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The Impact Of Instructional Coaching And Mentoring On First-Year Teachers' Job Fulfillment And Performance In Urban Schools: Implications For Educational Administrators

Malikah Marshall
Texas Southern University

THE IMPACT OF INSTRUCTIONAL COACHING AND MENTORING ON FIRST-YEAR TEACHERS' JOB FULFILLMENT AND PERFORMANCE IN URBAN SCHOOLS: IMPLICATIONS FOR EDUCATIONAL ADMINISTRATORS

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By

Malikah Marshall, B.A., M.Ed.

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Approved By

Dr. Emmanuel Nwagwu
Chairperson, Dissertation Committee

Dr. Mahesh Vanjani
Dean, The Graduate School

Approved By

Dr. Emmanuel Nwagwu	04/12/2023
Chairperson, Dissertation Committee	Date
Dr. Mokysha Benford	04/12/2023
Committee Member	Date
Dr. Emiel Owens, Jr.	04/12/2023
Committee Member	Date
Dr. Bernnell Peltier-Glaze	04/12/2023
Committee Member	Date
Dr. Ihekwoaba Onwudiwe	04/12/2023
Committee Member	Date

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By

Malikah Marshall, Ed.D.

Texas Southern University, 2023

Professor Emmanuel Nwagwu, Advisor

Elementary school teachers in testing grades have had different responsibilities over the years. Urban schools are constantly expected to provide students with a more intense curriculum and rigorous instruction. The duties and responsibilities of a first-year teacher directly affect how novice teachers judge their performance and effectiveness. Teachers are held accountable for student achievement at increasingly higher rates.

This study investigates the effect of teacher mentoring and instructional coaching on first-year elementary math teachers' job satisfaction and student performance. It can create effective teacher mentoring by including instructional coaching to retain new teachers, help self-reported job satisfaction, and increase student achievement.

Six hypotheses were formulated for this study. A causal-comparative design to measure the perception of novice teachers' attitudes towards receiving instructional coaching with mentoring and how it relates to their job satisfaction. The Chi Square measured if there are statistically significant associations between first-year teachers who

have mentoring as primary instructional support and the treatment of instructional coaching and first-year math teachers who have only mentoring as a primary source of instructional support. the groups.

Based on the findings, this study concluded mentoring and mentoring with additional content support may have an impact on the different levels of student achievement, but further research needs to be conducted. In addition, grade level does not appear to impact the student achievement or job satisfaction of first-year math teachers on the standard of approaching for the state of Texas Standardized test. Furthermore, in general, educational administrators should attempt to increase the efficiency and effectiveness of first-year math teachers through evidence-based practices.

Keywords: *coaching, content instructional coach, highly qualified teacher, mentoring*

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VITA

2000.....	B.A., Elementary Education Aquinas College Grand Rapids, MI
2007.....	M.Ed., Curriculum & Instruction Texas Southern University Houston, TX
2001-2003	Instructor Purple Sage Elementary School Galena Park, TX
2003-Present.....	Campus Instructional Coach Science Lab Teacher Office of Special Education Services Galena Park ISD Galena Park, TX
Major Field.....	Educational Administration & Foundations

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DEDICATION

To my son, Wynton, you are the inspiration I need to try to be the best me as an example to you. When times are hard or seem impossible, I want you to keep going. Keep striving for your very best, for you can do things through Christ!

To my mom, you have always been my hero! I have always believed you were the most beautiful woman in the world! We have cried together, laughed together and celebrated life together! I can't imagine having any other mom than you!

To my stepdad, Bill Henderson, even though you left us ten years ago, your guidance is still with me. I missed being able to talk to you and bounce all of my ideas off of you. However, each day is another chance to fulfill the promises I made to you. And I promised to make this dream a reality. Your words are still with me today when you told me that I was smart enough to keep going.

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Alma, Auntie Marguerite, Aunt Peaches, Uncle Sonny, Great grandpa Ben, Great grandma Ellen and more: I hope they are proud of my accomplishments and satisfied with the sacrifices they made so the children, grandchildren and great grandchildren can prosper.

To all of you I am most grateful to God for allowing me to be able to honor your memories.

CHAPTER 1

INTRODUCTION

Elementary school teachers in testing grades have had different responsibilities over the years. Urban schools are constantly expected to provide students with a more intense curriculum and rigorous instruction. Educational administrators face increasing student achievement yearly while promoting successful hiring practices. Educational administrators want to choose the best and the brightest applicants to promote the campus culture and climate of successful learners. The undertaking of successful applicant choice is a craft administrators deliberately chooses to influence decision-making. After the hiring process, teacher retention and self-efficacy are the main focus. Determining the decision-making process of training new teachers in what to teach and how to teach it is at the forefront of a teacher management issue.

First-year teachers can often feel overwhelmed and dissatisfied with their job performance. Mentoring and instructional coaching are situational factors that can impact this variable. The duties and responsibilities of a first-year teacher directly affect how novice teachers judge their performance and effectiveness. Teachers are held accountable for student achievement at increasingly higher rates. There were 43 states in the United States that included student achievement in the teacher evaluation in 2015 (National Council for Teacher Quality, 2015). School districts across the country are increasingly evaluating student performance through teacher effectiveness. In the past few decades, the impact of standardized testing has changed the curriculum and instructional methods for all teachers. Veteran and new teachers feel more pressure to attain specific standardized scores in the classroom and school. Standardized testing is challenging

teacher efficiency and effectiveness. More and more districts feel the pressure of increasing performances associated with this metric.

First-year teachers can feel even more pressure than veteran teachers because they learn the practices, procedures, and expectations of student achievement. First-year teachers have to meet the student's academic and social needs, expectations of parents' advancement, and the structural integrity of learning. To navigate the increasingly complex path to ensuring students are at mandated levels of academic achievement, first-year teachers are also under pressure to achieve district and campus goals. This standard of achievement can be the main factor related to self-reporting job dissatisfaction and high turnover for incoming first-year teachers. Teacher turnover rates were around 16% in 2019 (National Center on Education Statistics, 2019), which accounted for teachers leaving the profession or transferring to different districts. Training and retaining first-year teachers can impact student outcomes.

Background of the Problem

Teacher turnover has been examined as the number of students enrolling in teacher preparation programs in traditional colleges and universities is decreasing. Recently, a college in Oklahoma did not have enough students to fill the teacher training program and had to cancel their semester courses. A large district in the Houston area had over 700 teacher openings in August of 2021. In January 2022, over 20,000 students were still left in classrooms without certified teachers. In the fall of 2020, over 49 million students nationwide enrolled in public schools (National Center on Education Statistics, 2022). School administrators nationwide are charged with hiring and retaining quality teachers to increase student instruction and achievement.

Most of the teacher openings stem from teachers leaving the profession. Almost two-thirds of those exiting report job dissatisfaction and performance dissatisfaction (Carver-Thomas & Darling-Hammond, 2017). In Southern states, teacher turnover tends to be higher than in other regions. Turnover rates are also, on average, 50% higher in schools designated as Title I, schools with highly economically disadvantaged populations. Schools with the highest percentages of students of color have a 70% higher teacher turnover rate than their counterparts (Carver-Thomas & Darling-Hammond, 2017).

There are several costs to teacher turnover. Teacher turnover can cost monetary fees for districts, costs to campus cultures, and costs to student achievement. Training teachers to be effective costs districts financially. Districts can provide external professional development and internal professional development. Educational administrators help to allocate resources within a district and campus level. Districts will spend money yearly to train and provide capacity-building opportunities for all teachers to perfect their craft. This costs money to provide out-of-district experiences and in-district experiences and bring external training into the district. Once novice teachers leave the profession, the expense paid for their training is lost. Campus culture is also affected. Each campus with high turnover can lead to low morale. Other teachers must take up the slack and train a new person repeatedly. Student achievement is also affected. Once a new teacher performs at a higher effectiveness rate, their exit takes that expertise away from the students' ability to have a high-performing teacher. The impact of teacher turnover can affect districts in different ways. The global pandemic has also stressed

educational institutions and the effects of it have not been fully measured; it will be interesting to examine those results.

Statement of Problem

The actual application of teaching methods and theories learned in teacher preparation programs does not sufficiently address the real-life circumstances of classrooms. First-year teachers report anxiety and frustration when dealing with the responsibilities of learning the position without additional support. Nearly 50 percent of new teachers leave the profession within their first five years (United States Department of Education, 2011). During the mid-80s, teacher experience in the K-12 public school system had a median of 14 years of classroom experience. The statistics vary concerning the number of teachers leaving the field within the first three years; however, first-year teacher frustration is reported to have increased. There is an urgent need for these first-year teachers to stay in education and become masters, experienced teachers.

Between 2015–16, almost 10 percent of public school teachers had less than three years of teaching experience, 28 percent had three to nine years of experience, 39 percent had ten to twenty years of experience, and 22 percent had more than twenty years of experience. Students who have had highly effective teachers for three years in a row score as much as 50 percentile points higher on achievement tests than those who have had ineffective teachers for three years (United States Department of Education, 2011). Multiple studies examining connections between teacher effectiveness and student achievement have been published since the 1990s. In these studies started by Darling and Hammond, the teacher who performs at an optimal level repeatedly shows higher student achievement levels.

High turnover rates in urban schools can adversely affect student performance because it can put students at an educational disadvantage. Areas with higher populations of low socioeconomic students, students of color, and students with disabilities experience increased teacher turnover rates (Carver-Thomas & Darling-Hammond, 2017). These students are at risk of falling behind their same-age and same-grade-level peers. This is highly crucial when districts, schools, and teachers are evaluated by student performance. In addition, national legislation that arose in the early 2000s aimed at education reform increasingly emphasized student performance. Goals 2000, initiated by President Bush and enacted by President Clinton, increased standards for student outcomes in reading for 3rd-grade and math for 8th-grade students. President Clinton advocated for a national standardized test; however, the states kept state control over standardized testing. Each state has different student achievement goals. Novice teachers have an additional hurdle of accomplishing proficiency in state standards. Teacher mentors are tasked to help novice teachers navigate through implementing instruction, managing classroom behaviors, and improving student achievement. These tasks can be viewed as overwhelming for first-year teachers. First-year teachers should have more support than just a teacher mentor.

Purpose of the Study

This study investigates the effect of teacher mentoring and instructional coaching on first-year elementary math teachers' job satisfaction and student performance. It can create effective teacher mentoring by including instructional coaching to retain new teachers, help self-reported job satisfaction, and increase student achievement. It will give educational administrators insight into teacher professional development as an

instructional tool that can enhance and promote positive relationships between educators. Instructional coaching serves as a process to guide teachers in any service stage. Instructional coaching is a job-embedded strategy for professional development opportunities (Knight, 2007; Pollard, 2015; Yendol-Hoppey & Dana, 2010).

Teacher preparation programs through universities, colleges, and accelerated accreditation programs attempt to prepare first-year teachers for the actual classroom. Many states require ongoing professional development for continued teacher certification; however, these programs are missing the mark on preparation in many areas. Novice teachers still feel isolated and disconnected between the ideal classroom theories taught in the teacher prep programs and the job itself. Teacher professional development creates a community of learners. Helping these new teachers through a community of learners can effectively increase teacher retention and student achievement. Novice teachers receiving additional support can learn more through the actual application, not self-trial and error.

Mentoring and coaching assist in this area because it allows novice and experienced teachers to exchange ideas and experiences. Teacher learning and professional development create an environment that gives the adult learner student-centered instructional practices. Mentoring and instructional coaching can provide additional support simultaneously to make novice teachers more effective in classroom structures, classroom content, and effective instructional delivery. There are different types of mentor and coaching roles. Mentors can include grade-level mentors, retired teacher mentors or mentor/instructional coaches. Instructional coaching can also be by

grade level or by content specific. Both support levels will add to educational institutions' decision-making to retain high-quality teachers and increase student achievement.

Most research has examined the effects of mentoring or instructional coaching in reading; however, math has not had as much insight into literature. This study will focus on the impact of mentoring and coaching on mathematics instruction for first-year teachers. The following research questions will address the impact that instructional coaching paired with mentoring has on first-year math teachers' student achievement and job satisfaction.

Research Questions

The following research questions were formulated for this investigation:

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

RQ2: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fourth grade?

RQ3: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fifth grade?

RQ4: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in third grade?

RQ5: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fourth grade?

RQ6: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fifth grade?

To address these questions, the following hypotheses will be tested:

Null Hypotheses

The following null hypotheses were formulated for this investigation is as follows:

Ho_1: There is no statistically significant association in student performance of approaching or not approaching standards in math when third grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_2: There is no statistically significant association in student performance of approaching or not approaching standards in math when fourth grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_3: There is no statistically significant association in student performance of approaching or not approaching standards in math when fifth grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_4: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year third grade math teachers receive mentoring or mentoring with instructional coaching.

Ho_5: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fourth grade math teachers receive mentoring or mentoring with instructional coaching.

H_{o6}: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fifth grade math teachers receive mentoring or mentoring with instructional coaching.

