

# **Examining Teachers' Perceptions of Professional Development: A Qualitative Case Study**

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### **Abstract**

The purpose of this qualitative descriptive case study was to explore how teachers described the influences of in-service professional development on their instructional practices. Understanding teacher perceptions is essential to the overall effectiveness of professional development schemes. The theoretical foundation of this study was Vygotsky's constructivist learning theory, which requires teachers to engage in processes designed to improve instructional techniques through professional development. Specifically, Vygotsky interpreted learning as an active, collaborative process of combining new knowledge with prior knowledge to construct a deeper understanding of content. The research questions guiding this study asked about how reading and math teachers perceived the in-service professional development they received influenced their instructional practices. The purposive sampling method was used to select 14 participants from a southern school district in Maryland. A total of 6 individual semi-structured interviews were conducted, along with two focus group discussions involving 8 additional participants. Braun and Clarke's thematic analysis method was used to analyze data collected from interviews and focus groups. The study findings provide insight into how teachers perceive the impact of in-service professional development on their instructional practices and student achievement.

Keywords: Coaching, instructional leadership, professional development, student achievement.

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## Chapter 1: Introduction

Student achievement has been a national concern, prompting policymakers to initiate educational laws such as No Child Left Behind (NCLB) and the Every Student Succeeds Act (ESSA) to improve education and the performance of underperforming pupils (Close et al., 2020; Colyar et al., 2022; Good, 2023; Peterson et al., 2022). The NCLB (2001) education reform law was designed to address the issue of academic achievement gaps among students, particularly the economically disadvantaged and minority students, and their more advantaged peers (Hemelt et al., 2020; Kang, 2023). Numerous longitudinal studies involving NCLB (2001) reported that failure to meet the mandated goals led to severe sanctions, including staff terminations and reassignments, school board takeovers, or loss of federal funding (Colyar et al., 2022; Hunter, 2019). The Every Student Succeeds Act, enacted in 2015, replaced NCLB, giving states more educational control and establishing national learning standards for public schools (Close et al., 2020). Both NCLB and ESSA are reauthorizations of the Elementary and Secondary Education Act of 1965 (ESEA), which has characterized federal education legislation for the past 50 years (Atchison, 2019; Robinson, 2018; Vinovskis, 2019). Education reform laws have provided targeted legislative actions designed to bring significant changes and improvements to the American educational system.

Educational policymakers hoped NCLB would reform the American education system by improving teacher effectiveness. NCLB (2001) required states to assess student learning throughout the K-12 educational experience to measure school effectiveness and teacher quality, which informed school improvement initiatives, including student achievement and teacher professional development provisions (Etim et al., 2020; Nichols et al., 2021). However, NCLB (2001) prompted states to lower academic standards, supported the exclusion of underprivileged

and primarily minority students from mainstream public education, and drove dedicated educators away from lower-performing schools (Baldner, 2021). Furthermore, NCLB imposed federal penalties that diminished educator professional self-efficacy and disproportionately affected urban areas and communities of color by widening the performance gap (Mette et al., 2020; Nichols et al., 2021). ESSA (2015) was signed into law to counter the effects of NCLB (Ydesen et al., 2022; Good, 2023).

Educational reformers signed ESSA into law to provide more autonomy to states by transferring educational governance decision-making back to the states while maintaining standards for learning for both students and teachers (Baskin, 2022; Good, 2023; Troppe et al., 2020). The Every Student Succeeds Act required states to establish academic content standards, assess student achievement, identify and support low-performing schools, and improve educator effectiveness (Troppe et al., 2020). ESSA allowed states and districts to construct means to serve their communities in contextually relevant and responsive ways by developing innovative assessment and accountability systems that also encompass new measures of student performance (Mette et al., 2020). While differing in their approach to school governance, both NCLB and ESSA required school systems to incorporate the professional development of teachers into school improvement plans (Kaul et al., 2018; Richerme, 2021; Weiser et al., 2019). The professional learning community's professional development framework became the guiding light for many school districts.

