EXPLORING THE SELF-EFFICACY AND PERCEPTIONS OF VIRTUAL MENTORING OF TEACHERS PARTICIPATING IN A NEW TEACHER INDUCTION PROGRAM

by

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DEDICATION

This dissertation is dedicated to the memory of my father, Larry Gilbert, who passed away before I started my doctoral studies. Though he didn't always understand my passion for education, he was always supportive of my love of learning and kept me in an endless supply of books from an early age. I am certain he would have at least skimmed the abstract of this document.

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ABSTRACT

Teacher turnover is an issue plaguing states and districts around the country, particularly among novice teachers. Research indicates that strong induction and mentoring programs can provide novice teachers with critical support and guidance as they make the transition from the pre-service environment to the professional workforce resulting in higher levels of self-efficacy and performance. Teachers with high self-efficacy exhibit more enthusiasm and persistence and higher levels of organizational commitment. While there is a considerable amount of research on traditional, face-to-face new teacher induction (NTI) programs, there are few studies that investigate the integration of technology for a virtual experience. This study sought to explore quantitative measures of teachers' self-efficacy and the perceptions of novice teachers engaging in virtual mentoring in the context of a NTI program.

Results of the survey indicate that participants (n = 67) reported a moderate degree of confidence in their ability to satisfactorily accomplish tasks within their classrooms. The scale is comprised of three subscales: Student Engagement, Instructional Strategies, and Classroom Management. The participants indicated a higher self-efficacy in Classroom Management than in any of the other subscales. Several themes emerged from the qualitative data highlighting the importance of the frequency, quality, and content of teachers' interactions with their mentors. This study contributes to the existing literature on virtual mentoring and explores how the experience can provide teachers with an opportunity to cultivate self-efficacy.

TABLE OF CONTENTS

DEDICATION iv

ACKNOWLEDGMENTS v

ABSTRACT vi

LIST OF TABLES xi

LIST OF FIGURES xii

LIST OF ABBREVIATIONS xiii

CHAPTER ONE: INTRODUCTION 1

Context of the Study 4

Statement of the Problem 7

Purpose of the Study and Research Questions 9

Significance of the Study 10

Theoretical Framework 12

E-Mentoring 12

Social Cognitive Theory 14

Limitations 14

Delimitations 15

Assumptions 15

Definition of Terms 16

Organization of the Study 17

CHAPTER TWO: LITERATURE REVIEW 18
Teacher Shortages 19
Teacher Pipeline 20
Teacher Turnover 22
Teacher Attrition 24
Summary 26
Characteristics of New Teachers 26
Self-Efficacy 28
Impact of Self-Efficacy Beliefs 30
Sources of Self-Efficacy 33
Summary 34
Teacher Self-Efficacy 34
History of Teacher Self-Efficacy 35
Teacher Self-Efficacy Outcomes 36
Building Teacher Self-Efficacy 38
Summary 41
New Teacher Induction Programs 42
NTI Program Benefits 44
Structure of NTI Programs 45
Mentoring as a Component of New Teacher Induction 48
Face-to-Face Mentoring 48
Qualities of effective mentoring. 51
Challenges and Affordances of Virtual Mentoring 54

Summary 64
CHAPTER THREE: METHODOLOGY 66
Research Design 66
Selection of Participants 68
Data Collection 71
Quantitative Phase 71
Qualitative Phase 75
Summary 79
CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA 80
Introduction 80
Research Question 1 81
Survey Participants 82
Results 84
Research Question 2 89
Interview Participants 91
Results 93
Research Subquestion 2a 94
Research Question 2b 116
Summary 124
CHAPTER FIVE: SUMMARY, DISCUSSION, AND CONCLUSIONS 126
Discussion of Findings 126
Research Question 1 126
Research Question 2 130

Research Subquestion 2a 131

Research Subquestion 2b 142

Virtual Mentoring as an Avenue for Constructing Self-Efficacy 146

Implications 148

Limitations 152

Recommendations for Future Research 154

Conclusion 156

REFERENCES 159

APPENDIX A 178

APPENDIX B 180

APPENDIX C 182

APPENDIX D 185

LIST OF TABLES

Table 3.1 NTI2 Cohort Composition 2019-2020 (N = 230) 69

Table 3.2 Summary of Data Analysis Methods 78

Table 4.1 TSES Survey Participant Demographics 83

Table 4.2 Measures of Central Tendency and Variation for the TSES (n = 67) 85

Table 4.3 TSES Subscale Scores 86

Table 4.4 Mann-Whitney U Test for Significant Difference in Self-Efficacy by Teacher Certification Pathway 87

Table 4.5 Kruskal-Wallis H Test for Significant Difference in Self-Efficacy by Teaching Placement 88

Table 4.6 Instructional Strategies Pairwise Comparisons of Placement 88

Table 4.7 Classroom Management Pairwise Comparisons of Placement 88

Table 4.8 Kruskal-Wallis H Test for Significant Difference in Self-Efficacy by Frequency of Mentor Contact 89

Table 4.9 Qualitative Interview Participant Demographics 90

Table 4.10 Coding Category Definitions 97

Table 4.11 Interview Participant Mentoring Session Attendance 99

Table 4.12 Theme Descriptions 100

Table 4.13 Characteristics Influencing the Quality of Mentoring Interactions 103

Table 4.14 Content of Mentoring Interactions 113

Table 4.15 Subscale Definitions 117

Table 4.16 Teacher Comments on Personal Responsibility 123

LIST OF FIGURES

Figure 1.1. Overview of Study Timeline in Relation to Pandemic Response 7

Figure 3.1. Overview of Data Collection Process.....71

LIST OF ABBREVIATIONS

NTI2	New Teacher Induction (Year 2)
ELA	English Language Arts
TSES	Teacher's Sense of Efficacy Scale

CHAPTER ONE: INTRODUCTION

The primary goal of any educational institution is to improve student achievement. Research indicates that the greatest predictor of student achievement is teacher quality (Marzano et al., 2001). The definition of teacher quality varies in the literature with some identifying specific qualities or characteristics such as classroom experience, educational background, type of certification, and teachers' test scores (Coleman et al., 1966; Rice, 2003). By contrast, Hanushek (2002) provided a simple, output-based definition of teacher quality, "good teachers are ones who get large gains in student achievement for their classes; bad teachers are just the opposite" (p. 3). High quality educators are educators who demonstrate gains in student achievement. As such, districts strive to attract, recruit, and retain the highest quality educators. Unfortunately, it is becoming increasingly challenging to recruit these individuals. A recent survey found that only 5% of students taking the ACT college entrance exam were considering pursuing a career in education, and between the years of 2009-2014, teacher education program enrollments dropped nearly 35% (Sutcher et al., 2016). This puts many states in a situation in which demand for new teachers is increasing rapidly, while the pipeline for potential educators dwindles.

Given that there are fewer potential recruits, it is even more critical to retain new teachers. Research suggests that about 44% of new teachers leave the field within the first five years of teaching (Ingersoll et al., 2018). Apart from the newly created vacancies that must be refilled, this departure from the field also has a direct impact on student

achievement, disrupts the culture of buildings, and represents a significant financial cost for districts (Ingersoll, 2012; Kearney, 2014; Sutcher et al., 2016). One estimate from the Alliance for Excellent Education (2014) suggests that this cost exceeds as much as $10,000 per teacher.

Teachers are leaving the classroom for many reasons, but one of the most frequently cited reasons is burnout (Bressman et al., 2018; Kearney, 2014; Roloff & Brown, 2011). Teacher burnout is used to describe "the feeling of being dissatisfied with the responsibilities of teaching" (Bressman et al., 2018, p. 164). This includes such things as a lack of support from administration, disappointment in the realities of the role, feelings of inadequacy, stress, salary, and poor working conditions (Riley & Gallant, 2010). As a result, many states and districts are seeking solutions to help increase new teachers' feelings of support and improve issues related to teacher preparation and stress.

As a mechanism for providing additional support and training for novice teachers, many districts employ New Teacher Induction (NTI) programs. Induction can be defined as "a comprehensive, coherent, and sustained professional development process—that is organized by a school district to train, support, and retain new teachers and seamlessly progresses them into a lifelong learning program" (Wong, 2004, p. 42). Induction programs can include many different components or resources including targeted in-service trainings, orientation sessions, and opportunities for collaboration and planning with other new teachers. One component of induction that is especially helpful is mentoring (Wong, 2004). In the context of New Teacher Induction, e-mentoring or virtual mentoring is defined as a "mutually-beneficial relationship between a mentor and

protégé, which provides new learning as well as career and emotional support, primarily through email and other electronic means" (Ensher & Murphy, 2007, p. 300).

Mentoring programs are designed to provide novice teachers with guidance and support in their formative professional years. Through reflection and collaboration, novice teachers have an opportunity to build their confidence and competence in the classroom. Participation in such programs has been found to increase teachers' self-efficacy and confidence in his or her skills (Turley et al., 2006). Additionally, teachers' self-confidence is recognized as one positive factor that shows mentoring effectiveness (Ensher & Murphy, 2007). Self-confidence is defined as "trust in one's abilities, capacities, and judgment" (APA Dictionary of Psychology, 2020). Self-efficacy, derived from Bandura's Social Cognitive Theory, is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). According to Social Cognitive Theory, "the beliefs that people have about themselves are key elements in the exercise of control and personal agency" (Pajares, 1996, p. 543). Put another way, the beliefs that people have about their abilities, level of influence, and skills impact their outcomes. People with high self-efficacy are more likely to expend more energy toward reaching a goal or targeted objective, persevere in the face of challenges, and take control of their lives (Bandura, 1986; Bandura, 1997).

Bandura's self-efficacy model has been applied in a variety of different contexts including education. Teacher self-efficacy is defined as "a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran &

Woolfolk-Hoy, 2001). Teacher self-efficacy can impact a teacher's choice of instructional activities, level of effort, persistence in the classroom, organizational commitment, and retention (Darling-Hammond, 2003; Tschannen-Moran & Woolfolk-Hoy, 2001). Improved self-efficacy may sustain novice teachers as they make the transition from the pre-service environment into the classroom (Yost, 2006). Thus, this study will explore quantitative measures of teachers' self-efficacy and their perceptions of their experiences participating in virtual mentoring in the context of a NTI program.

Context of the Study

This study was positioned in the context of an urban K-12 school district located in the Midwestern United States. The district serves approximately 50,000 students and employs over 4,000 educators. Like many other urban districts, this district struggles with recruiting, hiring, and retaining high-quality educators. To support and retain new teachers in the district, they host a two-year New Teacher Induction program for all new hires. The purpose of the program is two-fold. First, it serves as a way to acculturate new hires and to provide information about the policies, practices, and vision of the district. As such, both novice teachers and experienced teachers who are new to the district are invited to participate in the program. The second purpose of the program is to provide new teachers with additional information, content, and support as they make the transition to the classroom from the pre-service environment.

In the past, the NTI program consisted of a series of face-to-face in-service opportunities over the course of the first two years of a teacher's career. In an urban district, it can be challenging to host these trainings within the school day as it is difficult to secure the requisite number of substitute teachers to provide coverage for classroom

teachers and it can be cost-prohibitive to pay for the release time. To address the challenge of meeting the unique needs of new teachers in a more flexible and cost-efficient way, the NTI program shifted to a blended model (NTI2) for second-year participants.

While the year one offering remained unchanged, the blended NTI2 model consists of three layers of support for educators including face-to-face networking sessions, an asynchronous online learning community, and synchronous virtual mentoring. Following the first face-to-face networking session, NTI2 teachers were divided into grade-level or content-specific cohorts and assigned a mentor. To ensure perceived similarity between the mentor and the mentees, elementary teachers were grouped according to grade level, while secondary teachers were grouped according to their respective content areas. The mentor was a veteran teacher within the district who teaches the same grade level or content area.

The cohort served as an organizational mechanism for ensuring that teachers were paired with a mentor who was participating in the same trainings, using the same curriculum, and engaging in the same day-to-day tasks as they were. The members of the cohort were encouraged to engage with one another and their mentors asynchronously in a Google Classroom. For synchronous virtual mentoring, the mentor hosted regularly scheduled, optional sessions via Zoom video conferencing software. The original intention of the program was such that the mentor would meet with mentees individually, but as the program evolved throughout the year, teachers were given the option to participate in sessions as a group, in pairs, or individually.

The district's State Department of Education requires districts to offer mentoring services for the first two years of a teacher's career. In this district, the mentoring services are both site-based and woven into the NTI program. Some buildings choose to leverage site-based services in which the principal pairs a new teacher with a veteran teacher in the same building. Others do not. In some cases, a teacher may be the only one teaching his or her content area in the building, so there is not a clear mentor available. To ensure that every teacher has the opportunity to participate in mentoring services in the first two years of their career, the district also offers virtual mentoring services as a part of the NTI2 program. Since some teachers may participate in site-based mentoring, the virtual mentoring component of the NTI2 program is optional.

This study explored the self-efficacy and perceptions of teachers who participated in the NTI2 program in the 2019-2020 academic year. The study design was established and developed prior to the COVID-19 pandemic response. Beginning in March 2020, many districts across the country, including the district in this study, ceased brick-and-mortar operations and rapidly shifted to remote learning. Figure 1.1 illustrates the timeline of the study design and data collection in relation to the COVID-19 response for additional clarity regarding the study's context. The COVID-19 pandemic response was outside the scope of this study, and as such, is a limitation of its results.

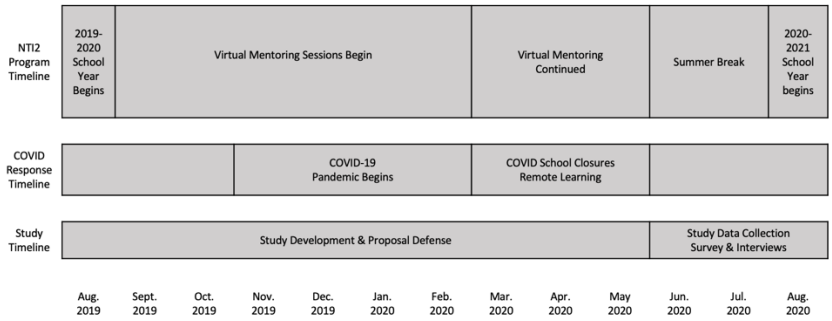

Figure 1.1. Overview of Study Timeline in Relation to Pandemic Response

Statement of the Problem

Teacher turnover is a critical issue in today's educational environment as it can exacerbate shortages in key content areas and disproportionately impact our highest need students (Ingersoll & Strong, 2011; Podolsky et al., 2016). New teachers are leaving the profession in droves citing high levels of stress, a lack of support, and dissatisfaction with the profession. As such, it is clear that states and districts must do more to support early career teachers as they make the transition from pre-service to the classroom.

Induction programs have been identified as an evidence-based strategy for reducing teacher attrition and addressing the issue of teacher turnover among novice teachers (Ingersoll, 2012; Ronfeldt & McQueen, 2017; Sutcher et al., 2016). These programs provide teachers with additional training, guidance, and support as they navigate the challenges of the classroom thus increasing teachers' self-efficacy and resilience (Darling-Hammond, 2003; Harris, 2004; Skaalvik & Skaalvik, 2014). Unfortunately, the need for more comprehensive support in the form of induction for new teachers comes at a time in which state and district officials are being asked to do more with less.

Funding for professional development for educators typically comes from two primary sources: the general budget and Title II funding (Gulamhussien, 2013). The general budget is comprised of federal, state, and local funding sources. Most districts have seen a sharp decline across all funding sources in recent years. At the state level, funding formulas vary, though state revenue sources provide nearly half of all school funding for K-12 education (Harris, 2019). Following the recession in 2008, states have started to see an increase in funding, but most have not returned to pre-recession spending levels (Leachman et al., 2017). Since most districts have little money specifically earmarked for professional development or induction supports, the funds come from the general budget. Many districts lump their professional development spending into a broader "Instructional supports" category which can also include such things as curriculum, technology, and library costs (Odden et al., 2002). As a result, districts often have to make difficult decisions regarding the allocation of funds and, oftentimes, the funds are diverted to other areas.

In addition to decreased funding for both ongoing PD and induction supports over the past ten years, districts also struggle with limited teacher release time, substitute teacher shortages, larger geographical regions, and fewer qualified mentors (Reeves & Pedulla, 2011). As a result, districts are looking for new and innovative solutions that may allow them to meet the professional development needs of teachers in a more cost-efficient and scalable way. Reeves and Pedulla (2011) reported that technology is one of the primary tools districts are utilizing to overcome obstacles such as a lack of time and resources for teacher professional development. As the internet and technology have

become more ubiquitous in today's world, many of the initial barriers to the implementation of online tools for teacher learning are no longer present.

Purpose of the Study and Research Questions

The urban, Midwestern school district examined within this study moved to the blended (NTI2) model to provide mentoring services to beginning teachers in the most flexible and efficient way possible. The blended solution is a departure from the traditional face-to-face program that has been used within the district in years past. The purpose of this study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in the NTI2 program.

Through the use of a mixed methods design, this study provides further insight into the virtual mentoring experiences of novice teachers from the target school district. Data collection began with the digital administration of a survey designed to measure teachers' self-efficacy. This study utilized the short form of Tschannen-Moran and Woolfolk-Hoy's (2001) Teachers' Sense of Efficacy Scale (TSES). The scale consists of twelve items and measures teacher's self-efficacy in the areas of student engagement, instructional strategies, and classroom management. The TSES was selected for several reasons. First, this survey has a direct connection to Bandura's own unpublished Teacher Efficacy Scale (TES). Tschannen-Moran and Woolfolk-Hoy (2001) utilized Bandura's TES as the foundation for this instrument but included an expanded list of teacher capabilities that is more reflective of teachers' jobs and experiences. Next, the instrument is valid and reliable and has been used in similar studies of teacher efficacy (Klassen & Chiu, 2010; Page, Pendergraft, & Wilson, 2014; Tschannen-Moran & Woolfolk-Hoy, 2007). Finally, with its three subscales and their connection to the specific needs of

novice teachers, the survey provides a helpful structure that can be used to facilitate the development of the interview protocol to be used in the qualitative component of this study. A clear connection between the survey instrument and the interview protocol lends coherence and structure to this mixed methods study.

Following the administration of the survey, the initial data was analyzed using descriptive statistics. Based upon the results of the survey, six teachers were selected to participate in semi-structured interviews to help provide further insight into the teachers' perceptions of their experience with virtual mentoring. The interviews were conducted via Zoom video conferencing software. The research questions that guided this research study are:

1. What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management?
2. How do teachers describe the virtual mentoring experience?
    1. How do teachers describe their interactions with their virtual mentors throughout the program?
    2. How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management?

Significance of the Study

Leveraging web-based technology to facilitate mentoring for novice teachers comes at a particularly opportune time for many states and districts. Budget cuts and logistical concerns continue to plague states and districts across the country. Leachman, Masterson, and Figueroa (2017) report that recent spending data available from the U.S.

Census Bureau indicates that "29 states were still providing less total school funding per student than they were in 2008" (p. 1). Regardless of funding challenges, the need for supporting novice teachers is critical. With the advent of new technologies, including video conferencing, districts have access to online resources that can potentially help scale induction efforts without increasing the number of in-service days thus mitigating issues related to teacher release time, substitute teacher shortages, and cost.

Much of the existing literature on virtual mentoring was conducted in the infancy of the technology. At that time, access to digital tools was limited due to availability and cost (Single & Muller, 2001). Over time, tools to facilitate this type of mentoring have become more ubiquitous and, as a result, less cost-prohibitive than in the past (Thomas & Ensher, 2013). Furthermore, technology has greatly improved and may yield more positive results.

Practice in the area of virtual mentoring has outpaced the research base and there is a need for more empirical research in the field (Ensher & Murphy, 2007; Rhodes et al., 2002; Yaw, 2007). This study was designed to provide further insight into the implementation of a virtual mentoring program by examining the lived experiences and perceptions of novice teachers. While limited in its generalizability, the information gleaned from this study provides information and recommendations to districts seeking to leverage video conferencing to provide job-embedded mentoring support for beginning teachers.

In addition to providing further insight into the use of virtual mentoring in the K-12 environment, this study also contributes important insights into the development and cultivation of novice teachers' self-efficacy. High teacher self-efficacy has been linked to

higher teacher quality, improved student achievement, increased enthusiasm for the profession, and organizational commitment (Holzberger et al., 2012; Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001).

Theoretical Framework

The study draws from the work of (1) Ensher and Murphy's (2007) Conceptual Model for E-Mentoring Research and (2) principles of Social Cognitive Theory.

E-Mentoring

Mentoring, both in the workplace and in education, has a long and rich history of successful outcomes. With the emergence of web-based communication technologies, a new subset of mentoring emerged: e-mentoring. E-mentoring referred to within this study as virtual mentoring, offers a more accessible and flexible format for mentoring relationships. The initial excitement in the medium led to an explosion of virtual mentoring programs in the early 2000s but there was little research into the phenomenon (Ensher & Murphy, 2007).

To address this gap in the literature, Ensher and Murphy (2007) proposed the Conceptual Model for E-Mentoring Research Agenda. Based upon early empirical research in the area, Ensher and Murphy identified several potential antecedents for participation and satisfaction with e-mentoring including access to face-to-face mentors, past experience with mentoring, comfort with Computer Mediated Communication, and the presence of organizational supports. While the antecedents predict one's participation in mentoring, Ensher and Murphy (2007) also presented several moderators that could affect how successful the relationship will be. These moderators include match quality, frequency of communication, perceived similarity, and the presence of technology issues.

The model suggests that e-mentoring best supports psychosocial and vocational support, with limited opportunities for role-modeling and that positive outcomes for the protegee could include self-confidence, support and encouragement, new learning, career opportunities, academic enrichment, and networking skills.

For the purposes of this study, the research focused on the types of support provided in an e-mentoring relationship and the potential positive outcomes, specifically self-confidence. Drawing from Kram's (1985) early work in workplace mentoring, three primary mentoring functions were identified for the delivery and implementation of e-mentoring including psychosocial support, vocational support, and role modeling. For this study, the presence of psychosocial and vocational support, as indicated in the conceptual model, were explored through interviews as a way of understanding the teachers' experiences with virtual mentoring. Finally, Ensher and Murphy (2007) identified several positive potential outcomes for e-mentoring relationships including self-confidence, support and encouragement, new learning, career opportunities, academic enrichment, and networking skills.

Self-confidence is an important outcome of mentoring relationships, but the scope of this study is concerned with one's self-confidence in relation to the specific skills of teaching and teachers' beliefs in their own abilities to improve student achievement through engagement, instruction, and classroom management. For this reason, the outcome of self-confidence was explored and measured as "situationally-specific self-confidence" or self-efficacy (Druckman & Bjork, 1994, p. 174).

Social Cognitive Theory

Self-efficacy, a component of Bandura's Social Cognitive Theory (SCT), emerged in 1986 as an extension of his earlier work on Social Learning Theory. Social Cognitive Theory suggests that learning occurs in a social context as a result of the interplay between personal, environmental, and behavioral influences. Bandura (1986) identified 6 different constructs that define SCT including (1) reciprocal determinism, (2) behavioral capability, (3) observational learning, (4) reinforcements, (5) expectations, and (6) self-efficacy. The primary goal of the theory is to explain how people regulate and maintain their behavior to achieve a goal or outcome.

Self-efficacy is "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1994, p. 2). A person's self-efficacy can have an impact on their life choices, level of motivation, resilience, and overall functioning in life (Bandura, 1994). Self-efficacy is not a specific character trait nor is it static. One's self-efficacy is malleable and can be influenced by a number of factors including mastery experiences, vicarious experiences, social persuasion, and one's somatic and emotional states.

Limitations

This study has the following limitations:

1. Data were collected from a single K-12 public school district in the Midwest.
2. The sample size was limited to a single cohort of 230 teachers entering their second year of employment within the school district.

3. While the initial face-to-face networking event was mandatory, participation in the full scope of the NTI2 program was voluntary. This may impact the ability to generalize the results to a wider population.

Delimitations

The delimitations included by the researcher were selected to help develop a clearer understanding of the perceptions and experiences of a select group of teachers. In this study, a critical case sampling method was used as only a subset of the teachers in the school district were engaged in the program. This methodology allows the researcher to explore a specific program in the context of a bounded system. Given that funding for the initiative is determined on an annual basis, the data collection period was limited to the 2019-2020 academic school year only.

Assumptions

For the purposes of this study, four main assumptions were applied:

1. All new teacher hires in the school district have access to a district-issued laptop and regular internet access.
2. Teachers responded honestly and accurately to the survey and interview questions.
3. The questions on the instruments were clear, concise, unbiased, and captured the information necessary to accurately convey the teachers' experiences and perceptions.
4. The interpretation of the data accurately reflects the intended meaning, voices, and experiences of the participants.

Definition of Terms

- Novice Teacher: For the purposes of this study, novice teacher refers to any teacher within the first five years of his or her career.
- NTI2: The name of the second-year New Teacher Induction program in the target school district. The cohort encompasses both novice teachers beginning their second year of teaching and experienced teachers beginning their second year of teaching in the target school district.
- Induction: “A system-wide, coherent comprehensive training and support process that continues for two to three years and then seamlessly becomes part of the lifelong professional development program of the district to keep new teachers teaching and improving toward increasing their effectiveness” (Wong, 2004).
- Mentoring: “The personal guidance provided, usually by seasoned veterans, to beginning teachers in schools” (Smith & Ingersoll, 2004).
- Self-confidence: “Trust in one’s abilities, capacities, and judgment” (APA Dictionary of Psychology, 2020).
- Self-efficacy: “The belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Bandura, 1994, p. 2)
- Virtual Mentoring: “A mutually-beneficial relationship between a mentor and protege, which provides new learning as well as career and emotional support, primarily through email and other electronic means” (Ensher & Murphy, 2007, p. 300).

Organization of the Study

This dissertation is organized into five chapters. Chapter One includes the background of the study, statement of the problem, the purpose of the study, the significance of the study, theoretical framework, research questions, limitations, delimitations, and assumptions. Chapter Two includes a review of the literature including relevant research on teacher attrition, new teacher induction programs, mentoring, and self-efficacy. Chapter Three outlines the methodology employed in this mixed methods study and provides both the procedure and the rationale for the methods utilized. Chapter Four provides an analysis of the data and the results of the study. Chapter Five includes a discussion of the findings and their relevance to the existing literature and the field overall.

CHAPTER TWO: LITERATURE REVIEW

Given that teacher quality is of utmost concern for school districts, it is crucial to attract and retain high-quality educators. A growing body of research suggests that the lifespan of a new teacher's career is quite short. One report suggests 25-40 percent of new teachers will leave the profession within the first five years (Ingersoll et al., 2018). Bearing that sobering statistic in mind, district officials and policymakers alike are searching for ways to support and retain new teachers. One research-based strategy for increasing teacher attrition is the use of New Teacher Induction programs. Ingersoll and Strong (2011) found that new teachers participating in NTI programs reported higher satisfaction, commitment, and levels of retention. NTI programs provide novice teachers with opportunities for reflection, additional support, and training. These supportive experiences help to cultivate teacher self-efficacy, a trait linked with improved performance, job satisfaction, and organizational commitment (Holzberger et al., 2012; Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001). Unfortunately, these supports often require a significant investment of resources on behalf of a district. To mitigate some of the costs inherent in implementing NTI and mentoring programs, some districts have turned to technology to offer online professional development. This review of the literature provides an overview of the current research on teacher turnover and attrition, self-efficacy, New Teacher Induction programs, and virtual mentoring.

Teacher Shortages

Increased student achievement is the ultimate goal of any educational institution. Research indicates that the teacher is the most important school-level factor impacting student achievement (Darling-Hammond, 2003; Marzano et al., 2001; Rivkin, Hanushek, & Kain, 2005). As such, districts must attract the highest quality educators. Though it goes beyond simply attracting candidates, the Organization for Economic Cooperation and Development (OECD) noted that it is imperative that districts “retain and further develop the teachers currently employed in schools” (OECD, 2005, p. 170) to ensure a quality teaching workforce. Given the teacher shortages plaguing many states across the country, it is becoming increasingly challenging to achieve this goal.

The increased demand for new teachers is driven by several factors including changing student enrollment, student-teacher ratios, teacher attrition rates, and perceptions about teacher quality (Castro et al., 2018). In practice, shortages occur when the demand for teachers is greater than the supply of candidates. A teacher shortage can be defined as a school's "inability to staff themselves with teachers who have qualifications appropriate to their specific needs" (García & Weiss, 2019, p. 3). While many factors can lead to a shortage, the primary causes include an increase in vacancies within a school or district, a reduction in class sizes, or a lack of qualified candidates in the application pool.

Issues related to teacher movement are multi-faceted and complex. There are many considerations and factors at play, but teacher mobility is a cause of growing concern. In the research, teachers can be placed in one of three categories: stayers, movers, or leavers. These categories capture the distinction between teacher turnover

(movers) and teacher attrition (leavers). Teacher mobility is considered one of the causes of the shortages seen across the country. For this review of the literature, three specific factors will be considered: the teacher pipeline, teacher turnover, and teacher attrition.

Teacher Pipeline

One of the fundamental issues facing districts as they struggle to fill classroom vacancies is the lack of qualified applicants. The pool of qualified applicants is sometimes referred to as the teacher pipeline. The definition of the pipeline implies two important factors - the number of potential candidates and the quality of the potential candidates. Both of these factors will be explored in turn.

A 2016 national survey of incoming college freshmen reported that only 4.2% of students were considering pursuing a career in education. This represents a drop of 29% between the years of 2009-2014 (Eagan et al., 2014). This statistic bears out in the field as teacher education program enrollments dropped nearly 35% (Sutcher et al., 2016) and the number of people completing the programs declined by 27.4% (García and Weiss, 2019). Simply put, fewer people are interested in pursuing a career in the field of education.

To gather information regarding college student's perceptions and interest in the field of teaching, the ACT research and policy group questioned a sample of students participating in national administrations of the ACT during the 2017-2018 school year. Nearly two-thirds of the respondents referenced poor pay as a detractor from the field. They also stated that limited opportunities for career development diminished the appeal of the profession (Croft et al., 2018). Perhaps unsurprisingly, respondents stated that better pay and increased flexibility would increase their interest in becoming a K-12

Teacher. Reeves (2018) summarized the challenges as “lowered respect, toxic teacher evaluation systems, adverse working conditions, inconsistent leadership, lack of efficacy, professional isolation, and inadequate pay” (p. 1). Other factors that influence one’s decision to enter the field include a lack of autonomy, rigorous accountability measures, and a lack of prestige or esteem for the field (Reeves, 2018; Croft et al., 2018; Riley & Gallant, 2010).