To analyze these hypotheses a Chi-Square test was used to determine the association between teacher support on student achievement and job satisfaction. It measured the statistically significant associations between groups of third, fourth, and fifth grade teachers in two levels of the independent variable. Data collected from the job satisfaction survey is interval measured with a minimum of 0 and a maximum of 14. A Fischer test will be administered to assess where and to what extent significant association may be scored for any cell that has under 5 participants. Additionally, the achievement scores are compared between grade levels in the two categories of mentor only and mentor with an instructional coach. Using a Fischer test for cells under 5 participants controls for type 1 errors when the cell has a low frequency. The p-value is set at a 0.05 level. The null hypotheses will be rejected if the Chi-Square meets this level.

Significance of the Study

The significance of this study is to provide educational organizations and administrators with tools to assist and promote the success of first-year teachers as it relates to their job satisfaction and student outcomes. It is an effort to ensure first-year teachers have adequate resources to deliver proper and effective classroom instruction for optimum student achievement. The Center for Teaching Quality has several investigations into teacher retention and experience. Since 2006, multiple studies have looked into the impact of teachers leaving schools and the lack of relationship-building

that can occur. The lack of teacher relationship building can also impact teacher effectiveness with students. Inexperienced teachers leave schools without developing relationships and expertise that allow for high student growth and achievement.

The publishing of A Nation at Risk in 1983 spearheaded educational reform in the United States. It gave birth to national programs such as Race to the Top Initiative and the No Child Left Behind ACT (2002) as it focused on educational effectiveness. Due to the No Child Left Behind Act of 2002, teachers are mandated to be classified as "highly qualified'. Highly Qualified teachers must have a bachelor's degree, state certification, and demonstrated competency in the academic subject. These competencies are often proven by ongoing professional development. This allows educational systems to maintain specific hours implemented toward professional development. It allows the teachers to have a certain level of proficiency in designated areas and leaves room for training and growth. Educational administrators can evaluate the effectiveness of using additional instructional content coaching resources in instructional delivery and use mentors for other teacher induction areas. Schools have examined the impact professional development has on teacher performance. In recent years, instructional coaching has been examined for best practices and methodology (Schacter, 2015). Enriching the best instructional practices for first-year teachers and maximizing instructional effectiveness will assist adult and student learners.

Theoretical Framework

Learning and motivation have had countless theories and juxtapositions throughout the decades. Several well-known theories can be applied to the position of adult learning. In this research, two theories have formulated the applicable guiding

factors for adult learning. The two crucial theories for this research are the Theory of Andragogy and Hierarchy of Needs. Both theories address the potential for new learning and what must occur in the individual for new learning to occur.

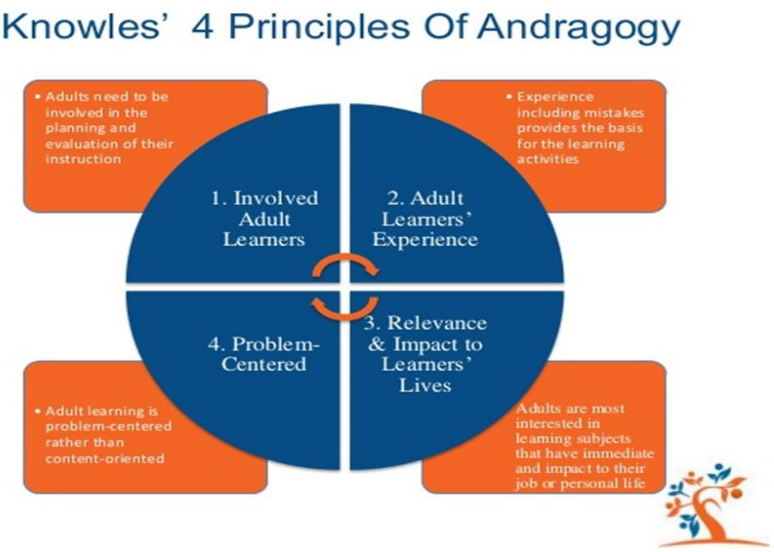
Adult learning has been examined with the best practices for teachers to learn the pedagogy of teaching information to adolescent or elementary learners. Mentoring and coaching are examples of andragogy, the best practice for adult learners (Knowles, Hilton & Swanson, 2011). Andragogy considers how adult learners have different opportunities for professional development specifically tailored to adult learners that are cooperative and relationship-building with opportunities for feedback (Wlodkowski, 2008). Immediate feedback is an instructional tool that increases problem processes (Black, 2001).

Knowles has a model that illustrates adult learning. In this model, there are four components (figure 1). The first area deals with the involvement of the adult learner. The engagement of the adult learner can be shown as the learner's planning. This planning increases the adult learners' self-efficacy by allowing him or them to be actively involved in instructional planning. The second area is the adult learner's experiences. Enabling adult learners to use their schema to address instructional practices and procedures should increase the likelihood of adult learners evaluating their shortcomings.

The next areas of relevance and problem-centered principles connect what the adult learner views as the effectiveness of the new knowledge and apply it to a content-related problem. In short, it allows the adult learner to assess the knowledge's effectiveness and judge its usefulness.

Figure 1

Knowles' 4 Principles of Andragogy



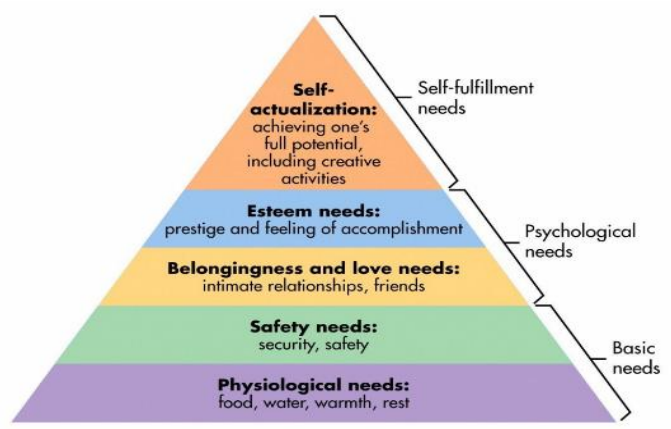
Learning to mentor is not necessarily a natural extension for veteran educators accustomed to teaching children, not adults (Orland, 2001). Guiding the learning of colleagues involves strategies related to adult learning and interpersonal skills situated within various political, cultural, and historical contexts. Additionally, these are facets of mentoring that engage the mentee in learning styles aimed at improving teaching practices.

Maslow's hierarchy of needs addresses the ability of the individual to move from deficit to growth (Maslow, 1954). It begins with the lower level of the order to address basic needs. The theory states after basic needs are attained, individuals can become motivated to build capacity in new areas. The three levels of needs are basic, psychological, and self-fulfillment. Individuals on the path to growth or actualization should travel through the level of needs to begin to motivate themselves for new tasks or

learning which benefits the individual. Stages will progress the individual from a deficit mindset to a growth mindset and realization of the individual's ability to increase potential. As noted in the diagram below, Maslow describes how the attainment level should occur in a sequential order to maintain the level of mental growth individuals need to incentivize personal growth.

Figure 2

Maslow's Hierarchy of Needs



In the bottom two tiers, the most basic of needs reside. Actual desires for basic self-care are present at the lowest level. These needs must be accounted for before any other needs can be conceptualized. Basic needs for physical health are immediately the most pressing for survival. Survival is such a basic function that without first achieving this level, no other functions can even be envisioned by the individual.

Advancing through the higher levels is associated with psychological needs. These needs are what an individual may need mentally or emotionally for their well-being. These needs include a sense of belonging and self-awareness. Self-awareness, defined by Maslow, is the driven desire of an individual to become the best self. The individual's desire to achieve the psychological hierarchy needs tends to become the main motivator.

Maslow's theory has been described as Maslow's Hierarchy of Needs and Motivation. His theory provides the framework for the motivation of new learning. Maslow's research has helped develop social programs for students, such as Temporary Assistance for Needy Families (TANF), school lunch programs, after-school programs, and behavior intervention programs. This theory helped educators and legislators advocate for holistic interventions for students and the educational setting (Noltemeyer et al., 2021).

An additional theory applicable to the framework is Kram's Phases of Mentor Relationship (Kram, 1983). Kram identified the relationship between mentor and mentor as having stages of development progression needed to have a more productive outcome for the mentee. The four stages of her theory are initiation, cultivation, separation, and redefinition. As a mentee advances through these stages, the mentee gains the ability to become more self-sufficient and capacity is learned. The initiation stage is characterized by the first connection a mentee and mentor make upon first working together. It is the beginning feeling of trust between the mentor and mentee relationship building.

The second stage is cultivation. In this stage, the mentee begins to take an interest in the tasks the mentor presents. This bond is the area where the mentee sees value in the same tasks as the mentor, further developing intrinsic motivation to achieve high productivity due to self-interest. Stages three and four are the separation and redefinition phases. The third stage, separation, is when the mentee gains independence from the mentor in self-starting and completing tasks with high productivity. The capacity of the mentee has been increased and the mentee can establish procedures and routines with proficiency independently. The last stage has the mentee in a stage of proficiency that is comparable and at the same level as the mentor. The skills of the mentee is as capable as

the mentor and the mentee can now become a mentor. The levels of independence make the mentee an expert at the same level as the mentor.

While Maslow's theory has been used to justify social interventions for children, the theory still can be applied to an adult. Novice teachers, as adult learners, are basic individuals and travel back and forth in this hierarchy of needs to perfect their craft of teaching and learning to teach. Andragogy relates to new teachers' ability to learn new and effectively retain teaching pedagogy. Adult learners must also have basic psychological needs met to motivate them to become more effective in instruction and content delivery as new teachers. Kram's theories of mentor relationships is applicable to the framework as it also gives a foundation for a positive mentor relationship. It allows the mentee to walk through a process to build capacity based on a positive strong relationship with the mentor. This strong relationship leads the mentee to be able to become proficient at the tasks assigned to the same degree as the mentor's expertise.

Limitations/Delimitations

The following limitations were observed in this study:

1. It is assumed that first-year teachers will have both a mentor and an instructional coach.
2. It is assumed that first-year teachers will be in a STAAR testing grade in elementary school.
3. It is assumed the mentoring style will be a grade-level mentor, retired teacher mentor, or mentor/instructional coach.
4. It is assumed the first-year teachers will be in their first-year of teaching in public schools.

5. It is assumed the teachers will receive instructional coaching by grade level or content.
6. It is assumed the teachers will complete the first-year of instruction in grades 3-5 in a STAAR-assessed reading, math or science area in the 2021-2022 school year.
7. It is assumed the effects of the Covid pandemic could have affected student learning and achievement levels.
8. It is assumed the effects of the Covid 19 pandemic could affect intervention instructional methods.

Definition of Terms

The following term will be used in this empirical study:

Content instructional coach: an instructional coach specializing in the content subject the first-year teacher is assigned to.

First-year teacher: person employed as a teacher without any professional experience and newly licensed.

Grade level instructional coach: an instructional coach specializing in the grade level the first-year teacher is assigned.

Grade level mentor: An experienced teacher in the same grade level assignment as the first-year teacher.

Highly qualified teacher: a public-school educator who meets the definition created under the federal education law, No Child Left Behind.

Instructional Coach: a person employed to work directly with teachers to evaluate student progress and growth.

Instructional Support: types of support given to first-year teachers including mentoring and mentoring with instructional coaching.

Job satisfaction: how a first-year teacher feels about the perception of their performance in the classroom.

Mentor/coach: A current instructional coach serving in both the role of the mentor and instructional coach.

Mentoring: improve through good practice and suggesting new approaches. They should lead you to reflect on your lessons and refine your teaching style.

No Child Left Behind: this is a federal law that provides money for extra educational assistance for poor children in return for improvements in their academic progress.

Professional Development: is effective structured professional learning that changes teacher practices and improves student learning outcomes.

Retired mentor: a retired teacher that now serves as a mentor to a first-year teacher.

Student achievement: is the measurement of the amount of academic content a student learns in a given time frame.

State of Texas Assessment of Knowledge and Skills (STAAR): is the standardized assessment given to students in grades 3 through 12 to measure student achievement in the state of Texas.

Covid 19 Pandemic: is the global viral pandemic that caused an interruption in student learning by shortening in class instruction for a time period lasting from months to a school calendar year.

Organization of the Study

This empirical investigation is organized into five major chapters. Chapter 1 is the case study and consists of the introduction, statement of the problem, significance of the study, theoretical framework, research hypotheses, assumptions, limitations, definitions of terms and variables, and the organization of the study. Chapter 2 consists of an extensive review of related literature focusing on first-year teachers in mentoring programs and instructional coaching in public elementary schools. Chapter 3 discusses and examines the design of the study, methodological framework and includes the type of design, population, sampling procedures, instrumentation, validity of the instrument, reliability of the instrument, data-collection procedures, independent and dependent variables, null hypotheses, and the statistical analysis. Chapter 4 includes the analysis of the data presentation, evaluation of results, and a tabulation of data. Lastly, Chapter 5 presents a summary of the findings, implications, conclusions, and discussion, along with recommendations.