The Professional Learning Community (PLC) is considered a practical professional development framework that improves teacher instructional practices, teacher self-efficacy, and student achievement (Aden, 2019; Anderson et al., 2022; Wan, 2020). For example, shared personal practices, which include peer observations and feedback, were determined to be a

meaningful form of professional development that positively impacts teacher instructional practices and self-efficacy (Miller, 2018; White, 2023; Visone, 2022). Other studies found that PLCs enabled instructors to hear multiple points of view, acquire the support of colleagues, and develop a shared understanding of priorities (Liu et al., 2022; McBrayer et al., 2018; Tabak et al., 2020). Further, the PLC characteristic of collaboration was identified by previous studies as a practice that promotes trust and shared responsibility among teachers while positively impacting collective self-efficacy, thus influencing teacher instructional practices and student achievement (Ninković et al., 2022; Weddle, 2022). The professional learning community framework allows educators to work together to improve teaching practices and student outcomes. Professional learning communities, as in-service professional development, support school improvement (Anderson et al., 2022; Hu et al., 2022; Khun-Inkeeree et al., 2023).

Researchers continued to study the effects of in-service professional development under the professional learning community framework on teacher practice, perspectives, and student achievement (Brennan et al., 2022; Elfarargy et al., 2022; Smith et al., 2020). Professional learning communities are major contributing factors that improve teacher self-efficacy, instructional practice, and student achievement (Little, 2020; Ninković et al., 2022; Weddle, 2022). Professional learning communities cultivate a collaborative learning environment, promoting student success by bringing teachers together to share knowledge, set goals, and support each other in their ongoing professional development (Battersby, 2019). However, suggestions for further research existed. For instance, previous studies reported the need for additional research on the in-service professional development methods that seek to garner teacher opinions regarding personal engagement in the PLC and the effects on their instructional practice (Moulakdi et al., 2020; Wan, 2020). While several studies addressed teacher perceptions

of professional development, a deeper examination of how teachers perceive in-service professional development affects their instructional practice was needed.

Knowing how teachers perceive the professional development they received could assist school leadership in planning and implementing professional learning activities. Professional development incorporating teacher beliefs and practices might assist in forming teacher pedagogies, fostering improved self-efficacy and instructional practice changes (Little, 2020; Ninković et al., 2022; Weddle, 2022). Evidence suggested that the effectiveness of professional development schemes depends on teacher self-efficacy, which impacts their ability to implement the skills learned and enhances their confidence and teaching to include the literacy skills they learned (Brennan et al., 2022; Elfarargy et al., 2022; Smith et al., 2020). Specifically, sustained professional development positively affects teacher attitudes toward professional development and implementation (Whatley et al., 2023). Teacher perceptions of the in-service professional development they received might affect the level of attention, concept implementation, and teacher willingness to change instructional practices.

The results of this study supported the professional development mandates dictated by ESSA (2015). How states and districts respond to ESSA's professional development mandates determines whether the school reform law stimulated educational improvement (Baskin, 2022; Good, 2023; Troppe et al., 2020). Further, the results of this study could potentially affect the design and implementation of teacher professional development frameworks locally and nationally. While school leadership could use the findings of existing literature to determine the most influential teacher professional development activities, the problem space suggested the need for further study.

## Statement of the Problem

The problem addressed in this qualitative case study was that without exploring how teachers describe the influences of in-service professional development on their instructional practices, efforts to improve teacher instructional practices and student achievement via professional development might have been impeded (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Accordingly, teacher perceptions might negatively affect levels of commitment to professional development processes, thus affecting the instructional implementation of skills and concepts presented (Parrish et al., 2020; Whatley et al., 2023). Recent evidence suggested that teacher perceptions of professional development schemes might influence engagement levels and motivation to participate, thereby diminishing the effectiveness of professional development on teacher practice (Kreifels, 2021; Rodgers et al., 2022; Wan, 2020). Mustafa et al. (2021) stated that “it is important to keep exploring teachers' perceptions of experiences in professional development sessions to inform future professional development design” (p. 1210). Therefore, understanding teacher perceptions might assist in designing professional development initiatives that are meaningful and motivating, leading to increased teacher buy-in and commitment (Mustafa et al., 2021; Smith et al., 2020).

Continuous professional development is considered essential for educators to remain up-to-date with teaching and learning practices (Tay et al., 2021). What was not known was how teachers described the influences of in-service professional development on their instructional practices. Without questioning how teachers perceive the professional development they received, leadership might prescribe and design meaningless professional development activities that fail to change teacher instructional practices or improve student achievement (Bellibaş et al., 2021; Deng et al., 2022). Thus, instructional leadership must understand the mindset of teachers

and plan for misconceptions to limit teacher disengagement in the learning process (Miller et al., 2019; Wehbe, 2019). Suppose teachers were willing to accept change but did not perceive professional development as necessary; reluctance to participate might occur. Knowing teacher perceptions of the prescribed professional development activities could inform future leadership's implementation of professional development agendas (Kreifels, 2021; Smith et al., 2020; Wan, 2020).