One issue related to the teacher pipeline relates to the number of candidates choosing to enter the profession, but the second issue relates to the quality of the incoming candidates. Research indicates that students choosing to enter the profession are not as qualified as their peers. In the ACT policy study, incoming candidates who indicated that they were “definitely interested” in pursuing a career in education held lower composite ACT scores than their peers (Croft et al., 2018). In response to these shortages, many states are lowering the standards required for beginning educators, thus exacerbating quality issues in the pool of candidates. Berry and Shields (2017) noted that in California, a state plagued by chronic shortages, emergency certificates issued in response to “acute needs” accounted for nearly 10,000 authorized licenses in the 2015-2016 academic year. In the U.S., nearly 100,000 classrooms were staffed by unqualified candidates in the 2017-2018 academic year (Espinoza et al., 2018). In summary, fewer potential candidates and lower entry-level requirements for certification impact the quality and depth of the teacher pipeline, thus making it challenging for states and districts to fill all vacancies with qualified candidates.

Teacher Turnover

Given the dwindling teacher pipeline, finding qualified candidates is one challenge that districts face when staffing buildings. A second challenge emerges once those individuals have been hired: retaining them. In teacher mobility research, there are two types of movement: turnover and attrition (García & Weiss, 2019). Teacher turnover, defined as teachers leaving one position or building for another, can be especially problematic because it can create new vacancies that remain unfilled. Ingersoll (2001) noted that the high turnover rates dramatically impact critical teacher shortages that plague schools across the country. This is especially notable in high-poverty and high-need placements (Carver-Thomas & Darling-Hammond, 2017).

Apart from the newly created vacancies that must be refilled, this movement represents several other negative implications for schools. First, research indicates that teacher turnover harms student achievement scores. Ronfeldt, Loeb, and Wyckoff (2013) conducted an empirical study examining the student achievement scores of students in buildings with high rates of teacher turnover. The researchers found a significant negative impact on students' math and English Language Arts (ELA) achievement concluding that "turnover has a broader, harmful influence on student achievement since it can reach beyond just those students of teachers who left or of those that replaced them" (p. 32). Others note that turnover disrupts the culture of buildings and represents a significant financial cost for districts (Bressman et al., 2018; Kajs, 2002). Finally, teacher turnover within a district can exacerbate inequities within a district as top-performing teachers tend to move to schools with higher quality indicators such as more resources and more support (Feng & Sass, 2017).

While the negative impacts of teacher turnover are well-documented, it is also worth noting that there is some potential for positive benefits as a result of teacher turnover. For instance, some argue that turnover can strengthen the mix of teachers in an individual school because research indicates that poorly performing teachers tend to leave more frequently than their more highly-qualified counterparts (Hanushek & Rivkin, 2010). Sorensen and Ladd (2018) argued that this sentiment fails to take into consideration the quality of the teachers who will replace the previously ineffective teacher and the impact that the new configuration of teachers and experience may have on a building over time. While the researchers acknowledge that it can be challenging to truly measure a new teacher's quality or efficacy in the absence of student achievement data, they have identified several characteristics that typically indicate reduced teacher quality including a lack of experience, alternate certification methods, and low licensure exam scores. Using longitudinal school-level data from North Carolina gathered from 1994-1995 to the 2015-2016 school year, Sorenson and Ladd (2018) found that high levels of turnover led to higher numbers of teachers demonstrating low-quality indicators. The disruption to the composition of the teaching staff, coupled with a loss of experience, represents a net negative impact on buildings with high turnover. These results suggest that turnover can potentially positively impact a building provided that schools can replace the teachers with high-quality new hires which represent a challenge of its own.

While not all turnover is negative, the high volume of movement, sometimes referred to as the revolving door, can lead to shortages in the field. In addition to these shortages, teacher turnover can be very costly for districts. When new teachers resign or move to another district, that investment is lost. One estimate suggests that urban districts

pay nearly $20,000 to replace each teacher (Carver-Thomas & Darling-Hammond, 2017). As such, districts have a vested interest in ensuring that teachers remain within the system.

Teacher Attrition

Teacher turnover refers to the movement within the field of education, but teacher attrition refers to leaving the field entirely. Research suggests that more than 44% of new teachers leave the profession within the first five years (Ingersoll et al., 2018). Teacher attrition, teachers leaving the profession altogether, exacerbates the shortages that many districts face. One estimate suggests that nearly 90% of the nationwide annual demand for new teachers stems from teacher attrition (Sutcher et al., 2016).

Sher (1983) identified three categories to describe the issues that impact teacher retention. The categories, referred to as the Three Cs of teacher retention are (a) Characteristics, (b) Conditions, and (c) Compensation. Characteristics refer to a teacher's personal characteristics including his or her personal educational experiences, background, demographics, and interests. Conditions refer to the conditions of the work environment including the size of the district or school, the type of building or district, the resources available to support instruction, and the climate of the staff or building. The final C, Compensation, refers to the annual salary and benefits teachers receive as compensation. Studies have shown that the more teachers are paid, the less likely they are to leave (Carver-Thomas & Darling-Hammond, 2016). Unfortunately, the Economic Policy Institute recently released a report detailing the erosion of teacher pay over time. The teacher compensation penalty refers to the difference in compensation between teachers and other college graduates when controlling for education and experience.

Allegretto and Mishel (2019) reported that the relative wage penalty for teachers has increased by 10.2 percent in the past ten years with a 21.4 percent penalty in 2018. This lack of equity in compensation is a deterrent for many potential and practicing educators.

Sher's Three Cs of retention, first established in 1983, remain relevant today. The Schools and Staffing Survey (SASS) is the largest survey of K-12 districts, schools, administrators, and teachers in the United States. The most recent administration of the survey occurred during the 2011-2012 academic school year. Following the administration of the SASS, a subset of participants was interviewed the following year using the Teacher Follow-Up Survey (TFS). The TFS was administered to a group of SASS participants who remained in the classroom and a group of teachers who left the profession. The survey was designed to measure attitudes and perceptions about the profession and measure the attrition rate for teachers. In the most recent administration of the TFS in the 2012-2013 academic year, teachers who voluntarily left the profession did so for many reasons. Aside from "personal life factors" which accounted for 38.4% of the leavers, career factors accounted for nearly 21% of the reasons why teachers chose to leave the profession (NCES, 2015). In this survey, career factors included such things as dissatisfaction with the teaching career and a lack of opportunities for career growth or personal advancement.

While some argue that the discourse around teacher shortages is overwrought and exaggerated, it is critical to consider the bigger picture. Those arguments fail to take into consideration which schools and districts are most heavily impacted by the shortages. García and Weiss (2019) pointed out that "when indicators of teacher quality (certification, relevant training, experience, etc.) are taken into account, the shortage is

even more acute than currently estimated, with high-poverty schools suffering the most from the shortage of credentialed teachers" (para. 1). The disproportionate impact of shortages and turnover on our highest-needs schools and students makes this an equity issue as well as a staffing issue.

Summary

Collectively, the movement of teachers - both through turnover and attrition - is referred to as teacher churn. Teacher churn is one of the primary causes of pervasive teacher shortages which can negatively impact student achievement and building culture. While teacher churn is problematic at all stages in the education profession, current research indicates it is especially acute among novice teachers (Ingersoll et al., 2018). Given that attrition and turnover are leading causes in existing teacher shortages and that the issue is so prevalent among new teachers, the remainder of this literature review will concentrate on the specific characteristics and needs of novice teachers and efforts to curb the departure of novice teachers from the profession.

Characteristics of New Teachers

Teaching is an incredibly challenging profession, particularly for novice teachers. It is one of the few careers in which the least experienced members face the greatest challenges and the most responsibilities including more non-teaching duties, more challenging classes, and more diverse placements (Brock & Grady, 2001; OECD, 2005; Podolsky et al., 2016; Riley & Gallant, 2010). Halford (1998) goes so far as to say that education is "the profession that eats its young" (p. 33). This section explores the challenges faced by novice teachers, their feelings of job satisfaction, and what the research says about why they choose to leave the profession. It will also explore the

concept of self-efficacy and how teachers' beliefs about their abilities in the classroom can impact performance, satisfaction, and commitment. The section will conclude with a recommendation from the research that has been shown to help beginning teachers navigate some of these challenges and, in turn, reduce attrition.

Teaching is colloquially described as an art, not a science. The implication is that many of the skills are learned on the job, refined over time, and are not always as straightforward as they might seem. Ingersoll (2012) noted that "pre-employment teacher preparation is rarely sufficient to provide all the knowledge and skill necessary to successful teaching, and that a significant portion of this knowledge can be acquired only on the job" (p. 47). As a result, many teachers find the first few years in the classroom to include a steep learning curve in which they must try to put all of the pedagogical strategies, instructional tools, and rules they learned into practice. Further compounding this challenge is the fact that many beginning teachers are transitioning from the pre-service environment into the professional workforce for the first time. Thus, in addition to grappling with the challenges inherent in the actual work of a classroom teacher, many novice teachers are also learning to navigate the complexities of the professional workforce for the first time.

The challenges that beginning teachers face are well-documented. Veenman (1984) conducted a meta-analysis of eighty-three empirical studies to determine the most serious problems impacting beginning teachers. In the context of this study, a problem was defined as a "difficulty that beginning teachers encounter in the performance of their task, so that intended goals may be hindered" (p. 143). Through this meta-analysis, Veenman (1984) identified eight problems that heavily impacted beginning teachers and

led to “reality shock” in which teachers struggle to reconcile their expectations or notions about the profession with the reality of the day-to-day job. The eight problems include classroom discipline, motivating students, dealing with individual differences, assessing students’ work, relationships with parents, organization of classwork, insufficient and/or inadequate teaching materials and supplies, and dealing with individual student behavioral issues. Other researchers have added to these findings over the years to include isolation, stress, and feelings of a lack of support (Wong, 2004; Dias-Lacy & Guirguis, 2017; Sharplin et al., 2011).

In light of these challenges, it is perhaps unsurprising that recent data indicate that 44% of new teachers will leave the profession in the first five years (Ingersoll et al., 2018). Novice teachers leave the profession for many reasons, but the most frequently voiced reason is dissatisfaction. This includes such things as disappointment in the realities of the role, feelings of inadequacy, a perceived absence of support from administration, stress, inadequate compensation, a lack of resources, and poor working conditions (Riley & Gallant, 2010; Dias-Lacy & Guirguis, 2017). Bressman et al. (2018) summarized these frustrations as burnout. Burnout can be defined as “the feeling of being dissatisfied with the responsibilities of teaching” (p. 2). The challenges of the profession, coupled with a lack of support and dissatisfaction, leads many teachers to depart the profession. While some choose to leave, some thrive despite the challenges.

Self-Efficacy

Self-efficacy, a concept first introduced by Albert Bandura (1977), refers to one’s beliefs about their abilities to perform and achieve in different situations. One’s self-efficacy beliefs have been linked to an increased enthusiasm, perseverance, and

organizational commitment. Rooted in Bandura's Social Cognitive Theory, self-efficacy is described as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgements of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391). Self-efficacy beliefs reflect a person's confidence in his or her ability to successfully achieve a goal or perform a certain behavior even in adverse situations. It is not a general feeling of competence or confidence. It is both situation- and task-specific. A person might perceive themselves as being competent in one field but not in another. For instance, an educator might feel competent teaching a kindergarten class, but might feel less competent teaching middle schoolers.

Self-efficacy theory is governed by the idea that a person's expectations of personal mastery and success determine whether or not they will engage in a given behavior. According to Bandura (1977), there are two expectations that influence action - efficacy expectations and outcome expectations.

Efficacy expectations are self-specific beliefs that "one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193) whereas an outcome expectation is "a person's estimate that a given behavior will lead to certain outcomes" (Bandura, 1977, p. 193). When one's efficacy expectations and their outcome expectations are in alignment, one is more likely to successfully engage in a given behavior. For instance, if a teacher believes that an intervention program is likely to increase student achievement (outcome expectation) and the teacher believes in his or her own capacity to effectively implement the intervention (efficacy expectation), the teacher is more likely to implement the program. That being said, efficacy expectations and

outcome expectations can be different for the same individual because they may recognize or believe that a given behavior will produce specific outcomes, but they do not believe that they are capable of enacting those behaviors to achieve the given outcome.

Efficacy expectations, those most closely related to self-efficacy, are not static and they rely heavily on context. They can vary in magnitude, generality, and strength (Bandura, 1997). They may not be the same for each specific task that a person encounters, so people make judgements about their capabilities in relation to the unique conditions in which they will be performing the action. The concept of outcome and efficacy expectations is important because "outcome expectations are highly dependent on efficacy expectations (self-efficacy) and therefore, self-efficacy predicts performance much better than expected outcomes" (Van der Bijl & Shortridge-Baggett, 2002). In summary, when one believes that an action will result in a desirable outcome (outcome expectations) and also believes he or she is capable of successfully completing that action (efficacy expectations), they are more likely to engage in the behavior or activity.

Impact of Self-Efficacy Beliefs

Self-efficacy beliefs are powerful, and they can impact behavior and functioning in a number of ways. Bandura (1994) identified four primary processes through which self-efficacy beliefs can impact human functioning including cognitive processes, motivational processes, affective processes, and selection processes.

Cognitive processes

Much of human behavior is cognitively driven. People are constantly assessing their surroundings, the tasks at hand, and their ability to complete those tasks

successfully. Perceived self-efficacy can influence performance in those tasks. People with high self-efficacy are more likely to remain task-oriented in spite of other situational demands, they are more likely to visualize positive outcomes for their work, they are more resilient in the face of setbacks, failures, and ambiguity. High self-efficacy also encourages more analytical thought processes (Bandura, 1977, 1994).

Bandura (1977) suggested that the strength of a person's beliefs about their own effectiveness could impact how they perform on challenging tasks. Collins (1982) conducted a study that explored this idea of self-efficacy's influence on achievement. The study examined a group of students as they approached a math task. The researcher selected students at three different levels of math skills - high, medium, and low. The study found that, regardless of skill, the students who believed in their capabilities performed better than their peers. They were more likely to return to incorrect problems and rework them and did so more accurately than their peers who struggled with self-doubt. This study affirmed that one's beliefs about their own skills can impact achievement.

Motivational processes

People form beliefs and judgements about what they can accomplish, visualize potential outcomes, set goals, and plan out a series of steps to achieve their goals. Self-efficacy impacts the types of goals that people set for themselves. People with high self-efficacy are more likely to set and pursue "explicit, challenging goals enhance and sustain motivation" (Bandura, 1994, p. 5). It also determines the level of effort that people will expend working toward achieving their goals. People with high self-efficacy are more persistent in challenging situations and demonstrate higher levels of perseverance and

resilience. By contrast, people with low self-efficacy are more likely to give up when they encounter obstacles or challenges, perceive failure as a personal flaw rather than an opportunity to try something new or expend more effort, and tend to dwell on perceived personal deficiencies when they could be concentrating on the task at hand (Bandura, 1994, 1997).

Affective processes

In addition to the cognitive and motivational processes, self-efficacy can also impact one's affective processes. These affective processes refer to the feelings of stress or depression people feel in threatening or difficult situations (Bandura, 1994). People's ability to cope with these feelings and experiences is critical to their success. Self-Efficacy can help regulate emotional states. People with high self-efficacy are more effective in managing threats because they are less likely to dwell on the issues and their own perceived helplessness. They are more apt to look for ways to solve problems and exert some control over a situation. (Bandura, 1997).

By contrast, people with low self-efficacy are prone to higher stress and anxiety. They possess less effective coping strategies and are more prone to dwell on both their perceived helplessness or insufficiencies, thus leading to more stress and anxiety. People with low self-efficacy are more likely to fall victim to stress and depression (Bandura, 1994).

Selection processes

People make decisions about the activities and the behaviors that they engage in each day. Many of those decisions are driven by their self-efficacy. Self-efficacy theory holds that people are more likely to engage in activities for which they have high self-

efficacy (Van der Bijl & Shortridge-Baggett, 2002). People are more apt to engage in activities in which they feel competent and prepared, conversely, they tend to avoid activities in which they feel unprepared or inadequate (Bandura, 1977, 1986). This explains why some people tend to gravitate toward tasks they may perceive as easier, leaving the more challenging tasks for later.

Sources of Self-Efficacy

Self-efficacy is not a fixed character trait. It can be cultivated and developed over time. Bandura (1997) posited four primary sources of self-efficacy: mastery experiences, vicarious experience, verbal persuasion, and psychological arousal.

Mastery experiences refer to one's personal experience with a task or action. Bandura (1977) suggested that as a person has an opportunity to positively and successfully engage in a behavior, they develop positive self-efficacy. Conversely, negative experiences or regular failures can reinforce negative self-efficacy. Of the four different sources of personal efficacy, mastery experiences are considered the most powerful.

Vicarious experiences involve modeling by another person. While considered less effective in terms of building efficacy, vicarious experiences are helpful because "seeing others perform threatening activities without adverse consequences can generate expectations in observers that they too will improve if they intensify and persist in their efforts" (Bandura, 1977, p. 197). This is especially effective if people can identify or see themselves in their person modeling a certain behavior.

The final two sources of efficacy are verbal persuasion and emotional physiological states. Verbal persuasion acknowledges the social component of efficacy

development. While considered less powerful because there is no authentic experiential foundation for the newly developed efficacy beliefs, words of encouragement and praise can help build up one's self-efficacy. One's emotional and physiological states can influence the development of self-efficacy. Bandura noted that people rely on their physical and emotional states to judge their capabilities (Bandura, 1997).

Summary

Perceived self-efficacy is a powerful construct that has been applied in a number of different fields. Self-efficacy beliefs can influence their thoughts and actions. They can also influence how much effort and energy a person is willing to commit to a task. People with high self-efficacy seek more challenging goals, approach obstacles with a more open mindset, demonstrate persistence and perseverance in the face of adversity and obstacles, and see failure as an opportunity to learn and reflect instead of being immobilized by it (Bandura, 1997). These are desirable characteristics worthy of intentional cultivation. The next section will explore the concept of self-efficacy within the context of education and explore its relevance to this dissertation.

Teacher Self-Efficacy

Sometimes referred to as teacher efficacy, teacher self-efficacy (TSE) is a teacher's "judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk-Hoy, 2001, p. 783). High TSE has been linked to several positive outcomes in educators including improved teaching behavior and improved student motivation and achievement (Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001). It has also been related to persistence,

enthusiasm, and organizational commitment (Holzberger et al., 2012). Conversely, low TSE can result in greater difficulties in teaching, higher levels of job-related stress, and lower levels of job satisfaction (Betoret, 2006; Klassen & Chiu, 2010; Tschannen-Moran & Woolfolk-Hoy, 2001).

History of Teacher Self-Efficacy

The construct of teacher efficacy originally emerged in the literature as a result of two studies conducted by the RAND Corp. Armor et al. (1976) conducted a study examining the effectiveness of various reading programs and interventions. The study included two survey items designed to measure teachers' efficacy beliefs. The construct, teacher efficacy, was found to be strongly related to reading achievement in minority students. A second study conducted by RAND explored the role of teacher efficacy in relation to student performance and teachers' willingness to continue utilizing federally subsidized programs after the initial implementation phase. (Berman & McLaughlin, 1977) found that teacher efficacy had a strong effect on both student and teacher performance. This first exploration of how teachers' efficacy beliefs might impact instruction led to heightened interest in the field. The construct of teacher efficacy as proposed by the RAND studies was derived from Rotter's locus of control theory (Dellinger et al., 2008).

Some argue that the construct of teacher efficacy introduced by the RAND studies is conceptually different from that of teacher self-efficacy (Dellinger et al., 2008; Tschannen-Moran & Woolfolk-Hoy, 2001). Teacher efficacy is primarily concerned with the ultimate outcome of student achievement and is conceptualized as "teachers' beliefs that factors under their control ultimately have a greater impact on the results of teaching

than factors in the environment or in the student --factors beyond the influence of teachers" (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998, p. 205). By contrast, teacher self-efficacy focuses on "successfully performing specific teaching tasks in a teacher's current teaching situation (specific school/classroom/students)" (Dellinger et al., 2008, p. 753). Given the impact of the RAND studies and their contribution to the early exploration of this topic in the literature, they have been included in this literature review, but the remainder of this literature review will concentrate on the concept of teacher self-efficacy. The second strand of teacher self-efficacy research, as explored within this dissertation, is derived from the work of Albert Bandura and his theory of self-efficacy. Bandura (1977) indicated that self-efficacy beliefs are both task- and situation-specific. As such, teacher self-efficacy beliefs directly relate to specific tasks and elements of a teacher's day-to-day role.

Teacher Self-Efficacy Outcomes

High teacher self-efficacy has been found to impact the teacher's instructional quality, overall student achievement, and teacher retention. As it relates to this study, these outcomes mirror the stated outcomes of the virtual mentoring services within the district's NTI program.

Instruction

Effective teachers employ instructional strategies in meaningful ways to engage students and facilitate learning. Holzberger, Philipp, and Kunter (2013) examined the relationship between teachers' self-efficacy and instruction. They found that "teachers with higher self-efficacy beliefs showed higher instructional quality" (p. 782). High self-efficacy has also been linked to a teacher's choice of instructional activities, level of

effort, and persistence in the classroom (Darling Hammond, 2003; Tschannen-Moran & Woolfolk-Hoy, 2001).

Achievement

Guo, Connor, Yang, Roehrig, and Morrison (2012) conducted a study that examined the effect of teacher self-efficacy, education, and years of experience on fifth graders' literacy outcomes. Guo et al. (2012) found that self-efficacy indirectly affected the instructional strategies employed by the teacher, the quality of the feedback, and the overall positive climate created in the classroom. The researchers concluded that "teacher self-efficacy predicts teacher's practices, which in turn predict student literacy outcomes over and above the influence of teachers' experience and teachers' education, when controlling for students' previous literacy skills and their social and economic status" (p. 22). Ultimately, teacher self-efficacy had a greater impact on fifth-grade students' literacy outcomes than either the teacher's educational background or years of experience.

Klassen and Tze (2014) conducted a meta-analysis examining the relationship between self-efficacy, personality, and teaching effectiveness. Using the results of 43 studies published over the last 40 years, the researchers found that teachers' self-efficacy is strongly associated with increased teacher performance and teachers' self-efficacy is "modestly but significantly" associated with student achievement. This relationship is logical as one would expect to see an increase in student achievement as a result of increased teacher performance.

Retention

As stated, attrition amongst teachers within their first five years in the profession is a critical concern in today's education system. Recent research indicates that one of the primary reasons novice teachers provide for leaving the profession is burnout (Bressman et al., 2018). Burnout reflects dissatisfaction and frustration with the responsibilities of teaching. Researchers have examined teacher self-efficacy in relation to retention and burnout. Skaalvik and Skaalvik (2010) explored the relationship between self-efficacy and burnout in a quantitative study of 2249 teachers in Norway. Teachers completed the Norwegian Teacher Self Efficacy Survey (NTSES) and analysis revealed a relationship between self-efficacy and burnout. Teachers with low self-efficacy are likely to experience feelings of burnout. A later study by Skaalvik and Skaalvik (2014) reaffirmed these findings indicating that self-efficacy positively relates to work engagement and satisfaction. Self-efficacy increases motivation and decreases teacher burnout.

Klassen and Chiu (2010) examined the relationship between teachers' self-efficacy and job satisfaction. Using the Teacher Self Efficacy Survey and two other scales, the researchers modeled relationships among teacher characteristics, years of experience, teachers' self-efficacy, job stress, and job satisfaction. Klassen and Chiu (2010) found that teachers' self-efficacy for instructional strategies and classroom management positively influenced job satisfaction. When teachers feel confident in their jobs, they are more likely to enjoy and stay in their job.

Building Teacher Self-Efficacy

Teacher self-efficacy has been shown to influence several desirable behaviors and outcomes in educators. As a result, cultivating a teacher's self-efficacy is a worthy goal

for school district leadership. Bandura (1977) suggested that self-efficacy is not a fixed character trait, particularly early in one's experience. These beliefs are thought to be malleable and fluid, especially in the early stages of one's experiences. Bandura (1997) posited that one's self-efficacy beliefs remain relatively stable once they have been established. For this reason, it is critical to support novice teachers in the development of high teacher self-efficacy at the outset of their careers.

Woolfolk-Hoy and Burke-Spero (2005) conducted a longitudinal study in which they examined teachers' self-efficacy over time. The study participants were 29 new teachers at the beginning of their careers. The researchers collected data from the teachers two during their teacher training and again at the end of their first year of teaching. The results showed a significant increase in teachers' self-efficacy during the training program and a decline at the end of their first year. Relatedly, Tschannen-Moran and Woolfolk-Hoy (2007) found that novice teachers had a lower self-efficacy belief than experienced teachers. This initial decline in self-efficacy may be explained by teachers' beginning first encounters with the realities of the classroom. The particular challenges faced by novice teachers have been detailed within this literature review and research indicates that many beginning teachers struggle to align their expectations for the profession and the realities. Fortunately, there are some indicators that these self-efficacy beliefs change as people's experiences increase. In a quantitative analysis, Klassen and Chiu (2010) found that teachers' self-efficacy was influenced by years of experience.

The development of self-efficacy among novice teachers is especially critical as Bandura (1997) posited that one's self-efficacy beliefs remain relatively stable once they have been established. Self-efficacy can be built through positive personal experiences,

vicarious experiences, feedback, and encouragement. Bandura (1977) pointed out that personal experiences are the most powerful mechanism for building efficacy. Woolfolk-Hoy and Burke-Spero (2005) noted that the student teaching experience and the induction years are the most critical experiences in the development of teacher self-efficacy. Efficacy beliefs are constructed based on one's perceptions of success. If an event is perceived as positive, it will raise one's efficacy beliefs. The opposite is true as well. Negative experiences lower efficacy beliefs. A teacher's first years in the classroom are critical, so providing ongoing support and training is crucial. Chester and Beaudin (1996) found that schools could influence teachers' self-efficacy by providing new teachers with opportunities to reflect on teaching and learning. This is in line with Bandura's (1977) assertion that personal and vicarious experiences can improve self-efficacy. By providing teachers with an opportunity to discuss and reflect upon their early classroom experiences, schools can help teachers to build their confidence and competence. Many districts choose to employ New Teacher Induction programs to provide novice teachers with a structured onboarding experience.

While personal experiences are considered the most powerful source of efficacy beliefs, vicarious experiences and social persuasion also play a role. Teachers benefit from discussion and collaboration with peers and mentors. Vicarious experiences are those in which the skill in question, in this case, teaching, is modeled by someone else. When teachers see someone with whom they can identify successfully performing a task, it reinforces their self-efficacy. Social persuasion can be thought of as a pep talk or encouragement. Both vicarious experiences and social persuasion can be provided in the form of a mentor. Many novice teachers are paired with mentors who provide them with

guidance and support as they begin their professional careers. Yost (2002) suggested that mentoring can have an impact on the self-efficacy beliefs of novice teachers. In an examination of a mentoring program for early-career college professors, Yost found that participants reported increased competence, and, in turn, increased self-efficacy as a result of their interactions with their mentors.

Richter, Kunterbuntest, Lüdtke, Klusmann, Anders, and Baumart (2013) conducted an empirical study examining the relationship between mentoring and the development of teacher efficacy, enthusiasm, and job satisfaction among 7000 beginning mathematics teachers in Germany. The researchers employed a pre/post-test study design in which teachers were surveyed at the beginning and the end of the academic year to determine whether mentoring predicts beginning teachers' teacher efficacy, enthusiasm for teaching, beliefs about learning, emotional exhaustion, and job satisfaction. Richter et al. (2013) found that quality mentoring experiences that espoused and reinforced constructivist learning principles led to growth in all variables.

Summary

Teacher self-efficacy is a powerful construct that has been shown to impact one's behavior and achievements. Teachers with high self-efficacy view themselves as capable of impacting students' learning, persist in the face of challenges, are generally more enthusiastic about their jobs, and demonstrate a strong commitment to their profession. Efficacy beliefs are formed by early experiences in the profession, so it is critical to provide novice teachers with opportunities to reflect upon their experiences, learn from mentors, and collaborate. One research-based strategy that is employed by many districts to facilitate these opportunities is the implementation of a New Teacher Induction

program. Formal induction programs for beginning teachers have indicated increases in teachers' self-efficacy (OECD, 2005). The next section will explore the research surrounding New Teacher Induction programs.

New Teacher Induction Programs

New Teacher Induction (NTI) programs are a subset of traditional teacher professional development positioned early in an educator's career. Teaching is an especially complex career and much of the learning is refined through practice. As such, NTI programs are designed with the unique challenges and needs of beginning teachers in mind. They help new practitioners bridge the gap between theory and practice through targeted training and support.

Ingersoll (2012) suggested that induction programs can be loosely defined as "employee entry, orientation, and support programs" (p. 47). Offering a more comprehensive definition, Wong (2004) defined induction programs as "a systemwide, coherent, comprehensive training and support process that continues for 2 or 3 years and then seamlessly becomes part of the lifelong professional development program of the district to keep new teachers teaching and improving toward increasing their effectiveness" (p. 42). Similarly, Kearney (2014) suggested that induction is "the primary phase in a continuum of professional development leading to the teacher's full integration into a professional community of practice and continuing professional learning throughout their career" (p. 5). The definition may vary, but the goals of NTI programs are fairly consistent, though they often vary in scope.

Breaux and Wong (2003) outlined 3 basic purposes for induction:

- To provide instruction in classroom management and effective instructional strategies;
- Smooth the transition into teaching; and
- Increase the retention rate of qualified teachers (p. 5)
- Similarly, Wood and Stanulis (2009) identified five primary goals of induction:
- Increase novice teachers' retention;
- Promote novice teacher personal and professional well-being;
- Improve teacher competence;
- Improve students' academic achievement through improving teacher performance; and
- Satisfy mandated requirements related to induction and certification (p. 4-5).

Many beginning teachers are coming straight from the pre-service college environment and may lack the professional skills necessary to be successful in a new organization. Often, it is one's first foray into the professional world. As a result, NTI programs also serve the purpose of helping to bridge the divide between college and professional life. Many induction programs include information on the district's mission and vision, values, protocols, and policies. Districts see this as a valuable opportunity to "socialize beginning teachers such that they are integrated into the school community and culture" (Serpell, 2000, p. 11) and to "properly acculturate their teachers into the professional world" (Kearney, 2014, p. 11). From a human resources perspective, NTI programs are a valuable tool.

The definition of NTI programs remains somewhat ambiguous and is often determined by the specific needs of a state or district but, ultimately, induction programs help to fill in the theory-practice divide (Clark & Byrnes, 2012) and are unified in their goal of supporting teachers at the beginning of their careers.