CHAPTER 2

LITERATURE REVIEW

Teacher Induction Programs

Researchers have called for studies of induction programs that focus on practical and conceptual issues related to how induction is done and what induction could be (Britton et al., 2003; Wood & Stanulis, 2009). Mentoring and coaching are common in many induction programs to help novices navigate the transition between a utopian, idealistic approach and actual hands-on classroom situations. Conceptually, what the new teacher learned in the teacher preparation program does not always match the classroom. New teachers have overwhelming demands in curriculum and instruction as the challenge is to master teaching pedagogy in a finite time frame (Casperson & Raaen, 2014). Although training is given through practicums and student teaching programs, it still places the university student as a spectator or visitor. It is starkly different from having the actual responsibilities of instructional planning, classroom setup, and curriculum content.

Joyce and Showers began examining teacher training in the 1980s. Through their studies, other researchers have investigated the relationship between mentoring as a method of teacher training. Joyce and Showers' peer coaching model suggests classroom application is more effective with peer coaching (Joyce & Showers, 1980). These studies helped to generate further research, such as the research by Darling-Hammond in the 1990s. Their research into mentoring, peer coaching, and the increased effectiveness of teacher training resulted in numerous other studies into teacher training. Teacher training aims to create an expert in student-centered instruction (Irby, 2017). Teacher training has

fractured into separate pieces to a puzzle with what to teach and how to teach it. The responsibility of teacher training is a complex issue researchers have undertaken for several decades. To address these needs, teacher induction programs were thought to approach the different learning gaps in new teacher dissatisfaction (Shockley et al., 2012).

Teacher induction programs began as a way to increase novice teachers' self-efficacy and reduce turnover rates (Lejonberg & Tilpic, 2016). The programs have been aimed at situational responses to policies and procedures novice teachers need to succeed in adequate skills and knowledge. Teacher induction programs aim to train teachers to a high degree of effectiveness and increase teacher retention to maximize that effectiveness. Over the past few decades, teacher induction programs have aimed at influencing administrators' decision-making in student outcomes, financing, school culture, and climate (Shockley et al., 2013). Shockley's research suggests the reasons novice teachers leave the field of teaching include political influences, class size, salaries, career goals, and community demands (2013). As time progresses, these demands increase as high-stakes testing has been included in teacher evaluations (Bullough, 2012). Novice teachers have a higher attrition rate in secondary math and science, affecting student outcomes (Shockley et al., 2013). The inability to retain novice teachers affects high-yield instruction, especially in secondary STEM subjects (Shockley et al., 2013). Beginning teacher induction programs aimed to prevent novice teachers from the hazards of ineffective teaching (Wood et al., 2012).

Teacher induction programs must meet new teachers' motivation and encourage the new teacher to build the capacity of pedagogy (Shockley et al., 2013). Conversely,

the beliefs and perceptions of new teachers influence misconceptions about the ease of teaching or relate teaching to previous limited experiences (Wood et al., 2012). These misperceptions and misconceptions can allow the novice teacher to believe that little teaching pedagogy is sufficient to be effective (Wood et al., 2013). Shockley used Herzberg's 2 Factor of Motivation Theory to define how to motivate new teachers to build the capacity of teaching pedagogy needed to be effective in the classroom (Shockley et al., 2013). In Herzberg's Theory, Herzberg proposed that as an individual moves through Maslow's hierarchy, the individual meets job satisfaction needs by meeting interpersonal needs. Herzberg proposed that factors achieving interpersonal needs included how happy an individual was with the job. Interpersonal factors affecting satisfaction dealt with salary, perceived performance, working conditions, and supervision. Once these factors were viewed in high regard, personal motivation led the individual to pursue advancement, personal growth, responsibility, recognition, and achievement (Nicholson, 2021). This theory can be applied to the birth of teacher induction programs, as it appears to justify meeting the needs of novice teachers on several levels to encourage novice teachers to motivate themselves to self-efficacy intrinsically.

Even though the teacher induction program aimed to increase teacher self-efficacy, it has not always had the desired or anticipated results in increasing teacher retention (Shockley et al., 2013). Teacher induction programs may not meet the specific content specific needs of novice math teachers (Wood, 2012). To address national teacher shortages, many states have begun to offer alternative certification programs to meet the demand for highly qualified teachers (Shockley et al., 2013). The non-traditional

certification may lead to differences in teaching pedagogy. To address the needs of those differences, researchers understand there could be more factors than just teacher induction programs that impact teacher self-efficacy (Shockley et al., 2013). First-year teachers have a range of needs and experiences that can be addressed through continuous conversations that provide a variety of support to learn instructional pedagogy. Perception drives knowledge and approaches to new learning and new material in ways that teacher induction programs may fall short of doing (Wood et al., 2012). Induction and mentoring are not equivalent and can have varied approaches to build the capacity of novice teachers' instructional practices (Shockley, 2013). Wood's findings on the examination of teacher induction programs and building teacher pedagogy suggest a combination of pedagogy and content knowledge is needed for novice teachers. For new teachers to become more effective in instructional delivery, student engagement, and efficient pedagogical practices, new teachers need additional support (Wood, 2012). Becoming an effective teacher involves further theory and practices in educative induction and content-specific learning (Wood, 2013).

Mentoring

Much of what beginning teachers learn during their first year depends on the opportunities in their academic study to continue to learn (Grossman & Thompson, 2004; Worthy, 2005). It is crucial to develop support targeted toward helping new teachers increase their content-based abilities and proficiencies to impact student learning early in their careers. Opportunities for classroom expectations are not always offered to novice teachers. Some of those teachers come into the classroom without the experiences of actual teacher mandates yet are expected to reach the same goals as the experienced

teacher (Raine, 2001). Mentee development is defined as providing developmental guidance and support for professional growth and experiences (Weinberg, 2019).

Most states have already mandated and implemented teacher mentor programs. Mentee development is defined as providing developmental guidance and support for professional growth and experiences (Weinberg, 2019).

Mentors are perceived as experts in student-centered instruction (Irby, 2017). Through expertise, the mentoring model includes the transfer of knowledge from the mentor to the mentee. Mentors are expected to impart knowledge to the novice teacher and allow the novice teacher to understand and implement the material (Sanyal, 2017). Mentor teachers passing knowledge and expertise from teacher to adult learner provide immediate feedback that when there is a strong relationship, the novice teacher has a greater understanding of what to do in the classroom (Sanyak, 2017). Through knowledge transfer between colleagues, mentors are used to improve teaching practices (Irby, 2017). Mentoring is meant to retain new teachers, improve productivity, increase teacher knowledge, and effectively cultivate mentees (Irby, 2017).

Mentoring fills the psychological needs of novice teachers. It builds autonomy, competence, and relatedness (Collie & Martin, 2015). This suggests that novice teacher has a psychological need to feel an autonomous sense of direction in the classroom. The novice teacher has to have the freedom to be able to plan for an effective lesson, can measure the effectiveness, and have the relationship to receive feedback. Mentoring allows the novice teacher to learn new practices in a relaxed, casual setting. The flexibility of direction, immediate feedback, and relationship building can increase mentees' independence in the classroom. Mentors are psychosocial role models for

novice teachers. It allows the novice teacher with interpersonal comfort to learn new ideas (Weinberg, 2019). It provides relational training and relationship building to enhance the personal competencies of instructional practices (Weinberg, 2019).

However, the conceptualizations of what mentors should know and be able to do are not commonly agreed upon by those in the field. Consequently, preparing mentors can differ based on the induction purposes and the context in which they develop their practices. There are two approaches to mentoring; progress monitoring and relationship building (Cook, 2012). It becomes difficult for the mentor alone to completely fulfill the needs of a novice teacher based on the nature of the mentor program. Additionally, mentor programs may be shortsighted if the mentor teacher also has a classroom. The responsibilities of having a classroom thwart the amount of time mentors will have to train a new teacher adequately. The time needed to provide intense modeling may not be available. Mentors must also have adequate training. Ill-trained mentors, or mentors without sound methods, can hinder the amount of progress a novice teacher will make (Smith, 2004).

Mentoring has traditionally been a hierarchical relationship, and through that relationship, knowledge is implanted in the mentee. However, the relationship between mentor and mentee is more diverse. The relationship needs to be more reciprocal with the opportunity for ideas to be shared (Ambrosetti, 2014). Mentors and mentees have relationships in which the novice teacher is allowed to share their experiences and is more effective in learning the new instructional practices. Mentor roles should include feedback, not supervision. Allowing the mentor and mentee to build this relationship increases the productivity of the new teacher. Ambrosetti explains that without the

reciprocal relationship, the mentee may revert to past experience and/or ineffective practices. Mentors and mentees must have the opportunity for relationship and reflection (2014). Quality mentoring should have the components of understanding the targeted instructional goal and familiarity with instructional tasks. Mentors should help novice teachers understand the best practices for educators.

Mentoring has roots in the Social Exchange Theory by George Homans in 1958. In this theory, Homans maintain relationships, and interactions between individuals have value. The interactions between individuals have an equally beneficial arrangement. The relationships among individuals have costs and rewards that drive individuals to positively and negatively interact with others. This exchange fosters the foundation for the type of relationship mentors and mentees need to possess (Lejonberg & Tilpic, 2016). This theory lends to the feedback cycle, and communication exchange mentors and mentees need to develop.

Weinberg discussed the role of effective mentorship to include learning outcomes and competencies. He goes on to say mentoring is the transfer of content-specific learning outcomes, which consists of gaining new skills (2019). Personal learning should include short-term goals, contextual skills, and interdependent job training (2019). Mentees can begin to mirror the mentor's behavioral tendencies, including attitudes, perceptions, values, and practices. Mentors can be a positive influence on the development of best practices in new teachers (2019). Mentoring novice teachers was designed to enable novice teachers to increase effectiveness to match higher proficiencies closer to experienced teachers.

Mentoring can be categorized into two groups, clear mentoring and developmental mentoring. These two concepts have been defined by the types of support the mentee receives (Lejonberg & Tiplic, 2016). In clear mentoring, the focus is on increased managerial effectiveness, student relationships, and self-confidence in abilities. This type of mentoring helps the mentee discover and build teaching pedagogy capacity by reflecting practices free from judgment or bias. It also includes one-on-one relationship building between the mentee and mentor that allows for cyclical feedback (Lejonberg & Tiplic, 2016). Developmental mentoring has elements of clear mentoring, except it goes in stages according to the perceived needs of the mentee. It does not have the same immediate feedback as clear mentoring. Developmental mentoring is more reactive to situations than the mentee's proactive participation (Lejonberg & Tiplic, 2016). Clear mentoring provides reflective conversations and an openness to a variety of professional approaches. In short, clear mentoring provides building capacity and flexibility for instructional differentiation.

The role of a teacher mentor is to build the capacity of first-year teachers to have students meet or exceed state grade-level standards for tested achievement (Bullough, 2012). It is harder for a first-year teacher to be proficient in all areas of teaching pedagogy at the beginning of their career. An expected amount of time is needed to be applied to learning effective instructional content and delivery (Wood, 2012). The three main relationships to facilitate efficacy in attitudes toward teacher proficiency are teacher-to-student, teacher-to-content, and student-to-content (Wood, 2012). Mentoring tends to focus mainly on the teacher-to-student relationship as it can deal with managerial tasks and classroom performances. Classroom management, procedures, and behaviors

are focused on in the mentoring relationship. Teacher-to-content relationships involve the teacher having the expertise in curriculum and instruction in the classroom and meeting the needs of a variety of individual students. Student-to-content relationships involve student processing and applications of subject content to make meaningful connections to instructional material. Several mentoring models will address some of these areas, but not all.

Mentoring without additional instructional support affected by duration, theoretical framework, programming approach, and fidelity can weaken a mentor and mentee relationship (Shockley et al., 2013). Mentoring programs can be constructivist rather than transmissive. This could be potential reasons teachers still leave the profession because it assumes the mentor can model for the new teacher. The modeling may not be enough for the novice to process, analyze, and apply the new skills to the proficiency it requires (Lejonberg &Tiplic, 2016). Mentor-reflective practices are most beneficial, including feedback intended for improvement. Beginning teacher induction programs can include mentoring, however, may not include content-specific induction opportunities (Wood, 2012). Research is beginning to explore what additional programs can assist novice teachers in mastering instructional content and the traditional induction program.

Instructional Coaching

Instructional coaching supports the adult learner, or teacher-learner, as it increases the standards of curriculum implementation in the classroom. It strengthens the capacity of the teacher to deliver in curriculum and instruction (Galey, 2016). Due to the various legislative initiatives in the past 20 years, student achievement has been a focus

through data-driven analysis from standardized assessments. The initiatives have been drivers to an increase in student achievement standards measured through nationally and statewide standardized assessments. Policymakers are using instructional coaching to increase reading and literacy pedagogy as written in No Child Left Behind (NCLB) of 2001. Part of this legislative policy included the Reading First Initiative, aimed at increasing reading and literacy achievement in students through additional teacher training. This idea traveled into the Every Student Succeeds Act of 2015, which entailed mandatory professional development in reading and literacy. Even recently, the state of Texas has included a house bill to create a mandatory Reading Academy for teachers, experienced or novice. Instructional coaching is a way to address the new pedagogy legislative demands.