### **Purpose of the Study**

The purpose of this qualitative descriptive case study was to explore how teachers described the influences of in-service professional development on their instructional practices. The goal was to determine how 3rd through 5th-grade math teachers and 3rd through 5th-grade reading teachers described the influences of in-service professional development on their instructional practices. A substantial body of literature focused on the effectiveness of professional development programs. These studies acknowledged numerous factors significantly contributing to the efficacy of professional development activities that school leadership provided teachers (Gupta et al., 2020; Lestari, 2022). However, finding pedagogical approaches that enhanced teaching quality required more study (Mustafa et al., 2021). The results of this study could help school leadership understand how teachers perceived elements of professional development that support student learning (Lestari, 2022; Mustafa et al., 2021).

The target population consisted of 3rd through 5th-grade math and reading teachers working in elementary schools within the Maryland school district. To gather data, a sample of 6 teachers participated in interviews, inclusive of 3 math teachers and 3 reading teachers. Additionally, two focus groups were conducted, each comprised of 4 participants different from

the interviewees. The data collected from these sources highlighted how teachers described the impact of in-service professional development on their instructional practices.

An interview protocol guided the interviews with teachers, who were asked to describe their experiences with in-service professional development and its impact on their instructional practices. The themes identified in the literature review informed the discussion topics for the focus groups. Using inductive thematic analysis, data from the interviews and focus groups were collected and analyzed to identify patterns and themes. This analysis addressed the gaps in the literature by providing insight into how teachers described the influence of in-service professional development on their instructional practices.

### **Introduction to Theoretical Framework**

The constructivist learning theory is based on personal experience and research on how people acquire new knowledge (Vygotsky, 1978). Thus, constructivist learning theory defines professional development as data-informed dialogue and innovative collaboration amongst peers to problem-solve while building individual and group knowledge (Chuang, 2021; Elhussain et al., 2020; Gilson et al., 2022). Researchers linked the constructivist learning theory to professional development, noting that Vygotsky interpreted learning as an active, collaborative process of combining new knowledge with prior knowledge to construct a deeper understanding of content (Chuang, 2021; Deng et al., 2022; Epps et al., 2021). Active learning and the degree of congruence between learning activities and job-embedded practice were factors in effective professional development (Chuang, 2021; Gilson et al., 2022). The constructivist learning theory requires teachers to engage in processes designed to improve instructional techniques through professional development.

Teacher professional development based on constructivist learning theory is designed to empower educators with effective strategies and techniques to facilitate meaningful learning experiences for their students (Deng et al., 2022; Qui, 2019; Toolin et al., 2022). The constructivist learning theory was a teacher-guided, student-centered learning theory consisting of four elements: context, collaboration, conversation, and meaning construction” (Qui, 2019, p. 1167). Several researchers clarified Vygotsky’s interpretation of the theory as an active, collaborative process that combined new knowledge with prior knowledge to construct a deeper understanding of content (Deng et al., 2022; Epps et al., 2021; Toolin et al., 2022). The constructivist learning theory provided an applicable framework for this study.

Vygotsky’s theory of Constructivism was the theoretical framework for the proposed study. The constructivist learning theory guided the research decisions to explore how teachers described the influences of in-service professional development on their instructional practices. Research studies on teacher perceptions identified the problem that without exploring how teachers described in-service professional development and how this influenced their instructional practices, efforts to engage teachers in instructional coaching processes could be problematic (Westmoreland Jr. et al., 2019; Wilson, 2020). However, understanding how teachers described in-service professional development and how this influenced their instructional practices could foster a shared vision of best practices for teaching and learning within the educational community (Chuang, 2021; Toolin et al., 2022).

The constructivist learning theory was an appropriate theoretical framework to base the teaching and learning principles on when considering teacher professional development and student achievement (Elhussain et al., 2020; Fletcher et al., 2021). Accordingly, constructivist educators encouraged students to actively participate in their learning by asking questions and

reflecting on their inquiries (McLeod, 2019). As facilitators of knowledge acquisition, teachers must be willing to implement the skills and strategies provided within professional development activities (Rodgers et al., 2022). There was a need to explore teacher perceptions of the professional development they received to improve their instructional practices and student achievement (Parrish et al., 2020; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Based on this, the research questions for this study were, “How do math teachers describe the influences of in-service professional development on their instructional practices?” and “How do reading teachers describe the influences of in-service professional development on their instructional practices?”