NTI Program Benefits

Many states are implementing New Teacher Induction programs in an effort to increase retention among new teachers. Some form of induction program or services are now required in 29 states (Goldrick, 2016). The increase in implementation is due to the reported and perceived benefits of NTI programs.

Ingersoll and Strong (2011) engaged in a systematic review of 15 empirical studies conducted on NTI programs. The review included empirical studies that focused on specific outcomes including teacher commitment and retention, classroom practices, and student achievement. The review determined that, with the exception of one study, "beginning teachers who participated in some kind of induction had higher satisfaction, commitment, or retention" (p. 225). Similarly, the data indicated that teachers who had participated in comprehensive induction programs performed better at various aspects of teaching and their students yielded higher academic achievement.

Other studies have yielded similar findings. For instance, Fry (2009) found that teachers who participate in an effective induction program feel more supported, have a sense of belonging, and have higher levels of efficacy. In addition, Espinoza et al. (2018) reported that "beginning teachers who receive a comprehensive set of induction supports are twice as likely to stay in teaching as those who do not receive this support" (p. vii).

While there are many studies addressing the benefits of induction and mentoring programs, the results are not conclusive. There are very few empirical studies designed to measure the efficacy of NTI programs. Much of the existing literature is qualitative and does not capture the longitudinal data necessary to truly assess a program's impact on retention over time.

One of the largest experimental studies was conducted by Glazerman, Senesky, Seftor, and Johnson in 2006. The researchers employed a randomized controlled study design using 17 large school districts with at least 50% of low-income students. They compared a "high intensity" program with a more "typical" induction program. The three year study concluded that the comprehensive induction programs had no effects on teachers' instruction, retention, and student achievement in their first two years and modest positive effects on student achievement in the third year. These findings tend to diverge from other studies in the field. One criticism of this study notes that the researchers compared two varying levels of induction instead of comparing induction with the absence of supports (Polikoff et al., 2015). Another criticism relates to the sample of the study and suggests that the data lack generalizability across the varied districts across the country.

Structure of NTI Programs

Typified by their strategic placement at the beginning of a teacher's professional journey, NTI programs often vary in their implementation. Program administrators must consider several different factors including the types of supports or activities included within the program, the intensity of those supports, and the duration of the offerings. All of these factors can impact the success of the NTI program.

According to Stansbury and Zimmerman (2000), the supports included within an NTI program can be categorized in a few different ways: personal and emotional support, task or problem-focused support, and critical reflection on teaching practice. Districts can utilize many different strategies to offer this support. Stansbury and Zimmerman (2000) identified two different levels of support strategies that can be offered by districts. Low-intensity support strategies can be defined as strategies that "make minimal demands on district and school resources" (p. 6). Low-intensity support strategies include orienting new teachers, matching beginning and veteran teachers, adjusting working conditions, and promoting collegial collaboration. While the "cost" for the district is low, the potential benefits for new teachers are high. By contrast, high-intensity support strategies require a considerable investment of time, effort, and resources on behalf of a state or district. These strategies can include selecting and training effective support providers, providing release time, mini courses addressing common challenges, and examining the evidence of achievement. Many programs utilize a mix of these strategies to varying degrees.

Other supports for new teachers include structured professional development, opportunities for increased collaboration, targeted mentoring, modeling of effective teaching strategies, opportunities for classroom observations, and opportunities for networking (Wong, 2004; Kearney, 2014; Ingersoll, 2012; Espinoza et al., 2018). NTI programs can also include "orientation sessions, retreats and seminars for novice teachers, coaching and feedback from experienced teachers, the opportunity for novice teachers to observe expert teachers, extra classroom assistance, reduced workloads, and mentoring" (Podolsky et al., 2016, p. 34). These components can be included and

implemented in a variety of different ways including in a traditional face-to-face format or even virtually.

Kapadia, Coca, and Easton (2007) evaluated district wide induction programs in Chicago Public Schools (CPS). CPS requires some form of induction support for all beginning teachers, but there are several different options and levels of support available. The types of supports that teachers received were categorized in three different ways: weak, average, and strong. 72% of beginning teachers in the district completed a survey designed to measure three specific outcomes including how positive a teacher felt about his/her first year on the job, the teacher's intention to remain in the profession, and the teacher's intention to remain in the same school. The results from the survey indicated that "in addition to the type, number, and quality of induction components available to novices, the intensity of supports also affects the success of a program" (p. 4).

Much like there is considerable variance in the definition and aims of NTI programs, there is also a considerable amount of variety in the composition, structure, content, and design of induction programs. Sometimes the policies for induction programs are articulated at the state level, while other times, districts or buildings design and implement programs on their own. As of 2016, only 29 states require induction services for new teachers. These requirements vary in terms of what the induction programs must include. Some policies provide guidelines on the types of services and support districts must provide, while others do not. For example, California requires two years of induction support consisting of individualized, job-embedded mentoring and targeted professional learning whereas Ohio requires new teachers to complete a four-year residency program including induction support and formal mentoring (Goldrick,

2016). This lack of clarity around the implementation and content of NTI programs can make it challenging to compare or evaluate them effectively.

Mentoring as a Component of New Teacher Induction

While there is some ambiguity on exactly what constitutes a comprehensive induction program, research is clear on what induction is not. Serpell (2000) pointed out that induction programs are not simply mentoring opportunities for teachers. Wong (2004) agreed and clarified that mentoring is a powerful component of an induction program, not an induction program in and of itself. This distinction is important as many districts, in light of funding challenges, offer teachers opportunities for mentoring and call it induction, whereas research indicates that a more comprehensive and strategic collection of supports is necessary for a true induction program.

As a component of a comprehensive NTI program, mentoring is widely considered to be the most critical (Polikoff et al., 2015; Serpell, 2000; Smith & Ingersoll, 2004; Wong, 2004). Mentoring provides novice teachers with support, guidance, advice, and encouragement with the purpose of enhancing student learning (Bressman et al., 2018). Traditional face-to-face mentoring relationships will be discussed first followed by a discussion of virtual mentoring.

Face-to-Face Mentoring

The concept of drawing up alongside someone more experienced to cultivate a new skill is not new. The earliest documented occurrence of mentoring as we know it today occurred in Greek mythology. Homer’s Odyssey features a character named Mentor who is considered a wise and loyal advisor to Odysseus's son, Telemachus when Odysseus sailed for Troy. The figure of Mentor is an early archetype of mentoring

relationships (Ragins & Kram, 2007). Over time, mentoring has evolved as a field of study, particularly given its applicability in the workplace.

Much of today's workplace learning occurs on the job, over time. As a developmental relationship, mentoring can help new practitioners in acquiring job-specific skills. This concept of job-embedded learning or development is derived from Lave's (1991) work on situated learning as it relates to apprenticeship opportunities. They propose that "informal and situated social interaction" can lead to "authentic, motivated learning of what is needed to be known about the complexities of real practice" (Cox, 2005, p. 528). Over time, the theory has evolved and new layers of complexity have been added to address different dimensions of socially-constructed learning, but the idea of "situated social construction of meaning" (Cox, 2005, p. 527) is retained. While Lave and Wenger (1991) go on to describe these relationships in a larger community of practice, the apprenticeship-style model is relevant in this context. For this literature review, mentoring will be described as a "developmental relationship that is embedded within the career context" (Ragins & Kram, 2007, p. 5) positioned within the greater context of an NTI program. For this literature review, mentoring will be described as a "developmental relationship that is embedded within the career context" (Ragins & Kram, 2007, p. 5) positioned within the greater context of an NTI program.

In her early work on mentoring, Kram (1985) identified two primary functions of mentoring relationships in the workplace: career and psychosocial functions. Career functions refer to skills and learning related to one's workplace or role. In this capacity, the mentor serves as a champion, nurturer, and supporter of the mentee. The second function, psychosocial, refers to behaviors that help support the mentee's personal and

professional growth including “offering acceptance and confirmation and providing counseling, friendship, and role-modeling” (Ragins & Kram, 2007, p. 5). These mentoring functions have been applied in a variety of workplace contexts including education.

In the field of education, mentoring began fairly organically as novice teachers sought to build relationships with more experienced educators in their buildings. As these informal mentoring relationships began to yield positive results, the discourse in education shifted to the idea of formalizing these relationships to ensure that new teachers had an opportunity to share their concerns and discuss professional practices with someone who had enough experience to provide true guidance (Stansbury & Zimmerman, 2000). As early research indicated a relationship between mentoring and teacher retention, many states implemented policies mandating some form of mentoring for novice teachers. Presently, 29 states require some form of mentoring for novice teachers (Goldrick, 2016).

At this time, it is critical to reiterate that mentoring, in and of itself, is not induction. Rather, mentoring is a component of a broader program (Wong, 2004). Some suggest it is the most critical component (Ingersoll & Strong, 2011; Wong, 2004; Serpell, 2000). Kapadia, Coca, and Easton (2017) reported that the inclusion of effective mentoring can mean the difference between a successful induction program and an unsuccessful one.”

As a component of an NTI program, mentoring can be considered “a formalized relationship between a beginning teacher and a master teacher that provides support and assesses teaching skills” (ECS, 1999 as cited in Serpell, 2000). Smith and Ingersoll

(2004) defined mentoring as “the personal guidance provided, usually by seasoned veterans, to beginning teachers in schools,” (p. 683). In this way, mentoring is designed to provide novice teachers with a “local guide” to help them navigate the district and the challenges of the profession (Ingersoll & Strong, 2011, p. 203).

Though mentoring is a widely used strategy for supporting new teachers, there is little uniformity in its implementation and use. At times, it can be used as a response to mandated certification requirements. Other times, it is a need addressed informally within an individual building. It can also be formalized as part of a wider professional development program. Some programs choose to implement site-based mentors with little structure or support. Wong (2004) argues that this is an ineffective strategy for support as it is divorced from a clear process and is simply a way for many administrators to abdicate their responsibility for supporting and growing new teachers. By contrast, a more formalized process ensures that teachers and mentors meet regularly and discuss relevant topics.

Qualities of effective mentoring.

As a response to the variance among mentoring programs found within the literature, Polikoff, Desimone, Young, and Hochberg (2015) developed a six-part framework for the study of teaching mentoring and its effects. The six parts include (a) teacher and mentor background and characteristics; (b) characteristics and content of mentoring activities; (c) mentor policy features; (d) instructional quality and alignment; (e) student achievement; and (f) context. The researchers suggested that the teacher and mentor background and characteristics, coupled with the instructional quality and alignment of the activities and the mentoring policy, can impact student achievement.

Mentoring is a developmental relationship. Much of this relationship is built around emotional or psychosocial support. Teachers are encouraged to share their struggles, challenges, weaknesses, and successes in the classroom. This level of transparency requires a considerable amount of vulnerability and trust. Kram (1985) identified trust as a critical factor for an effective mentoring relationship as a deficiency of trust can prevent mentees from seeking assistance as needed. As a result, it is critical to consider the interpersonal relationship and compatibility between the mentor and mentee. Kajs (2002) notes that the quality of the personal and professional match between the mentor and mentee can have a significant impact on the mentoring outcomes. Concerning the professional match, research indicates that a mentor with a teaching background in the same subject as the mentee yields better outcomes (Grossman & Thompson, 2004). This personal experience with a mentee's context and placement enables a mentor to address the teachers' needs more effectively. Relatedly, Owen and Solomon (2006) found that new teachers who reported a high level of similarity with their mentors also reported increased satisfaction with the mentoring experience. The relational nature of mentoring support highlights the need for a good mentor-mentee match.

Another characteristic of effective mentoring relationships relates to the background and training of the mentor. Programs and initiatives vary widely in terms of recruitment, training, and support in place for mentors. As might be expected, research indicates that the quality of the mentor and his or her level of experience can have a dramatic impact on mentoring outcomes (Polikoff et al., 2015). Often, it is assumed that a good teacher will make a good mentor, but that is not always the case (Dias-Lacy & Guirguis, 2017). Mentoring requires many additional skills including a deeper knowledge

of the unique needs of beginning teachers and basic adult learning principles (Kajs, 2002). Similarly, years of experience do not always yield effective mentors (DeCesare et al., 2016; Wasonga et al., 2015). These factors are part of the equation, but specific training in mentoring strategies improves outcomes.

The skillset of the mentor and the relationship between the mentor and the mentee are critical aspects of an effective mentoring relationship, but the characteristics and content of the actual mentoring interactions are also an important factor. The focus of mentoring programs can vary widely, but the content of mentoring in induction programs can be "conceptualized as focusing on career development, instructional support, and psychosocial support" (Hawkinson & Cannata, 2009, p. 11). In the context of an NTI program, mentors are helping novice teachers to make the transition from the preservice environment to the professional environment, they are offering support with instructional decisions and pedagogy, and they also offer teachers ongoing assistance and support.

Mentoring transpires through social exchanges, either face-to-face or computer-mediated communication such as e-mails or video conferencing. These exchanges or interactions can be categorized in four main ways: instructional, psychosocial, classroom management, and administrative (Hawkinson & Cannata, 2009). Instructional interactions relate to pedagogical decisions that teachers make in the classroom. Psychosocial exchanges relate to the interpersonal or emotional support necessary for new teachers. Classroom management interactions relate to strategies or processes in the classroom. Finally, administrative interactions provide new teachers with information on documentation, procedures, and evaluations. These interactions can help move the goals of a mentoring relationship forward.

The research documents many positive benefits of mentoring relationships for both novice teachers and their mentors. Some of the benefits for novice teachers include increased satisfaction, increased commitment, professional development, adoption of strategies and practice techniques from their mentors, higher confidence and self-esteem, and a decreased sense of isolation (Fantilli & McDougall, 2009; Ingersoll & Strong, 2011; Sun, 2012). When veteran teachers step into the role of mentor, they accrue benefits as well. Mentors report increased professional competency, reflective practice, feelings of renewal, and increased self-esteem (Huling, 2001).

Mentoring relationships offer novice teachers opportunities for career development, instructional support, and psychosocial support (Hawkinson & Cannata, 2009). Traditional face-to-face mentoring relationships are often limited by logistical constraints including time, location, and availability of mentors (Kasprisin, Single, Ferrier, & Muller, 2009). As a solution to this problem, virtual mentoring emerged as a mechanism to make mentoring more accessible to all.

Challenges and Affordances of Virtual Mentoring

As the benefits of traditional mentoring relationships emerged, the demand for such programs and opportunities increased. Unfortunately, traditional mentoring relationships, facilitated in a face-to-face format, are not always accessible to all. Kasprisin, Single, Single, Ferrier, and Muller (2009) identified several constraints to traditional mentoring relationships including time, geography, and mentor availability. The advent of new technologies, coupled with the desire to provide equitable access to mentoring relationships, led to the rise of virtual mentoring.

Sometimes referred to as e-mentoring, online mentoring, or telementoring, virtual mentoring refers to a mentoring relationship facilitated primarily through the use of technology. In the literature, the term "e-mentoring" was initially used as a way to capture the electronic communications facilitated through the use of tools such as asynchronous discussion boards or e-mail (Single & Mueller, 2001). This terminology was also used to make a distinction between e-mentoring and telementoring in which communication happened largely through the telephone. Single and Mueller (2001) provided the first comprehensive definition of e-mentoring in which they describe:

> A relationship that is established between a more senior individual (mentor) and a lesser skilled or experienced individual (protégé), primarily using electronic communications, and that is intended to develop and grow the skills, knowledge, confidence, and cultural understanding of the protégé to help him or her succeed, while also assisting in the development of the mentor. (p. 108)

Ensher and Murphy (2007) defined e-mentoring as "a mutually-beneficial relationship between a mentor and a protégé, which provides new learning as well as career and emotional support, primarily through email and other electronic means" (p. 300). While e-mentoring, telementoring, online mentoring, and virtual mentoring have been used interchangeably over time, the term virtual mentoring will be used within this dissertation to encompass both asynchronous and synchronous communication facilitated through web-based technology tools including telephone, e-mail, and video conferencing.

Opportunities

Virtual mentoring provides a potential solution for mitigating some of the issues and constraints that plague traditional mentoring relationships. Increased access to the internet, along with the potential opportunities afforded by the emergence of new web-

based technologies have led to an increase in the number and quality of e-mentoring programs (de Janasz et al., 2008).

Many recognized the potential value of mentoring services in the workplace, but organizations struggled to provide these services at scale. Virtual mentoring emerged as a potential solution for expanding access to mentoring services as the digital medium serves to provide potential mentees with increased access to qualified mentors, regardless of their location (Wilbanks, 2014). This is especially true for women and people of color who may be underrepresented in certain fields. One of the first large-scale virtual mentoring organizations, MentorNet, emerged as a solution for addressing the lack of women in STEM fields. Since its inception in 1997, MentorNet has served nearly 33,000 mentoring pairs (MentorNet Mission, n.d.).

In addition to increased access to potential mentors, virtual mentoring alleviates some of the logistical strain experienced in traditional mentoring relationships as it is flexible and convenient for both mentors and mentees. Through the use of web-based technology, mentors and mentees can interact more frequently without the constraint of securing a shared space. Mentoring pairs can utilize tools such as e-mail, message boards, chat services, or video conferencing to connect either synchronously or asynchronously with one another, as needed (Ensher et al., 2003). The anytime-anywhere nature of the medium allows for increased access to support and advice (Thomas & Ensher, 2013).

Depending upon the nature of the technology employed, mentoring pairs can utilize asynchronous or synchronous communication tools. Some tools such as email, forums, or message boards are asynchronous. Single and Mueller (1999) found that the use of such tools allows both mentors and mentees to construct thoughtful messages

without the pressure of an immediate response. Similarly, Mueller (2004) found that the asynchronous aspect of some tools facilitated a more reflective, focused, and 'task-oriented' interaction between mentors and mentees. By contrast, video conferencing tools enable mentoring pairs to connect with one another in real-time to engage in discussion and dialogue. The seemingly ever-expanding suite of technology tools presents mentoring pairs with an array of options for facilitating virtual communication.

Finally, given the increased access to low-cost and free web-based tools, many virtual mentoring programs are more cost-effective than their face-to-face counterparts as there are reduced costs related to administering the program, conducting trainings, and reproducing materials (Thomas & Ensher, 2013). This is a contrast to early e-mentoring programs in which the web-based tools necessary for the effective facilitation of virtual mentoring were difficult to access and cost-prohibitive (Single & Mueller, 2001).

Challenges

While there are many exciting opportunities presented by virtual mentoring, there are some distinct challenges as well. Ensher, Huen, and Blanchard (2002) identified several challenges presented by virtual mentoring: (1) likelihood of miscommunication, (2) slower development of relationship online than in more traditional face-to-face relationships, (3) requires competency in written communication and technical skills, and (4) computer malfunctions (p. 276).

All mentoring relationships rely heavily on dialogue and communication. While some suggest that the use of computer-mediated communication (CMC) lends itself to clearer, more thoughtful communication, others have found that the use of CMC may negatively impact the effectiveness of communication. Shrestha, May, Edirisingha,

Burke, and Lindsey (2009) challenged this widely held assumption of clarity in communication in their examination of a virtual peer mentoring program at an undergraduate university. Mentors reported that “electronic communication can be ambiguous and can require clarification through a face-to-face meeting” and that “the thoughtfulness and clarity of electronic communication depended on the skills of both the mentor and mentee” (p. 122). Clark and Brennan (1991) noted that it can be challenging to ground communication in a virtual environment. Relatedly, Xin and Feenberg (2006) found that mentors and mentees experienced difficulty establishing trust and ‘common ground’ in relationships.

Ultimately, challenges in communication and a lack of social presence can lead to slower development of the mentoring relationship relative to face-to-face mentoring (Ensher & Murphy, 2007). Given that mentoring is, at its foundation, a relational endeavor, this can lead to problems over time. Specifically, the increased length of time it takes to establish a relationship in the digital environment may lead to decreased participation and commitment (Bierema & Merriam, 2002). Mentors and mentees do not experience the same level of commitment or investment in the digital environment, so it is easier to rationalize non-responsiveness.

In addition to the interpersonal challenges that can emerge, the qualifications for participation are higher in virtual mentoring. Virtual mentors must possess a working knowledge of web-based tools. Beyond the basic operation of the technology, mentors must recognize the affordances and costs of specific tools to tailor the communication (Brennan & Lockridge, 2006). Mentors must also possess high competency in written communication skills as clarity is of utmost importance in the written communication.

Shrestha et al. (2009) found that the participants' comfort with CMC greatly impacted the success of the program and, as such, it may be necessary to re-examine mentoring requirements and offer basic technology training to participants.

One's comfort with technology is important because it makes it easier to handle technical issues and glitches that emerge in the virtual environment. While access to web-based technology has increased dramatically, access to technology and broadband internet is still an issue for many people which can lead to slow loading times or Cothran, McCaughtry, Faust, Garn, Kulinna, and Martin (2009) found that computer access and other logistical challenges relating to technology access negatively impacted the efficacy of mentoring programs.

The potential challenges presented by the implementation of virtual mentoring programs have not diminished people's enthusiasm for the potential benefits it can offer. Rather, these challenges provide program administrators, mentors, and mentees with factors that must be taken into consideration in the virtual environment.

Considerations

As discussed in the previous section, Kram (1985) identified two primary functions of traditional mentoring relationships in the workplace: career and psychosocial. While the context, tools, and processes differ, the outcomes and mentoring functions remain the same for both traditional and virtual mentoring relationships.

Establishing mentoring programs requires a considerable amount of effort, energy, and forethought. Changing the delivery method and the context of these mentoring relationships adds yet another layer of complexity. Some considerations for the effective implementation of a virtual mentoring program include the affordances and

constraints of the technology itself and the participants' level of comfort and knowledge regarding the use of web-based tools.

Technology considerations

Virtual mentoring relationships are distinct from their traditional face-to-face counterparts in that the communication and relationship transpire through the use of web-based tools. Ensher, Heun, and Blanchard (2003) characterized virtual mentoring relationships along a continuum based upon the level of CMC used. On one end, CMC-only relationships are facilitated solely through the implementation of CMC. Whereas CMC-supplemental relationships offer a mix of face-to-face and computer-mediated communication. Many virtual mentoring relationships are characterized as CMC-Only which implies the need to ensure that the technology used effectively supports the functions and outcomes of the mentoring relationship.

Mentoring relationships are typified by a high level of discourse and dialogue. Effective communication, mediated virtually or otherwise, is imperative for mentoring functions and outcomes. By its nature, communication is a collective activity. Both parties must engage in a series of behaviors and actions, referred to as grounding, to ensure that common ground is reached (Clark & Brennan, 1991). It is only by establishing and maintaining this common ground that clear communication can ensue.

Clark and Brennan (1991) suggest that the medium employed in CMC relationships can have a dramatic impact on communication as virtual tools introduce additional constraints that can impede grounding. They identified eight constraints that a medium may impose on communication including copresence, visibility, audibility, cotemporality, simultaneity, sequentiality, reviewability, and revisability. Each tool has

its own set of affordances and limitations as it relates to supporting facilitation. For instance, reviewability and revisability are two constraints that specifically impact email communications. Users can access previous messages by accessing past exchanges. Users can also revise their statements and take some time to reflect before sending communications. These two constraints, while not necessarily negative, impact communications. In the context of video conferencing, the primary mechanism for virtual mentoring in the context of this dissertation, visibility, audibility, cotemporality, simultaneity, and sequentiality are all constraints that mentors must consider in their communications.

For this reason, Clark and Brennan (1991) cautioned against concentrating solely on the potential affordances of a given piece of technology, "All too often, it is the benefits of technology that get discussed at the expense of due consideration for possible limitations… in order to be able to use technology effectively for mentoring purposes, the possible pitfalls need to be borne in mind and, where possible, pre-empted." (p. 468). In the development of virtual mentoring relationships, one must consider the technology tool and how it both assists and detracts from participants' ability to effectively communicate.

Participant considerations

In the previous section on face-to-face mentoring, the role of the mentor and the characteristics of an effective mentoring relationship were addressed. These skills and qualifications still apply in the context of a virtual mentoring relationship since the functions and the outcomes remain unchanged, but the unique demands of virtual mentoring relationships suggest that virtual mentors must possess a different, or rather, an

additional set of skills, than their face-to-face peers (Ensher & Murphy, 2007). In their analysis of a virtual mentoring program, Shrestha et al. (2009) found that "a mentor with good face-to-face skills may not be as effective when communicating electronically" just as "a mentor can feel self-conscious in face-to-face interaction yet may be highly skilled at establishing and maintaining relationships electronically, and communicating clearly in this medium" (p. 122). Virtual mentors must possess a higher level of comfort and familiarity with the affordances, constraints, and application of web-based technology.

French, Hale, Johnson, and Farr (1999) identified several skills that are necessary to effectively facilitate virtual mentoring relationships. Virtual mentors must be able to cultivate and maintain interpersonal relationships through electronic networking. They must be able to efficiently search and identify instructional tools on the internet. Relatedly, they must be able to critically examine and assess various websites. Finally, they must know how to utilize various conferencing systems. These skills are different than the prerequisites for a traditional mentoring relationship. Program coordinators should consider basic technology training opportunities for both mentors and mentees to enhance the virtual mentoring process (Ensher & Murphy, 2007; Shrestha et al., 2009) as technical glitches and challenges can derail CMC-Only relationships very quickly.

Virtual Mentoring Examples

Virtual mentoring, in its various forms, has been employed across many industries and contexts including corporate-sponsored programs for employees, health care, higher education, K-12 education, public relations, and the government (Ensher & Murphy, 2007; Fletcher, 2007; Wilbanks, 2014). In the K-12 environment, there are few examples of broadscale virtual mentoring programs. Research in the area focuses predominantly on

early email or wiki-based implementations. Of the most frequently cited programs in the research is the Electronic Mentoring for Student Success program described below.

Electronic Mentoring for Student Success (eMSS) is a year-long virtual mentoring program that partners novice math, science, and special education teachers with veteran educators. The program originated in 2002 from a grant from the National Science Foundation (NSF). Initially, the program served novice math and science teachers. It later included special education teachers. The program has evolved to provide teachers with a mix of curriculum resources, coursework, and access to a content-specific mentor.

Hunt, Powell, Little, and Mike (2013) explored the initial pilot implementation of the special education eMSS program. Through a mixed methods approach, the researchers examined the impact on teachers' professional competencies and their perceptions about the efficacy of the program. The data indicated that the program yielded increases in teachers' professional competencies, specifically as it relates to the standards. According to the teachers, mentors served as "'safe harbors' for the mentees, often supporting them with comments, additional suggestions, and specific examples for classroom use from their experiences" (Hunt et al., 2013, p. 295). The study found that the pilot partly addressed special education teacher's retention issues but would benefit from more specificity of content and the inclusion of synchronous communication.

Like the eMSS program, Redmond (2015) explored online mentoring in the context of specific content areas. Redmond's study explored the use of asynchronous virtual mentoring as a mechanism to support secondary pre-service teachers. The mixed methods study employed pre and post surveys, interviews, and a selection of discussion board interactions between mentors and mentees over the course of the academic year.

Redmond found that open, relatively unstructured online communities can support mentoring for educators, though the open nature may inhibit communications resulting in shallow or limited discussions. Redmond also found that the program may have benefited from the additional synchronous interactions at the outset as a mechanism for establishing rapport and trust within the community.

Spanorriga, Jimoyiannis, and Tsiotakis (2018) conducted a qualitative study designed to explore the experiences and perceptions of novice teachers engaged in a virtual mentoring program. The program employed a mix of synchronous and asynchronous communication in the form of peer mentoring and open-community mentoring to provide novice teachers with a comprehensive system of support. The study found that teachers valued the communication and interactions with one another, the immediacy of the system, the privacy and anonymity of the online platform, the reduction of barriers, and the culture of collaboration. Ultimately, the findings indicated the "potential applicability of e-mentoring as an alternative mode for supporting and advising teachers with low teaching experience and promoting their collaboration and mutual support" (Spanorriga et al., 2018, p. 9). The mix of asynchronous and synchronous communication explored within this study is in line with the programmatic structure of the NTI2 program.

Summary

In the context of this study, the potential opportunities presented by virtual mentoring make it an attractive option for providing access to anytime, anywhere support to classroom teachers. The benefits of mentoring for early career teachers are well

documented, but it is not always feasible for states and districts to provide those mentoring services in a face-to-face setting.

In this way, virtual mentoring, as a component of a comprehensive NTI program, offers beginning teachers with opportunities for ongoing support. Defined as a "computer-mediated relationship that is established between a senior individual (mentor) and a novice or non-experienced individual (protege), which aims to provide learning, advising, encouraging, promoting, and modeling" (Spanorriga, Tsiotakis, & Jimoyiannis, 2018), virtual mentoring enables districts to capitalize on technology resources to provide a more flexible experience for teachers by removing the barriers of time and distance. Though it can provide a potentially more cost-effective and flexible experience for teachers, the virtual medium can also introduce some challenges including difficulty establishing rapport and building a mentoring relationship, issues surrounding privacy and confidentiality, and technological issues such as equipment malfunctions (Ensher et al., 2003). The solution is not without its challenges, but with careful program design and implementation, the challenges may be mitigated.

CHAPTER THREE: METHODOLOGY

The primary goal of this study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in a NTI program. The mixed methods design employed to explore these research questions is presented below. In this chapter, the research design, selection of participants, instrumentation, data collection, and data analysis are discussed in detail.

Research Design

Mixed methods can be defined as a "class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson & Onwuegbuzie, 2004, p. 17). Given the integrated nature of the data collection and analysis, mixed methods research can "permit researchers to address more complicated research questions and collect a richer and stronger array of evidence than can be accomplished by any single method alone" (Yin, 2018, p. 63).

There are three primary considerations one must address while designing a mixed methods study: priority, implementation, and integration (Creswell, Plano Clark, Guttman, & Hanson, 2003). Priority refers to which methodology, quantitative or qualitative, is given more emphasis in the study. This study employed the use of a mixed methods design in which quantitative data was collected first and was followed by the collection of qualitative data with the purpose of explaining the results in more depth (Creswell, 2014; Merriam & Tisdell, 2016). This design was selected in an effort to

facilitate a more intentional interview participant selection process and to provide further detail, context, and explanation of the overall mentoring experience and the connection to teachers' self-efficacy.