Instructional coaching practices have had positive research through the early 2000s. It has shown increased proficiency in lesson planning, special populations, instructional practices, classroom management, and student achievement (Desimone & Pak, 2017). Instructional coaching addresses the diverse needs of novice teachers. Novice teachers, as well as experienced teachers, are often at different levels of pedagogical instruction. The different levels mean instruction is often implemented ineffectively (Heredia, 2020). Coaching can increase teacher self-efficacy and address the differentiated instructional needs of teachers, including new teachers. Incoherence, as Heredia states, leads to different levels of instructional delivery and formative assessments. It can cause a deficit in the instruction to meet the intended curriculum rigor (2020). Instructional coaching helps teachers by adding to the teacher toolbox with self-efficacy. Teachers can become more confident in their pedagogical levels of instruction

through guidance and reflection, with continuous reflection (Walsh, 2020). Instructional coaching can improve school culture, teacher collaboration, teacher opinions, instructional skills, self-efficacy, and student achievement (Desimone & Pak, 2017). Instructional coaches improve instructional practices by allowing teachers to understand expectations and adapt instructional delivery. Coaches align lessons and teacher performance with academic standards (Desimone & Pak, 2017).

Public K-12 schools have become more competitive as they compete with privatization and charters. The increase in student achievement has elevated the framework of former pedagogy. The shift also moved from teacher-centered instruction to student-centered instruction. This shift includes the teacher as the student and actively participating in professional development (Galey, 2016). Changes to how teachers were professionally trained and the display of teacher proficiencies are now characterized as active learning. Educational reform required teacher instructional practices to meet the needs of the changing student performance and standard-based achievement (Galey, 2016). In 2011, the Texas Education Agency, TEA, studied mathematics instructional coaching and its impact on student outcomes, college readiness, cost-effectiveness, and program fidelity in high school mathematics. TEA concluded that the program rolled out in two cycles, had shown increased student outcomes through standardized testing (Merola et al., 2011). The program also was cost-effective by allowing savings for staff professional development resources to be allocated for different school needs (Merola et al., 2011). The study surmised increased student achievement above the state's increase, especially among African American middle school students. Those students rose from 59% to 64%, meeting the standard in the 2011 assessed year (Merola et al., 2011).

Eighth-grade students in SES demographics saw an increase in passing rates. Teacher participation was stable, and there was little turnover as teachers went from Cycle 1 to Cycle 2 (Merola et al., 2011).

Instructional coaches, like mentors, must build a relationship with the teacher to build trust and facilitate learning. The teacher should have a relationship similar to sports coaches whereby constructive feedback and modeling can pass freely between coach and student. Instructional coaching is an interactive and reciprocal relationship with adequate opportunities for feedback (Desimone & Pak, 2017). Practicing problem-solving skills in real-world situations is an embedded skill set of coaching and a main component of andragogy (Knowles et al., 2011). Coaching is more focused than a mentor because it allows instructional delivery and content as the most concentrated study area. Coaching allows the mentorship relation to be content-specific and more refined. It will enable the coach to be a pedagogical content expert (Desimone & Pak, 2017). Coaches support teacher efficacy in instructional pacing, effective student feedback, and program fidelity (Glover, 2017). Improved teacher productivity is expanded when the teacher has additional support in learning what to teach and how to teach it. Dialogical questioning between instructional coach and teacher makes an effective form of feedback and gives the teacher ownership of learning (Knight, 2018).

Content-specific teacher induction leads to connections of the student to the content relationship by enhancing or equipping novice teachers to better understand essential questions to foster more in-depth student understanding (Wood, 2012). Instructional coaching assists in the decision making of the administrators and teachers on daily instructional decisions (Glover, 2017). Real questioning fosters thought

exchanges between coaches and novice teachers, providing a diverse idea exchange (Knight, 2018). Through these ideas of conversational feedback, the instructional content expert can systematically analyze teacher- and student-centered data (Glover, 2017). This dialogical conversation from an instructional coach to a mentee provides no unbiased and genuine feedback (Knight, 2018). These conversations give teachers ownership of learning and lend to the intrinsic learning motivation. This model of instructional coaching is a very accepted approach, as many studies examine the effects instructional coaching has on teacher and student outcomes.

Assisting the Response to Intervention model, instructional coaches provide embedded teacher professional development in four areas. Systematically analyzing data, problem analysis, action plans, and evaluative reflection (Glover, 2017). The cyclical approach to analyzing and using data as a reflection tool engages teachers in processing information to target instruction for individual student needs. Coaching a spiral and scaffolding process that adjusts teacher instructions it adjusts student instruction. The instructional coach's role is a cyclical process to improve productivity in learning (Glover, 2017) systematically. Instructional coaching provides onsite supervision of scaffolding instructional opportunities over time with opportunities for frequent visits for mentors and mentees to process curriculum and instructional practices for students (Porsche et al., 2012). Instructional coaching improves school reform in 3 areas: teacher efficacy, effective teaching strategies, and student achievement (Knight, 2018). Glover (2017) agrees instructional coaching can maximize effectiveness in classroom instructional delivery to improve student performance. The main focus of school reform and teacher self-efficacy relies heavily upon student achievement. Student achievement is

the measurable goal of teacher mastery of curriculum and instruction. Instructional coaching provides a pathway to increase the effectiveness and efficiency of student learning through the best teaching pedagogy.

Professional Development

Mentoring and instructional content coaching have been studied to increase teachers' content knowledge and ability in education. By allowing the best practices to emerge and be implemented, education can achieve its main focus of consistent and effective classroom instruction that promotes student achievement. Coaching and mentoring together, when done in tandem, can help to facilitate a new level of teacher proficiencies that strive for optimal student performance and achievement. Professional development for teachers seeks to inspire teachers to integrate researched best practices of teaching pedagogy into teaching self-efficacy (Porche et al., 2012). Most state teacher licensing requires yearly professional development for teachers to maintain their professional licensure.

The Race to the Top initiative of 2009 had five parts to address school reform, specifically teacher training. The five components of the initiative included increased, more rigorous curriculum standards, teacher recruitment and retention, data-driven decision making, innovation, demonstrating and sustaining school reform. The component of teacher retention and recruitment requires more research into best practices for teacher training and instructional needs. These needs include mentorship and professional development. Two areas in the initiative specifically discussed professional development to help teacher effectiveness. The two areas of professional development mentioned are providing educators with effective support and improving educator

effectiveness through planning. Relevant professional development aimed at increasing the ability of principals and teachers to perform the pedagogy of instruction can benefit the student performance outcomes outlined in the national initiatives. Allowing states to plan and design the most effective instruction requires deliberate research and implementation of the research Teachers are not often involved in staying current on research in journals and studies. This creates a learning opportunity for administrators to plan and design opportunities for teachers to learn new pedagogy (Porche et al., 2012). The intent of Race to the Top (2009) definitely addresses the need for current and relevant professional development to be easily accessible and applicable to all teachers. Teacher professional development has a more positive effect on student outcomes in elementary math as it involves increasing the capacity of teacher pedagogy and strengthening teaching instructional delivery (Yang et al., 2020).

Data-Driven Decision Making

Lastly, support for first-year teachers should be consistent and instructionally aligned. Achieving this will create a specific goal-setting and monitoring process that mentors may not be adequately involved in (Cook, 2012). Additional instructional support is needed for a novice teacher to have student achievement at the same levels as the experienced teacher. Instructional coaching is an ongoing, evaluative professional development for first-year teachers. It allows for progress monitoring and relationship building to further the adult learner's competencies in which the instructional coach can focus mainly on student achievement through statistical analysis, teacher instructional planning, and student-centered curriculum. The "managing from the middle" coaching approach achieves these goals (Galey, 2016).

Data-driven decision-making encourages instructional coaches to address student-centered outcomes as the model for improving teacher performance. The data-driven model's main task is to examine the interactions between teacher actions, student actions, and the learning environment (Glover, 2018). Standard data-driven models include observation of the instructional expert to provide ongoing professional feedback in targeted instructional areas (Knight, 2018). Through this cyclical evaluation process, the teacher has feelings of acceptance and confirmation. The evaluation and feedback are presented precisely to foster teacher growth (Lejonberg & Raaen, 2016). The coaching model incorporating data-driven decision-making will focus on instructional coaching to teacher outcomes to student outcomes (Glover, 2017). This can help to create a measurement of rigor to guide instructional practices towards monitoring and adjusting instruction for student needs.

Using data-driven instructional coaching provides additional academic support by screening, identifying misconceptions, monitoring instruction, adjusting instruction and intervention. Parts of the Individuals with Disabilities Act of 2004 introduced the nation to Response to Intervention. Response to Intervention, often called RtI, uses a data-driven model to inform the decision-making of educators to meet the needs of the students. Originally the process intended to identify students in need of evaluation for special education services. Now it is a national model of identifying student needs to be successful in general education services. Texas Education Agency often referred to as TEA, the definition of Response to Intervention is an approach schools use to help all students, including struggling learners. The RtI approach allows Texas students to learn and work at their grade level. The idea is to help all students be successful through plans

and identified practices for targeted instruction (TEA, 2022). TEA addresses the needs for the RtI process for several student populations, from Head Start to special education services. Throughout this process, students are tracked and given targeted instruction through the data-driven process. The data collected by the educator is specific to the student's needs. Teachers are encouraged to try a variety of teaching methods to achieve student mastery with fidelity and monitor over time for the observation of student outcomes. This is an explicit model of data-driven instruction as it continuously monitors student outcomes to target instruction for intervention (Porsche et al., 2012).

Targeted instruction is embedded in the RtI process as it aims at specific goal setting in small-group intervention administration. Teachers doing their own evaluative small group intervention learn more introspection of data and student needs (Porsche et al., 2012). Studies have focused on reading and what data-driven practices can occur. Targeting instruction allows teachers to administer quality interventions in smaller increments of time and repeatedly over time (Aiken et al., 2021). It allows students to be exposed to the content and application of differentiated instruction (Aiken et al., 2021). There has been direct evidence RtI, and targeted instruction have proven to be more beneficial for student outcomes. Targeted instruction increases student achievement and understanding of concepts because it caters to the specific needs of the student (Glover, 2017). Data-driven instructions take the guesswork out of instructional practices as they fine-tune the approach to meet the needs of the students, becoming a more efficient and effective way to gain student mastery.

Math Instructional Practices

Trending data for math-based instruction has increased rigor and student expectations in recent years. Mathematic scores nationally have lagged behind other countries, and math programs and instructional practices have been reformed to address these shortcomings (Doabler et al., 2012). School reform legislation has targeted increased standards in math and science. Common core, a state initiative, called for increased student rigor, which led to increased student expectations (Bottge et al., 2015). Although all states did not adopt Common Core, the influence of national and state legislature has affected the mathematics classroom. As researchers examine mathematical instruction and the benefits of different styles, research suggests math instruction has eight basic core instructional practices (Doabler et al., 2012). The basic principles for a strong math curriculum are prerequisite skills, math vocabulary, explicit instruction, math models, opportunities for practice, academic feedback, and formative feedback. The prerequisite skills allow students to have a foundation for the new learning that will transpire. Students can be expected to learn new concepts while using prior skills to understand the new learning adequately. Math vocabulary assists in learning as it will try to explain concepts students need to apply to problem-solving. After explicit instruction, which can be direct or student-centered, math curricula will involve students' opportunities to practice the new skills with opportunities for immediate feedback during instruction or during formative assessments (Doabler, 2012). Math curriculum should be based on procedural and conceptual knowledge to ensure students receive high-yield instructional practices for mastery learning (Bachman et al., 2015). Well-designed

mathematics curricula should include these areas to address student content-specific needs (Doabler et al., 2012).

Math proficiency needs to provide opportunities for students to use meta-cognitive skills in both procedure and comprehension for students to have diverse tools to apply to mathematical problems (Bachman et al., 2015). Problem-based learning is an approach where the students are asked to combine procedural and computational skills to real-life situations. Its goal is to allow students to recognize through critical evaluation of a series of skills needed to solve the problem. Anchored instruction is similar but asks students to evaluate a mathematical solution through pre-practiced uniformed steps. Both approaches aim to increase student outcomes in mathematical solutions and the mental processes associated with those solutions (Bottge et al., 2015). Research also includes allowing students to make connections to the tasks helps to foster an understanding of the reasoning behind why the steps are taken in a solution. Research into spatial reasoning of mathematical operations could include how or what to use, either acting it out or computer-based simulations (Bottge, 2015). Differentiating the approaches can improve student outcomes by increasing the rigor needed to address the content-rich investigation skills required for high-order problem-solving. Math instruction should be research-based and have opportunities for practice embedded in the design (Doabler et al., 2012).