### **Introduction to Research Methodology and Design**

This qualitative descriptive case study explored how teachers describe the influence of in-service professional development on their instructional practices. A qualitative methodology was appropriate for this study as it provided a platform for inquiry into teacher thoughts, feelings, and beliefs freely about the in-service professional development they received (Merriam et al., 2016; Patton, 2014; Yin, 2018). The descriptive qualitative design offered a practical approach to incorporating the most suitable methods to answer the two research questions (Kahlke, 2018). Exploratory questions, observations, and surveys were all part of the qualitative descriptive approach, which promoted theoretical relevance (Mustafa et al., 2021). Open-ended questions posed during semi-structured interviews and focus groups provided the opportunity to access in-depth personal responses (Kahlke, 2018; Patton, 2014; Yin, 2018). The qualitative descriptive case study addressed the “why” and “how” questions (Yin, 2018) by exploring societal processes, examining the individual perceptions of specific events, and attempting to understand

why people thought and responded the way they did (Yazan, 2015). Two focus groups and 6 interviews were conducted to explore the perspectives of reading and math teachers.

Data collection in the form of six interviews and two focus groups provided the opportunity to analyze how the research participants describe the influences of in-service professional development on their instructional practices (Stake, 1978; Yin, 2018). Individual interviews supported the qualitative methodology by comprehensively understanding teachers' perceptions of how their experiences shaped their instructional practices (Kahlke, 2018; Patton, 2014; Yin, 2018). Conducting focus groups allowed the researcher to capture group dynamics, idea exchange, and rich qualitative data on participant thoughts and experiences (Graham et al., 2022). Therefore, a thorough narrative that provided a detailed description was created by combining the various perspectives of several participants. The versatility of the qualitative descriptive method allowed for the analysis of multiple perspectives through thorough descriptions of experiences and professional practice (Kahlke, 2018; Yin, 2018). Based on this, the qualitative descriptive case study was the best method and design as it aligned with the purpose and the research questions of this study.

The qualitative descriptive methodology and design were the best for this study. The study's problem, purpose, and research questions explored how teachers describe the influences of in-service professional development on their instructional practices. The qualitative descriptive methodology and design supported the problem, purpose, and research questions of this study because the focus was on the exploration of participants' perceptions, which might have provided validated descriptions of experiences and practices by documenting their thoughts, feelings, and beliefs (Patton, 2014; Merriam et al., 2016; Yin, 2018).

## **Research Questions**

### **RQ1**

How do reading teachers describe the influence of in-service professional development on their instructional practices?

### **RQ2**

How do math teachers describe the influence of in-service professional development on their instructional practices?

## **Significance of the Study**

A study on how teachers describe the influences of in-service professional development on their instructional practices was essential. Instructional leadership might use the results of this study to create in-service professional development that blends evidence-based teaching practices and builds connections (Deng et al., 2022; Lestari, 2022; Mustafa et al., 2021). The results of the proposed study might provide qualitative data to assist policymakers, school districts, teachers, and other academic community members in making informed decisions about the design, implementation, and improvement of professional development programs that effectively support teacher growth and enhance student learning outcomes. Colyar et al. (2022) and Hunter (2019) determined that studies focusing on teacher professional development could affect policy and funding, as professional development is essential to the nation's school improvement plan. The research results could inform instructional coaching protocols with teacher perspectives in mind, affecting professional development at the school level and beyond.

The problem addressed in this qualitative case study was that without exploring teachers' opinions of the professional development they received, initiatives to enhance teaching methods and student achievement via professional development might have been hindered (Rodgers et al.,

2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). There were several benefits to addressing this problem. For instance, knowing teachers' perceptions of their professional development could have assisted school leadership in designing and implementing professional learning activities (Mustafa et al., 2021; Smith et al., 2020). Without questioning how teachers perceived the professional development they received, leadership might mandate and create pointless professional development initiatives that did nothing to improve teacher instruction or student performance (Bellibaş et al., 2021; Deng et al., 2022; McBrayer et al., 2018). Additionally, understanding teacher perspectives could aid in creating relevant and inspiring professional development programs, increasing teacher buy-in, commitment, and student achievement (Mustafa et al., 2021; Smith et al., 2020).