Implementation refers to the order or sequence of the data collection and analysis. Some mixed methods designs, such as the one used in this study, follow a given trajectory in whi6ch the researcher begins with quantitative data collection and analysis, then based upon the results of the quantitative data, moves into the qualitative data collection phase (Merriam & Tisdell, 2016). In this study, quantitative data in the form of the Teacher's Sense of Efficacy Scale (TSES) was gathered and analyzed. The results of the quantitative analysis enabled the researcher to refine the existing interview protocol, crafted during the researcher's graduate coursework, and select interview participants to provide further insight into the teachers' personal experiences with virtual mentoring. According to Ensher and Murphy's Conceptual Model for E-Mentoring Research (2007), one of the primary outcomes of virtual mentoring is increased self-confidence. Given the study's focus on new teachers, self-confidence in the areas of student engagement, instruction, and classroom management are of particular interest as these areas have been identified as critical challenges facing teachers in the classroom (Tschannen-Moran & Woolfolk-Hoy, 2001). This situationally-specific form of self-confidence is referred to as self-efficacy (Druckman & Bjork, 1994). The TSES results and the connected qualitative data help provide insight into the virtual mentoring program's potential impact on the development of self-efficacy beliefs among new teachers.

Integration refers to the phase during the research process where the mixing or connecting of the quantitative and qualitative data occurs. Integration occurred at two

points within this study. The quantitative data was used to help define the sample of teachers participating in the interviews and it was used to make any necessary refinements to the interview protocol. It was also integrated into the final analysis stage to help fully address the research questions.

The quantitative data gathered within this study provides insight into teachers' self-efficacy in the areas of student engagement, instructional strategies, and classroom management. Qualitative data can be employed within the context of a mixed methods study for a number of different purposes. Creswell and Poth (2018) suggested the use of qualitative inquiry when a "problem or issue needs to be explored" (p. 45) and when "an understanding of the contexts in which participants in a study address a problem is warranted" (p. 46).

Selection of Participants

This study explored a virtual mentoring program implemented in an urban district located in the Midwestern United States. The district serves 50,000 students and employs nearly 4,000 certified staff. All new hires participate in a two-year induction program designed to provide additional support, training, and acculturation into the district's norms and culture. The first year of the program consists of a series of three mandatory, face-to-face meetings totaling about 24 hours in training. In addition to the in-service dates, program participants also meet bi-monthly with site-based mentors. In the second year, teachers transition into the NTI2 program. As a part of the NTI2 program, teachers engage in two mandatory face-to-face networking sessions coupled with optional ongoing virtual mentoring, totaling approximately 20 hours over the course of the year. This study concentrated solely on the NTI2 cohort for the 2019-2020 academic school year as they

were the only teachers enrolled in the NTI2 program, thus the only teachers receiving virtual mentoring, when this research was being conducted.

The 2019-2020 NTI2 cohort included 230 teachers across the PK-12 grade span. Table 3.1 provides a breakdown of the teachers in this cohort. All teachers entering their second year of employment within the district are invited to participate in the NTI2 program. While most of the teachers were new teachers entering their second year in the classroom, the cohort also included 12 transfer teachers who had previous classroom experience in other districts but were entering their second year of employment with the district. While these teachers were invited to participate in the NT2 program, they were excluded from this study.

Table 3.1 NTI2 Cohort Composition 2019-2020 (N = 230)

Placement	Number of Teachers
Elementary (PK-5)	98
Middle School (6-8)	42
High School (9-12)	21
Intervention/SPED	34
CTE	10
Specialists	25

Not only did teachers within the cohort vary in terms of their level of classroom experience, but they also varied concerning their pre-service educational experiences. Due to massive teacher shortages throughout the state, the State Department of Education provides several different options for teacher licensure. The first, most traditional route, is a baccalaureate program in the field of education. Another option includes an

emergency restricted certification in which professionals from other fields can teach on a provisional license while earning a degree through an accredited program. Finally, paraprofessionals can teach on a provisional license through the Teacher Apprentice Program (TAP) offered through a local university. A teacher's road to licensure and, as such, his or her previous experiences can impact the types of induction support needed. This information was gathered as part of the demographics section of the survey.

For the purposes of this study, all NTI2 members were invited to participate in the initial administration of the TSES to examine their self-efficacy. The resulting quantitative data was gathered and analyzed. The TSES provides researchers with information on three separate scales including student engagement, instructional strategies, and classroom management. Using the results from the TSES, participants were selected for the qualitative portion of the study. Six participants with varying levels of self-efficacy were selected for follow-up interviews. These participants were selected based upon both their TSES scores and their grade level to provide a variety of insights into the virtual mentoring experience and to examine any differences in teachers' perceptions of the NTI2 experiences on the basis of their self-efficacy scores. This method of utilizing the quantitative data to select participants is a function of the mixed methods design called the participant selection model. Creswell (2007) suggested that this method should be used when a researcher needs quantitative information to narrow down or identify and purposefully select participants for a deeper, follow-up qualitative study.

Data Collection

This study employed a mixed methods design in which the quantitative and qualitative data work together to provide a picture of teachers' self-efficacy and their experiences participating in virtual mentoring as part of a NTI program. Figure 3.1 outlines the procedures and steps in the proposed mixed methods study. The remainder of this section will detail the quantitative and qualitative phases at length.

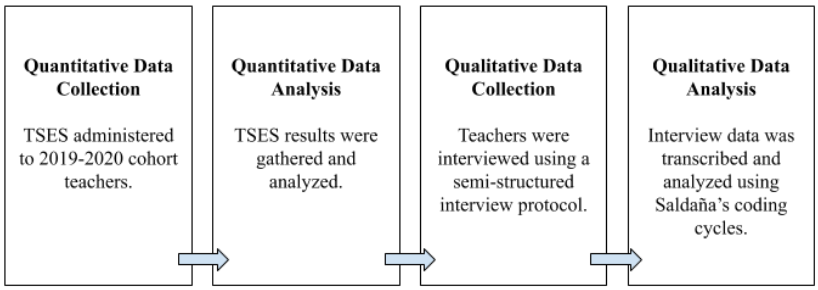

Figure 3.1. Overview of Data Collection Process

Quantitative Phase

Quantitative data was gathered using Tschannen-Moran and Woolfolk-Hoy's (2001) Teachers' Sense of Efficacy Scale (TSES). The instrument was designed to measure teachers' self-efficacy in three different areas including student engagement, instructional strategies, and classroom management. The survey exists in two forms - a long form and a short form. The 12-item short-form survey was utilized in this study as Tschannen-Moran and Woolfolk-Hoy (2001) recommended the use of the long form for pre-service educators enrolled in teacher preparation programs. Data collection for this study began following teachers' completion of the NTI program. As such, the teachers are considered by the district and the state as "fully inducted" professionals, eligible for a professional license. For this reason, the short form of the TSES was selected.

Sometimes referred to in the literature as the Ohio State Teacher Efficacy Scale (OSTES), the TSES was developed by participants of a seminar on self-efficacy in teaching and learning at Ohio State University. The participants included two researchers and eight graduate students. All eight graduate students had classroom teaching experience with a mean of 11.9 years (Tschannen-Moran & Woolfolk-Hoy, 2001). While other tools for measuring teacher efficacy exist, the team identified a need for a valid and reliable instrument that was more unified in its approach to measuring efficacy and more reflective of the kinds of tasks that make up a teacher's work life (Tschannen-Moran & Woolfolk-Hoy, 2001). The team began by using Bandura's unpublished Teacher Efficacy Scale as a foundation. The team adopted the same measurement scale but expanded the number of items to provide a more accurate representation of the true work of a classroom teacher.

After the completion of the initial survey instrument, three different studies examined its validity and reliability leading to further refinements and iterations. The first study employed the use of factor analysis to narrow the initial survey down from 52 items to 32 items that were considered to be reflective of the true classroom experience (Tschannen-Moran & Woolfolk-Hoy, 2001). The second study, administered to a group of in-service and preservice teachers in Ohio, utilized factor analysis to further refine the instrument and reduce the number of total items from 31 to 18, organized into three separate subscales (Tschannen-Moran & Woolfolk-Hoy, 2001).

In the final study, Roberts and Henson (2001) conducted a confirmatory factor analysis of the measure. In their examination, they found that the hypothesized three-factor structure was not supported by the data. While the first two factors, Efficacy of

Student Engagement and Efficacy of Instructional Strategies, were confirmed; the third factor, Efficacy of Classroom Management, was not supported. As a result, Roberts and Henson (2001) recommended the removal of the third subscale. Despite the recommendations of this study, Tschannen-Moran et al. decided to retain the classroom management subscale as the team felt that classroom management was a critical component of a teacher's role in the classroom. To improve the construct validity, the team drew items from Emmer and Hickman's (1991) Teacher Efficacy for Classroom Management Scale which yielded improved results in later confirmatory factor analysis (Tschannen-Moran & Woolfolk-Hoy, 2001). The resulting instrument is the current form of the TSES.

While other instruments to measure teacher's self-efficacy exist such as Gibson and Dembo's (1984) Teacher Efficacy Scale (TES) or Bandura's own unpublished Teacher Self-Efficacy Scale (Bandura TSES) (Tschannen-Moran & Woolfolk-Hoy, 2001). The TES was not selected for this study as it reflects dated thinking in the field of teacher self-efficacy and has declined in use in recent years (Klassen & Tze, 2014; Tschannen-Moran & Woolfolk-Hoy, 2001) Bandura's TSES was not selected as it serves as the foundation for the instrument utilized in this study. Of these instruments, the TSES was selected for a variety of reasons. First and foremost, the measure is valid and reliable and has been used in similar studies of teacher efficacy (Klassen & Chiu, 2010; Page, Pendergraft, & Wilson, 2014; Tschannen-Moran & Woolfolk-Hoy, 2007). Second, the instrument is derived from Bandura's own Teacher Efficacy Scale (TES) and, as such, shows clear coherence and alignment with the theoretical framework that underlies this study. Finally, the three separate scales of teacher efficacy align nicely with the issues

commonly faced by novice teachers (Veenman, 1984) and permit a clear connection between the survey instrument and the interview protocol which lends coherence and structure to this mixed methods study.

The survey was administered digitally via Qualtrics in August of 2020. All members of the 2019-2020 NTI2 cohort (N = 230) received a Survey Recruitment Email, available in Appendix A, from the researcher. Participants had two weeks to complete the survey, at which point, the survey was closed. The online survey rendered in three parts beginning with an informed consent agreement, shown in Appendix B. Prior to beginning the survey, participants were informed of the purpose of the survey, how the data would be collected and stored, and how the results of the survey would be shared. Users had the option of exiting the survey or initialing the form, thus providing consent, and moving forward with the survey.

The second section of the survey consisted of a collection of 6 demographic questions. In addition to gathering basic demographic information including gender, age, experience in the classroom, pathway to licensure, and grade level or content area taught, the form also collected the user's email address so that participants could be contacted for future interviews or questions. The third, and final section, consisted of the TSES short-form scale.

After the survey window closed, data was exported into a spreadsheet for further analysis. Descriptive statistics were used to examine the self-efficacy beliefs of novice teachers. To provide deeper insight into the TSES scores of the teachers in the NTI2 cohort, the researcher conducted further analysis to determine if any statistically significant differences in self-efficacy appeared across the demographic categories of

teaching placement, pathway to certification, and frequency of mentor contact. Given the small, unequal distribution of the sample size, two non-parametric measures were selected and conducted in SPSS for this analysis: the Mann-Whitney U test and the Kruskal-Wallis H Test.

The Mann-Whitney test is a non-parametric test used to compare differences between two independent groups. In order to utilize this test, the data set must satisfy a few assumptions. The data cannot be equally distributed. The data gathered from the NTI2 cohort satisfied this assumption. Another assumption is that the data is ordinal in nature. In this study, the TSES responses fell along a nine-point Likert scale which satisfied the requirement for ordinal data. The Mann-Whitney test only permits researchers to compare two groups. To compare multiple groups, a different test must be used. To examine the differences in central tendency for more than two groups of data, the Kruskal-Wallis H Test was used as it permits the comparison of more than two groups.

Once the data was analyzed and the qualitative interviews were completed, the user email addresses were removed from the survey data to protect the privacy of the participants. A copy of the spreadsheet was saved locally on a password-protected device and in the cloud for security in the event of data loss.

Qualitative Phase

For the qualitative component of this study, six out of 67 teachers were interviewed. The teachers selected represented the diversity of the sample group to include elementary, middle school, high school, and SPED teachers with varying levels of self-efficacy as demonstrated by the TSES scores. Potential interview participants

were sent an Interview Informed Consent document via Adobe Sign. A copy of this document can be found in Appendix C. Following completion of the informed consent process, interviews were scheduled in summer 2020 and took place via Zoom video conferencing. Pending permission from the participants, all sessions were recorded and stored both locally and in the cloud. All interview participants received a $10.00 Starbucks gift card as an expression of gratitude for their time and participation.

A semi-structured interview protocol was used to guide the interviews. Per Castillo-Montoya's (2016) Interview Protocol Refinement Framework, the protocol included scripting at both the beginning and end of the interview to provide the interviewee with information about the research process and his or her role within that process. Following the introduction to the interview and study, the protocol included basic demographic questions to gather background information relevant to the participant and the context. The remaining questions were open-ended in nature with specific, identifiable ties to explore how teachers described their interactions with their virtual mentors throughout the program, and their perceptions regarding how virtual mentoring affected their self-efficacy.

In addition to specific, open-ended questions, Jacob and Furgerson (2012) recommended creating probes and prompts aligned to each question to facilitate further discussion or guide the conversation. Carefully crafted prompts can help drive the interview participant to get at specific topics that they may not have considered mentioning. Many of the questions and prompts included in this protocol were tested and refined through informal field testing during the researcher's Innovative Experience. A sample of the interview protocol can be found in Appendix D.

Miles, Huberman, and Saldaña (2020) stressed the importance of intentional and organized data management from the outset of the research project. From the outset of the study, the researcher ensured that files were easily accessible, labeled consistently and tagged according to participants, sites, and dates. To ensure confidentiality, anonymity, and security of the data, all files were stored locally on both the researcher's hard drive and external hard drive. Additionally, copies of the data were backed up in the Cloud. All of these data access points were password-protected and secure. Any identifying markers were removed from the file names and surnames were redacted. The researcher maintained a database of interview participant names and information, but study participants were assigned pseudonyms which were used to label and store all data both in the data management files and within NVivo, the computer-assisted qualitative data analysis software (CAQDAS) that was employed in this study.

Once the raw data files from the interviews were transcribed, labeled, organized, and stored on the researcher's computer and in the cloud, a copy of the data files was imported into the CAQDAS software, NVivo. NVivo provides researchers with a suite of tools to store, organize, code, compare, and visualize qualitative data. While it serves the purpose of "managing and organizing data, managing ideas, querying the data, graphically modeling ideas and concepts, and reporting from the data" (Kaefer, Roper, & Sinha, 2015, para. 11), the software does not perform qualitative data analysis. The process of analysis is still within the purview of the researcher.

For qualitative data analysis, Saldaña (2016) recommended the use of first and second cycle coding methods. First cycle coding methods were employed to organize and categorize the data. In vivo coding was used to capture the language and voice of the

study participants. Second cycle coding methods were used to identify themes in the data. Pattern coding helped the researcher extract overall themes from the larger collection of data. Table 3.2 illustrates how the data sources and methods of analysis connect to the study's research questions.

Table 3.2 Summary of Data Analysis Methods

Research Question	Data Source	Data Analysis
What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management?	TSES	Descriptive Statistics
How do teachers describe the virtual mentoring experience? • How do teachers describe their interactions with their virtual mentors throughout the program? • How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management?	Interviews	In vivo Coding Pattern Coding Analytic Memoing

In addition to Saldana's coding strategies, analytic memoing was utilized throughout the data collection and analytic process. Miles, Huberman, and Saldaña (2020) described analytic memos as "a brief or extended narrative that documents the researcher's reflections and thinking processes about the data" (p. 95). Memos can offer helpful insight into the analytical process and provide a detailed view of the interpretation process. Furthermore, as Yin (2018) pointed out, this will further support the overall reliability and validity of the study by creating an audit trail.

Summary

Chapter three outlines the methodology employed within the study. This study sought to explore the self-efficacy in the areas of student engagement, instructional strategies, and classroom management and perceptions of virtual mentoring of teachers participating in a NTI program. The mixed methods design was employed to help provide further insight into teachers' self-efficacy scores by exploring the ways in which they describe their interactions with their virtual mentors and how those interactions shaped their instructional practice in the same areas of student engagement, instructional strategies, and classroom management. The next chapter presents the results of the study.

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this mixed methods study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in a NTI program. The results presented in the following sections are based on survey data collected from 67 K-12 educators who participated in virtual mentoring within the context of a blended NTI program and semi-structured interviews with six participants to delve deeper into their individual experiences.

The results of this study are presented in two separate sections that address each of the research questions. The research questions that guided this study are:

1. What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management?
2. How do teachers describe the virtual mentoring experience?
    a) How do teachers describe their interactions with their virtual mentors throughout the program?
    b) How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management?

In the first section, quantitative survey data is presented providing an overall view of teachers' self-efficacy. In the second section, an analysis of the qualitative interview

data is provided to explore teachers' perceptions of their experiences in the NTI2 virtual mentoring program.

Research Question 1

The quantitative section of this study sought to answer the first research question: What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management? Teachers' self-efficacy was measured using a digital administration of the short form of the Teacher Self Efficacy Survey (TSES) (Tschannen-Moran & Woolfolk, 2001).

As a result of administrative delays and scheduling changes due to the district's COVID-19 pandemic response, the researcher was unable to administer the survey earlier in the summer, as originally planned. Teachers were scheduled to return from summer break on August 5. The resulting data collection window used within this study was chosen to capture teachers in the final days of summer break who were beginning to check their emails again and then in the first week of the school year before students arrived.

Potential participants were sent an email to their institutional email address on July 28, 2020. In this email, they were asked to complete the survey and indicate their interest in a qualitative follow-up interview. The survey window remained open for two weeks. In an effort to increase participation, a second follow-up email was sent to teachers who had not completed the survey on August 5, 2020. A final survey reminder was sent on August 9, 2020, before the survey window closed on August 11, 2020.

Survey Participants

The survey was sent to all members of the NTI2 cohort for the 2019-2020 academic school year. The cohort included 230 teachers across the PK-12 grade span. While most of the teachers were novice teachers entering their second year in the classroom, there were also some teachers within the cohort with previous classroom experience outside of the district who were simply new to the school district. These teachers were excluded from the study, as were teachers who were eligible for participation but did not attend any virtual mentoring sessions. This narrowed the ultimate pool of potential participants down to 228 teachers. Ultimately, sixty-seven teachers participated in the quantitative survey, resulting in a 29.39% response rate from the district's eligible NT12 population (N = 228).

Before beginning the TSES, participants were asked a series of demographic questions designed to add more clarity to the participants' experiences. The results of the demographics questions are outlined in Table 4.1.

Table 4.1 TSES Survey Participant Demographics

	n = 67	Percent
Gender		
Female	54	80
Male	13	20
Age		
20-25 Years	29	43
26-30 Years	18	27
31-40 Years	10	15
41+ Years	10	15
Placement		
Pre-K or Elementary	34	51
Middle School or High School STEM	5	7
Middle School or High School Humanities	9	13.5
Specials/Exploratory	9	13.5
SPED/ESOL/Intervention/Other	10	15
Pathway to Licensure		
Traditional Certification	52	78
Alternative Certification	15	22
Years of Experience		
0-2 Years	58	87
3-5 Years	9	13

The sample population was predominantly female across a variety of age groups with 70% of the participants being 30 years of age or younger. Nearly half of the survey participants were elementary teachers in a general education setting, with another 20.5% coming from middle school and high school backgrounds. 78% of the participants reported that they completed a traditional certification program. The remaining 22% completed an alternative certification process. The majority of the teachers were within

their first three years of teaching, with 13 percent arriving in the district with previous experience but still within the first five years of their time in the profession.

Results

To answer the first research question, What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management?, the researcher calculated measures of central tendency and variation for the 12 items on the short-form of the TSES (Tschannen-Moran & Woolfolk-Hoy, 2001). The results are displayed in Table 4.2. The researcher also conducted further analysis to determine if any statistically significant differences in self-efficacy appeared across the demographic categories of age, gender, teaching placement, pathway to certification, and frequency of mentor contact.

In the survey, respondents were presented with a variety of different challenges encountered in the classroom. Respondents were asked to rate how much they feel they can do to address those challenges. The scale for the survey was a 9-point Likert scale ranging from "Nothing" to "A Great Deal." An efficacy rating of (5), defined as "Some Influence" represented the neutral point of the scale.

Table 4.2 Measures of Central Tendency and Variation for the TSES (n = 67)

Item #	Item Phrase	Mean	MDN	SD
1	Disruptive Behaviors	6.66	7	1.90
2	Low Interest	6.15	6	1.88
3	Student Beliefs	6.69	7	1.78
4	Value Learning	6.85	7	1.64
5	Questioning	6.49	7	2.03
6	Classroom Rules	6.93	7	1.67
7	Calm Disruptions	6.57	7	1.69
8	Classroom Management System	7.07	7	1.42
9	Assessment Strategies	6.43	7	1.88
10	Alternative Explanation	7.04	7	1.66
11	Family Support	6.21	7	1.71
12	Alternative Strategies	7.01	7	1.38
	Means	6.67	6.9	1.72

The unweighted means for the 12 TSES items ranged from 6.15 to 7.07. The overall mean from the TSES scale was 6.67 which indicates that, as a group, the participants in the NTI2 program reported a moderate degree of confidence in their ability to satisfactorily accomplish tasks within their classrooms. The item with the highest mean for the cohort was item 8 in which teachers described their feelings about their ability to “establish a classroom management system with each group of students.” The cohort mean for this item was 7.07, higher than the overall TSES mean of 6.67. By contrast, the item with the lowest mean across the cohort was item 2 in which teachers described their ability to “motivate students who show low interest in school work.” The

overall cohort mean for this item was 6.15 indicating that teachers feel they have a moderate amount of influence over students' feelings of motivation.

The TSES is organized into three separate subscales related to student engagement, instructional strategies, and classroom management. Table 4.3 outlines the cohort's ratings on each of the three subscales.

Table 4.3 TSES Subscale Scores

Scale	Mean	MDN	SD
Student Engagement	6.47	6.67	1.75
Instructional Strategies	6.75	7	1.74
Classroom Management	6.81	7	1.67

Of the three subscales, teachers reported a higher self-efficacy in the area of classroom management with a mean of 6.81. Classroom management entails such things as behavior management, discipline strategies, and systems to manage an organized classroom. The lowest rated subscale was student engagement with an overall mean of 6.47. Student engagement relates to students' interest, participation, and ownership of their learning. It also includes the ability to engage families in the learning process.

To add further insight into the TSES scores of the teachers in the NTI2 cohort, the researcher ran two statistical tests in SPSS: the Mann-Whitney U Test and the Kruskal-Wallis H Test. These tests were used to determine if any statistically significant differences in self-efficacy appeared between subpopulations.

A Mann-Whitney U Test revealed no significant difference in overall TSES scores of teachers who completed a traditional teacher certification program (n = 52) and teachers who completed an alternative certification program (n = 15). This is the case for

each of the subscales as well as shown in Table 4.4. The results also indicate higher median scores across all three subscales for teachers with alternative certification.

Table 4.4 Mann-Whitney U Test for Significant Difference in Self-Efficacy by Teacher Certification Pathway

Null Hypothesis	Significance	Decision
The distribution of overall TSES mean scores is the same across categories of teacher certification pathway.	.383	Retain the null hypothesis.
The distribution of Student Engagement is the same across categories of teacher certification pathway.	.493	Retain the null hypothesis.
The distribution of Instructional Strategies is the same across categories of teacher certification pathway.	.353	Retain the null hypothesis.
The distribution of Classroom Management is the same across categories of teacher certification pathway.	.266	Retain the null hypothesis.

The demographic section of the survey permitted teachers to select their teaching placement across four different placement options. The hiring needs for the 2019-2020 academic year were heavily concentrated in the elementary grade levels, so the Pre-K through fifth grade group is disproportionately higher. A Kruskal-Wallis Test revealed no statistically significant difference in overall TSES scores of teachers across four different teaching placements as shown in Table 4.5. There are no significant differences in the teachers' Student Engagement scores either. The subscales of Instructional Strategies and Classroom Management both indicate a statistically significant difference in self-efficacy scores across the categories of teaching placement. Dunn's post-hoc pairwise

comparisons revealed that the differences emerged in the MS/HS ELA group. The results of the significant pairwise comparisons are found in Table 4.6 and 4.7. The MS/HS ELA group showed lower median scores across the Instructional Strategies and Classroom Management subscales (Md = 6.75; Md = 5.75). While the differences are statistically significant, it is worth noting that these median scores still fall to the right of the neutral point of the scale indicating that the teachers possess moderate levels of self-efficacy.

Table 4.5 Kruskal-Wallis H Test for Significant Difference in Self-Efficacy by Teaching Placement

Null Hypothesis	Significance	Decision
The distribution of overall TSES mean scores is the same across categories of teaching placement.	.081	Retain the null hypothesis.
The distribution of Student Engagement is the same across categories of teaching placement.	.217	Retain the null hypothesis.
The distribution of Instructional Strategies is the same across categories of teaching placement.	.034	Reject the null hypothesis.
The distribution of Classroom Management is the same across categories of teaching placement.	.031	Reject the null hypothesis.

Table 4.6 Instructional Strategies Pairwise Comparisons of Placement

Sample 1-Sample 2	Significance
MS/HS ELA – PreK-5	.038
MS/HS ELA – MS/HS STEM	.013

Table 4.7 Classroom Management Pairwise Comparisons of Placement

Sample 1-Sample 2	Significance
MS/HS ELA – PreK-5	.035
MS/HS ELA – SPED/OTHER	.005

When analyzing the differences in self-efficacy responses for the frequency of mentor contact, the researcher grouped the responses into three categories: 0-5 sessions, 6-10 sessions, and 10+ sessions. The demographic questionnaire allowed teachers to self-report in four categories: 0-5 sessions, 6-10 sessions, 11-15 sessions, and 16 or more sessions. The representation of teachers who reported higher contact frequency was too low to validate such a comparison, so the final two categories (10-15 sessions and 16+ sessions) were clustered for analysis. A Kruskal-Wallis H Test revealed no statistically significant difference across the categories of frequency of mentor contact in the overall TSES means or any of the related subscales for the three groups representing the frequency of mentoring contact as shown in Table 4.8.

Table 4.8 Kruskal-Wallis H Test for Significant Difference in Self-Efficacy by Frequency of Mentor Contact

Null Hypothesis	Significance	Decision
The distribution of overall TSES mean scores is the same across categories of frequency of mentor contact.	.115	Retain the null hypothesis.
The distribution of Student Engagement is the same across categories of frequency of mentor contact.	.106	Retain the null hypothesis.
The distribution of Instructional Strategies is the same across categories of frequency of mentor contact.	.218	Retain the null hypothesis.
The distribution of Classroom Management is the same across categories of frequency of mentor contact.	.096	Retain the null hypothesis.

Research Question 2

For the qualitative component of this study, the researcher conducted semi-structured interviews with program participants. Six teachers were interviewed as a part

of this study. The teachers represented different age groups, grade levels, and pathways to licensure as shown in Table 4.9. To protect the privacy of the participants, pseudonyms were used.

Table 4.9 Qualitative Interview Participant Demographics

Alias	Gender	Age	Placement	Pathway to Licensure	Mentor Sessions	TSES Mean
Debbie	Female	20-25 years	SPED/ESOL/ Intervention/Other	Traditional Certification	0-5 times	5
Melissa	Female	26-30 years	Pre-K or Elementary	Traditional Certification	0-5 times	6.17
Barb	Female	41+ years	SPED/ESOL/ Intervention/Other	Traditional Certification	0-5 times	6.5
Star	Female	26-30 years	Pre-K or Elementary	Traditional Certification	6-10 times	6.5
Mary	Female	31-40 years	Pre-K or Elementary	Traditional Certification	6-10 times	6.83
Lisa	Female	26-30 years	Pre-K or Elementary	Alternative Certification	6-10 times	8.58

While the original intention of the researcher was to select participants based upon their self-efficacy scores, the lower-than-anticipated survey response rate precluded this selection process. As a result, the researcher contacted every respondent who expressed interest in participating in the interview process, regardless of their self-efficacy scores or grade-level assignment. Ten teachers indicated their willingness to participate in the interviews. Of those ten teachers contacted, six teachers completed the interview. Three never responded to email contacts and one declined participation after reviewing the Interview Informed Consent document. The interviews were conducted via Zoom in August of 2020. The data were transcribed and coded for qualitative analysis.

The results of the qualitative analysis follow. Further discussion of considerations and implications for practice will be addressed in Chapter Five.

Interview Participants

The literature suggests that the mentoring relationship is personal and nuanced. To truly understand and interpret teachers' experiences, it is important to know about their context and their experiences in education. In the context of this study, teachers' current teaching placements, the pathway that led them to their role, and their backgrounds all shaped both their experience in the mentoring program and their self-efficacy. For this reason, this section will begin with a brief introduction to each of the interview participants designed to help position the teacher in the appropriate context and to add thick description to the remaining narrative.

Debbie recently completed her second year of teaching in the district. She always knew she wanted to be a teacher, so when she went to college, she pursued a degree in education. In addition to completing her coursework, she worked as a paraprofessional within the district. Following the completion of her degree, she accepted a position within the district. During her first year in the classroom, she worked in the general elementary education classroom. For her second year, she transitioned into the special education classroom. So, while the 2019-2020 academic year was her second year in the classroom, it was her first year as a special education teacher. In addition to her position as a special education teacher, she worked a part-time job and was enrolled in a Master's program to complete her degree in special education.

Melissa recently completed her second year of teaching within the district as a general elementary education teacher. She always knew she wanted to be a teacher, so

she took a traditional pathway to the classroom. Following the completion of her degree, she started working in the school district. Her background in the schools and her lifelong love of education have contributed to her feelings of confidence in the classroom.

Star recently completed her first year of teaching in the school district. Similar to Debbie, Star always knew that she wanted to be a teacher and followed a traditional pathway to licensure. She was technically a second-year teacher, but it was her first year in the school district, having completed her first year out of district. Star experienced many challenges transitioning from a rural, gifted placement to a general education classroom in an urban district. These challenges primarily centered around classroom management and relationship building. Star was unique in her mentoring experience as she was the only interview participant who knew her mentor prior to beginning the NTI2 program as her mentor was her fourth-grade teacher as a child.

Mary recently completed her second year in the school district. She followed an alternative pathway to the classroom and entered the profession after taking time away to raise her children. As such, she was older than the other members of her cohort. She appreciated the relatability of her mentor as they were both working moms and, as such, she felt like her mentor understood both the personal and professional challenges that she faced. Mary shared that she felt her experiences as a mother helped her to transition into the classroom more confidently than her peers.