Teacher competence or self-efficacy can affect the quality of instruction students receive in math. Preschool teachers teaching STEM areas must feel confident in teaching content-specific instruction because it affects their willingness to teach the subjects (Gerde et al., 2018).

It will affect the teacher's frequency and ability to teach to the rigor needed for higher-order mathematical applications. Teachers have three common math enrichment approaches: remediation, mandatory enrollment, and a combination of both approaches (Cortes et al., 2015). Remediation is often used to provide additional instructional time to attend to tasks and can include methods such as tutoring or retention. Mandatory enrollment is where all students are required to take a math class to graduate, such as Algebra I. These methods aim to give students more exposure and time to master the mathematics material. Cortes's (2015) research findings suggest that the higher the student mastery with more time on tasks through targeted instruction and small groups. Primary teachers in the lower grades feel more confident teaching reading than math or science due to inadequate time or unpreparedness (Gerde et al., 2018). Time needs to be spent helping to instruct teachers in more effective ways to teach to ease the feeling of inefficiency. Co-teaching is another method that can assist teachers in instructing students with special needs. Teachers using a variety of approaches from best practices professional development had higher achievement with students from special populations (Bottge et al., 2015). Addressing the needs of all students requires using multiple approaches in mathematical instruction. Students from lower socioeconomic backgrounds, SES and English Language Learners, ELL's, can benefit from dialogical instruction as it involves the students' thinking to apply to mathematical solutions (Bachman et al., 2015). Student achievement can be increased when there is a planned effort to examine ways to incorporate student engagement in the areas needed for enrichment.

Principals are the instructional leaders on campus. Principals are the primary evaluators of teacher performance on a campus. This evaluation measures the effectiveness of teachers as they implement pedagogy through curriculum and instruction in the classroom. As the primary evaluator, principals provide reliable feedback through observations of teacher actions (Ozdemir, 2020). Principals, as instructional leaders, address teacher needs through structured curricula and professional development. Teachers' expectations of principals as instructional leaders is that the principal is competent in pedagogy especially when it comes to the evaluation of programming and human resources (Ozdemir, 2020). Principals set the campus instructional goals and decide how to use the financial resources to improve instruction and increase student achievement. Currently, several educational administrative programs include coursework in instructional leadership. Instructional leadership is defined as setting goals, managing curriculum, developing the learning climate, and developing student outcomes (Ozdemir, 2020). The principal is an integral part of mathematics instruction as the instructional leader and primary guide for increased proficiencies in campus mathematics instruction for increased student achievement.

Additional mathematics instruction should include literacy. Reading helps math problem-solving in real-life approaches. Math literacy instruction is a varied approach involving reading and going in between literacy comprehension and mathematical comprehension (Yang et al., 2020). Yang goes on in their research to examine how high reading skills may not mean high math skills, and students can show a high reading proficiency and math deficits. Elementary and secondary math content differs developmentally in skills, ability, comprehension, teacher background, time spent on

tasks and resources. The importance of literacy skills in mathematics instruction goes beyond just vocabulary but comprehension of problem-solving tasks (Yang et al., 2020).

CHAPTER 3

RESEARCH DESIGN

This study used a descriptive design to measure the perception of novice teachers' attitudes toward receiving instructional coaching with mentoring and how it relates to their job satisfaction. It was administered in the middle of the second year to collect the perception of job satisfaction or readiness of the first-year teacher after instructional coaching and mentoring were received with the same group of participants.

This study used a quasi-experimental research design to look for statistically significant associations between groups with and without mentoring and coaching and how it relates to student achievement performance. A static group comparison design was used by the researcher, as noted below was used.

X O1

O2

One group of first-year math teachers received instructional coaching as the treatment. The second group of first-year math teachers received mentoring only. The post-test was the administered state standardized test given in the Spring of 2022. An additional posttest of the job satisfaction survey was administered to measure the job satisfaction of the first-year math teachers in the 2021-2022 school year. This design allowed the study to examine the statistical significance in the associations between the two teacher groups with different teacher supports on job satisfaction and student achievement. Each grade level was statistically examined using the two groups on job satisfaction and student achievement. This study collected quantitative data using empirical methods to gain an understanding of the interrelation of the variables.

Population and Research Setting

The first district is the Houston metropolitan area school district located in Houston, Texas. As of the 2018-2019 school year, it had approximately 22,264 students. The district has 15 elementary campuses, four middle school campuses, and four high school campuses. According to the Texas Education Agency in the 2018-2019 school year, the district received an accountability rating of B. 65.4% of students were considered at risk of dropping out of school. 33.5% of students were enrolled in bilingual and English language learning programs. The ethnicity of the students in the district is 15% African American, while the state average is 12.7%. American Indian students represent 0.3% of the student population, and the state average is 0.4%. Asian students represent 0.6%, and the state average is 4.5%. Hispanic students represent 79.1% of the student body, and the state average is 52.9%. White students account for 4.1% of the population, and the statewide average is 27.4%. Two or more races are measured at 0.8%, and the state average is 2.4%

A student is identified as being at risk of dropping out of school based on state-defined criteria. A student is defined as "economically disadvantaged" if they are eligible for free or reduced-price lunch or other public assistance. These students are reported as 65.4% identified as at risk, 85.5% identified as economically disadvantaged, and 34% labeled as Limited English Proficiency. Students receiving special education services are 9%. The teacher-to-student ratio is 15 students to 1 teacher.

The second district is in the metropolitan area of Houston, Texas. This district has nine elementary, 3 middle, and four high school campuses. It has a student population of slightly under 10,00 students. In the 2018-2019 school year, the Texas Education

Agency, TEA, gave the district an overall rating of B. The student-to-teacher ratio is close to 15 students to 1 teacher. 77% of students were identified as at risk of dropping out of school. The ethnicity of the student population is 65.7% Hispanic, while the state average is currently 52.9%. African American students are 19.9%, slightly over the state average of 12.7%. The Asian student population was reported as 4.1%, Pacific Islander 0.2%, and American Indian 0.3%. White students were identified as 6.9%. Students identified as two or more races are 3%. Students identified as economically disadvantaged are 76.7%, and limited English proficient students are 42.5%. The special education student population is 10.7%. Bilingual and ESL students are 42.8%.

First-year math teachers in the 2021-2022 school year were from both districts. The first-year teachers were in grades 3 through 5 and taught math in one of the elementary campuses in each district. All first-year elementary math teachers were the math teachers of record for the classroom and administered math instruction and state testing to their classes. All first-year math teachers have recorded aggregate scores for the state testing in the 2021-2022 school year.

Sampling Procedures

This study conveniently sampled first-year teachers in urban public schools assigned to a math STAAR testing grades 3 through 5 in the 2021-2022 school year to participate in the survey for job satisfaction. The researcher assigned a number to the participants to record their classroom aggregate scores on the 2021-2022 STAAR test. The researcher sent surveys through the districts to first-year teachers to monitor student performance for achievement levels from mentoring and coaching. From the responses received, each sample was assigned to a group. Each sample was randomly assigned a

number to correlate to aggregate state standardized test scores. Each district allowed access to all first-year math teachers in grades 3 through 5 through email. Surveys and confidentiality statements were sent out through email, and of those responses, each participant received a randomized number to allow correspondence to test scores while still allowing for anonymity for validity. Participants were assigned a randomized number by grade level for additional testing purposes. This identification was only by grade level, and the researcher recorded no other identifiable characteristics.

Instrumentation

This study used two instruments to collect the data. The two instruments were the PIRLS Jos satisfaction survey and the State of Texas Assessment of Knowledge and Skills (STAAR) math test. In the PIRLS job satisfaction survey, a Likert scale was used to measure the job satisfaction of first-year teachers. The researcher chose to use a survey from a collection of first-year teacher job satisfaction from a database of surveys A Likert scale questionnaire was used to measure the job satisfaction of first-year teachers. The collection of first-year teacher job satisfaction was measured from 1 to 4, with 1 as Strongly Disagree to 4 as Strongly Agree on each question. Items included but not limited to questions such as I am content with my profession as a teacher. It also included questions about finding work meaningful and purposeful. The survey was converted into a Google form allowing the user to respond anonymously with the only identification as the randomized number. The survey assessed to what degree first-year teachers perceive their job satisfaction at the end of the 2021-2022 school year.

The quantitative field study used a survey design to describe trends in the population of individuals. Creswell (2002) and Rumrill (2004) defined survey designs as

procedures in quantitative research in which investigators distribute surveys or questionnaires to a sample or to an entire population to describe attitudes, opinions, behaviors, or characteristics of a designated population.

The researcher examined the 2021-2022 State of Texas Assessment of Academic Readiness standardized assessment scores in math in grades 3 through 5 of the first-year teachers in the sample. These standardized scores came from the Texas Education Agency's scale for approaching grade level to master grade level data. Teacher aggregate scores measured the percent of teachers' accountability measure of Approaches Grade Level Standard with classroom mean percentages. Each class's mean scores were separated into 2 categories approaching grade level and did not meet standard, or did not approach grade level standard. Students who met grade level or master grade-level standards were included in state reporting in the approaching standard. Therefore, for this study approaching standards and did not approach standards were used as the outcome measure of student achievement. The Texas Education Agency has previously established this instrument and set scores based on the statewide performance of students historically in grades 3 through 5. This outcome measures student achievement by the teacher and examines between grade levels. This study used two instruments to collect quantitative data and identify associations between variables.

Validity of the instrument

Internal validity for the study's purpose was assessed by ensuring the survey instruments' validity. The survey instrument was a questionnaire from PIRLS teacher job satisfaction. The study used an instrument with established validity from previous studies. The previous studies used the Cronbach Alpha test to examine the items of the

questionnaire to adequately measure if the questions accurately described the construct of job satisfaction. The surveys used a Likert-type scale. According to Creswell (2002), Likert-type instruments are accurate because they are nonjudgmental and therefore provide valid results. “External validity is concerned with the interaction of the experimental treatment with other factors and the resulting impact on the ability to generalize to (and across) times, settings, or persons” (Cooper & Schindler, 2003, p. 434). The researcher also addresses content validity by using the established survey for the questionnaire.

The Texas Education Agency already addresses content validity for standardized testing. For the math STAAR assessment, the Texas Education Agency addressed content validity by using peer-reviewed items, historical scores from previous years, and prediction variables. Raters evaluated each item presented in the assessment pool and identified it as fully aligned, partially aligned, and not aligned. The Texas Education Agency has a statewide guide of skills students should master per grade level in a school calendar year. Each item, or question, was examined with the rubric of the Texas grade level standard in math and was rated by judges as a peer-reviewed process. Grades 3-5 met the threshold of 97% fully aligned before being placed on the state’s standardized test.

To protect external validity, participants assigned themselves to one of the two groups of mentoring or mentoring with an instructional coach. Researcher bias was removed by allowing the participants to categorize themselves in the study. Texas Education Agency reports student scores to school districts and the districts desegregate data by teacher and school. This study allowed districts to mass-email the survey and

report unnamed scores. Incentives of gift card drawings were given to volunteers to participate. External validity is not a threat in this study, and the results apply to other first-year teachers.

Reliability of the Instrument

The survey used by the researcher is a previously tested instrument. The researcher has established internal consistency with the study established and standardized test. The survey has been correlated with a Cronbach Alpha for the reliability of the instrument. The survey is found to be a valid instrument with established validity from the Cronbach Alpha at 0.96. This study used an established survey with validity and reliability that was statistically tested in several countries including the United States. Each item in the survey was statistically correlated and given a scaled performance total to use as a categorical variable of Highly Satisfied, Satisfied, and Less Than Satisfied.

The researcher also used the standardized instrument of the State of Texas Assessment of Academic Readiness, STAAR. This instrument measured student achievement according to the expected student performance levels of Texas students in grades 3, 4, and 5. The state of Texas has run statistical analysis of its standardized test yearly to account for the variance of student groups in areas of performance and subpopulations. The STAAR test was designed to align with the content-specific tasks written by the state of Texas for students in each grade in each content. It serves as a blueprint for what academic standards should be gained by students' acceptable yearly adequate progress. The standards given for the standardized test were for the 2021-2022 school year where performance was adjusted for Covid safety protocols. In addition, to

the peer review process, the state of Texas did field testing on items to compare to historical data of similar test items.

The researcher used a Chi-Square test to measure the association between teacher support and job satisfaction along with student achievement. The dependent variables of job satisfaction and student achievement were examined by grade level of third, fourth, and fifth grade. The performance of the Chi-Square test examined the association between variables at a 0.05 statistical level. In addition, the researcher used a Fisher test for any cells lower than 5 to further examine the association between variables from a small sample. Reliability is used for evaluating measurements where measures produce similar results over time and across situations. Zikmund (1997) defined reliability as "the degree to which measures are free from error and therefore yield consistent results" (p. 340). Researchers are interested in determining if their measure is valid. Zikmund defined validity as "the ability of a scale or measuring instrument to measure what is intended to be measured" (p. 342). Thus, each instrument the researcher used was reliable and valid and no external or internal threats were visible.