## **Definitions of Key Terms**

### **Coaching**

Coaching is a “non-evaluative, ongoing process (e.g., occurring over a period of time), in which one individual observes and provides feedback to another individual targeting an intervention, supports, or other variables the individual wants to increase in the classroom” (Stormont et al., 2015, p. 70).

### **Instructional leadership**

Instructional leadership focuses on improving teaching and learning through curriculum development, teacher support, and instructional strategies (Kilag et al., 2023).

### **Professional Development**

Professional development is learning within the context of improved professional practice, consisting of all inadvertent and intentional learning experiences intended to increase student achievement (Harland et al., 2014).

## **Student Achievement**

Student achievement is the documented improvement of student performance via standardized assessments (Ratts et al., 2015).

## **Summary**

The problem addressed in this qualitative case study was that without exploring teacher perceptions of the professional development they receive, efforts to improve teacher instructional practices and student achievement via professional development might be impeded (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Exploring how teachers describe the influence of in-service professional development on their instructional practice could impact the implementation strategies and student achievement (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). The qualitative case study was conducted by using an interview and focus group protocol to gather data from three math and three reading teachers and two focus groups, consisting of four teachers. The data analysis included a comprehensive approach to the data, including thematic analysis, which enabled the identification of trends in the data collected and the identification of topics pertinent to the research topic (Richards et al., 2018; Roberts et al., 2019).

The constructivist learning theory supported this study, as Constructivism is rooted in the construction of knowledge. The constructivist learning theory is based on personal experience and research on how people acquire new knowledge (Vygotsky, 1978). Examining teacher perceptions of how professional development experiences influenced instructional practice was essential to the school improvement process. Understanding how teachers perceived the effectiveness of professional development is crucial to successfully implementing professional development programs.



## Chapter 2: Literature Review

This qualitative descriptive case study explored how teachers describe the influences of in-service professional development on their instructional practices. Without exploring teachers' perceptions of professional development, they received efforts to improve teacher instructional practices and student achievement via professional development might be impeded (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Teacher perceptions of PD schemes could significantly influence their levels of engagement in these opportunities (Kreifels, 2021; Wan, 2020). Positive perceptions tend to enhance engagement, while negative perceptions can hinder it. When teachers perceive professional development as relevant to their needs and classroom challenges, they are more likely to engage actively (Mustafa et al., 2021; Smith et al., 2020). If teachers perceive professional development as irrelevant to their teaching context or not meeting their needs, they may disengage, considering it a waste of time (Westmoreland Jr. et al., 2019). Therefore, knowing teacher perspectives could aid in creating relevant and motivating professional development programs that enhance teachers' commitment and buy-in.

Included in the literature review are five themes: professional development, professional learning communities, leadership and school improvement, student achievement, and teacher perceptions of professional development. The literature review presents an in-depth analysis of each theme. The subsequent sections are the theoretical framework, literature review, and chapter summary.

The following databases were used to examine the literature: educational and social science journals and retrieved from online databases, including (ERIC) Education Resources Information Center, Education Research Complete, and ProQuest Education Journals. Keywords used in the search included *professional development*, *teacher perceptions*, *professional learning*

*community (PLCs), student achievement, constructivism, professional practice, school leadership, and educational law.* The search terms provided the background for the phenomenon examined in the proposed study. The chapter concludes with a summary of the key points from Chapter 2.

### **Theoretical Framework**

The constructivist learning theory supports ongoing teacher learning and growth through professional development. Constructivism is a learning theory that suggests learners actively construct their understanding of information and knowledge through personal experiences and interactions with their environment (Khurma et al., 2024). According to the constructivist learning theory, professional development is a collaborative, problem-solving process that fosters knowledge creation and innovation through data-driven discussions and peer interactions. (Vygotsky, 1978). Vygotsky's constructivist learning theory informs professional development, emphasizing active, collaborative learning that integrates new and prior knowledge to foster deeper understanding (Epps et al., 2021; Kohlmeier et al., 2020). Effective professional development combines active learning and on-the-job practice, aligning with constructivist principles of learner-centered, hands-on, and collaborative growth. (Deng et al., 2022). Hence, the constructivist learning theory requires teachers to engage in processes designed to improve instructional techniques through professional development.