Barb recently completed her second year of teaching as a special education teacher in the school district. Like Mary, Barb came to the profession later in life. She had a career in a different industry for over twenty years before pursuing her bachelor's degree in education. She quickly realized that she had a heart for special education

students and chose to begin her master's degree shortly thereafter. She spent the first two years as the only special education teacher in her specialty in her building.

Lisa recently completed her second year of teaching as a general elementary education teacher in the school district. She always knew she wanted to be a teacher and worked as a paraprofessional before entering the classroom through the Teacher Apprentice Program, an alternative certification program offered through the state. She spent a considerable amount of time in the schools growing up and attributes much of her natural competence as an educator to these experiences.

Each of the teachers interviewed shared their perceptions of the mentoring experience and how that experience shaped their practice. Their insights and experiences follow.

Results

Semi-structured interviews were utilized to answer the following research question: How do teachers describe the virtual mentoring experience? To develop a fuller understanding of teachers' experiences, this research question was separated into two subquestions:

a) How do teachers describe their interactions with their virtual mentors throughout the program?

b) How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management?

Qualitative analysis was conducted through the use of Saldaña's (2013) first and second cycle coding methods. After transcribing the interview data and importing it into

NVivo, a computer-assisted qualitative data analysis software tool, the researcher utilized first cycle coding methods to organize, condense, and synthesize the data. The coding methods utilized within this study include structural and In Vivo coding.

Structural coding was used to align the transcripts, interview protocol questions, and the research questions. It was also used to identify teachers' comments or observations about each of the related TSES subscales for easy reference. Following the implementation of structural coding, In vivo coding was used to analyze the data and to capture participants' voices as they described both their self-efficacy in the classroom and their experiences in the virtual mentoring program. The first-round coding yielded 236 unique codes.

In an effort to synthesize and consolidate the resulting first cycle codes, pattern coding was utilized to identify categories in the data. As a second cycle coding method, pattern coding permits researchers to examine the data chunks, detect any recurring patterns, and cluster similar codes together to create a smaller number of categories (Miles, Huberman, & Saldaña, 2020). Deeper analysis of the initial coding indicated many commonalities in teachers' experiences and descriptions. Categories and, later, themes were identified based upon their frequency across the data set. Some of these categories emerged from the teachers' language themselves, while others aligned to a priori concepts and themes from the literature on virtual mentoring.

Research Subquestion 2a

Research subquestion 2a was designed to answer the question: How do teachers describe their interactions with their virtual mentors throughout the program? From a programmatic and logistical standpoint, teachers' experiences shared many similarities.

Each teacher was placed into a small group or cohort of other teachers from the same grade level or content area. Each cohort was assigned a mentor who was a practicing educator in the same grade level or content area in the district. Each mentor scheduled meetings with their mentees over the course of the academic year, though these meetings varied in frequency. The meetings were hosted via Zoom video conferencing. All of the teachers reported that they met with their mentor in small groups instead of one-on-one in the virtual environment. For this reason, subquestion 2a, pertaining to the teachers' interactions with their mentors was amended to include their interactions with their peers in the mentoring sessions as well.

Mentoring occurs through social exchanges or interactions between a mentor, a mentee, and as in the case of the district teachers, their peers. These interactions occur either face-to-face or via computer-mediated communication such as Zoom video conferencing.

To help address this research subquestion more specifically, pattern coding was used to categorize the ways in which teachers described their interactions with their mentors. Codes were already aligned to specific research questions through the act of structural coding, but it was necessary to narrow the descriptions down further. Through this process, a distinction was made between the way that the teachers described their mentors, the overall mentoring experience, and their interactions with their mentors. Further subcoding within each of those categories helped to further clarify and describe teachers' experiences.

With regard to the interactions teachers described in their mentoring groups, the codes reflected three different categories including the frequency of the interactions, the

quality of their interactions, and the content of their interactions. These themes are addressed in Table 4.10 and will be explored in more depth.

Table 4.10 Coding Category Definitions

Participant Quotes	In Vivo Codes	Categories	Definition
"I would have to say maybe inconsistent." "We didn't meet very often or I didn't make it very often." "She was kind of random. Like, every month or so, but not the same time."	INCONSISTENT RANDOM NOT VERY OFTEN NOT ENOUGH TOO MUCH TIME FILLER	Frequency of Interactions	Frequency of interactions relates to the number of times a teacher was able to meet with his/her mentor over the course of the school year. While it was not mentioned as frequently amongst the participants, it was deeply connected to teachers' ability to establish trust and rapport with their mentors. The frequency of the interactions also contributed to the amount of content teachers could cover in their mentoring sessions.
"It's not personal, you know, just the conversation between you and I would feel much different if we were sitting in a Starbucks." "I wasn't able to, like, emotionally connect.	IMPERSONAL FORCED NO EMOTIONAL CONNECTION SEPARATED STRUCTURED FORMAL	Quality of Interactions	The quality of the interactions refers to the ways that teachers described their mentors, their mentoring cohorts, and the way these interactions felt. It encompassed both the interpersonal nature of the interactions (IMPERSONAL, FORCED, NO EMOTIONAL CONNECTION) and how the medium appeared to color the interactions (SEPARATED, STRUCTURED, FORMAL).

Participant Quotes	In Vivo Codes	Categories	Definition
“I could turn around and go implement the next day without like thinking twice about it.” “It was always discussing something that was relevant and current.”	RELEVANT ACTIONABLE NAVIGATING THE CLASSROOM QUESTIONS	Content of Interactions	Teachers made a distinction between their mentoring interactions and the things that they discussed during those interactions. As such, the category of “content” emerged. The importance of the content of the interactions is also addressed in the literature (Ensher & Murphy, 2007; Hawkinson & Cannatta, 2009; Polikoff, et al., 2015).

Frequency of the Interactions

The State Department of Education requires districts to offer mentoring opportunities for second year teachers as participation in mentoring is a requirement for professional licensure in the state. Within the NTI2 program, it was the responsibility of the mentor to schedule and host regular sessions to meet the state requirements. The self-reported number of sessions teachers attended was captured during the demographic section of the survey. The self-reported approximate number of sessions attended by interview participants is found in Table 4.11.

Table 4.11 Interview Participant Mentoring Session Attendance

Participant Alias	Approximate Number of Sessions
Debbie	0-5
Melissa	0-5
Barb	0-5
Star	6-10
Mary	6-10
Lisa	6-10

Teachers varied in their satisfaction with the frequency of their mentoring interactions. Three of the teachers felt that the meetings were “chorelike” or a “time filler,” but two of the six teachers communicated a desire for more frequent meetings with their mentor as it was challenging to “get to the real meat of things” in their monthly one hour group sessions.

Coding revealed that teachers’ perceptions about the frequency of their mentoring interactions could be categorized in two ways – the flexibility of the virtual meeting format and scheduling constraints. A short description of each theme with related codes and teacher comments is found in Table 4.12.

Table 4.12 Theme Descriptions

Theme	Related Codes	Description
Meeting Format Flexibility	CONVENIENT ON THE GO MEET NO MATTER WHAT EASIER	Flexibility refers to the virtual format broadly.
Scheduling	INCONSISTENT RANDOM OPTIONS CHOICE	The theme of logistics refers to the implementation of the virtual mentoring and not the virtual medium itself.

Five of the six participants positively described the flexibility, convenience, and ease of the virtual mentoring solution. Star noted:

> I really liked it because we were able to meet no matter where I was, like, there were times when we were meeting and I was like driving home or I was, you know, running errands or whatever. We were still meeting. So, it was very convenient for the teacher on the go.

The teachers appreciated that the meetings could happen anytime, anywhere and that they did not need to be out of the classroom or write sub plans. This added to the convenience of the mentoring solution for teachers.

While the medium itself was flexible, some teachers still experienced challenges with the scheduling and implementation process. Each mentor handled the scheduling and planning differently. Some mentors scheduled a monthly meeting that was hosted at the same time each month, without input from the teachers, creating a logistical challenge for some participants. Melissa shared an example of the scheduling challenges that she encountered:

> They were always scheduled right after school at 4:40. I think 4:30, maybe 4:40? By that time, some days, you know, it's late enough in the day that I had to get out of the building. I had things I had to get done before going home.

Like Melissa, Mary mentioned scheduling issues emerging from the challenge of trying to accommodate teachers' schedules from so many different schools, "you know with all the schools... you know we're all on different schedules or at conference and parent teacher nights or whatever. So, you know, not everyone attended all the time." Despite the fact that the medium itself was flexible, scheduling decisions still presented a logistical challenge for some participants.

To alleviate this challenge, one mentor scheduled a standing "mentoring week" with a few different drop-in sessions once a month. Teachers could register for the time that best fit their schedule and they could also see which other cohort members would be attending their session. Star shared, "She would always send a little calendar invite where you could pick a slot and she would do like three slots per time, so it was never a large group. It was always really small." Two of the six teachers, Star and Lisa, were from the same mentoring group and neither of them mentioned logistical challenges or concerns regarding scheduling or the frequency of interactions. Star went so far as to say, "I really liked that you could do it on the go. I really liked that. I don't know... I guess it was never really inconvenient for me." Her mentor's flexible approach to scheduling created a more accessible environment for her teachers.

Quality of the Interactions

In addition to describing the frequency of their mentoring interactions, teachers also discussed the quality of their interactions. In the context of this study, quality refers to both the interpersonal nature of the interactions and their perceived value.

For many, the term "mentoring" conjures up images of deep, reflective conversations with a trusted colleague. Overwhelmingly, this conception of mentoring

did not fit with teachers' experiences in the NTI2 program. Five out of the six teachers described their interactions as "impersonal" and "forced." They experienced difficulties in establishing a connection with the mentor or with the mentoring cohort. Of the six participants, only Star communicated feelings of closeness with her mentor though that can be attributed to the fact that she had a personal relationship with her mentor outside of the NTI2 program.

While the connotation of those adjectives may seem negative, it does not necessarily indicate that teachers' interactions with their mentors were not meaningful or that teachers did not perceive the experience as valuable. Five of the six teachers described the actual content of the meetings as being "actionable" and "immediately relevant." Lisa shared, "I would always grab something from it that I could use in my classroom right away." This distinction between the mentoring interactions themselves and the content of the mentoring interactions emerged through the analytic memoing process.

In teachers' descriptions of the quality of their interactions with their mentors they described the interactions themselves and some of the characteristics of their interactions more broadly. Pattern coding revealed that teachers' descriptions of the quality of their mentoring interactions could be characterized in three ways: relationships and trust, the virtual format, and the presence of other cohort members. Examples of these characteristics can be found in Table 4.13.

Table 4.13 Characteristics Influencing the Quality of Mentoring Interactions

Sub-Themes	Examples
Relationships and Trust	"Impersonal and forced" "Lacking an emotional connection" "Closed interactions" "Relied more heavily on building support"
Virtual Format	"Facilitation challenges" Either "too formal" or "too casual" "Hard to read body language"
Cohort	"Comforting community" "Struggling together" "Challenges are universal" "Diverse experiences"

Relationships and Trust

Relationships are a key part of the mentoring process. Successful mentoring is rooted in trust and rapport. The lack of a meaningful relationship, and more specifically, a lack of trust was a theme in the data. Mentoring requires honesty, critical evaluation, and vulnerability. It can be challenging to engage those types of behaviors with someone unfamiliar. Teachers described some difficulty in establishing relationships with their mentors.

The difficulty in establishing relationships derived from the fact that most of the teachers did not have an opportunity to meet their mentor prior to beginning the program either in person or even in a one-on-one Zoom meeting. Five of the six teachers never met their mentors face-to-face, despite working in the same district and attending the same opening events. The initial "getting to know you" Zoom meetings all happened in a small group format making it difficult for teachers to meet and establish rapport with their mentors. Two of the six teachers could not even remember their mentors' names.

The NTI2 program was designed to give teachers an opportunity to share their challenges and garner support from one another and their mentor, but teachers expressed some reluctance to share real challenges, struggles, or areas of weakness in their meetings. Lisa noted:

> It definitely felt strange that it was, you know, we were meant to come to bring to the table struggles and issues we were having in the classroom, but I'm more likely to go next door to my teammate that I know really well, and I can cry to her, and we can figure it out as opposed to going to a stranger. Um, that didn't really mean anything to me.

Melissa echoed this sentiment:

> Talking with her, the whole program felt, it all always felt very forced, like, "We're gonna come together and we're gonna be good friends!" and I was like, "I have so much to do right now. I can't zoom with you. Like, I can't pretend to be friends with someone I've never met, you know, like the teachers in other buildings and stuff.

By contrast, one of the six teachers knew her mentor before beginning the program. Star described her mentor assignment as “pure serendipity” as her mentor was her former fourth grade teacher. Interestingly, while she reported feelings of closeness that the other teachers did not mention, she still described instances in which she was unwilling to share things with her mentor. For example, following a performance evaluation with her administrator, the teacher received feedback that she found surprising regarding student engagement in her classroom. When asked if she discussed this feedback with her mentor, she responded,

> I never really brought it up because it's something that, you know, is one of those things that if all the kids are participating in general, then that's like, good enough for me. And then like I said, then I get reamed about it. And then I'm like, “Oh, so they're not actually engaged…” and then it's just like, you know, something I'm self-conscious about so it’s something I don't bring up. So, it's not something that she ever talked about because it's not something that was brought up.

Despite experiencing difficulty cultivating a trusting relationship, all of the teachers had positive things to say about their mentors. Five out of the six participants described their mentors as being committed, accessible, and supportive. Regarding her feelings about her mentor, Melissa shared:

> She made sure that we knew we could always email her or set up some kind of a phone call outside of school hours. She did a really good job making sure that we knew she was available to us if we needed her.

Similarly, Mary noted:

> Our relationship was very flexible. I knew she was available, like I didn't really reach out to her but I knew she was available. I also knew that she was supportive of me just by her checking in or saying, 'Hey, you know, you missed the last two meetings, everything okay? Call me.' or, you know, just checking in like, she did a really good job.

In addition to being accessible and supportive, all six of the interviewees described their mentor as relatable. All of the mentors were teachers currently practicing in the school district. Teachers were strategically placed with mentors who taught the same grade level and/or content area. This design was intended to help establish rapport and to ensure that the mentor had a clear understanding of the challenges and expectations facing the participants. One teacher shared, "She was empathetic, she knew exactly what we were going through." The intentional selection of mentors with the goal of increasing teachers' perceived similarity with their mentors was an overwhelmingly positive characteristic of the program design.

Another element related to relationships and trust is the presence of building support. If teachers had supportive relationships in their buildings, they were more likely to perceive the mentoring relationships as unnecessary because they felt as if they already

had the support they needed in their classroom. Conversely, if the teachers did not feel as if they had adequate support in their building, they appeared to value their mentoring relationships more. The virtual mentoring experience offered comfort to teachers who experienced isolation in their roles.

For example, Melissa struggled to see the value in cultivating a relationship with her mentor because she already had a group of supportive colleagues and building-based mentors who she could turn to as needed. She noted:

> I'm confident in my teaching abilities. I have a great team. I had a really great team this year and next year, and I didn't feel like I needed to talk to somebody. Um, and so you're telling me I have to talk to them. And I'm like, I don't want to, I could go talk to my friend next door, who I have that kind of relationship with.

Interestingly, Melissa did observe that there were other teachers in her mentoring group who did not seem to have the same level of building support that she did. She mentioned that these teachers joined the call and had a lot more questions. They appeared to be more anxious. She went on to say:

> I always have the chance to go be that anxious person with my team. It seemed like maybe they didn't have that. And so they brought that to the meetings. I mean, from my side, it looked like it was really beneficial for them. For those that needed that, that extra time with a group.

While Melissa had a highly supportive team, Lisa did not. Lisa described how much she valued the group mentoring sessions because she did not have an inclusive or supportive building team, so she always felt “on the outskirts.” The group mentoring sessions helped Lisa to feel less isolated in her new role.

Virtual Format

The virtual format of the mentoring program played a part in the way in which teachers described their interactions with their mentors. For a few of the teachers, the lack of rapport and familiarity was exacerbated by the virtual medium. It created a sterile or impersonal environment in which they did not experience a real emotional connection. One teacher described feeling “separate” and “closed off” from her mentoring group. “I just wasn't able to emotionally connect. Okay, you know, when you get to see someone physically that's totally different than virtual. I don't know, maybe it's just the screen that separates, you know, that just limits that ability?” Another described it as feeling sterile and “too professional,” though she attributed that to some of the management necessary when several people were sharing on the call.

While the impersonal feeling of the virtual sessions was not beneficial for some of the teachers, others found it to be helpful. One teacher shared that she found it easier to engage in the meetings from a “comfortable environment” - whether that was at home or in the classroom:

> I'm in my own comfortable environment. I'm in my classroom that I've created and I'm having the meeting or I'm in my home while I'm having this meeting. So those like social anxieties of being in a place where you're not familiar with maybe are taken away is part of it.

Another teacher added that the virtual nature allowed her to share her opinions and ideas more freely because she did not really know any of the people in her group outside of the cohort session, noting:

> There's something with closing a meeting that it's just done. And you got to say what you got to say, instead of feeling like I'm gonna run into this person in the hallway, and they're gonna be mad that I said this thing, or that I called them out on this, or, hey, their idea didn't work and I'm mad. And you don't have to run into

> them daily, I think is very beneficial." Similarly, another teacher shared, "I care about a lot about what people think of me. I think just being able to click x out of the meeting that I'm able to let it go instead of carrying it around with me because I have to go see them in person.

The virtual format served to provide teachers with a flexible approach to mentoring, but it was not without its drawbacks. Teachers reported difficulty establishing rapport and facilitation challenges. Interestingly, while some reported the impersonal nature of the medium negatively, others found it to be liberating.

Cohort Structure

With the exception of one teacher, five of the six participants described satisfaction with the cohort structure and group mentoring experience. It allowed teachers to engage with and interact with others at the same point in their career, doing the exact same work. For some, this led to a sense of comfort and community. Melissa shared:

> We were all kind of going through the same thing and we all kind of have the same insecurities. Like I think all second year teachers kind of feel the same way. I mean, you feel kind of the same as a first year teacher, you know, like you, you just, you have those same insecurities. You have those same like frustrations [...] We were all kind of struggling together. We all kind of felt the same way and we could celebrate each other's successes and stuff like that. It was nice.

Similarly, Debbie noted:

> We didn't really get close or anything like that because it was only over zoom meetings and you maybe only met each other once or twice like in passing through the meetings. You know, you're at different times. But yeah, you kind of realize that we were all feeling the same way, dealing with the same things no matter what school you're at, it's kind of universal.

Teachers found comfort in "struggling together" instead of struggling alone. The cohort structure offered them a sense of community and in their new roles.

For some of the participants, the cohort structure cultivated a sense of familiarity that extended beyond the confines of the virtual environment. Two teachers reported emailing and sharing resources outside of the mentoring sessions. Another teacher shared that she found it helpful to know some of the other people in her content area when she attended district trainings:

> having the cohort and then seeing those different people at training kind of made it nicer because you know, sometimes you go to trainings, they don't necessarily apply to Special Ed. So being able to be with a group of other teachers that know special ed can help to make it more useful so we can make it apply to us or we could figure out how to do that together.

Teachers positively described the sense of community that the cohort created, but they also described the value in listening to and learning from one another. In some ways the cohort served as a source of social comparison. Three teachers shared that listening to the challenges faced by their peers helped them to reframe their thinking about their own skills and it validated their own experiences. They found it empowering to know that they were doing okay in relation to some of their peers and they enjoyed the opportunity to lead and share their experiences with their peers. Lisa shared that she perceived the cohort as a "leadership opportunity" and a chance to share her expertise, ideas, and experience with her peers:

> I felt like I was able to help other teachers that maybe didn't have that natural ability. And then I was able to say, Well, this is what I do in my classroom, and it's successful. So I think that specific need in the mentorship program is probably addressed either through the mentor or through somebody else in that cohort.

While the cohort structure and group mentoring introduced several benefits to the virtual mentoring experience, it also introduced some challenges from a logistical standpoint. Teachers were always given the option to request a one-on-one mentoring

session, but the regularly scheduled sessions were designed for the entire cohort, so instead of hosting a simple one-on-one video conferencing session, mentors served as facilitators in larger group sessions.

> In some groups, this manifested in a more structured session:
> It was kind of like a college class. We would discuss how things were going. Usually one person would maybe have a gripe or some kind of problem going on and we'd all kind of pitch in our two cents or things we've done or tried. Those kind of things and then the mentor would be like, "You know here are some other options" for that person.

Melissa similarly described the format of her sessions saying that they were very mentor-driven and facilitated by a clear agenda. She found it challenging because the virtual environment made it difficult to engage in any conversational overlap or discuss with peers, she noted:

> in person, you and I can have a side conversation while, you know, those two over there talk with the mentor about something more specific, so I don't think virtual really lends itself to being more relaxed just because of what it is.

While some of the sessions were highly structured, in others, it led to frustration and chaos as the increased number of participants introduced some facilitation and management challenges in the virtual environment. For instance, as a new special education teacher, Debbie struggled to help engage her students with age-appropriate materials. When asked if engagement was something she was able to visit about with her mentor, she shared that her group never really got a chance to talk in-depth about meaningful content because her mentor lacked the virtual facilitation skills necessary to effectively manage the group of participants, so they always ran out of time. She shared: "I think with the cohort, I think just the lack of structure made it less of a mentoring program and more of like just kind of had time for people to talk after work." She went

on to discuss that much of the time was spent discussing frustrations or "venting" which left no time for digging into "the real meat of things." Debbie's student engagement subscale score was among the lowest in the cohort as a whole. She would have benefited from conversation and resources surrounding this topic.

In addition to facilitation challenges, three of the teachers described difficulty in discerning social cues and body language in the group video calls. When multiple people join a Zoom session, it can be challenging to keep track of who is talking or to concentrate on their body language. Furthermore, not everyone chose to use the camera in the video sessions, so it made it even more challenging for some of the teachers to engage with one another socially.

The cohort structure had an impact on the delivery and facilitation sessions, but it also had an impact on the quality of the mentoring relationships and the mentoring interactions. Teachers described difficulty in getting to know their mentors due to the number of other participants on the call. The presence of their peers also made it challenging to address specific areas of need because it increased teachers' feelings of vulnerability. Teachers described an unwillingness to share areas of true challenge or weakness. For instance, Melissa noted that she was reluctant to talk about some of the challenges that she faced in the classroom out of a fear of being judged. She shared her desire for one-on-one sessions:

> just gives you that opportunity to be a little more vulnerable and not… just being able to say things away from your peers. And not, you know worrying, 'Are they going to judge me because I can't handle this type of student?' or 'Are they going to judge me because I don't know what this word means that they keep saying?'

Melissa's concerns about feeling judged were echoed by other interview participants. Star shared her reluctance to address student engagement with her mentor in the group calls because she did not want to feel judged or evaluated. The presence of other cohort members in the group mentoring sessions served to filter participants' conversations or thoughts thus limiting self-disclosure and opportunities for new learning. Generally speaking, the teachers described the cohort structure favorably, but it did introduce some challenges that would not have been present in one-on-one sessions.

Content of the Interactions

Much like the structure of the session and the quality of the interactions varied from group to group, so did the content of teachers' mentoring interactions. Some teachers reported a more mentor-driven session with a regular focus. In the groups in which the sessions were governed by an agenda, the teachers shared that the content was connected to the "season of teaching or the district." For instance, one teacher shared that her mentor would always begin each meeting with an opportunity for teachers to share things happening in the classroom, then they would discuss whatever topic was relevant at that time, "if it was around conferences, she would ask us if we had any questions about conferences, if it was around report cards, she'd ask us if we had any questions about report cards." In other groups, the meetings were not necessarily topical in nature, but rather driven by the teachers' questions and needs.

While the content varied across the mentoring groups, coding revealed that the content of teachers' mentoring interactions could be categorized in four primary ways: job responsibilities, district initiatives, venting, and resource sharing. Table 4.14 provides examples of each of these types of interactions.

Table 4.14 Content of Mentoring Interactions

Category	Examples
Job Responsibilities	Navigating the Classroom Responsibilities Paperwork and Logistical Responsibilities Learning District Norms
District Initiatives	New English Language Arts Curriculum Standards Referenced Grading District Instructional Protocol
Venting	Sharing frustrations and challenges Not solution-oriented
Resource Sharing	Sharing resources, lessons, and materials

Job Responsibilities

The interactions related to job responsibilities addressed two main areas: navigating the classroom experience and understanding district norms. Navigating the classroom experience entails all of the tasks and responsibilities inherent in the teacher's job throughout the day including things like facilitating parent teacher conferences, administering district assessments, IEPS. Many of these tasks are not necessarily covered in college courses or may not have been a part of a teacher's apprenticeship experience, so they are required to draw from what they know and learn on the go.

One of the teachers ended up switching grade levels and positions between her first and second year of teaching. She moved from a general elementary education classroom to a Special Education placement and she described feeling unprepared for some of the job-specific tasks that she encountered over the course of the year,

> I had a lot of questions when it came to like how to write IEPs, how to write goals and the paperwork. I was very confused about how paperwork went more like, you know, when I should be talking to parents about having an IEP meeting, or how to talk to parents at an IEP meeting.

Another teacher described her interactions with her mentor as reminding her of the things she learned in college when she needed them,

> You forget about some of that. You forget about a lot of the stuff you learn in college because it's all from books. And then when you're in the classroom, it's like firsthand, hands on experience.

In addition to helping teachers tackle any “on the job” questions that emerged, the mentors also helped to serve as a useful resource to navigating the district norms and requirements. Teachers described discussions relating to things like the district evaluation process, administrator walk-throughs, and paperwork requirements.

District Initiatives

Mentoring sessions also helped to support the rollout of new district initiatives. During the 2019-2020 academic school year, the district rolled out a new elementary reading program. Four of the six teachers interviewed were elementary teachers. All four of the teachers described spending time discussing the implementation of the Journeys content.

The virtual cohort format seemed to help give teachers a place to get feedback from like-minded peers. Given that the change was met with some negativity with teachers in the district, one teacher explained that it was challenging to discuss the new content with veteran teachers in her building,

> I'm lucky that I didn't know any different, other than Journeys, but the problem was I ran into people, especially being a new teacher with it, I couldn't go to a veteran teacher and say, ‘Okay, what do you normally do? They're like, "I don't know, you're on your own kid." So we were still last year talking a lot about it.

Similarly, the school district rolled out a new Standards Referenced Grading (SRG) system in K-5. Again, all four elementary teachers discussed the challenges of the new SRGs and how to best manage them.

Venting

Sharing frustrations and challenges or "venting" was another common interaction within the mentoring sessions. In this context, venting describes the act of sharing frustrations without the expectation of support or solutions. In contrast to problem-solving, venting is not solution-oriented. Debbie shared that her sessions often turned into "people complaining about their rough day" instead of specific mentoring content. Melissa added to this sentiment sharing:

> You were able to complain. And, that sounds like I'm just being negative, but you know, you could kind of bounce those frustrations off of one another in what felt like a more free setting, there wasn't... you didn't feel like there were these hidden kind of standards and rules that you had to abide by in those kinds of conversations.

Half of the teachers mentioned venting or ranting in their descriptions of their interactions within their mentoring sessions. While the connotation of those words is somewhat negative, only one of the three participants, Debbie, experienced the interactions negatively.

Sharing Resources

The final interaction type, sharing resources, typically happened asynchronously in response to needs presented by teachers within their mentoring sessions. Each mentoring group utilized a Google Classroom or Drive to organize and share resources within the cohort. Mentors posted articles, ideas, and videos for teachers to review or utilize. Similarly, teachers were encouraged to share lessons and resources with one

another. Five out of the six teachers interviewed described resource sharing as one of the primary benefits of the program.

Research Question 2b

The first subquestion helped to clarify how teachers described their interactions with their mentors. The second subquestion answers the question: How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management? This question is designed to explore teachers' self-reported changes to their practice as a result of their virtual mentoring experience.

To answer this question, structural coding was used to identify interview content related to teachers' descriptions of the program's relation to their professional practice in the areas of student engagement, instructional strategies, and classroom management. These categories were selected to match TSES subscales which governed the creation of the interview protocol. A definition of each subscale is found in Table 4.15.

Table 4.15 Subscale Definitions

Subscale	Definition
Student Engagement	Relates to motivating students, encouraging students to believe in their academic abilities, encouraging students to value learning, and engaging families in the learning process.
Instructional Strategies	Relates to the delivery of effective instruction in the classroom, questioning and assessment strategies, the ability to generate alternate explanations for a given topic, and the implementation of a wide variety of strategies in the classroom.
Classroom Management	Relates to managing disruptive behaviors, reinforcing classroom rules and policies, calming disruptive students, and establishing and maintaining an effective classroom management system

The resulting interview sections were coded using In vivo coding methods in an effort to capture the teachers' voice and experience more authentically. The resulting codes were further examined during second cycle coding to identify categories and themes.

Student Engagement

According to the TSES subscale used within this study, student engagement refers to motivating students, encouraging students to believe in their academic abilities, encouraging students to value learning, and engaging families in the learning process (Tschannen-Moran & Woolfolk-Hoy, 2001). Of the three targeted areas, student engagement was the most ambiguous for teachers.

To begin, each teacher was asked to describe their understanding of student engagement. Though the teachers' definitions varied, they were unified in their description of interest and on-task behavior. According to Lisa, student engagement is "your kids are doing what you're asking them to be doing." Similarly, Melissa responded,

"being active participants in what we're doing." Mary expanded her definition to include more student ownership in the learning process:

> When I hear student engagement, I think not only are students engaged, but they're taking responsibility for their learning. So it's not just that they're following my directions, but they're going the next step. And they're, they're becoming more responsible. That's when I know a student is engaged, when they are the ones asking questions and they are the ones coming up with solutions, and they're the ones trying to figure out a problem or do strategies on their own.

Only half of the participants described spending time discussing student engagement in their mentoring sessions despite two of the participants explicitly stating that student engagement was an area of particular challenge. Lisa described the power of relationship-building in relation to student engagement. In her mentoring sessions, her group discussed building relationships as a mechanism for motivating and engaging students:

> It is the foundation in an elementary, really any, classroom - they have to have a relationship with me in order to want to do what I'm asking them to do. So it was a lot of discussing, 'How do you build a relationship that's authentic?' but also trying to meet this goal of having them learn and better themselves.

She went on to share specific strategies that she had learned and tried in her classroom including classroom circles, morning meetings, and games saying, "I could turn around and go implement them the next day without thinking twice about it."

Similarly, Mary shared that her group's focus on building relationships was useful as she worked to increase student engagement:

> Building relationships and understanding your students and meeting them where they are is so important because we all know that they're not in the same place. They're all from different backgrounds. And you can't engage a student, if you don't know anything about them and you don't care and you're only there to do your job. You're not going to engage them.