Data Collection

Surveys have been heavily criticized for nonresponsive bias if respondents differ substantially from non-respondents (Armstrong & Overton, 1977). Some literature on nonresponse bias details three recommended methods for protecting against nonresponse bias: (a) reduce nonresponse itself, (b) sample non-respondents, and (c) estimate the effects of nonresponse (Armstrong & Overton, 1977). The study addresses the issue of nonresponse bias by examining the incentivizing respondents' behavior and participants assigning themselves to groups.

The researcher emailed district offices of all first-year math teachers in the 2021-2022 school year still present in the districts. The surveys were assigned a random number before being emailed. The researcher collected the responses from the Google form with the only identifiable marker as the randomized number. The personal interview questions were derived from a PIRLS survey on job satisfaction, and the data were from the first-year teachers in grades third through fifth in urban schools in Houston, Texas. These teachers were informed of the purpose of the study and then asked to answer their perceptions recorded on a Likert scale from Strongly Agree to Strongly Disagree.

The researcher accessed from both school districts the aggregate classroom math STAAR scores, and State of Texas Assessment of Academic Readiness for grades 3, 4, and 5 of first-year math teachers in the 2021-2022 school year that have responded to the survey. The data collected were the passing standard of approaches grade level set by the State of Texas through the Texas Education Agency. The scores were sorted by classroom average in approaching grade level by percentages and raw scores. The researcher also denoted the grade level each classroom belongs to for the second research question looking for differences between groups.

Identification of Variables

Independent variables are mentoring and instructional coaching. The attributes of mentoring are teachers with a mentor and teachers without a mentor. The levels of instructional coaching are teachers with an instructional content coach and those without an instructional coach. In addition, the researcher examined the levels of grade level in the independent variable. The grade levels are 3rd-grade, 4th-grade, and 5th-grade first-year math teachers in the 2021-2022 school year. The dependent outcome is job

satisfaction and student achievement. To examine these variables, the following research questions were formulated for this investigation:

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

RQ2: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fourth grade?

RQ3: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fifth grade?

RQ4: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in third grade?

RQ5: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fourth grade?

RQ6: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fifth grade?

The research questions led the researcher to form the following null hypotheses based on the examined variables.

Null Hypotheses

The following null hypotheses were formulated for this investigation is as follows:

Ho_1: There is no statistically significant association in student performance of approaching or not approaching standard in math when third grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_2: There is no statistically significant association in student performance of approaching or not approaching standard in math when fourth grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_3: There is no statistically significant association in student performance of approaching or not approaching standard in math when fifth grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_4: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year third grade math teachers receive mentoring or mentoring with instructional coaching.

Ho_5: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fourth grade math teachers receive mentoring or mentoring with instructional coaching.

Ho_6: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fifth grade math teachers receive mentoring or mentoring with instructional coaching.

Statistical Analysis

The statistical analysis will look to provide evidence to reject or accept the null hypothesis. The Chi-Square test measured if there are statistically significant differences between the groups. It measured if there are differences between mentoring and instructional coaching on first-year teacher job satisfaction and student performance. The

survey asked participants to give their perceptions of their mentoring relationship and job satisfaction. Questions 1 through 7 of the questionnaires focused on the independent variable of job satisfaction and the perception of performance. The researcher ran a Chi-Square analysis for this study and also examined the effect between groups of first-year teachers' grade level to examine if any, differences or associations between the groups.

The sample size was relatively small. Therefore, the researcher used a Fisher's test to further examine the significance between the variables to avoid a Type 2 error. When the expected frequencies in a cell are greater than or equal to 5, assumptions of variance are greater. Thus, using a Fisher's test reduces the amount of variance between variables in a smaller sample size.

Evaluation of the Assumptions

The researcher met the following assumptions. Assumptions include normal distributions, homogeneity of variance, and independence of observation. The assumption is this study can be generalized to the greater population due to the randomization of sampling. The researcher assumes this study tested for normal distributions due to the use of interval data. The researcher used a valid instrument of a standardized survey and standardized achievement test. The researcher assumes homogeneity of variance is met by randomization of the sample and using the sample population of first-year math teachers in the 2021-2022 school year. Participant choice of groups and anonymity removed researcher bias; thus, this study met independence of observation.

Summary

In summary, the researcher used the static group comparison research design. This allowed the researcher to give one group of first-year teachers the treatment of the

independent variable of instructional coaching. The first group of first-year teachers have mentoring as primary instructional support and the treatment of instructional coaching. The second group of first-year math teachers have only mentoring as a primary source of instructional support. The sampling procedure used by the researcher included convenience sampling of the first-year math teachers target population in three districts with similar student demographics, including race, special education population, bilingual learners, and student-to-teacher ratio. From those samples, the researcher assigned randomized numbers to protect anonymity.

The researcher then administered a survey to the targeted population, and only the responses were used as the sample. The researcher also gained access through the districts to the aggregate STAAR math scores for the sample and separated it by grade level to run a 2 by 2 Chi Square to examine the associations in the mean in groups and between groups, if any, to reject the null hypothesis. The math scores are standardized by the Texas Education Agency and collected by the passing standard of approaching grade level. Each score was examined by percentage and a raw score for the researcher to use a Chi Square test to test the hypothesis. Internal and external validity has been established by using an established instrument. The researcher has removed bias by using convenience sampling, and assumptions of normal distribution, homogeneity of variance and independent of observation have been met.

CHAPTER 4

RESULTS

Introduction

The primary goal of this research was to investigate whether the provision of additional instructional support, in addition to mentoring, could lead to better outcomes for first-year teachers and their students. Specifically, the study explores the potential association between first-year math teachers receiving mentoring or mentoring with additional content support and student achievement in third, fourth, and fifth grade. Additionally, the study examines the relationship between mentoring and job satisfaction among first-year math teachers in third, fourth, and fifth grade.

In this chapter, the study begins by restating the research questions and hypotheses to be tested for the study. This is followed by providing descriptive measures of the sample used in this study. The next section of this study provides measures of validity and reliability for the job satisfaction instrument being used. The remaining sections report the results of the statistical test performed in analyses of the hypotheses presented in this study. A summary of the chapter results concludes this chapter.

To examine the impact of the two modes of first-year teacher support on student academic performance the following research questions are being posed.

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

RQ2: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach

grade level on math standardized assessments in fourth grade?

RQ3: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fifth grade?

To examine the impact of the two modes of first-year teacher support on job satisfaction the following research questions are being posed.

RQ4: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in third grade?

RQ5: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fourth grade?

RQ6: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fifth grade?

To address these six questions a series of null hypotheses were formulated and tested. By testing these null hypotheses, the study seeks to understand better the potential impacts of mentoring and instructional coaching support given to first-year math teachers on their student performance and teacher job satisfaction. The statistical analysis conducted in Chapter 4 provided valuable insights into the effectiveness of these programs and informed future efforts to support first-year math teachers**.** The hypotheses being tested are the following:

Ho_1: There is no statistically significant association in student performance of approaching or not approaching standards in math when third-grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_2: There is no statistically significant association in student performance of approaching or not approaching standards in math when fourth-grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_3: There is no statistically significant association in student performance of approaching or not approaching standards in math when fifth-grade first-year teachers receive mentoring or mentoring with instructional coaching.

Ho_4: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year third-grade math teachers receive mentoring or mentoring with instructional coaching.

Ho_5: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fourth-grade math teachers receive mentoring or mentoring with instructional coaching.

Ho_6: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fifth-grade math teachers receive mentoring or mentoring with instructional coaching.

Reliability of the Instrument

Table 1 provides information about the reliability and validity of the seven-item scale. The first column shows the reliability coefficient measured by Cronbach Alpha. The second column shows the percentage of variance explained in the scale. The third column explains the remaining columns are the component loading for each item on the scale to show the extent to which the item measures the construct of job satisfaction.

From Table 1, Cronbach's alpha coefficient of 0.92 indicated that the measure had high internal consistency and reliability, suggesting that the items measured the same

construct. It was also determined that the percentage of variance explained is 69%; this indicated that the measure is explaining a significant amount of the variability in the data. On the other hand, the component loadings for each item are all above 0.7; this indicated that each item was highly correlated with the underlying construct being measured and had good construct validity, meaning that it measured what it intended to measure. These results suggest that the data collection tool was reliable and valid, hence was used confidently in conducting the statistical analysis necessary to meet the research objective.

Table 1

Cronbach's Alpha and Component Loadings for a Seven-Item Scale

Cronbach's Alpha Reliability coefficient	*Percentage of variance explained*	*Item 1*	*Item 2*	*Item 3*	*Item4*	*Item5*	*Item 6*	*Item 7*
0.92	*69*	*0.84*	*0.78*	*0.87*	*0.88*	*0.88*	*0.76*	*0.79*

Table 2 presents the distribution of the type of certification program among first-year teachers. The table shows the number of teachers and the percentage of teachers who belong to each type of certification program. The table also includes the cumulative percentage, which shows the proportion of the total number of teachers who belong to each program as well as all programs combined.

Table 2 shows the distribution of the type of certification program among a sample of 28 teachers. Most teachers (50%) were certified through an Alternative Certification Program (ACP), while 46.43% were certified through a Traditional University Program. Only 3.57% of teachers had a certification program that was not classified as either ACP or Traditional University Program.

Table 2

Distribution of Type of Certification Program among First-Year Teachers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other	1.00	3.57	3.57	3.57
	Alternative Certification Program, ACP	14.00	50.00	50.00	53.57
	Traditional University Program	13.00	46.43	46.43	100.00
	Total	27.00	100.00	100.00	

Table 3 is a frequency table showing the age distribution among individuals. The table shows the number of participants in each age group and the percentage and cumulative percentage. Specifically, there are 9 individuals (32.14%) between the ages of 18-25, 14 individuals (50.00%) between the ages of 26-35, 2 individuals (7.14%) between the ages of 36-45, and 3 individuals (10.71%) who are older than 45. The total number of individuals in the sample is 28.

Table 3

Frequency Table Showing the Distribution of Age Among a Group of Individuals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	9.00	32.14	32.14	32.14
	26-35	14.00	50.00	50.00	82.14
	36-45	2.00	7.14	7.14	89.29
	older than 45	3.00	10.71	10.71	100.00
	Total	28.00	100.00	100.00	

Table 4 represents the gender of the participants. Participants were asked to identify as male or female for the demographic reporting of this study. From table 4, Out of the 28 participants, 25, or 89.29%, were female, while 3, or 10.71%, were male.

Table 4

Distribution of Gender Among Participants in the Study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	25.00	89.29	89.29	89.29
	male	3.00	10.71	10.71	100.00
	Total	28.00	100.00	100.00	

Table 5 includes data on the class average score for both the mentor-only group (consisting of 12 first-year teachers) and the mentor and instructional coach group (consisting of 15 first-year teachers). Each class has the actual percent score from the students and averaged for the class. For each grade level, the table provides information on the mean, standard deviation, and standard error mean for each measure of student achievement.

Table 5 presents the descriptive statistics results used to examine the average class percentage scores across grades 3-5 for a sample of 27 first-year teachers. The mean score represents the actual average for the class of each teacher reported in third grade classes, thus the mean score represents the average actual percentage score students received for the entire classroom. The mean percentage score was 56.48% (SE = 2.71%) for Grade 3, 65.11% (SE = 3.29%) for Grade 4, and 61.79% (SE = 2.34%) for Grade 5, resulting in an overall mean of 61.07% (SE = 1.63%). The standard deviation was 7.68% for Grade 3, 8.70% for Grade 4, and 8.09% for Grade 5, with an overall standard deviation of 8.49%. The sample variance was 0.59% for Grade 3, 0.76% for Grade 4, 0.66% for Grade 5, and 0.72% overall. The median percentage scores were 54.53% for Grade 3, 64.17% for Grade 4, and 60.88% for Grade 5, with an overall median of 60.25%. The minimum percentage score was 48.00% for Grade 3, 53.13% for Grade 4, and 50.03% for Grade 5, with an overall minimum of 48.00%. The maximum percentage score was 71.41% for Grade 3. The descriptive statistics presented in this study provide valuable insights into the class average percentage scores across grades 3-5, which serve as a foundation for examining the relationship between first-year math teachers receiving mentoring or mentoring with additional content support and student achievement, as well as the relationship between first-year math teachers' job satisfaction and mentoring with additional content support.

Table 5

Class Average Percentage Score

	Grade 3	*Grade 4*	*Grade 5*	*Total*
Mean	56.48%	65.11%	61.79%	61.07%
Standard Error	2.71%	3.29%	2.34%	1.63%
Standard Deviation	7.68%	8.70%	8.09%	8.49%
Sample Variance	0.59%	0.76%	0.66%	0.72%
Minimum	48.00%	53.13%	50.03%	48.00%
Maximum	71.41%	73.75%	79.37%	79.37%
Number of First-Year Teachers	8	7	12	27

Examining the Relationship between First-Year Third Grade Math Teachers Receiving Mentoring or Mentoring with Instructional Coaching and Student Performance

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

To answer research question 1 above, the following statistical hypothesis was formulated:

Ho_1: There is no statistically significant association in student performance of approaching or not approaching standards in math when third-grade first-year teachers receive mentoring or mentoring with instructional coaching.