The constructivist learning theory is the foundation for professional development programs and other learning schemes. As stated by Qui (2019), "constructivist learning theory is a teacher-guided, student-centered learning theory consisting of four elements: context, collaboration, conversation, and meaning construction" (p. 1167). According to the constructivist learning theory, effective teacher professional development entails actively participating in

processes that enhance instructional methods, fostering ongoing growth and improvement in teaching practices (Vygotsky, 1978). Furthermore, Epps et al. (2021) clarified Vygotsky's interpretation of the theory as an active, collaborative process that combines new knowledge with prior knowledge to construct a deeper understanding of content. The constructivist learning theory provides an applicable framework for teaching and learning.

The constructivist learning theory states that learning is an active, constructive process resulting from individual experiences and social interactions (Deng et al., 2022). Active learning and the degree of concinnity between learning activities and job-embedded practice are factors in effective professional development. Thus, educators should engage in professional development opportunities that allow them to construct new knowledge and skills that closely align with their everyday teaching practices (Chuang, 2021; Gilson et al., 2022).

Other theories considered for this study on teachers' perceptions of professional development were adult learning theory and social cognitive learning theories. The adult learning theory, referenced as andragogy, is a framework that outlines the distinctive traits and requirements of adult learners (Knowles, 1975; Mezirow, 1997; 2000). According to andragogy, adult learning is most effective when individuals are self-directed and responsible for their growth and development by identifying their learning needs, setting personal goals, selecting relevant resources, and evaluating their progress (Garner et al., 2023; Knowles, 1975). Although andragogy offers self-directed learning, it falls short of providing the comprehensive learning experiences advocated by constructivist learning theory, which emphasizes active learning, collaboration, and reflection as essential components of the learning process. (Chaipidech et al., 2021; Jones, 2021).

Bandura's Social Cognitive Theory (1977), self-efficacy, peer collaborations, observations, and past experiences influence an individual's knowledge constructs (Marsicek, 2022; McClusky, 2021; Rachmatullah et al., 2023). The Social Cognitive Theory highlights the importance of imitation, which implies that individuals build knowledge through peer observation and result analysis. In comparison, the Social Cognitive Theory attempts to explain how observations and modeling aid in acquiring knowledge, while the constructivist learning theory provides an educational framework to design learning experiences that promote active engagement, critical thinking, and the construction of knowledge schemes (Kohlmeier et al., 2020; Pischetola et al., 2023; Qui, 2019; Salem, 2019). The constructivist learning theory is the best theoretical framework for the proposed study.

The constructivist learning theory is an appropriate theoretical framework to base the teaching and learning principles when considering teacher professional development and student achievement (Elhussain et al., 2020; Fletcher et al., 2021; Qui, 2019). According to McLeod (2019), constructivist educators encourage students to actively participate in their learning by asking questions and reflecting on their inquiries. As facilitators of knowledge acquisition, teachers must be willing to implement the skills and strategies provided within professional development activities (Rodgers et al., 2022). There is a need to explore teachers' perceptions of the professional development they receive to improve their instructional practices and student achievement (Parrish et al., 2020; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Based on this, the research questions for the proposed study are “How do math teachers describe the influences of in-service professional development on their instructional practices?” and “How do reading teachers describe the influences of in-service professional development on their instructional practices?”.

## **Professional Development**

Professional development is an integral part of the nation's educational reform efforts. For example, NCLB made professional development an essential component, focusing more on improving teacher practice and effectiveness (Nichols et al., 2021; West, 2021). Likewise, legislation like the Elementary and Secondary Education Act (ESSA) also requires states to provide teachers with professional development opportunities to improve educator effectiveness, but unlike NCLB, states were granted implementation autonomy (Baskin, 2022; Mette et al., 2020; Troppe et al., 2020). ESSA (2015) requires state boards of education and school districts to monitor and prescribe professional development to improve teacher practice. However, the research concerning the effectiveness of mandated professional development on student performance has not yielded positive results (Martin et al., 2019). Because of this, identifying efficacy in professional development practices is essential.

Teacher professional development is crucial for educational reform (Chaipidech et al., 2021; Patfield et al., 2023). Seven key factors characterize effective professional development: content-driven, interactive, collaborative, model-based, supported by coaching and expertise, feedback-rich, and ongoing or integrated into daily work (Gupta et al., 2020; Medina et al., 2021; West, 2021). Furthermore, effective professional development is aligned with the school's mission, goals, and priorities (Richter et al., 2022; Yang et al., 2023). Integrating professional development into the broader school improvement plan fosters a culture of continuous improvement and collective responsibility for student success. Schools can empower educators to stay updated on best practices, address emerging challenges, and drive student achievement and growth by prioritizing teacher professional development (Patfield et al., 2023; West, 2021; Yang et al., 2023).