Of the three subscale topics, student engagement appeared to be addressed and discussed the least across the cohorts. Interestingly, it was also the lowest rated subscale in the cohort's TSES scores.

Instructional Strategies

Instructional Strategies relates to the delivery of effective instruction in the classroom. Topics can include such things as questioning and assessment strategies, the ability to generate alternate explanations for a given topic, and the implementation of a wide variety of strategies in the classroom. Four of the six teachers who were interviewed shared that their cohort spent time in their sessions focused on improving instructional strategies in the classroom.

During the 2019-2020 academic school year, the district implemented a new English Language Arts (ELA) program at K-5. As a result, many of the conversations were centered around the implementation of the district's instructional protocol or the implementation of the new ELA program.

With the new ELA content, conversations centered around the use of specific program components or the sharing of resources. Melissa shared that the structure of her sessions typically followed the same format, "Journeys has this component, how are you using it? What are you doing with it? How are you introducing that to your students? What strategies are you using?" and so we did discuss a lot of that." Another teacher shared that it was a good way to get ideas or suggestions on improving their use of the program. In this instance, teachers found it especially helpful that their mentors were assigned the same grade level as it was easier to discuss instructional strategies and curriculum resources because everyone was on the same page.

Barb shared that her group created a Google Drive to share resources following the sessions:

> We could all put in things in there like she made one tab for Journeys and then when you clicked on it, it would be writing, vocabulary, and comprehension. And then the next one was math and there were different subheadings and then science, social studies, behavior management - all those types of categories that every teacher could definitely use more strategies in.

The tool is collaborative so that all of the members of the cohort could add resources. This seemed to make the content of the mentoring sessions more applicable because if a resource was mentioned during the session, it was also available in the shared Drive.

Teachers valued the resources and advice shared in the sessions as it gave them something that they could immediately apply in their own classroom. Having a mentor who teaches the same content made this even more helpful for some teachers.

Classroom Management

Classroom Management relates to managing disruptive behaviors, reinforcing classroom rules and policies, calming disruptive students, and establishing and maintaining an effective classroom management system. Across all six teachers, of the three topics related to the TSES instrument, classroom management was addressed in the mentoring sessions most frequently. All six teachers reported discussing classroom management in their mentoring groups.

In some cases, the mentoring sessions simply provided a place to share about frustrating or challenging situations. Melissa shared:

> I mentioned my one student that I was really struggling with, I think I mentioned him because he exhibited such intense, difficult behaviors. We were already kind of throwing everything at him. We were throwing all the strategies, I mean,

> anything we could [...] I brought him up just because you don't get a student like him very often but when you do, they put you through the wringer.

She did not mention any specific strategies that she received through this, but she seemed to derive some relief simply from the act of sharing the situation. Sharing offered Melissa both validation and comfort because it alleviated any feelings of self-doubt regarding the extent of the behavior.

Beyond sharing frustrations, referred to by some of the teachers as "venting", the teachers described seeking support for specific problems or challenges. For instance, Lisa teacher shared:

> Classroom management is probably the thing I got the most advice in with it. I had a very chatty class last year. And that was the first time I had to deal with just chatter. They weren't bad. They weren't disruptive. They just really liked each other and liked to talk to each other. So there were lots of strategies like talking beans or just things that I could implement in managing the classroom environment so that we're staying on topic instead of just talking about what we want to do on the weekend.

Mary shared that she really struggled with the organization of her classroom and that it was impacting her students' behaviors:

> My challenge was organization. That's the main thing that I struggled with because when I needed something, I couldn't find it, which then the kids are like throwing paper balls at each other and I'm like, 'Just give me two more minutes. Talk time, let me go find this.

She recognized the issues that her poor organization was creating in the classroom and sought feedback from her cohort, "They had great ideas and I would buy all of these organizational things like file cabinet sorters, the vertical file, the vertical file folders or pockets. They had great ideas." She described trying these solutions and recognizing that, ultimately, consistency in her practice was what was going to help her. "You know when

you organize something, you have to put it back where it goes. You have to maintain it. They couldn't help me with that but I got better."

Mary's statement suggests a theme that emerged throughout the data regarding the personal responsibility of the mentee. With regard to the experience as a whole and then to actually using the information gleaned to shape their practice, it is ultimately on the teacher's shoulders to implement, enact, and use the things that they have learned.

Star described the challenge of moving to a new building between her first and second year of teaching. The student population and the demographics of the building were very different, and she found that the strategies that she had used in the past were ineffective. She described discussing this with her mentor and her cohort. For Star, the discussions were very reflective in that the group would revisit the success or the failures of the strategies that they had committed to trying in previous sessions. In doing so, she realized that her greater issue was related to inconsistencies in her management style:

> You do have to be consistent. And if you're going to be lax, then be lax. But if you're going to be strict and rigid then be strict and rigid. You can't, just be somewhere in between and changing all of the time because then there's confusion and then nobody knows what's going on and nobody knows what the expectations are.

For Star, there were clear implications in her practice that extended beyond strategy use and into more reflective practice. Her willingness to reflect on her mentoring interactions served her well.

Personal Responsibility

A related theme of personal responsibility emerged when examining teachers' descriptions of changes to their classroom practice. One of the stated objectives of the NTI2 program was to help teachers build their independence as new teachers. In the first

year of the NTI program, teachers were assigned a face-to-face mentor who they met with monthly. In the second year, that scaffold was removed and teachers entered the virtual mentoring phase of the program. In NTI2, teachers still had support and mentoring, but the mentoring sessions were facilitated virtually and the responsibility for seeking out additional support rested in the hands of the teachers.

Three of the six teachers mentioned this shift in responsibility in their interviews. Table 4.16 shows examples of teachers' comments on personal responsibility. The teachers recognized that the responsibility for changes in their practice was "on their shoulders" and that they needed to be more of an advocate for themselves in their professional journey.

Table 4.16 Teacher Comments on Personal Responsibility

Teacher Comments
"With the virtual, it felt like it was more of my responsibility to reach out."
"So the virtual format, I felt like it put like a lot more responsibility on the new teachers and not in a bad way."
"You know, so if I wanted to be more confident, I have to work on that I have to do the work."
"It was a lot more on my shoulders if I had a question."

Barb, a special education teacher, described how the level of support that she needed in her second year was significantly less than in her first year because she was "already swimming pretty decent." Barb shared that she communicated with her mentor mostly through email as she often had IEP meetings during her group's regularly scheduled meeting times. She also found that email was more "individualized and confidential" and that her main concern was finding ways to become more efficient in her

role. Barb is a great example of a program participant assuming personal responsibility to ensure that they were getting what they needed to feel more confident in the classroom.

For the teachers who were interviewed, the primary way in which their practice was most directly affected across all three subscales was through the sharing and subsequent implementation of new ideas, resources, and strategies from both their mentors and the other cohort members. Personal responsibility for the implementation of these new ideas and strategies is implied, ultimately, as Mary pointed out:

> If I wanted to be more confident, I have to work on that. I have to do the work. I'd have to practice and, and, you know, do positive self-talk, read about it myself. I mean, they can give me all the information but the work comes from within.

For the teachers in this study, the content of the mentoring interactions, coupled with personal responsibility, yielded changes in teachers' practices in the areas of classroom management, instructional strategies, and student engagement.

Summary

The purpose of this study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in a NTI program. Teachers' self-efficacy was measured through the administration of the TSES. The overall mean 6.67 from the TSES scale indicates that, as a group, the participants in the NTI2 program reported a moderate degree of confidence in their ability to satisfactorily accomplish tasks within their classrooms. As it pertains to the job-critical areas of student engagement, instructional strategies and classroom management, measured by the subscales of the TSES, teachers rated their self-efficacy highest in classroom management and lowest in student engagement.

With regard to the virtual mentoring experience, teachers described the frequency, quality, and content of their mentoring interactions. Teachers varied in their satisfaction with the frequency of their mentoring interactions and noted that the flexibility of the medium was sometimes limited by the logistical constraints imposed in the program implementation. Teachers descriptions of the quality of their interactions with their mentor could be categorized as relating to a few different elements including the virtual format of the delivery, the presence of other cohort members in group mentoring sessions, and difficulties establishing trust and rapport in the mentoring relationships. Finally, teachers shared that the content of their mentoring interactions helped shape changes to their practice as the actionable, career-oriented strategies gave them something actionable to implement in the classroom. Overall, teachers emphasized the value and importance of the content of the mentoring interactions and the cohort structure in their virtual mentoring experience.

This chapter provides an overview of the findings from the administration of the TSES and the semi-structured interviews. Further discussion of the data, implications for practice, and recommendations for future research will be addressed in Chapter Five.

CHAPTER FIVE: SUMMARY, DISCUSSION, AND CONCLUSIONS

Self-efficacy, one's beliefs about their ability to achieve a positive outcome, has been linked to improved performance, job satisfaction, and increased organizational commitment in teachers. The purpose of this mixed methods study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in a New Teacher Induction Program. The study examined novice teachers' self-efficacy in job-critical areas such as student engagement, instructional strategy usage, and classroom management. The study also described the perceptions of those teachers participating in the virtual mentoring program and how their experience changed their classroom practice.

In this chapter, the results of this study are discussed in further detail, connecting these results to the existing literature in the area of virtual mentoring and self-efficacy. Additionally, implications for practice, recommendations for further research, and conclusions are discussed.

Discussion of Findings

Research Question 1

The first research question asked: What are novice in-service teachers' levels of self-efficacy in the areas of student engagement, instructional strategies, and classroom management? The quantitative survey results of the 12-item short form of the Teacher Sense of Efficacy Scale (TSES) had a mean of 6.67. The TSES uses a 1 to 9 scale with a neutral midpoint.

The unweighted means for the 12 TSES items ranged from 6.15 for Item 2, “How much can you do to motivate students who show low interest in school work?” to 7.07 for Item 8, “How well can you establish a classroom management system with each group of students?” The range of means from 6.15 to 7.07 falls on the positive side of the scale which indicates that as a group, the teachers in the study reported a moderate degree of confidence in their ability to accomplish job-related tasks in the classroom.

For the 67 survey participants, the TSES grand mean was 6.67, the median was 6.90, and the standard deviation was 1.72. The grand mean indicates that teachers reported a moderate degree of confidence in their ability to complete teaching tasks in their roles. Descriptive statistics revealed that there were six teachers (9%) who reported “very little” confidence in their ability to complete the teaching tasks required in their role and only four teachers (6%) who reported a mean score between 4 and 5, the neutral point of the scale. At the high end of the scale, the responses of 10 teachers (14.9%) produced TSES mean scores between 8 and 9.

Several factors may have contributed to the teachers’ self-efficacy scores. These factors, referred to in the literature as contextual factors, can have an impact on teachers’ self-efficacy. Tschannen-Moran and Woolfolk-Hoy (2007) explored the antecedents of self-efficacy beliefs of teachers and found that contextual factors including the availability of teaching resource and interpersonal support were particularly important sources of efficacy beliefs for novice teachers. Similarly, in an exploration of pre-service teachers’ self-efficacy beliefs, Moudling, Steward, and Dunmeyer (2014) found that the teachers’ perceptions of support were linked to high self-efficacy. They also found that efficacy scores were higher for teachers in schools with higher student achievement.

Contextual factors may have had an impact on these teachers' TSES scores. Of the six teachers interviewed, half of the teachers shared that they moved to a new grade-level or teaching placement between their first and second year in the classroom. While the tasks on the TSES were specifically chosen to generalize across a variety of educational contexts, the lack of familiarity with the content and building expectations may have had an impact on teachers' TSES scores. Teachers also reported varying degrees of building support which may have contributed to their scores as well.

The TSES instrument was constructed by assembling a list of the different challenges faced by classroom teachers. With review and feedback from a committee of educators, the list was condensed to reflect some of educators' biggest obstacles. Further refinement of the instrument found that the challenges could be categorized into different groups, creating the subscales (Tschannen-Moran & Woolfolk-Hoy, 2001). Teachers' skills and confidence to tackle these obstacles varies across the range of challenges that they encounter in the field. As such, examining each of the subscales separately permits a greater understanding of teachers' self-efficacy in the different types of tasks a teacher must accomplish in the classroom.

The TSES consists of three subscales (student engagement, instructional strategies, and classroom management). Student engagement relates to a teacher's ability to encourage a student to value learning and create a motivational learning environment (Tschannen-Moran & Woolfolk-Hoy, 2001). Of the three subscales, teachers rated their self-efficacy in student engagement the lowest (N = 6.47). The teachers' scores indicated that teachers felt the highest self-efficacy in the area of classroom management (N = 6.81). These scores mirror teachers' descriptions of the amount of time spent discussing

related topics in their mentoring groups. Across the interview participants, teachers described spending the most time on topics relating to classroom management including strategies, systems, and routines. Only three of the participants described spending any time on topics related to student engagement.

When compared to the descriptive statistics generated by Tschannen-Moran and Woolfolk-Hoy's (2001) original study, the NTI2 cohort reported lower scores across nearly all of the scales. The original study, used to confirm the instrument, surveyed 410 teachers, but the sample included a mix of pre-service and in-service teachers. It is possible that their scores were bolstered by the presence of pre-service teachers as research indicates that pre-service teachers' self-efficacy typically drops after they enter the field and encounter the "reality shock" of the classroom (Putman, 2012; Tschannen-Moran & Woolfolk-Hoy, 2007). Another interesting contrast in the data relates to the scores on each of the individual subscales. Tschannen-Moran and Woolfolk-Hoy (2001) found that the highest subscale rating for their participants was the area of Classroom Management. The NTI2 cohort demonstrated the highest scores in that particular subscale. This may be related to district initiatives to concentrate on classroom management amongst novice teachers.

In a more recent study, Bacon (2020) examined the self-efficacy beliefs of novice teachers participating in a NTI program using the TSES. Bacon's study examined the self-efficacy beliefs of 40 teachers at the end of the program. He found that the overall TSES mean for participants was 7.01 which is higher than the 6.67 mean (N = 6.67) found amongst the NTI2 participants. Similar to the results of this study, Bacon found

that the Student Engagement subscale had the lowest scores (N = 6.83) of the three subscales.

Research Question 2

To answer the second research question, qualitative data was collected through a series of semi-structured interviews with six NTI2 participants. The second research question asked: How do teachers describe the virtual mentoring experience?

In describing the program as a whole, four of the six teachers positively described the flexibility of the virtual medium. They appreciated the accessibility of their mentors and the ability to access their sessions on the go. The ability to participate in sessions from the comfort of their classroom or their homes was appealing to teachers as they were not required to complete sub plans or miss a day of work. This finding is in alignment with one of the most widely touted benefits of virtual professional development for educators - flexibility (Dede et al., 2009; Gareis & Nussbaum-Beach, 2007; Single & Muller, 2001; Taranto, 2011). Similarly, in an exploration of e-mentoring amongst novice teachers, Spanorriga, Tsiotakis, and Jimooyiannis (2018) found that the ability to visit with a mentor at any time - either synchronously or asynchronously - was of value to the novice teachers and increased teachers' acceptance of the program.

While many of the participants described the benefit of the flexibility of the virtual format, teachers varied in their self-reported feelings of satisfaction with the program on the whole. Teachers' satisfaction with the program was related to their perceived level of personal need, their interactions with their mentors, and the perceived value. Some teachers felt the sessions were a formality or a "hoop to jump through" for licensure, while others described the program as "really helpful."

Research Subquestion 2a

To explore the second research question in more depth, it was broken down into two subquestions. The first subquestion asks: How do teachers describe their interactions with their virtual mentors throughout the program? Teachers described different aspects of their interactions with both their mentors and their peers. The analysis of the qualitative data revealed that teachers' descriptions could be organized according to the frequency, quality, and content of their interactions.

Frequency of interactions

In terms of frequency, teachers described meeting with their mentoring groups fairly infrequently throughout the year with four of the six teachers indicating that they met with their mentor between 0-5 times during 2019-202 academic year. Prior research in the area of virtual mentoring indicates a positive relationship between frequency of interactions and mentoring effectiveness (Ensher & Murphy, 2007; Single & Single, 2005; Polikoff et al., 2015). While the researcher is unaware of any empirical research that indicates the optimal amount of time that should be spent with beginning teachers to yield positive outcomes, extant research in the area indicates a positive correlation between the time spent and improved performance outcomes (Hawkinson & Cannata, 2009; Fletcher & Strong, 2009; Murphy, 2011; Rockoff, 2008). Furthermore, increased frequency of interactions helps to facilitate relationship building, rapport, and feelings of trust (Waterman & He, 2011). Many of the teachers described difficulties establishing rapport and building trust with their mentors. In five out of the six cases, teachers did not feel as if they had authentic relationships with their mentors. Increased mentoring

frequency, particularly at the outset of the program, may have helped teachers establish a more authentic relationship with their mentors.

Research in the area of face-to-face beginning teacher mentoring suggests that mentoring frequency should vary based upon the needs of the individual teachers (Fuller & Brown, 1975; Robinson, 1998). The findings of this study support this recommendation as teachers indicated a desire for more contact with their mentors at certain times of the year and in areas of specific need. Teachers who described themselves as feeling confident did not feel as if they needed as much support from their mentors. Differentiating the level of support based upon the needs of the teachers may yield positive results in the area of relationship development, increased satisfaction with the mentoring experience, and improved professional practice.

Quality of interactions

Overall, teachers described their interactions with their mentors as surface-level and impersonal. Despite describing their mentors very positively, two of the six teachers could not remember their mentor's name. Of the teachers interviewed, only one teacher referred to her mentor by name in the interviews. She is the only interview participant who had a previously existing relationship with her mentor.

Qualitative data analysis revealed that teachers' perceptions about the quality of their mentoring interactions could be categorized in three different ways: the virtual format, relationships and trust, and the presence of other cohort members.

Virtual Format

Early research in the field of e-mentoring, which predates the ubiquity of video conferencing software, indicated concerns regarding the impersonal nature of the medium

itself (Ensher & Murphy, 2007; Single & Single, 2005). Some of these concerns were proven to be unfounded as contemporary studies have found that virtual mentoring can offer the same opportunities for trust and authentic relationships as in-person mentoring, though the functions may differ (Gregg, Galyardt, & Todd, 2015; Hodges, Payne, Dietz, & Hajovsky, 2014). Some have advocated for the use of video conferencing as a potential solution for the impersonal nature of computer-mediated communication (Neely et al., 2017; Redmond, 2015). Zoom video conferencing was used as the primary mode of communication in the NTI2 program, yet teachers still described feeling "separated", "removed", or "closed off" from their mentoring groups. For the teachers in this study, the use of video conferencing tools did not eliminate their feelings of separation or distance from their mentor. In some cases, the teachers explicitly ascribed their feelings of distance to the virtual format using such language as "the screen that separates" or "behind a screen." These teachers also mentioned difficulties reading body language and visual cues and discerning tone in their interactions.

In addition to adding a more impersonal feel to teachers' interactions with their mentors, the virtual format of teachers' interactions also made it challenging for mentors from a facilitation standpoint. Much of the literature in the area of virtual mentoring assumes that the synchronous sessions are transpiring in a one-on-one format. Though, even in the context of facilitating one-on-one video conferencing sessions, the research is clear on the need for specific training on the technical and facilitation aspects of virtual mentoring (Fletcher, 2007; French et al., 1999; Johnson & Brown, 2017; Neely et al., 2017). In the context of group mentoring facilitated online, the need for virtual facilitation skills becomes even more critical. Though there is little in the literature as it

specifically pertains to virtual group mentoring, there is a considerable amount of research in the related areas of online and distance learning. Phelps and Vlachopoulous (2019) identified the need for specific training and skills in technical and operational skills including the software, hardware, and applications used to facilitate the sessions. They also recommended training and support in the cultivation of communication skills such as positive communication strategies, explicit group expectations, and awareness of the different communication tools on the platform. Bower (2011) identified four levels of synchronous competencies for both teachers and students including operational, interactional, managerial, and design. Bower makes the important observation that users must know more than just the basic operational requirements of the tools being used for success. Users must be able to identify the affordances of the tools and how they work in conjunction with other systems or applications in use. At the outset of the NTI2 experience, mentors received a brief training on the video conferencing software. Most of the participants had little to no experience using video conferencing tools beyond limited personal use. While they mastered the basic operational skills, many lacked the interactional skills outlined by Bower. A few examples of the facilitation challenges encountered within the NTI2 program follow.

Instead of one-on-one mentoring sessions, all six teachers participated in group video conference sessions. Teachers shared that the presence of multiple users in the video call made it difficult to tell who was speaking. Also, if multiple participants chose to use their cameras, the gallery view made the images appear small and difficult to see. One of the primary reasons for the recommendation of video conferencing in virtual mentoring is the richness of the medium, specifically the ability to read body language

and discern visual communication cues (Redmond, 2015). The presence of multiple users on the calls and the lack of clear facilitator instruction on how to mitigate this issue detracted from the richness of the medium for some of the teachers in this study.

Another challenge presented by the virtual facilitation of group mentoring relates to the natural conversational flow. When meeting in small groups in an in-person setting, it is customary for side-bar conversations to develop. For example, if the group is discussing an issue and one person needs a bit more clarification, people can talk amongst themselves while the issue is being resolved. The virtual environment is not conducive to this natural conversational structure. One teacher shared her frustrations with this constraint as she felt that it made the meetings less productive for everyone on the call. Other teachers expressed a reluctance to jump into the conversation at the risk of potentially interrupting their peers. One teacher shared that she wished her mentor had utilized some of the tools built into the platform to assist with virtual facilitation. The example she provided was the "raised hand" icon so that people could share without inadvertently talking over one another. To that same point, lags in the video conferencing software can occur which makes it difficult to know when to begin speaking. This lag does not occur in natural conversation, so conversations facilitated virtually can feel stilted or formal.

To offset some of these challenges, some mentors utilized a turn-taking structure to ensure that everyone had a chance to talk and to eliminate any conversational overlap. Teachers described the turn-taking conversational structure as very formal and like a "college class" instead of a more organic conversation with peers. The use of virtual facilitation strategies made the conversations feel unnecessarily formal, perhaps further

contributing to teachers' descriptions of their interactions as surface-level and impersonal. Though, by contrast, the absence of facilitation strategies and norms led to unproductive meetings in which little content was shared. While teachers generally enjoyed the small group, cohort-based structure of their interactions, it led to facilitation challenges on behalf of the mentors.

Another concern or limitation to a positive virtual mentoring experience described by Ensher and Murphy (2007) is the impact of technology challenges on virtual mentoring relationships. It is thought that higher levels of comfort with technology or increased levels of computer self-efficacy can improve teachers' experiences with virtual mentoring (DiRenzo et al., 2010; Ensher & Murphy, 2007; Neely et al., 2017; Panopolous & Sarri, 2013). Early research in the area describes initiatives and programs plagued by seemingly endless technology issues that negatively impacted teachers' experiences and, in some cases, derailed the programs entirely (Panopoulos & Sarri, 2013). While some of the teachers described constraints presented by the virtual medium and the tools themselves, none of the teachers in this study described technical challenges emerging during their meetings. Given its presence in the literature, it was surprising that technical problems or issues were not mentioned once throughout the course of the interviews. It is possible that the sophistication of the tools and availability of bandwidth have increased since the emergence of virtual mentoring. Alternatively, it is also possible that teachers are simply more comfortable with technology and, as such, are more forgiving of technical challenges as they emerge.

Relationships and Trust

Five of the six teachers interviewed for this study described difficulties in establishing rapport, building relationships, and, as a result, cultivating trust with their mentors. While the teachers interviewed attributed some of this to the virtual medium of the mentoring relationship, they also shared that the frequency of the interactions made it challenging to establish trust with their mentors. The literature has not explicitly quantified a target number of contacts between a mentor and mentee, but the increased frequency of mentoring interactions has been found to be linked to teachers' overall acceptance of virtual mentoring and increased satisfaction with the mentoring relationship (Alemdag & Erdem, 2017; Chong et al., 2020; DiRenzo et al., 2010; Spanorriga et al., 2018). Two of the NTI2 teachers described their interactions with their mentors as "inconsistent" and "sporadic". Coupled with the fact that teachers were on the video call with other members of the cohort, the teachers shared that the infrequent mentoring meetings did not provide them with sufficient time to establish rapport in the mentoring relationship.

The impersonal nature of the mentoring relationships led teachers to describe their mentors as a "resource" or "support" rather than a confidant or a trusted colleague. In this way, the mentor served to function as an on-demand advisor or a consultant rather than a mentor. Instead of engaging in deeper, reflective conversations about their practice, teachers viewed their mentors more as on-the-job support and facilitators. While this is not inherently negative, it is a departure from the more relationally-driven role of the mentor as defined in the traditional mentoring literature.

The difficulty building relationships and establishing trust also had an impact on teachers' willingness to discuss difficulties, challenges, or insecurities with their mentoring groups. Kram (1985) stated that trust is a critical factor of any mentoring relationship as it helps mentors to cultivate a safe space for mentees to discuss their challenges, frustrations, and weaknesses. This level of vulnerability, defined as "the ability to seek help and expertise with no loss of self-esteem" (Fletcher, 1999, p. 168) is a "necessary condition for the development of a more rewarding mentoring relationship" (Kram and Cherniss, 2001, p. 270). A lack of trust and vulnerability in mentoring relationships inhibits open, candid communication that may lead to increased self-efficacy among the teachers.

The NTI2 program would benefit from increased interactions in the early stages of the mentoring relationships as a mechanism for building trust and rapport. A synthesis of the e-mentoring literature suggested that the frequency of interactions in a virtual mentoring relationship should vary according to the stage of the mentoring relationship with more frequent interactions occurring in the early, formative stages of the relationship (Chong et al., 2020). Similarly, Obura, Brant, Miller, and Parboosingh (2011) found that more frequent interactions early in the mentoring relationship permitted more opportunities to build trust and rapport.

Cohort Structure

One new finding that emerged in the teacher interviews was a change to the mentoring structure. Each mentor was assigned a group of mentees in the same grade level or content area. Originally, it was expected that the mentor would meet with teachers individually on a regular basis with periodic group meetings. Throughout their

experience in the NTI2 program, teachers met with their mentors in small groups alongside their peers almost exclusively, creating a group mentoring experience.

While the teachers generally described this experience favorably, it also introduced some challenges in relation to teachers' interactions with their mentors. First, teachers shared that the number of participants on the call introduced management challenges from a facilitation perspective. Mentors were required to facilitate conversational turn-taking to ensure that everyone had a chance to share. This led to a more formal and structured session. Some teachers found that comforting because it was "like a college class" while others found the formality to be intimidating because the sessions felt more evaluative in nature. In addition to changing the conversational flow and structure of the sessions, the presence of others on the call also introduced time challenges. Some teachers shared that they did not have time to discuss things at depth because there were too many people sharing.

The presence of other cohort members also impacted teachers' willingness to share true challenges or areas of weakness on the calls. While teachers appeared comfortable venting with their peers, they expressed reluctance in sharing true problems or anything that could be perceived as a weakness or problem in their teaching. In their examination of an e-mentoring program employing group mentoring with novice teachers, Spanorriga, Tsiotakis, and Jimoyiannis (2018) found that teachers expressed "reluctance and caution" to expose themselves in sessions with their peers. This reluctance may have limited the true benefit of the mentoring relationship as teachers were unwilling to discuss areas they were truly struggling with in their classroom resulting in a more surface-level discussion of common challenges versus areas of

specific growth for each teacher. This is an important consideration as Wanerg, Welsh, and Kammeyer-Mueller (2007) found evidence of a link between mentee self-disclosure and positive mentoring outcomes.

Content of the Interactions

Kram's (1985) seminal research on mentoring identified two primary mentoring functions including career and psychosocial functions. Drawing upon Kram's research, Ensher and Murphy's (2007) conceptual model for e-mentoring research suggested that the virtual environment is particularly conducive to vocational and psychosocial support, while it is less conducive to role modeling. "Vocational support enhances learning and provides assistance in career advancement, while psychosocial support enhances protégés' sense of competence, clarity of identity, and effectiveness in a professional role" (Murphy, 2011, p. 610). Psychosocial support also encompasses "acceptance or confirmation, counseling, and friendship" (Murphy, 2011, p. 610). This observation is in alignment with the ways in which teachers described the content of their interactions with their mentors. Data analysis revealed that the content of teachers' mentoring sessions centered around job responsibilities, district initiatives, resource sharing, and venting. As such, the majority of teachers' mentoring interactions were related to the career or vocational functions with less time dedicated to psychosocial functions. These observations will be explored in more depth below.

The topics of job responsibilities, district initiatives, and resource sharing all relate to the concept of vocational support. Teachers described interactions that helped them to make sense of their new roles and provided specific tools and strategies for

handling challenges that emerged in the classroom. One of the primary goals of new teacher induction (NTI) programs is to:

> aid new practitioners in adjusting to the environment, to familiarize them with the concrete realities of their jobs, to socialize them to professional norms, and also to provide a second opportunity to filter out those with substandard levels of skill and knowledge (Ingersoll et al., 2018, p. 230).

One of the primary goals of new teacher induction programs is to help bridge the gap between pre-service learning and application in the field (Kearney, 2014; Serpell, 2000). Through the integration of interactions centered around vocational topics, the virtual mentoring program helped to achieve the goal of supporting novice teachers in adjusting to their new professional roles.

In addition to discussions centered around vocational support, teachers also shared that their mentoring interactions provided psychosocial support. Kram and Ragins (2007) defined psychosocial functions in mentoring as behaviors that enhance mentees' "professional and personal growth, identity, self-worth, and self-efficacy" and can include such supports as "offering acceptance and confirmation and providing counseling, friendship, and role-modeling" (p. 5). Ensher and Murphy (2007) suggested that virtual mentoring is particularly conducive to this type of mentoring function. They found their mentors to be caring, supportive, and empathetic. As teachers described their interactions with their mentoring groups, teachers shared that venting played a heavy role. Venting, as described by the teachers, included sharing frustrations, challenges, and complaints in their groups. Venting is differentiated from addressing specific classroom challenges or weaknesses in instruction because the purpose of sharing was not to gather strategies or garner feedback on ways in which they could improve their practice, it was

just the act of sharing. While some teachers shared that venting detracted from the amount of time that the group spent discussing real issues, others shared that they found this time immensely helpful as it gave them a chance to share their struggles and relieve the associated frustrations in a safe space. In this way, the venting was a form of psychosocial support rather than a mechanism for true growth. The mentors and their groups provided a listening ear and a sounding board for teachers who may not have another outlet for these frustrations.