H1: There is a statistically significant association in student performance of approaching or not approaching standards in math when third-grade first-year teachers receive mentoring or mentoring with instructional coaching.

To test the hypothesis above, a chi-square analysis examined the relationship between first-year third-grade math teachers receiving mentoring or mentoring with additional content support and student achievement. The results of the cross-tabulation and chi-square analysis are presented in table 6 and 7 below:

Table 6 shows a cross-tabulation of the two groups combining grades 3, 4, and 5 on student achievement. Student achievement was categorized as did not meet and approaches. Did not meet standards were students who did not pass. Approaches are the students who were approaching grade level, met grade level or mastered grade-level standards set by the Texas Education Agency on the standardized state test.

The cross-tabulation table illustrates the relationship between the Coach (mentor only, mentor with instructional coach) and Student Achievement variables (Did not meet, Approaches). Student achievement was measured in terms of two standards those students who did not meet passing standards and those who were at approaching grade level standards. The meets grade level standard and mastery level standard are included in the approaching category reported by the state of Texas, thus making 2 categories of did not meet and approaching. The table shows that out of the 5 first-year third-grade math teachers who received mentorship and instructional coaching, all had their students

approach the expected level of achievement. None of them failed to meet the expected level. On the other hand, out of the 3 first-year third-grade math teachers who only received mentorship, only one had their students approach the expected level of achievement, while two of the first-year third-grade math teachers failed to make their students meet the expected level. The total count of first-year third-grade math teachers who received either mentorship and instructional coaching or mentorship only was 8. The expected count in each cell was calculated based on the assumption of independence between the two variables. However, it is noteworthy that the expected count for four cells was less than five, with the minimum expected count being 0.8.

Table 6

Cross-tabulation of Coach Mentorship for First-Year Teachers in Math and Student Performance

		Student Achievement		Total
		Approaches	Did not meet	
Mentor and Instructional Coach	Count	5	0.5	5.5
	Expected Count	3.8	1.3	5.0
Mentor Only	Count	1	2	3
	Expected Count	2.3	.8	3.0
Total	Count	6	2	8
	Expected Count	6.0	2.0	8.0

Table 7 shows the results of the statistical test examining the association between third grade first year math teachers who received mentoring or mentoring with instructional coaching on student performance. The table includes Chi Square, the Continuity Correction, the Likelihood ratio and the Fisher's Exact Test.

The results of the chi-square tests revealed a significant association between the two categorical variables (χ^2(1) = 4.444, p = 0.035). However, due to the violation of the assumption of expected cell counts greater than or equal to 5 (4 cells with expected

counts less than 5 and the minimum expected count being 0.8), the validation of this interpretation was infringed; hence an alternative test, Fisher's exact test was considered more appropriate in this case, as it does not have the assumption of expected cell counts greater than or equal to 5, and provides a more precise p-value. Fisher's exact test is often used when the sample size is small. The Fisher's exact test in this study showed a p-value of .107, suggesting no significant association between the two variables (Fisher's exact test, p = .107). As such, we failed to reject the null hypothesis that there is no association between the two variables and conclude that there was insufficient statistical evidence at a 0.05 significance level to prove that the First-year third grade math teachers who receive mentoring with instructional coaching will have higher student performance compared to those who receive only mentoring.

Table 7

Chi-Square Tests to Examining Relationship between First-Year Third Grade Math Teachers Receiving Mentoring or Mentoring with Instructional Coaching on Student Performance

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.444[a]	1	.035	.107	.107
Continuity Correction	1.600	1	.206		
Likelihood Ratio	5.178	1	.023	.107	.107
Fisher's Exact Test				.107	.107

N of Valid Cases	8

a. 4 cells (100.0%) have an expected count of less than 5. The minimum expected count is .75.

b. Computed only for a 2x2 table

The Relationship between First-Year Fourth Grade Math Teachers' Mentoring and Student Performance

In order to answer the research question RQ2 that, intended to investigate whether there was a statistically significant association between first-year fourth-grade math teachers receiving mentoring or mentoring with instructional coaching and student performance, the following hypothesis was formulated and tested;

Ho_2: There is no statistically significant association in student performance of approaching or not approaching standards in math when fourth-grade first-year teachers receive mentoring or mentoring with instructional coaching.

H2: There is a statistically significant association in student performance of approaching or not approaching standards in math when fourth-grade first-year teachers receive mentoring or mentoring with instructional coaching. The result of the chi-square test is presented in the table 8.

Table 8 shows the results of the statistical test examining the association between fourth-grade first-year math teachers who received mentoring or mentoring with instructional coaching on student performance. The table includes Chi-Square, the Continuity Correction, the Likelihood ratio, and the Fisher's Exact Test.

The Pearson Chi-square test results from Table 8 showed that there was no significant association between the two categorical variables for the job satisfaction of first-year third-grade math teachers receiving mentoring or mentoring with instructional coaching support ($\chi^2(1) = 0.467$, $p = 0.495$). However, it was noted that the assumption of expected cell counts greater than or equal to 5 was violated, with all four cells having expected counts less than 5, with the minimum expected count being 0.29. Therefore, the interpretation of the chi-square test results was considered inconclusive; instead, Fisher's exact test was used as the sample size was small, and 4 cells(100%) had an expected count is less than 0.05, the test revealed a p-value of 1.000, indicating that there is no significant association between the two variables (Fisher's exact test, $p = 1.000$). These statistics gave us enough evidence at a 0.05 significance level to fail to reject the null hypothesis and conclude that, at a 95% confidence level, the data does not provide sufficient evidence to reject the null hypothesis that there is no statistically significant relationship between first-year fourth-grade math teachers receiving mentoring or mentoring with instructional coaching and student performance.

Table 8

Chi-Square Tests Showing the Relationship between First-Year Fourth-Grade Math Teachers' Mentoring and Student Performance

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.467[a]	1	.495	1.000	.714
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.738	1	.390	1.000	.714
Fisher's Exact Test				1.000	.714
N of Valid Cases	7				

a. 4 cells (100.0%) have an expected count of less than 5. The minimum expected count is .29.

b. Computed only for a 2x2 table

The Effect of Mentoring and Additional Content Support for First-Year Fifth-Grade Math Teachers on Student Performance

To investigate whether there was a statistically significant relationship between first-year fifth-grade math teachers who received mentoring compared to those who received mentoring with instructional coaching on their student achievement, the following statistical hypothesis was formulated:

H_{O3}: There is no statistically significant association in student performance of approaching or not approaching standards in math when fifth-grade first-year teachers receive mentoring or mentoring with instructional coaching.

H_3: There is a statistically significant association in student performance of approaching or not approaching standards in math when fifth-grade first-year teachers receive mentoring or mentoring with instructional coaching.

Table 9 below presents the results of a chi-square test that was conducted to evaluate the statistical hypothesis and examine the relationship between first-year fifth-grade math teachers receiving mentoring or mentoring with instructional coaching and student performance.

Table 9 shows the results of the statistical test examining the association between fifth-grade first-year math teachers who received mentoring or mentoring with instructional coaching on student performance. The table includes Chi-Square, the Continuity Correction, the Likelihood ratio, and the Fisher's Exact Test.

At a 95% confidence level, the chi-square test results show no statistically significant relationship between first-year fifth-grade math teachers who received mentoring or mentoring with instructional coaching and student performance (Pearson Chi-Square=0.545, df=1, p=0.460). It was noted that 75% of the cells had expected counts less than 5, with the minimum expected count being 0.33; therefore, the chi-square results were considered to be inconclusive and invalid; hence, the Fisher's Exact test was necessary to account for the small sample size and low expected counts. The Fisher's Exact Test also did not reveal a statistically significant association as its p-value was calculated to be (p=0.667). Additionally, the likelihood ratio test was determined to be 0.856, with a p-value of 0.355. These findings gave us sufficient statistical evidence at a 0.05 significance level to fail to reject the null hypothesis and conclude that student

performance was not statistically impacted significantly due to first-year fifth-grade math teachers receiving mentoring only or mentoring with instructional coaching.

Table 9

Chi-Square Tests For Examining The Effect of Mentoring and Instructional Coaching for First-Year Fifth-Grade Math Teachers

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.545[a]	1	.460	1.000	.667
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.856	1	.355	1.000	.667
Fisher's Exact Test				1.000	.667
N of Valid Cases	12				

a. 3 cells (75.0%) have an expected count of less than 5. The minimum expected count is .33.

b. Computed only for a 2x2 table

The Relationship between First-Year Third-Grade Math Teachers' Instructional Support and Reported Job Satisfaction.

Research question 4 aimed to determine if there was a statistically significant association between first-year third-grade math teachers receiving mentoring or

mentoring with instructional coaching and reported job satisfaction. To determine and asses this relationship, we formulated and tested the following statistical analysis;

H_{O4}: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year third-grade math teachers receive mentoring or mentoring with instructional coaching.

H_4: There is a statistically significant association in reported first-year teachers' job satisfaction when first-year third-grade math teachers receive mentoring or mentoring with instructional coaching.

Table 10 shows the results of the statistical test examining the association between third-grade first-year math teachers who received mentoring or mentoring with instructional coaching on job satisfaction. The table includes Chi-Square, the Continuity Correction, the Likelihood ratio, and the Fisher's Exact Test.

A chi-square test was conducted to examine the association between first-year third-grade math teachers' mentoring/instructional coaching support and reported job satisfaction. The sample consisted of 5 valid cases. The Pearson chi-square value was not significant, $\chi2(1) = 0.833$, $p = .361$, indicating that there was no significant association between mentoring/instructional coaching support and reported job satisfaction. The continuity correction value was also not significant, $\chi2(1) = 0.000$, $p = 1.000$. The likelihood ratio was not significant, $\chi2(1) = 1.185$, $p = .276$. Finally, Fisher's exact test was not significant, $p = 1.000$. These results suggest that there is no evidence to support the hypothesis that mentoring/instructional coaching support is associated with reported job satisfaction among first-year third-grade math teachers. However, it should be noted

that all four cells had expected counts less than 5, with the minimum expected count being 0.40, which may limit the interpretability of these findings.

Table 10

Chi-Square Tests Showing the Association between First-Year Third-Grade Math Teachers' Mentoring/Instructional Coaching Support and Reported Job Satisfaction

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.833[a]	1	.361	1.000	.600
Continuity Correction	.000	1	1.000		
Likelihood Ratio	1.185	1	.276	1.000	.600
Fisher's Exact Test				1.000	.600
N of Valid Cases	5				

a. 4 cells (100.0%) have an expected count of less than 5. The minimum expected count is .40.
b. Computed only for a 2x2 table

Examining the Relationship Between First-Year Fourth-Grade Math Teachers' Job Satisfaction and Mentoring with Instructional Coaching Support

To answer research question 5 seek to answer if there was a statistically significant association between reported job satisfaction of first-year fourth-grade math teachers who received mentoring compared to those who received mentoring with instructional coaching support, we formulated the following hypothesis:

H_{O5}: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fourth-grade math teachers receive mentoring or mentoring with instructional coaching.

H_5: There is a statistically significant association in reported first-year teachers' job satisfaction when first-year fourth-grade math teachers receive mentoring or mentoring with instructional coaching.

Table 11 shows the results of the statistical test examining the association between fourth-grade first-year math teachers who received mentoring or mentoring with instructional coaching on job satisfaction. The table includes Chi-Square, the Continuity Correction, the Likelihood ratio, and the Fisher's Exact Test.

A chi-square test was conducted to examine the association between first-year fourth-grade math teachers' job satisfaction and mentoring with instructional coaching support. The sample consisted of 12 valid cases. The Pearson chi-square value was marginally significant, $\chi 2(2) = 6.000$, $p = .050$, indicating a potential association between mentoring with instructional coaching support and job satisfaction. The likelihood ratio was also marginally significant, $\chi 2(2) = 7.410$, $p = .025$. However, Fisher's exact test was not significant, $p = .080$. These results suggest that there may be a possible association between mentoring with additional content support and job satisfaction among first-year fourth-grade math teachers, but further research with a larger sample is needed to confirm these findings. It should also be noted that all six cells had expected counts less than 5, with the minimum expected count being 1.50, which may limit the interpretability of these findings, that is (why we only report the fisher's exact test).

Table 11

Chi-Square Tests Examining the Association Between First-Year Fourth-Grade Math Teachers' Job Satisfaction and Mentoring with Instructional Coaching Support

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	6.000[a]	2	.050	.123
Likelihood Ratio	7.410	2	.025	.123
Fisher's Exact Test	5.469			.080
N of Valid Cases	12			

a. 6 cells (100.0%) have an expected count of less than 5. The minimum expected count is 1.50.