While some teachers described psychosocial support from their mentors, teachers' descriptions of their mentoring interactions indicated that the majority of their interactions were related to career or functions. Psychosocial support in a mentoring relationship "build on trust, intimacy, and interpersonal bonds in the relationship" (Kram & Ragins, 2007, p. 5). Given teachers' descriptions of the difficulties that they experienced establishing relationships with their mentors, it is perhaps unsurprising that the content of the mentoring interactions was more career-oriented.

Research Subquestion 2b

The second research subquestion answers: How do teachers describe the ways in which the virtual mentoring experience might relate to their practice in the areas of student engagement, instructional strategies, and classroom management?

The teachers interviewed described limited changes in their practice in the area of student engagement with more examples of positive changes in both instructional strategies and classroom management. Teachers shared that the primary changes in their practice emerged as a result of the content of the conversations in their mentoring

sessions and their willingness to implement and reflect upon the new strategies in their own classrooms.

Content of Interactions

This study found that the content of the teachers' mentoring interactions shaped teachers' descriptions of the changes to their practice. Hawkinson and Cannatta (2009) highlighted the importance of the content shared during the mentoring sessions as it constitutes a critical process in mentoring. Similarly, Polikoff, Desimone, Porter, and Hochberg (2015) asserted that "the characteristics and content of mentoring activities represent the means through which mentoring policies influence teacher outcomes and student learning" (p. 79). This study confirms this notion, suggesting that, for the teachers in this study, the content of the mentoring interactions had an influence on changes to their instructional practice.

To this point, teachers described little to no conversation in the area of student engagement within their mentoring groups. When asked to describe their understanding of student engagement, teachers varied in their understanding of the principle. Some teachers described student engagement simply as motivation or generating excitement for learning, while others described student engagement as compliance with the teacher's directive. The teachers' responses indicated a lack of clarity about the topic of student engagement. As such, it is possible that the topic did not come up in conversation because teachers were self-conscious or lacked understanding of the topic. Half of the teachers described their reluctance to share with their mentoring groups out of embarrassment or a fear of judgement or evaluation. This points to the topic of self-disclosure.

There is conflicting information on the topic of disclosure in virtual mentoring relationships. Some studies found that mentees are more likely to disclose information in a virtual setting due to the impartiality of their mentor (Bierema & Merriam, 2002; Neely et al., 2017; Panopolous & Sarri, 2013) While other findings suggested a reluctance to share areas of challenge or weakness (Shpigelman, Weiss, & Reiter, 2009; Spanorriga et al., 2018). Admitting a lack of understanding or confidence in an area requires a considerable amount of vulnerability and, given teachers' descriptions of the challenges establishing trust in their mentoring groups, it is possible that they were not comfortable discussing a topic that they did not understand well. Whatever the reason for its absence in the mentoring conversations, it is clear that student engagement was not an area of focus in the mentoring sessions these teachers attended. As a result, they did not have much to share with regard to how the mentoring experience changed their practice in this area.

Teachers in this study described spending the majority of their time on classroom management topics. Similar to the findings in this study, Hong and Matsko (2019) explored mentoring in the context of a New Teacher Induction program and found that teachers' interactions and conversations were heavily focused on classroom management. This is unsurprising as classroom management is a well-documented challenge and area of concern for novice teachers (Bressman et al., 2018; Serpell, 1999; Veenman, 1984). Teachers also described increased interactions in the areas of instructional strategies and classroom management, and accordingly, they also shared more tangible examples as to how their mentoring experience impacted their work in the classroom.

Teachers described the content of the mentoring interactions as the main determinant of changes in their instructional practice, but another point emerged in the interviews: the role of personal responsibility. In this case, personal responsibility pertains to the maintenance of the mentoring relationship, willingness to share and discuss areas of need, and the implementation of new strategies and ideas. It is insufficient to simply discuss new strategies and share resources, teachers must implement the strategies in their classrooms.

Personal Responsibility

Personal responsibility is mentioned fairly infrequently in the virtual mentoring literature. Ambrosetti and Dekkers (2010) identified the critical roles of the mentee, stating that the relationship is "a mutual relationship, the mentee has an equally important role to that of the mentor" (p. 49) and suggests that mentees should be active participants as evidenced by being open in their communication, performing necessary tasks, and documenting their own progress. In a case study of an asynchronous online mentoring program with pre-service teachers, Fong, Zakaria, and WanMansor (2013) found that the role of the mentee as an active participant was critical in ensuring a more effective and reciprocal relationship. Similarly, in their analysis of two virtual mentoring programs, Owen and Whalley (2017) found that mentees must assume a high level of responsibility and initiative for their own learning in the virtual mentoring relationship. Active participation in the experience is a manifestation of a mentee's personal responsibility for their learning and growth.

One of the stated objectives of the program was to provide teachers with scaffolded support as they transitioned into the profession. In their first year in the

district, teachers are offered regularly scheduled face-to-face mentoring, but in the second year, that scaffold is removed and the support is lessened with the integration of virtual mentoring opportunities in lieu of the face-to-face option. The NTI2 mentors provided open access and availability, but outside of the regularly scheduled group sessions, teachers were required to reach out as needed.

Schunk and Mullen (2016) asserted that this transition to a more "self-empowered learner" who is capable of taking responsibility for problem-solving and reflecting on decisions made and able to translate those skills into future teaching situations is an outcome of positive mentoring relationships. In this way, the program was effective in that teachers knew that they had regular access to a caring and supportive mentor, but ultimately, they recognized that it was their responsibility to ask for help and implement the guidance and suggestions offered.

Ultimately, a mentoring program is only as effective as the participants' willingness to engage and participate with their mentors. Relatedly, teachers' practice only changed when they engaged in the sessions and actually implemented the strategies and tools they discussed.

Virtual Mentoring as an Avenue for Constructing Self-Efficacy

The content of the mentoring interactions, coupled with teachers' willingness to implement the new strategies in the classroom and reflect upon them, led to self-reported changes in confidence and teachers' classroom practice. Bandura (1997) described four sources of efficacy beliefs including mastery experiences, vicarious experiences, social persuasion, and physiological and affective states. For some teachers, the content of the mentoring interactions served as a springboard for the creation of new mastery

experiences in the classroom. Mastery experiences have been found to be the primary source of teachers' self-efficacy beliefs (Bandura, 1997; Tschannen-Moran & Woolfolk-Hoy, 2007; Moulding et al., 2014). The mentoring experience permitted teachers to experiment with new strategies in the classroom and report back on their challenges and successes.

Typically, novice teachers have not had as many opportunities for mastery experiences as their more experienced colleagues, so they benefit more from learning from others than experienced teachers (Tschannen-Moran & Woolfolk-Hoy, 2007). Bandura (1997) describes learning from experiences of others as vicarious experience. In the NTI2 experience, teachers shared that their mentors provided them with strategies, ideas, and resources to implement in the classroom. While they found their interactions with their mentors helpful, the teachers in this study teachers in this study derived more meaning from their interactions with their peers than with their mentors. This is in alignment with Spanoorriga, Tsiotakis, and Jimoyiannis's (2018) finding that teachers considered "peer interaction and mutual support, as well as their collaboration with colleagues as the most important and influential factor" in their mentoring experience (p. 7).

The integration of the group mentoring cohort structure offered teachers an opportunity to build confidence or self-efficacy through the experiences of peers. This is particularly important as vicarious experiences are found to be more effective when the observer identifies more closely with the model (Tschannen-Moran & Woolfolk-Hoy, 2007). In the case of the NTI2 program, the cohort structure offered teachers a group of their peers, who were all facing similar challenges in their roles. Teachers described

listening to other teachers in their cohorts and “feeling better” about their own experiences and struggles. They noted that they took comfort in hearing about the challenges that their cohort teachers faced because it made them feel less alone in their struggles. Teachers reported listening to the challenges that their peers faced bolstered their confidence.

In addition to providing teachers with opportunities to learn vicariously, the NTI2 program also offered opportunities for building self-efficacy in the form of social persuasion. Bandura (1994) noted that social persuasion is often the least impactful of the four different sources of efficacy beliefs, but when partnered with vicarious experiences and mastery experiences, it can be a helpful tool. In an analysis of changes in pre-service teachers’ self-efficacy, Pfitzner-Eden (2016) found that positive feedback from a mentor had a significant positive impact on the development of teachers’ self-efficacy. The teachers shared that their mentors provided feedback and encouragement in response to their challenges and frustrations. The teachers shared that these interactions bolstered their confidence and self-efficacy in job-critical areas such as classroom management and instructional strategy usage. In this way, the NTI2 program offered teachers an opportunity to build their efficacy beliefs through their reflection on mastery experiences, vicarious experiences of their peers, and feedback from their colleagues and mentors.

Implications

This study highlighted several implications for future program design including the need for more consistent program policies and expectations for mentors and mentees, more intentional relationship building between the mentor and the mentees, further mentor training, and the presence of building support. The study also highlighted the

value of ensuring similarity between the mentor and the mentees, the flexibility of a virtual offering, and the power of the peer cohort structure in creating both community and opportunities to build self-confidence or self-efficacy in novice teachers.

Inconsistent policies and program implementation have long plagued education-based mentoring programs (Polikoff et al., 2015). While most districts recognize the value in facilitating mentoring relationships for novice teachers, they encounter many obstacles in the implementation of such programs. Teachers' descriptions of their experiences in the NTI2 program indicate that more consistency in the program implementation may benefit both the mentors and the teachers. Clear expectations surrounding the required number of meetings, opportunities for one-on-one sessions as needed, and additional structure to the experience may offer teachers increased opportunities for growth. Each mentor appeared to handle their mentoring group differently which led to inconsistencies in the availability of support for teachers.

Teachers expressed a desire for more intentional relationship building with their mentors. Given that the mentors are located within the district, the teachers were interested in meeting during district in-services to establish rapport. To the extent that it is possible, teachers would prefer a blended approach to relationship building. For example, the mentors were on-site during one of the initial face-to-face sessions, but they did not have an opportunity to meet their mentees. One teacher stated that she wished that they had been required to have lunch together or attend a session with her mentor so that they would have some familiarity before diving into the mentoring sessions. This was a common refrain among the teachers that could possibly be addressed during the back to school orientation sessions for NTI2 participants.

Another recommendation that emerged from the teachers' experiences relates to additional mentor training. Given that teachers met in small groups instead of one-on-one sessions, two teachers mentioned facilitation issues that could be addressed by further training for the mentors. This is in alignment with Fletcher's (2007) recommendation that virtual mentors need specific training in facilitation skills, not just basic mentoring functions. Virtual facilitation strategies include things like deeper training in the technology medium, troubleshooting skills, and best practices for group facilitation using computer-mediated communication tools (Bower, 2011). These facilitation tools may permit mentoring groups to leverage their time more efficiently.

While the study highlighted some practical recommendations for possible programmatic changes, it also highlighted some of the programming successes, one of which being mentor selection. Regardless of their perceptions of the program as a whole, the teachers shared overwhelmingly positive feelings about their mentors. They appreciated their mentor's accessibility and transparency. They also shared how much they valued the fact that the mentors were classroom teachers, just like them. Ensher and Murphy (2007) noted that perceived similarity is a moderator of an effective mentoring relationship. Other studies have reinforced the importance of this finding (Murphy, 2011; Polikoff et al., 2015). Mentor and mentee similarity was perceived as positive attribute of the program as teachers expressed that they felt their mentor could share more helpful information and truly understand the challenges that they were facing in the classroom since they were going through it too.

Teachers shared overwhelmingly positive feedback about their mentors, but they valued the connections with their peers even more. Though the presence of peers

sometimes limited authentic and open communication with their mentors and introduced management challenges, teachers described the cohort component of the program very favorably. Teachers enjoyed hearing from others, collaborating and sharing resources, and building some familiarity with peers that they encountered in other trainings within the district. The cohort experience added more opportunities to build self-efficacy through vicarious experiences and social persuasion. It even provided a space for some beginning teacher leadership as more proficient or confident teachers had an avenue for sharing ideas and suggestions with their peers. Ultimately, the cohort component of the program was perceived as extremely beneficial and positive for the program participants interviewed.

The integration of the cohort component also addressed a specific need that emerged within the study. The presence, or perceived lack thereof, of building support, impacted teachers' satisfaction with the program, their perceived need for additional mentoring support, and their level of engagement and participation. Some teachers described working in a building with a supportive administrator and a collaborative and welcoming team. These teachers were less inclined to describe their experiences positively because they felt adequately supported within their own building and teams, making the virtual mentoring experience feel like "one more thing to do." Alternatively, others described feelings of loneliness or isolation in their teaching placement. These feelings emerged as a result of poor relationships with building administrators, insular or cliquey grade-level teams, or simply being the only teacher assigned to a specific content-area or placement in a building. For the teachers interviewed who reported feelings of isolation or loneliness in their roles, the virtual mentoring experience was positive

because it gave them an opportunity to collaborate, share, and connect with peers in a similar situation. In their investigation of online communities for new teachers, Hur and Brush (2009) found that an online community helped reduce teachers' feelings of isolation. Similarly, Taranto (2011) explored the integration of an online community in the context of a New Teacher Induction program. He found that the presence of an online space to discuss challenges and needs helped to reduce feelings of isolation amongst NTI participants.

In addition to the implications for program administration and development, this study also highlighted the potential of one other benefit for districts - faster diffusion of innovation. Teachers described conversations related to organizational change including the implementation of a new elementary reading program and major changes to the grading system. Teachers shared that their mentors served as guides and advocates for these changes as the teachers did not always have people that they could reach out to in their buildings. For instance, one teacher shared that the veteran teachers in her building were not supportive of the district's new ELA program implementation. As a result, they did not have a place to discuss their needs or ideas outside of the mentoring program. By positively representing and supporting the rollout of district initiatives, mentors can help create a broader and more rapid rollout of district initiatives and innovations. This is one area in which further research could illuminate the organizational benefits of a virtual mentoring program.

Limitations

In interpreting and analyzing the implications of this study, several limitations need to be considered. First, the overall sample for this study is relatively small with 67

respondents out of the 238 potential participants. The breakdown of the quantitative survey respondents was heavier in the elementary population than at other grade levels. Part of this is related to the fact that the district hired more elementary teachers for the 2018-2019 school year than other grade levels, so the cohort was heavier in that part of the demographic. Another related issue is the representativeness of the interview participants. For this study, teachers indicated their willingness to participate in the interview as part of the quantitative TSES survey. Every teacher who expressed a willingness to participate was contacted, but only six teachers actually completed the interviews. This is a fairly small subset of the overall sample. The demographics of the participants span a number of grade levels, but much like the sample itself, it is heavy in the elementary representation. Also, the teachers who chose to participate in the qualitative interviews represent mid-range and high TSES mean scores. None of the survey respondents whose TSES scores fell in the "low" range chose to participate in the interviews.

The researcher's objectivity may be a limitation of the data set. The researcher is not employed by the school district and is not affiliated with the NTI2 program directly. While she supported the mentor onboarding training in Fall 2019, she was not in contact with or visible to the program participants. It is possible that this impartiality, which was mentioned during the interview process, was an advantage as it permitted teachers to share their experiences more freely, but a lack of trust borne from a lack of familiarity, may have influenced the teachers' responses to the interview questions.

Other potentially relevant variables include the urban nature of the school district, the timing of the data collection, and the impact of COVID-19. In March of 2020, the

onset of a global pandemic shifted education from face-to-face instruction to remote learning. This has potential implications for teachers' self-efficacy scores as teaching in a remote environment is a very different experience for most teachers. COVID-19, the pandemic response, and remote teaching were not explicitly mentioned by the researcher. Teachers were instructed to "consider their classroom experience" and approach the questions on the survey, so this is a possible limitation to the study. Another limitation arising from the COVID-19 response relates to teachers' comfort level with and exposure to video conferencing software. Teachers had limited professional exposure to video conferencing tools at the beginning of the year, this experience greatly increased by the end, so this may have impacted teachers' reflections on the technology in the program. Again, this was not explicitly addressed with the teachers in the interview. The potential impact of this shift was not explored within the scope of this study and may serve as a study limitation.

Recommendations for Future Research

The scope of this study was limited to the lived experience of a small group of teachers. The results indicate several areas for future research in the area of virtual mentoring. Future research questions arising from this study include investigations into the relationship between teachers' self-efficacy, commitment, and satisfaction in the mentoring relationship, cultivating trust in virtual relationships, and virtual group mentoring.

Predictors of a successful virtual mentoring relationship include increased frequency of interactions, the perceived similarity in the mentoring dyad, the presence of trust, and a positive interpersonal relationship (Ensher & Murphy, 2007; Neely et al.,

2017). The results of this study indicated a possible relationship between one's self-efficacy and their overall commitment to and satisfaction with virtual mentoring. These observations are purely qualitative but further quantitative research could explore self-efficacy as a predictor of successful mentoring relationships.

Previous research indicates that trust is a critical component of a successful mentoring relationship (Evans, 2018; Kram, 1985). One of the primary challenges that teachers described in their mentoring relationships was difficulty building trust and rapport with their mentor. This was connected to the frequency of interactions, the medium, and the presence of other cohort members on the video calls. Given its importance in effective mentoring, it is vital to understand how mentors might cultivate trust and rapport in exclusively virtual relationships. Further research into both the use of synchronous tools, such as video conferencing software and the optimal frequency of interactions would be beneficial for future virtual mentoring programs.

At the outset of this study, the cohort structure seemed to be more of a logistical constraint designed to help pair teachers with a similarly-placed mentor. The researcher was under the assumption that most of the teachers would meet with their mentors in a one-on-one video conferencing session with occasional group sessions. Over the course of the interviews, it became apparent that teachers met with their mentors almost exclusively in a group setting. As a result, the cohort structure ended up playing a more significant role than originally planned. Additional research into the potential benefits of virtual group mentoring for novice teachers may yield helpful insights for districts seeking to provide educators with authentic support in the classroom. Relatedly, the virtual group mentoring structure introduced facilitation concerns for mentors.

Researchers (Ensher & Murphy, 2007; Fletcher, 2007; Polikoff et al., 2015) have pointed out the importance of mentor training on mentoring outcomes. This study also indicates a need for further research into the specific types of skills necessary for mentors in a virtual group mentoring setting.

Conclusion

The purpose of this study was to explore the self-efficacy and perceptions of virtual mentoring of teachers participating in a NTI program. The findings of this study highlight the importance of teachers' mentoring interactions indicating that the frequency, quality, and content of the interactions were important elements in teachers' descriptions of changes to their classroom practice and their satisfaction with their mentoring relationship. The study also pointed to the promising potential of virtual group mentoring and the importance of personal responsibility in the mentoring relationship.

For the teachers in this study, the content of the mentoring interactions served as the most important part of the mentoring experience. The interactions were primarily career-oriented in nature, though some teachers mentioned helpful psychosocial support. Teachers described feelings of increased confidence and changes in their classroom practice based upon the topics covered in their mentoring groups.

The cohort structure and the integration of group mentoring was another positive attribute of the program structure. Teachers reported experiencing a sense of community and support from their peers that, in some cases, extended beyond the virtual mentoring environment. The cohort structure also offered some teachers an opportunity for early leadership experiences through the ability to share their own learning and experiences with peers who were struggling. Teachers appreciated the diversity of voices, placements,

and experiences that they were exposed to through the group mentoring experience. While this experience was generally perceived positively, this study found that the facilitation of group mentoring virtually can introduce logistical constraints that are not present in one-on-one sessions.

New Teacher Induction programs are designed to acculturate new teachers in and help them bridge the gap from the pre-service to in-service teaching with the end goal of increased retention (Ingersoll & Strong, 2011). Mentoring is one of the primary mechanisms used in this endeavor as mentoring provides teachers with personal guidance in navigating new professional challenges. Four of the teachers in the study described strong internal support systems within their buildings. Two did not. The virtual mentoring program offered ongoing support and community for otherwise isolated new teachers. This is in line with findings that virtual mentoring can reduce feelings of isolation, enable stronger peer connections, and increase organizational commitment (Johnson & Brown, 2017). By providing those teachers who might otherwise slip through the cracks with additional support and community, the virtual mentoring experience helped to achieve its goals for the teachers interviewed in this study in a relatively low-impact way for the organization.

Ultimately, teachers' self-efficacy has been linked to retention, job satisfaction, and effectiveness (Holzberger, Phillip, & Kunter, 2012; Skaalvik & Skaalvik, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001). Bandura (1997) described four sources of efficacy beliefs including mastery experiences, vicarious experiences, social persuasion, and physiological and affective states. For the teachers in this study, the virtual mentoring experience provided them with an avenue for constructing efficacy beliefs through

vicarious experiences and social persuasion. Research indicates that self-efficacy is most malleable in the early stages of a teacher's career. As such, districts are well served by the time and money spent in providing teachers with opportunities to cultivate self-efficacy.

REFERENCES

Allegretto, S., & Mishel, L. (2019). The teacher wage penalty hit 21.4 percent in 2018, a record high (Research Report). Retrieved from the Economic Policy Institute website: https://www.epi.org/publication/the-teacher-weekly-wage-penalty-hit-21-4-percent-in-2018-a-record-high-trends-in-the-teacher-wage-and-compensation-penalties-through-2018/

Alemdag, E., & Erdem, M. (2017). Designing an e-mentoring program for novice teachers in Turkey and investigating online interactions and program outcomes. Mentoring & Tutoring: Partnership in Learning, 25(2), 123-150. https://doi.org/10.1080/13611267.2017.1327394

Alliance for Excellent Education. (2014). On the path to equity. https://all4ed.org/reports-factsheets/path-to-equity/

Ambrosetti, A. & Dekkers, J. (2010). The interconnectedness of the roles of mentors andmentees in pre-service teacher education mentoring relationships. Australian Journal of Teacher Education, 35(6). https:// doi.org/10.14221/ajte.2010v35n6.3

Armor, D. J., Conry-Oseguera, P., Millicent Cox, N., King, J., McDon-nell, L. M., Pascal, A. H., et al. (1976). Analysis of the school preferred reading program in selected Los Angeles minority schools. Report No. R-2007 LAUSD. Santa Monica:RAND Corporation.

APA Dictionary of Psychology. (2020). Confidence. In APA Dictionary of Psychology. Retrieved on March 18, 2020, from https://dictionary.apa.org/self-confidence

Bacon, J. B. (2020). New teacher induction: Improving teacher self-efficacy. [Doctoral dissertation, University of Kentucky]. Theses and Dissertations – Educational Leadership Studies.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychological review, 84(2), 191. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71-81). New York: Academic Press.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W. H. Freeman & Company.

Berman, P., & McLaughlin, M. W. (1977). Federal programs supporting educational change, Vol: Factors affecting implementation & continuation (Report No. R-1589/7 HEW). Santa Monica, CA: Rand Corporation.

Berry, B., & Shields, P. (2017). Solving the teacher shortage: Revisiting the lessons we've learned. Phi Delta Kappan, 98(8), 8-18. https://doi:10.1177/0031721717708289

Betoret, F. D. (2006). Stressors, self-efficacy, coping resources, and burnout among secondary school teachers in Spain. Educational Psychology, 26, 519-539. doi:10.1080/01443410500342492

Bierema, L., & Merriam, S. (2002). E-mentoring: Using computer mediated communication to enhance the mentoring process. Innovative Higher Education, 26(3), 211-227. https://doi.org/10.1023/A:1017921023103

Bower, M. (2011). Synchronous collaboration competencies in web-conferencing environments – their impact on the learning process. Distance Education, 32(1), 63-83. https://doi.org/10.1080/01587919.2011.565502

Breaux, A., & Wong, H. (2003). New teacher induction: How to train, support, and retain new teachers. Mountain View, CA: Harry K. Wong Publications.

Bressman, S., Winter, J., & Efron, S. (2018). Next generation mentoring: Supporting teachers beyond induction. Teaching and Teacher Education, 73, 162-170. https://doi:10.1016/j.tate.2018.04.003

Brennan, S.E., & Lockridge, C.B. (2006). Computer-mediated communication: A cognitive science approach. In K. Brown (Ed.). ELL2. Encyclopedia of Language and Linguistics (2nd ed.; pp. 775-780). Oxford: Elsevier.

Brock, B., & Grady, M. (2000). Rekindling the flame: Principals combating teacher burnout. Thousand Oaks, CA: Sage Publications.

Carver-Thomas, D. & Darling-Hammond, L. (2017). Teacher turnover: Why it matters and what we can do about it. Palo Alto, CA: Learning Policy Institute.

Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol refinement framework. The Qualitative Report, 21(5), 811-831. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss5/2

Castro, A., Quinn, D., Fuller, E., & Barnes, M. (2018). Addressing the importance and scale of the U.S. teacher shortage (Policy brief 2018-1). Retrieved from https://files.eric.ed.gov/fulltext/ED579971.pdf

Chester, M. D., & Beudin, B. Q. (1996). Efficacy beliefs of newly hired teachers in urban schools. American Educational Research Journal, 33(1), 233-257. https://doi.org/10.3102/00028312033001233

Chong, J.Y., Ching, A.H., Reganathan, Y., Lim, W.Q., Toh, Y.P., Mason, S., & Krishna, L. (2020). Enhancing mentoring experiences through e-mentoring: a systematic scoping review of e-mentoring programs between 2000-2017. Advances in Health Sciences Education, 25, 195-226. https://doi.org/10.1007/s10459-019-09883-8

Clark, H.H., & Brennan, S.E. (1991). Grounding in communication. In L.B. Resnick, J.M. Levine, & S.D. Teasley (Eds.), Perspectives on socially shared cognition (p.127-149). American Psychological Association. https://doi.org/10.1037/10096-006

Clark, S. K. & Byrnes, D. (2012). Through the eyes of the novice teacher: perceptions of mentoring support. Teacher Development, 16(1), 43-54. https://doi.org/10.1080/13664530.2012.666935

Coleman, J.S., United States, & National Center for Education Statistics. (1966). Equality of educational opportunity [summary report].

Collins, J. L. (1982). Self-efficacy and ability in achievement behavior. Paper presented at the annual meeting of the American Educational Research Association, New York.

Cothran, D., McCaughtry, N., Faust, R., Garn, A., Kulinna, P. H., & Martin, J. (2009). E-mentoring in physical education. Research Quarterly for Exercise and Sport, 80(3), 552-562. https://doi.org/10.1080/02701367.2009.10599593

Creswell, J. W. (2007). Qualitative inquiry and research design: Choosing among five traditions, second edition. Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2014). Educational research: Planning, conducting, and evaluating quantitative and qualitative research, 5th edition. Upper Saddle River, NJ: Pearson Education, Inc.

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research. (3rd. Ed.). Thousand Oaks, CA: SAGE

Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods designs. In A. Tashakkori & C. Teddlie (Eds.), Handbook of mixed methods in social and behavioral research (pp. 209-240). Sage.

Creswell, J. W. & Poth, C.N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed). Thousand Oaks, CA: Sage Publications.

Croft, M., Guffy, G., & Vitale, D. (2018). Encouraging More High School Students to Consider Teaching. ACT Research & Policy.

Cox, A. (2005). What are communities of practice? A comparative review of four seminal works. Journal of information science, 31(6), 527-540. https://doi.org/10.1177/0165551505057016

Darling-Hammond, L. (2003). Keeping good teachers: Why it matters, what leaders can do. Educational Leadership, 60(8), 6–13.

DeCesare, D., Workman, S., & McClelland, A. (2016). How do school districts mentor new teachers? (REL 2016–125). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central.

Dede, C., Ketelhut, D. J., Whitehouse, P., Breit, L., & McCloskey, E. M. (2009). A research agenda for online teacher professional development. Journal of Teacher Education, 60(1), 8-19. https://doi.org/10.1177/0022487108327554

de Janasz, S., Ensher, E, & Heun, C. (2008). Virtual relationships and real benefits: Using e-mentoring to connect business students with practicing managers. Mentoring and Tutoring: Partnership in Learning, 16(4), 394-411. https://doi.org/10.1080/13611260802433775

Dellinger, A., Bobbett, J., Olivier, D., & Ellett, C. (2008). Measuring teachers' self-efficacy beliefs: Development and use of the TEBS-Self. Teaching and Teacher Education, 24(3), 751-766. https://doi.org/10.1016/j.tate.2007.02.010

Dias-Lacy, S., & Guirguis, R. (2017). Challenges for new teachers and ways of coping with them. Journal of Education and Learning, 6(3), 265-272. http://doi.org/10.5539/jel.v6n3p265

DiRenzo, M. S., Linnehan, F., Shao, P., & Rosenberg, W. L. (2010). A moderated

mediation model of ementoring. Journal of Vocational Behavior, 76(2), 292-305. https://doi.org/10.1016/j.jvb.2009.10.003

Druckman, D., & Bjork, R. (Eds.). (1994). Learning, remembering, believing: Enhancing human performance. National Academy Press.

Eagan, K, Stolzenberg, E. B., Ramirez, J. J., Aragon, M. C., Suchard, M. R., & Hurtado, S. (2014). The American freshman: National norms fall 2014. Los Angeles: Higher Education Research Institute, UCLA.

Emmer, E. T., & Hickman, J. (1991). Teacher efficacy in classroom management and discipline. Educational and Psychological Measurement, 51, 573-765.

Ensher, E. A., Heun, C., & Blanchard, A. (2003). Online mentoring and computer-mediated communication: New directions in research. Journal of Vocational Behavior, 63, 264-288.

Ensher, E., & Murphy, S. (2007). E-mentoring: Next generation research strategies and suggestions. In B. Ragins and K. Kram (Eds.), The Handbook of Mentoring at Work: Theory, Research, and Practice (pp. 299-322). Los Angeles, CA: Sage Publications.

Espinoza, D., Saunders, R., Kini, T., & Darling-Hammond, L. (2018). Taking the long view: State efforts to solve teacher shortages by strengthening the profession. Palo Alto, CA: Learning Policy Institute.

Evans, C. (2018). Trust and connection in formal, virtual mentoring. International Journal of Evidence Based Coaching and Mentoring, 12, 154-164. https://doi.org/10.24384/000544

Fantilli, R. D., & McDougall, D. E. (2009). A study of novice teachers: Challenges and supports in the first years. Teaching and Teacher Education, 25, 814–825. https://doi.org/ 10.1016/j.tate.2009.02.021

Feng, L., & Sass, T. R. (2017). Teacher quality and teacher mobility. Education Finance and Policy, 12(3), 396-418. https://doi.org/10.1162/EDFP_a_00214

Fletcher, S. J. (2007). Fostering the use of web-based technology in mentoring and coaching. In S.J. Fletcher, & C.A. Mullen (Eds.), The SAGE Handbook of Mentoring and Coaching in Education (pp. 74-88). Thousand Oaks, CA: Sage Publications. https://doi.org/10.4135/9781446247549.n6

Fletcher, S. H., & Strong, M. (2009). Full-release and site-based mentoring of elementary grade new teachers: An analysis of changes in student achievement. The New Educator, 5(4), 329-341. https://doi.org/10.1080/1547688X.2009.10399583

Fong, N.S., Zakaria, M.H., & Mansor, W.F. (2013). Roles of mentees via virtual mentoring. Jurnal Teknologi, 65(2), 133-140. https://doi.org/10.11113/jt.v65.2359

French, D., Hale, C., Johnson, C., & Farr, G. (1999). Internet based learning. London: Kogan Page.

Fry, S. W. (2009). Characteristics and experiences that contribute to novice elementary teachers' success and efficacy. Teacher Education Quarterly, 36(2), 95-110.

Fuller, F. F., Brown, O. H. (1975). Becoming a teacher. In Ryan, K. (Ed.), Teacher education: Seventy-fourth yearbook of the National Society for the Study of Education (pp. 25–52). Chicago, IL: University of Chicago Press.

García, E., & Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought: The first report in 'The perfect storm in the teacher labor market' series (Research Report). Retrieved from the Economic Policy Institute website: https://www.epi.org/publication/the-teacher-shortage-is-real-large-and-growing-and-worse-than-we-thought-the-first-report-in-the-perfect-storm-in-the-teacher-labor-market-series

Gareis, C. R., & Nussbaum-Beach, S. (2007). Electronically mentoring to develop accomplished professional teachers. Journal of Personnel Evaluation in Education, 20(3), 227-246. https://doi.org/ 10.1007/s11092-008-9060-0

Gibson, S., & Dembo, M. (1984). Teacher efficacy: A construct validation. Journal of Educational Psychology, 76(4), 569-582.

Glazerman, S., Isenberg, E., Dolfin, S., Bleeker, M., Johnson, A., Grider, M., & Jacobus, M. (2010). Impacts of comprehensive teacher induction: Final results from a randomized controlled study. Washington, DC: National Center for Education Evaluation and Regional Assistance.

Goldrick, L. (2016). Support from the start: A 50-state review of policies on new educator induction and mentoring (New Teacher Center Policy Report). Retrieved from https://newteachercenter.org/wp-content/uploads/2016CompleteReportStatePolicies.pdf

Grossman, P., & Thompson, C. (2004). District policy and beginning teachers: A lens on teacher learning. Educational Evaluation and Policy Analysis, 26(4), 281–301. https://doi:10.3102/01623737026004281

Gregg, N., Galyardt, A., & Todd, R. (2015). STEM scalable model for enhancing secondary and postsecondary student on-line services. In M. Antona & C. Stephanidis (Eds.), Universal access in human-computer interaction. Access to learning, health and well-being (pp. 77-88). Springer. https://link.springer.com/chapter/10.1007/978-3-319-20684-4_8

Gulamhussien, A. (2013). Teaching the teachers: Effective professional development in an era of high stakes accountability. Alexandria, VA: Center for Public Education.

Guo, Y., Connor, C., Yang, Y., Roerhrig, A., & Morrison, F. (2012). The effects of teacher qualification, teacher self-efficacy, and classroom practices on fifth graders' literacy outcomes. The Elementary School Journal, 113(1), 3-24. https:/doi.org/10.1086/665816

Halford, J. (1998). Easing the way for teachers. Educational Leadership, 55(5), 33-36.

Hanushek, E. A. (2002). Teacher Quality. In L. T. Izumi & W. E. Evers (Eds.), Teacher Quality (1st ed., pp. 1-12). Hoover Institution Press. http://hanushek.stanford.edu/sites/default/files/publications/

Hanushek%202002%20Teacher%20Quality.pdf

Hanushek, E. A., & Rivkin, S. G. (2010). Constrained job matching: Does teacher job search harm disadvantaged urban schools? NBER Working Paper No. 15816. Retrieved from https://www.nber.org/papers/w15816.pdf

Harris, J. (2004). Online support for teacher induction. AACTE Briefs, 25(10), 5-6.

Harris, A. (2019, March 11). The Trump administration really wants to cut education funding. Congress doesn't. Retrieved from: https://www.theatlantic.com/education/archive/2019/03/trump-administration-would-cut-education-budget-again/584599/

Hawkinson, L. E., & Cannata, M. (2009). Conceptualizing and measuring the quality of the mentoring relationship. Paper presented at the annual meeting of the American Educational Research Association, San Diego.

Hodges, R., Payne, E. M., Dietz, A., & Hajovsky, M. (2014). E-sponsor mentoring: Support for students in developmental education. Journal of Developmental Education, 38(1), 12-18.

Holzberger, D., Philipp, A., & Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. Journal of Educational Psychology, 105(3), 774-786. https://doi.org/10.1037/a0032198

Hong, Y., & Matsko, K.K. (2019). Looking inside and outside of mentoring: Effects on new teachers' organizational commitment. American Educational Research Journal, 56(6), 2368-2407. https://doi.org/10.3102/0002831219843657

Huling, L. (2001). Teacher mentoring as professional development. ERIC Digest. Retrieved from ERIC database. (ED460125)

Hunt, J., Powell, S., Little, M., & Mike, A. (2013). The effects of e-mentoring on beginning teacher competencies and perceptions. Teacher Education and Special Education, 36(4), 286-297. https://doi-org.libproxy.boisestate.edu/10.1177/0888406413502734

Hur, J.W., & Brush, T. A. Teacher participation in online communities: Why do teachers want to participate in self-generated online communities of K-12 teachers? Journal of Research on Technology in Education, 41(3), 279-303. https://doi.org/10.1080/15391523.2009.10782532

Ingersoll, R. M., & Smith, T. M. (2004). Do teacher induction and mentoring matter? NASSP Bulletin, 88(638), 28-40. https://doi.org/10.1177/019263650408863803

Ingersoll, R.M., & Strong, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. Review of Educational Research, 81(2), 201-233. https://doi.org/10.1177/003172171209300811

Ingersoll, R. (2012). Beginning teacher induction: What the data tell us. Phi Delta Kappan, 93(8), 47-51. https://doi.org/10.1177/003172171209300811

Ingersoll, R., Merrill, E., Stuckey, D., & Collins, G. (2018). Seven trends: The transformation of the teaching force – Updated October 2018 (CPRE Research Report). Retrieved from the University of Pennsylvania Repository website: https://repository.upenn.edu/cpre_researchreports/108

Jacob, S. A., & Furgerson, S. P. (2012). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. The Qualitative Report, 17, 1-10. Retrieved from http://www.nova.edu/ssss/QR/QR17/jacob.pdf

Johnson, R., & Brown, K. G. (2017). E-learning. In G. Hertel, D. L. Stone, R. Johnson, & J. Passmore (Eds.), Handbook of the psychology of the Internet at work. London: Wiley/Blackwell. https://doi.org/10.1002/9781119256151.ch17

Johnson, R., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33, 14-26. https://doi.org/10.3102/0013189X033007014

Kaefer, F., Roper, J., & Sinha, P. (2015). A software-assisted qualitative content analysis of news articles: Example and reflections. Qualitative Social Research, 16(2), 1–20. https://doi.org/10.17169/fqs-16.2.2123

Kajs, L. (2002). Framework for designing a mentoring program for novice teachers. Mentoring and Tutoring, 10(1), 57-69. https://doi.org/10.1080/13611260220133153

Kapadia, K., Coca, V., and & Easton, J. (2007). Keeping new teachers: A first look at the influences of induction in the Chicago Public Schools. (Research Report). Retrieved from Consortium on Chicago School Research via Eric: https://eric.ed.gov/?id=ED498332

Kasprisin, C.A., Single, P., Ferrier, R.M., & Muller, C.B. (2008). Improved mentor satisfaction: Emphasizing protege training for adult-age mentoring dyads. Mentoring & Tutoring: Partnership in Learning, 16(2), 163-174. https://doi.org/10.1080/13611260801916424

Kearney, S. (2014). Understanding beginning teacher induction: A contextualized examination of best practice. Cogent Education, 1, 1-15. https://doi.org/10.1080/2331186X.2014.967477

Klassen, R. K., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. Journal of Educational Psychology, 102(3), 741-756. https://doi/org/10.1037/a0019237

Klassen, R.M., & Tze, V.M.C. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. Educational Research Review, 12, 59-76. https://doi:10.1016/j.edurev.2014.06.001

Kram, K. E. (1985). Mentoring at work: Developmental relationships in organizational life. Glenview, IL: Scott, Foresman and Company.

Kram, K.E., & Cherniss, C. (2001). Developing emotional competence through relationships at work. In C. Cherniss, & D. Goleman (Eds.), The Emotionally Intelligent Workplace: How to Select for, Measure and Improve Emotional Intelligence in Individuals, Groups, and Organizations (pp. 254-285). San Francisco, CA: Jossey-Bass.

Kram, K. E., & Ragins, B. (2007) The roots and meaning of mentoring. In Kram, K.E. (Ed.), The handbook of mentoring at work: Theory, research, and practice (pp. 5-12). Sage.

Lave, J. (1991). Situating learning in communities of practice. Perspectives on socially shared cognition, 63-82. In L. Resnick, J. M. Levine, & S. D. Teasley. (eds.), Perspectives on Socially Shared Cognition. American Psychological Association 2-63.

Lave, J., & Wenger, E. (1991). Learning in doing: Social, cognitive, and computational perspectives. Situated Learning: Legitimate peripheral participation. Cambridge University Press.

Leachman, M., Masterson, K., & Figueroa, E. (2017). A punishing decade for school funding. Washington, DC: Center on Budget and Policy Priorities.

Marzano, R. J., Pickering, D., & Pollock, J. E. (2001). Classroom instruction that works: Research-Based strategies for increasing student achievement. Alexandria, VA: ASCD.

MentorNet Mission. (n.d.). Retrieved from https://mentornet.org/organization/index.html

Merriam, S. & Tisdell, E. (2016). Qualitative research: A guide to the design and implementation. San Francisco: Jossey-Bass.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2020). Qualitative data analysis: A methods sourcebook (4th ed.). Los Angeles, CA: SAGE Publications, Inc.

Morse, J. M., & Niehaus, L. (2009). Mixed methods design: Principles and procedures. Walnut Creek, CA: Left Coast Press.

Moulding, L.R., Stewart, P.W., & Dunmeyer, M. L. (2014). Pre-service teachers' sense of efficacy: Relationship to academic ability, student teaching placement characteristics, and mentor support. Teaching and Teacher Education, 41, 60-66. https://doi.org/10.1016/j.tate.2014.03.007

Mueller, S. (2004). Electronic mentoring as an example for the use of information and communications technology in engineering education. European Journal of Engineering Education, 29(1), 53–63.

Murphy, W. M. (2011). From e-mentoring to blended mentoring: Increasing students' developmental initiation and mentors' satisfaction. Academy of Management Learning and Education, 10(4), 606-622. https://www.jstor.org/stable/23100434

National Center on Education Statistics (2015). Public School Teacher Attrition and Mobility in the First Five Years: Results From the First Through Fifth Waves of the 2007–08 Beginning Teacher Longitudinal Study, http://nces.ed.gov/pubs2015/2015337.pdf

Neely, A. R., Cotton, J., & Neely, A. D. (2017). E-mentoring: A Model and Review of the Literature. AIS Transactions on Human-Computer Interaction, 9(3), 220-242. Retrieved from https://aisel.aisnet.org/thci/ vol9/iss3/3

Obura, T., Brant, W. E., Miller, F., & Parboosingh, I. J. (2011). Participating in a community of learners enhances resident perceptions of learning in an e-mentoring program: Proof of concept. BMC Medical Education, 11, 3. https ://doi.org/10.1186/1472-6920-11-3

Odden, A., Archibald, S., Fermanich, M., & Gallagher, A. (2002). A cost framework for professional development. Journal of Education Finance, 28(1), 51-74.

OECD. (2005). Teachers Matter: Attracting, Developing and Retaining Effective Teachers, Education and Training Policy, OECD Publishing, Paris, France. https://doi.org/10.1787/9789264018044-en

Owen, C. J., & Solomon, L. Z. (2006). The importance of interpersonal similarities in the teacher mentor/protege relationship. Social Psychology of Education, 9(1), 83–89. https://doi:10.1007/s11218-005-2671-0

Owen, H., & Whalley, R. (2017). A journey within: the virtual mentoring CASE model. Journal of Advances in Education Research, 2(4), 253-264. https://doi.org/10.22606/jaer.2017.24006

Pajares, F. (1996). Self-efficacy beliefs in academic settings. Review of Educational Research, 66, 543-578. https://doi.org/10.3102/00346543066004543

Page, C. S., Pendergraft, B., & Wilson, J. (2014). Examining elementary teachers' sense of efficacy in three settings in the Southeast. Journal of Inquiry & Action in Education, 5(3), 31-41.

Panopoulos, A., & Sarri, K. (2013). E-Mentoring: The adoption process and innovation challenge. International Journal of Information Management, 33(1), 217-226. https://doi.org/10.1016/j.ijinfomgt.2012.10.003

Pfitzner-Eden, F. (2016). Why do I feel more confident? Bandura's sources predict preservice teachers' latent changes in teacher self-efficacy. Frontiers in Psychology, 7, 1486-1505. https://doi.org/10.3389/fpsyg.2016.01486

Phelps, A. & Vlachopoulos, D. (2019). Successful transition to synchronous learning environments in distance education: A research on entry-level synchronous facilitator competencies. Education and Information Technologies, 25, 1511-1527.

Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). Solving the Teacher Shortage: How to Attract and Retain Excellent Educators. Palo Alto, CA: Learning Policy Institute.

Polikoff, M., Desmione, L., Porter, A., & Hochberg, E. (2015). Mentor policy and the quality of mentoring. The Elementary School Journal, 116(1), 76-102. https://doi.org/10.1086/683134

Putman, S. M. (2012). Investigating teacher efficacy: Comparing preservice and in-service teachers with different levels of experience. Action in Teacher Education, 34(1), 26-40. https://doi.org/10.1080/01626620.2012.642285

Ragins, B.R., & Kram, K.E. (Eds.). (2007). The handbook of mentoring at work: Theory, research, and practice. Thousand Oaks, CA: Sage Publications.

Redmond, P. (2015). Discipline specific online mentoring for secondary pre-service teachers. Computers and Education, 90, 95-104. https://doi.org/10.1016/j.compedu.2015.08.018

Reeves, D. (2018). Bolstering the teacher pipeline. Educational Leadership, 75(8).

Reeves, T.D., & Pedulla, J.J. (2011) Predictors of teacher satisfaction with online professional development: Evidence from the USA's e-Learning for Educators Initiative. Professional Development in Education, 37(4), 591-611. https://doi.org/10.1080/19415257.2011.5553824

Rhodes, J., Grossman, J., & Roffman, J. (2002). The rhetoric and reality of youth mentoring. New Directions for Youth Development, 93, 9-20.

Rice, J. K. (2003). Teacher quality: Understanding the effectiveness of teacher attributes (Research Report). Retrieved from the Economic Policy Institute website: https://www.epi.org/publication/books_teacher_quality_execsum_intro/

Richter, D., Kunter, M., Ludtke, O., Klusmann, U., Anders, Y., Baumert, J. (2013). How different mentoring approaches affect beginning teachers' development in the first years of practice. Teaching and Teacher Education, 36, 166-177. https://doi.org/10.1016/j.tate.2013.07.012

Riley, P., & Gallant, A. (2010). Leaving narratives: Teachers tell us why they leave the profession early. Paper presented at the AARE Conference 2010: Making a difference— Celebrating 40 years of educational research, Melbourne, Australia.

Rivkin, S., Hanushek, E., & Kain, J. (2005). Teachers, schools, and academic achievement. Econometrica, 73(2), 417-458. https://doi.org/10.1111/j.1468-0262.2005.00584.x

Roberts, J. K., & Henson, R. K. (2001, April). A confirmatory factor analysis o f a new measure o f teacher efficacy: Ohio state teacher efficacy scale. Paper presented at the annual meeting of the American Educational Research Association, Seattle.

Robinson, G. W. (1998). New teacher induction: A study of selection new teacher induction models and common practices. Paper presented at the annual meeting of the Midwestern Education Research Association, Chicago, IL.

Rockoff, J. E. (2008). Does mentoring reduce turnover and improve skills of new employees? Evidence from teachers in New York City. National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w13868.pdf

Roloff, M. E., & Brown, L. A. (2011). Extra-role time, burnout and commitment: The power of promises kept. Business Communication Quarterly, 74(4), 450-474. https://doi.org/10.1177/1080569911424202

Ronfeldt, M., Loeb, S., & Wyckoff, J. (2013). How teacher turnover harms student achievement. American Educational Research Journal, 50(1), 4-36. https://doi.org/10.3102/0002831212463813

Ronfeldt, M. & McQueen, K. (2017). Does new teacher induction really improve retention? Journal of Teacher Education, 68(4), 394-410. https://doi.org/10.1177/0022487117702583

Saldaña, J. (2016). The coding manual for qualitative researchers (3rd ed.). Thousand Oaks, CA: Sage Publications.

Serpell, Z. (2000). Beginning teacher induction: A review of the literature. Washington, DC: American Association of Colleges for Teacher Education.

Sharplin, E., O'Neill, M., & Chapman, A. (2011). Coping strategies for adaptation to new teacher appointments: Intervention for retention. Teaching and Teacher Education, 27(1), 136-146. https://doi.org/10.1016/j.tate.2010.07.010

Sher, J. (1983). Education's ugly duckling: Rural schools in urban nations. Phi Delta Kappan, 65(4), 257-262.

Shpigelman, C.-N., Weiss, P. L., & Reiter, S. (2009). E-mentoring for all. Computers in Human Behavior, 25(4), 919-928. https://doi.org/10.4135/9781412996907.n17

Shrestha, C.H., May, S., Edirisingha, P., Burke, L., & Linsey, T. (2009). From face-to-face e-mentoring: Does the "e" add any value for mentors? International Journal of Teaching and Learning in Higher Education, 20(2), 116-124.

Schunk, D. H., & Mullen, C. A. (2012). Self-efficacy as an engaged learner. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), Handbook of research on student engagement (p. 219–235). Springer Science + Business Media. https://doi.org/10.1007/978-1-4614-2018-7_10

Single, P.B., & Muller, C. (2001). When e-mail and mentoring unite: The implementation of a nationwide electronic mentoring program. In L. Stromei (Ed.), Implementing successful coaching and mentoring programs (pp. 107-122). Cambridge, MA: American Society for Training and Development (ASTD) in Action Series.

Single, P.B., & Single, R. M. (2005). E-mentoring for social equity: Review of research to inform program development. Mentoring and Tutoring, 13(2), 301-320.

Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. Journal of Educational Psychology, 99, 611-625. https://doi:10.1037/ 0022-0663.99.3.611

Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. Teaching and Teacher Education, 26, 1059-1069. https://doi:10.1016/j.tate.2009.11.001

Skaalvik, E. M., & Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: relations with teacher engagement, job satisfaction, and emotional exhaustion. Psychological Reports, 114, 68-77. https://doi.org/10.2466/14.02.PR0.114k14w0

Smith, T., & Ingersoll, R. (2004). What are the effects of induction and mentoring on beginning teacher turnover?. American educational research journal, 41(3), 681-714. https://doi.org/10.3102/00028312041003681

Sorenson, L., & Ladd, H. (2018). The hidden costs of teacher turnover. CALDER Working Paper No. 203-0918-1. Retrieved from https://caldercenter.org/publications/hidden-costs-teacher-turnover

Spanorriga, C., Tsiotakis, P., & Jimoyiannis, A. (2018). E-mentoring and novice teachers' professional development: Program design and critical success factors, presented at EdMedia: World Conference on Educational Media and Technology, Amsterdam, Netherlands, 2018.

Stansbury, K. & Zimmerman, J. (2000). Lifelines to the classroom: Designing support for beginning teachers. San Francisco, CA: WestEd.

Sun, C. (2012). Teacher Induction: Improving State Systems for Supporting New Teachers. Arlington: National Association of School Boards of Education, 3, 2-19. Retrieved http://www.nasbe.org/wp-content/uploads/DG_Teacher_Induction_March_2012.pdf

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2016). A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S. Palo Alto, CA: Learning Policy Institute.

Taranto, G. (2011). New-teacher induction 2.0. Journal of Digital Learning in Teacher Education, 28(1), 4-15. https://doi.org/10.1080/21532974.2011.10784675

Thomas, A., & Ensher, E. (2013). The impact of prior mentoring and computer mediated communications experiences on willingness to participate in e-mentoring. The International Journal of Mentoring and Coaching, 11(1), 8-87.

Tschannen-Moran, M., Woolfolk-Hoy, A., & Hoy, W. (1998). Teacher efficacy: Its meaning and measure. Review of Educational Research, 68(2), 202-248. https://doi.org/ 10.3102/00346543068002202

Tschannen-Moran, M., & Woolfolk-Hoy, A. (2001). Teacher efficacy: capturing an elusive construct. Teaching and Teacher Education, 17(7), 783-805. https://doi.org/10.1016/S0742-051X(01)00036-1

Tschannen-Moran, M., & Woolfolk-Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. Teaching and Teacher Education, 23(6), 944-956. https://doi.org/10.1016/j.tate.2006.05.003

Turley, S., Powers, K., & Nakai, K. (2006). Beginning teachers' confidence before and after induction. Action in Teacher Education, 28(1), 27-39. https://doi.org/10.1080/01626620.2006.10463565

Van der Bijl, J. J., & Shortridge-Baggett, L. M. (2002). The theory and measurement of the self-efficacy construct. In E. A. Lentz & L. M. Shortridge-Baggett (Eds.), Self-efficacy in nursing: Research and measurement perspectives (pp. 9-28). New York: Springer. Retrieved from http://books.google.com/books?id=J6ujWyh_4_gC

Veenman, S. (1984). Perceived problems of beginning teachers. Review of Educational Research, 54(2), 143–178. https://doi.org/10.3102/00346543054002143

Wasonga, C. O., Wanzare, Z. O., & Dawo, J. I. (2015). Mentoring Beginning Teachers: Bridging the gap between pre-service training and in-practice realities. Journal of International Education and Leadership, 5(2), 1-11.

Wanerg, C. R., Welsh, E. T., & Kammeyer-Mueller, J. (2007). Protégé and mentor self-disclosure: Levels and outcomes within formal mentoring dyads in a corporate context. Journal of Vocational Behavior, 70, 398. https://doi.org/10.1016/j.jvb.2007.01.002

Waterman, S. Y, & He, Y. (2011). Effects of mentoring programs on new teacher retention. Mentoring and Tutoring: Partnership in Learning, 19(2), 139-156. https://doi.org/10.1080/13611267.2011.564348

Wilbanks, J. (2014). E-mentoring: Examining the feasibility of electronic, online, or distance mentoring. Journal of Higher Education Theory and Practice, 14(5), 24-28.

Wong, H. K. (2004). Induction programs that keep new teachers teaching and improving. NASSP Bulletin, 88, 41–58. https://doi.org/10.1177/019263650408863804

Wood, A. L., & Stanulis, R. N. (2009). Quality teacher induction: Fourth-wave (1997-2006) induction programs. The New Educator, 5(1), 1-23. https://doi.org/10.1080/1547688X.2009.10399561

Woolfolk-Hoy, A., & Burke-Spero, R. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. Teaching and Teacher Education, 21(6), 343-356. https://doi.org/10.1016/j.tate.2005.01.007

Xin, C., & Feenberg, A. (2007). Pedagogy in cyberspace: The dynamics of online discourse. E-learning and digital media, 4(4), 415-432. https://doi.org/10.2304/elea.2007.4.4.415

Yaw, D. (2007). E-Mentoring in virtual education. Presentation at Indiana State University, accessed on January 3, 2020 at https://pdfs.semanticscholar.org/74a3/4486e0270d882d032344138e2c4dccfca36e.pdf

Yin, R. (2018). Case Study Research and Applications: Design and Methods (6th ed.). Thousand Oaks, CA: Sage.

Yost, D. S. (2006). Reflection and self-efficacy: Enhancing the retention of qualified teachers from a teacher education perspective. Teacher Education Quarterly, 33, 59-76.

APPENDIX A

Survey Recruitment Email

Greetings,

My name is Kate Peila and I am a doctoral student at Boise State University. I am conducting a research study about novice teachers' feelings of self-efficacy and their participation in the [redacted] NTI2 Virtual Mentoring program. I am emailing to ask if you would like to take about 10 minutes to complete a brief survey for this research project. The survey measures your beliefs about your ability to successfully complete tasks in the areas of student engagement, classroom management, and instruction. Participation is completely voluntary and your answers will be anonymous, unless you choose to provide contact information for a follow-up interview.

If you are interested, please click on the link for the survey and additional information: (link here)

If you have any questions, please do not hesitate to contact me at katepeila@u.boisestate.edu or Dr. Trespalacios at jesustrespalacios@boisestate.edu.

Thank you for your time.

Kate Peila, Doctoral Candidate
Dr. Jesús Trespalacios, Professor
Boise State University

APPENDIX B

Survey Informed Consent

BOISE STATE UNIVERSITY

Kate Peila, a graduate student at Boise State University, is conducting a research study to learn more about teachers' perceptions about and experiences in the [redacted] NTI2 Virtual Mentoring program and their feelings of self-efficacy.

You are being asked to complete this survey because you participated in the [redacted] NTI2 Virtual Mentoring Program. Participation in the survey is voluntary. The survey will take approximately 10 minutes or less to complete.

This study involves no foreseeable serious risks. We ask that you try to answer all questions; however, if there are any items that make you uncomfortable or that you would prefer to skip, please leave the answer blank. Your responses are anonymous.

For this research project, the researcher is requesting demographic information. Due to the make-up of [redacted] population, the combined answers to these questions may make an individual person identifiable. The researcher will make every effort to protect your confidentiality. However, if you are uncomfortable answering any of these questions, you may leave them blank.

If you have any questions or concerns feel free to contact the researcher, Kate Peila, or Dr. Trespalacios:

Kate Peila, Graduate Student
(406) 208-7409
katepeila@u.boisestate.edu

Dr. Jesús Trespalacios,Professor
(208) 426-7105
jesustrespalacios@boisestate.edu

If you have questions about your rights as a research participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

If you would prefer not to participate, please do not fill out a survey.

If you consent to participate, please complete the survey.

APPENDIX C

Interview Informed Consent

INFORMED CONSENT

Study Title: Exploring Novice Teachers' Perceptions of Virtual Mentoring in a New Teacher Induction Program through their Sense of Self-Efficacy

Principal Investigator: Kate Peila **Co-Investigator:** Dr. Trespalacios

This consent form will give you the information you will need to understand why this research study is being done and why you are being invited to participate. It will also describe what you will need to do to participate as well as any known risks, inconveniences or discomforts that you may have while participating. We encourage you to ask questions at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of this form to keep.

- **PURPOSE AND BACKGROUND**

You are invited to participate in a research study to learn more about teachers' perceptions about and experiences in the [redacted] NTI2 Virtual Mentoring program and their feelings of self-efficacy. The information gathered will be used to help better understand the experiences and outcomes of the NTI2 program. You are being asked to participate because you indicated an interest in participation in the completion of the Teacher Sense of Efficacy Survey.

- **PROCEDURES**

If you agree to be in the study, you will be asked to participate in one recorded interview, hosted via Zoom video-conferencing. The interview will last no longer than 1 hour. During the interview, you will be asked about your perceptions and experiences with the virtual mentoring program, whether you believe your participation in the program had any bearing on your beliefs about your ability to do your job well, and your opinions on the affordances and disadvantages of the virtual format. The researcher may take notes as well.

- **RISKS**

Some of the questions asked may make you uncomfortable as you are providing your opinion on a district-offered service. You are always free to decline to answer any question or to stop your participation at any time.

- **BENEFITS**

There will be no direct benefit to you from participating in this study. However, the information that you provide may help the district and others in developing and implementing virtual mentoring programs to support the development of novice teachers' beliefs about their ability to do their jobs well.

- **EXTENT OF CONFIDENTIALITY**

Reasonable efforts will be made to keep the personal information in your research record private and confidential. Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. The members of the research team and the Boise State University Office of Research Compliance (ORC) may access the data. The ORC monitors research studies to protect the rights and welfare of research participants.

Your name will not be used in any written reports or publications which result from this research, Data will be kept for three years (per federal regulations) after the study is complete and then destroyed.

- **PAYMENT/COMPENSATION**

You will not receive any compensation for your participation in this study.

- **PARTICIPATION IS VOLUNTARY**

You do not have to be in this study if you do not want to. If you volunteer to be in this study, you may withdraw from it at any time without consequences of any kind or loss of benefits to which you are otherwise entitled.

- **QUESTIONS**

If you have any questions or concerns about your participation in this study, you should first contact the principal investigator at katepeila@u.boisestate.edu or 406-208-7409.

If you have questions about your rights as a research participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

APPENDIX D

Interview Protocol

NTI2 Interview Protocol

Demographics

- Tell me about yourself. How did you get into teaching?

Virtual Mentoring Experience (SQ.2)

Describe the Experience (SQ2.1)

- Describe your interactions with your mentor.
  - What kinds of things did you talk about?
  - Did you have a theme or topic of concentration when you met?
    - Examples: Classroom management, Student Engagement, Instruction
- If you could choose three words to describe your relationship with your mentor throughout the year, what would they be and why?

Teachers' Perceptions on Self-efficacy and Mentoring (SQ 2.2)

- What was your greatest challenge as a new teacher in [redacted]?
  - Do you feel that your virtual mentor helped you address this challenge? Explain.

- There are several skills and capabilities that the research indicates are critical for new teachers to master and refine. Some of those skills or capabilities include student engagement, instructional strategies, and classroom management. We will discuss each of these skills in turn.
  - What does student engagement mean to you?
  - Think about student engagement in your classroom.
    - How did your work with your mentor help you to increase student engagement in your classroom, if at all?
  - Consider the instructional strategies that you used in your classroom this year. How did your work with your mentor impact the instructional strategies that you used in your classroom, if at all?
  - Now let's consider classroom management. Can you think of a specific classroom management situation, problem, or challenge that you discussed with your mentor? (Examples: reducing transition time, disruptive behaviors, enforcing classroom rules) What was the outcome of that situation?

- Overall, how did your virtual mentoring experience affect your feelings of confidence as a classroom teacher?
- In your opinion, what was the most meaningful outcome of your relationship with your virtual mentor or cohort? How do you think it will help you as you move forward in your career?

Closing

- If you could change one thing about the program for next year, what would it be and why?
- Is there anything I missed that you'd like to talk more about?