Examining the Relationship Between First-Year Fifth-Grade Math Teachers' Job Satisfaction and Mentoring with Instructional Coaching Support

Research question 6 sought to answer is there a statistically significant association between first-year fifth-grade math teachers receiving mentoring or mentoring with instructional coaching and reported job satisfaction.

Ho_6: There is no statistically significant association in reported first-year teachers' job satisfaction when first-year fifth-grade math teachers receive mentoring or mentoring with instructional coaching.

H_6: There is a statistically significant association in reported first-year teachers' job satisfaction when first-year fifth-grade math teachers receive mentoring or mentoring with instructional coaching.

Table 12 shows the results of the statistical test examining the association between fifth-grade first-year math teachers who received mentoring or mentoring with instructional coaching on job satisfaction. The table includes Chi Square, the Continuity Correction, the Likelihood ratio, and the Fisher's Exact Test.

A chi-square test was conducted to examine the association between first-year fifth-grade math teachers' job satisfaction and mentoring support. The sample consisted of 10 valid cases. The Pearson chi-square value was not significant, $\chi2(2) = 1.270$, $p = .530$, indicating that there was no significant association between mentoring support and job satisfaction. The likelihood ratio was also not significant, $\chi2(2) = 1.265$, $p = .531$. Additionally, Fisher's exact test was not significant, $p = .500$. These results suggest that there is no evidence to support the hypothesis that mentoring support is associated with reported job satisfaction among first-year fifth-grade math teachers. However, it should be noted that all six cells had expected counts less than 5, with the minimum expected

count being 0.60, which limits the interpretability of chi-square findings; hence we tested the hypothesis using Fisher's exact test as its appropriate for small sample sizes and for situations where cell have expected counts less than 5.

Table 12

Chi-Square Tests Examining the Association Between First-Year Fifth-Grade Math Teachers' Job Satisfaction and Mentoring Support

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1.270[a]	2	.530	1.000
Likelihood Ratio	1.265	2	.531	1.000
Fisher's Exact Test	1.789			.500
N of Valid Cases	10			

a. 6 cells (100.0%) have an expected count of less than 5. The minimum expected count is .60.

Summary

In this study, the following research was analyzed. The instrument was found as a reliable tool and assessed the reliability and validity with a Cronbach Alpha measure. It maintained the items from the questionnaire would measure the construct of job satisfaction as identified by the researcher. The demographics found in the sample were predominantly first-year female teachers and were more commonly found in the age range of 26-35 years of age. The new teachers were approximately evenly split between a traditional 4-year university program and an accelerated accreditation program, ACP. The average class percentage score for grades 3 to 5 fell in the range of 55% and 65%, this information created a baseline in which to further examine the association of the variables with each other. The mean class average score served as additional data content for examining the association between first-year math teachers receiving mentoring or mentoring with additional content support and student achievement, as well

as the association between first-year math teachers' job satisfaction and mentoring with additional content support.

The first three research questions failed to reject the null hypothesis when the p values were over the threshold of 0.05. The researcher could not reject the null hypothesis with the values from the Chi Square analysis for research questions 1, 2, and 3 on student achievement. The first three research questions are as follows:

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

RQ2: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fourth grade?

RQ3: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fifth grade?

The researcher failed to reject the null hypothesis for the first 3 questions as there was no statistical significance in the association.

The last three research questions were also addressed in a Chi-Square analysis. The researcher attempted to determine if the two groups had an association with job satisfaction. The researcher used a valid instrument to assess the construct of job satisfaction.

The next three research questions are as follows:

RQ4: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in third grade?

RQ5: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fourth grade?

RQ6: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fifth grade?

The researcher failed to reject the null hypothesis of third-grade and fifth-grade teachers' job satisfaction between groups. The researcher did find significance between groups of fourth-grade teachers using a Chi-Square analysis, however, it was not rejected when using a Fisher test. A Fisher test was used for all research questions due to the sample size not being robust enough for the accuracy of a Chi-Square.

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Summary

The purpose of this research was to investigate whether the provision of instructional coaching support, in addition to mentoring, could lead to better outcomes for first-year math teachers and their students. Specifically, the study explored the association between first-year math teachers receiving mentoring or mentoring with instructional coaching support and student performance in third, fourth, and fifth grade. Additionally, the study examines the relationship between mentoring and job satisfaction among first-year math teachers in third, fourth, and fifth grade.

This chapter contains discussions, findings, and future research implications to help ascertain more information on the research questions. The following research questions are discussed in this chapter:

RQ1: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in third grade?

RQ2: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fourth grade?

RQ3: Is there an association between first-year teachers' instructional support and student performance of approaches grade level or did not approach grade level on math standardized assessments in fifth grade?

RQ4: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in third grade?

RQ5: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fourth grade?

RQ6: Is there an association between first-year teachers' instructional support and reported teachers' job satisfaction in fifth grade?

Findings

The following findings were observed in this empirical research study:

1. The variable of mentoring with instructional coaching was not a significant factor in determining student performance on the State of Texas Assessment for Academic Readiness, or STAAR for all grade-level math teachers.
2. The variable of mentoring with instructional coaching was not a significant factor in determining student performance on the State of Texas Assessment for Academic Readiness, or STAAR for third-grade math teachers.
3. The variable of mentoring with instructional coaching was not a significant factor in determining student performance on the State of Texas Assessment for Academic Readiness, or STAAR for first-year fourth-grade math teachers.

4. The variable of mentoring with instructional coaching was not a significant factor in determining job satisfaction for first-year math teachers in grade three.
5. The variable of mentoring with instructional coaching was a significant factor in determining job satisfaction for first-year math teachers in grade four.
6. The demographic statistics of gender and type of teacher training program did not affect the responses of the participants or their student academic performances.
7. Finally, increasing the number of participants to a robust status could help to identify a statistical significance in performance and job satisfaction.

Discussion

One of the most interesting findings of this study was that mentoring with instructional coaching was not a significant factor in determining student performance on the State of Texas Assessment for Academic Readiness, or STAAR for first-year third and fourth-grade math teachers. This was not consistent with the findings of Shockley et al., 2013, Galey, 2016, and Desimone & Pak, 2017. They found mentoring with instructional coaching strengthens the capacity of the teacher's delivery in curriculum and instruction. According to Desimone and Pak (2017), mentoring and instructional coaching increased teachers' proficiency in lesson planning, special populations, instructional practices, classroom management, and student achievement (Desimone & Pak, 2017). As a result, educational administrators are required to maintain a level of high standards mastery on the district level and campus level. Thus, research attempted

to pinpoint concrete methods of instruction and delivery to increase the effectiveness of instruction for student mastery of learning standards. The analysis of student performance on the STAAR test in grades three, four, and 5 was closer to being significant than when it was broken down by grade level. In addition, the pandemic of the Coronavirus and student learning could have affected the findings due to learning loss from school shutdowns, virtual learning, and student absences.

Another important and surprising finding of the present study suggested that mentoring with instructional coaching was not a significant factor in determining student performance on the State of Texas Assessment for Academic Readiness, or STAAR for first-year fourth-grade math teachers. This was contradictory to the findings of Desimone & Pak (2017), Bottge et al. (2015), Knight, 2018, and Glover (2017), which indicated instructional coaches improve instructional practices by allowing teachers to understand expectations and adapt instructional delivery. In addition, coaches align lessons and teacher performance with academic standards, improve school reform in three areas: teacher efficacy, effective teaching strategies, and student achievement, and maximize effectiveness in classroom instructional delivery to improve student performance.

Even more surprising was the gender and type of teacher training program did not affect the responses of the participants or their student academic performances. This is consistent with the findings of Shockley et al. (2012), Lejonberg & Tilpic, (2016), Weinberg (2019), and Wood et al. (2012). Their research suggested that teacher induction programs began as a way to increase novice teachers' self-efficacy and reduce turnover rates and were thought to approach the different learning gaps in new teacher dissatisfaction

Beginning teacher induction programs aimed to prevent novice teachers from the hazards of ineffective teaching (Wood et al., 2012). Mentors are psychosocial role models for novice teachers. It allows the novice teacher with interpersonal comfort to learn new ideas (Weinberg, 2019). It provides relational training and relationship building to enhance the personal competencies of instructional practices (Weinberg, 2019). Weinberg discussed the role of effective mentorship to include learning outcomes and competencies. He continues by saying mentoring is the transfer of content-specific learning outcomes, which consists of gaining new skills (2019). Personal learning should include short-term goals, contextual skills, and interdependent job training (2019).

Finally, a most interesting finding of the present study pertained to how mentoring with instructional coaching was a significant factor in determining job satisfaction for first-year math teachers in grade four but not grade three. Herzberg proposed that as an individual moves through Maslow's hierarchy, the individual meets job satisfaction needs by meeting interpersonal needs. Herzberg proposed that factors achieving interpersonal needs included how happy an individual was with the job. Interpersonal factors affecting satisfaction dealt with salary, perceived performance, working conditions, and supervision. Once these factors were viewed in high regard, personal motivation led the individual to pursue advancement, personal growth, responsibility, recognition, and achievement (Nicholson, 2021).

Conclusions

The following conclusions were generated from the results of this research study:

1. In general, the first-year math teacher can benefit from instructional coaching to achieve a greater sense of job performance.

2. First-year math teachers reported wanting to stay in the profession as an elementary math teacher.
3. A Chi-Square analysis of the association between factors of mentoring and instructional coaching should have a robust sample to more accurately assess statistical significance.
4. Mentoring and mentoring with instructional coaching support may have an impact on the different levels of student performance, but further research needs to be conducted.
5. Grade level does not appear to impact the student performance or job satisfaction of first-year math teachers on the standard of approaching for the state of Texas standardized test.
6. In general, educational administrators should attempt to increase the efficiency and effectiveness of first-year math teachers through evidence-based practices.
7. Teacher retention saves financial resources for educational administrators and any effort to achieve increased retention is an asset for educational administrators.

Implications

Due to the critical teacher shortage and increasing standardized achievement demands on districts, it serves a district to be able to recruit and retain qualified teachers to continue to provide high-quality, high-yielding instruction. Providing additional support for instruction content and delivery allows educational administrators to manage student achievement in an effective and efficient manner. Providing additional

instructional support for novice math teachers increases campus culture, increases teacher retention, and is an effective cost management tool available for educational administrators to utilize. Providing this support can be an asset used to build the competence of a district's core element of instruction. Educational administrators use instructional leadership to maintain and increase student productivity. To provide more insight into the variables, a more robust sample could illustrate the statistical association between variables. This would allow the researcher to examine a larger statistical strength to apply to the target population. Increasing the area of the sample size could illuminate the need for the structure for additional content support and increase the decision making for this support from educational administrators.

Educational administrators must assess the type of support that supports the mission and the vision of the campus or district. The main goal of education will always come back to student performance and which instructional path can be chosen to achieve students' success. By effectively managing the instructional leadership, administrators can and should examine ways to increase student achievement with the resources that are given to them. Instructional leadership not only deals with the curriculum but also with the amount of effectiveness of the curriculum. Student achievement does not happen accidentally, but rather a purposeful and planned event where educational administrators have given time and thought to the curriculum outlines for instruction.

Educational administrators are tasked with gaining the maximum growth of student achievement with the minimum number of fiscal allocations. Making sure the leader's vision matches with student achievement is a complex task that commands different multiple approaches. One step in this direction is enriching instruction for

novice teachers and making sure there is an equitable learning environment for staff and students. Additional teacher support ensures a positive school culture. It allows an educational administrator to accelerate and increase student potential and the potential of new teachers to stay in the profession and maintain high-quality instruction.

Recommendations for Further Research

Additional research in the area of frequency of coaching is suggested by the researcher. This study examined the significance of having both a mentor and instructional coach for new math teachers in elementary schools. However, the perceptions of new teachers may also be influenced by the type of instructional coach and the frequency of planning. Instructional coaches provide onsite professional development for the novice teacher that may increase with the amount of frequency the mentee and coach meet.

An additional factor that could benefit from future examination is the type of instructional coach the district provides. It can be theorized that the instructional coach that is assigned to a campus will have more time to have increased meetings, observations, and reflections. An instructional coach who may be district-level or assigned to multiple campuses may not have the most effectiveness due to the amount of time between campus visits.

In order to further extend the findings of this study, the researcher recommends further research in the following areas:

1. Conduct a study to examine the impact mentoring and instructional coaching have on first-year math teachers' student achievement and job satisfaction within the Houston metropolitan area.

2. Examine the impact of the independent variables of the three levels of achievement standards, Approaches, Meets and Masters: when first-year math teachers in grades 3-5 have a mentor or mentoring with additional instructional support.
3. Investigate the influence types of mentoring or instructional coaching have on first-year math teachers' student performance in grades 3-5.
4. Assess the impact of generational influences on job satisfaction for first-year math teachers in grades 3 to 5.
5. Conduct a study on the age of first-year math teachers and turnover rates in elementary and secondary schools.

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