Due to various implementation and engagement challenges, professional development programs often struggle to impact teacher practice and student achievement. Efforts to improve teacher skills and knowledge often struggle due to the “lack of implementation fidelity in the conduct of the professional development, lack of opportunity for teachers to implement what they learned in their classrooms, and teacher turnover that reduced teacher access to the professional development” (Darling-Hammond et al., 2017 p. 2). Other reasons include teacher perception and school leadership (Fan, 2023; McChesney et al., 2023; Rodgers et al., 2022). For example, teachers' beliefs, attitudes, and motivation can influence their engagement and buy-in to PD programs. If teachers do not see the value or relevance of the training, they may not be invested in the process (Jones, 2020; Juan, 2023; Rodriguez et al., 2022). The support and commitment of school leaders can make or break the success of PD programs. Leaders who prioritize and actively support teacher learning can create a culture that fosters growth and implementation (Grace et al., 2023; Sims et al., 2021). Hence, professional development must improve learning for all and increase student achievement. How to actuate this theory into a practice that affects all students still needs to be understood.

Teacher professional development generally encompasses various approaches that cater to diverse teacher needs and preferences. Three prominent forms of professional development include content-focused, active learning and collaboration, and coaching (Varghese et al., 2021; West, 2021). Content-focused professional development delves into subject matter and pedagogical techniques to enhance teacher knowledge and skills in specific areas (Medina et al., 2021; Varghese et al., 2021). Active learning and collaboration approaches, such as workshops and professional learning communities, encourage teachers to actively engage with new ideas and practices and share experiences and expertise with peers (Lodge, 2022; Richter et al., 2022).

Coaching, a more personalized form of professional development, provides one-on-one support and guidance, enabling teachers to receive tailored feedback and refine their instructional practices (Glover et al., 2023; Kelly et al., 2023). These forms of professional development can be used alone or in combination, offering teachers a range of opportunities to take ownership of their growth and development, aligning with their individual needs, interests, and career goals, and ultimately, empowering them to make informed choices about their professional learning (Akiba et al., 2019; Mesutoglu et al., 2023; Whatley et al., 2023).

### **Content-focused**

Content-focused teacher professional development studies have been conducted at various grade levels to determine effectiveness. Content-focused professional development is intended to improve teacher knowledge, instructional practice, and student achievement in specific content areas (Medina et al., 2021; Varghese et al., 2021). Types of content-focused professional development include but are not limited to the following: coaching and mentoring, professional learning communities, and online courses and webinars (Anderson et al., 2022; Chaipidech et al., 2021; Westmoreland Jr. et al., 2019). The scope and availability of each content-focused professional depend on the educators' school or district requirements; these content-focused professional development opportunities might be combined or personalized.

Effective professional development programs facilitate teacher learning through active engagement in standards-based activities focused on internalizing the curriculum, including the skills and concepts they will use with their students (Medina et al., 2021; Varghese et al., 2021). Successful professional development empowers teachers through collaborative planning, peer coaching, and reflection, deepening their understanding of the curriculum and enabling them to

create engaging, standards-based learning experiences. Because of this, researchers conducted studies to determine the effectiveness of content-focused professional development schemes. Findings indicated that content-focused professional development that is school-based and sustained positively influences teacher content knowledge, instructional practice, and student achievement (Medina et al., 2021; Odom et al., 2022). Program effectiveness requires at least two years of engagement to affect teacher instructional practice and increase student achievement positively (Varghese et al., 2021). Therefore, school leaders must invest in teacher learning and collaboration through sustained, school-based professional development programs to improve instruction and student outcomes.

Despite being content-focused and sustained, professional development initiatives often fail to yield desired improvements in teacher quality or student outcomes. While teachers may report changes in their instructional practices, implementing new strategies is frequently inconsistent and needs more fidelity (Fairman et al., 2020; Gupta et al., 2020; McKim et al., 2023). This inconsistency hinders the potential for meaningful gains in student performance, undermining the effectiveness of professional development efforts. To address this issue, educators and administrators must prioritize ongoing support and coaching, foster a culture of collaboration and peer learning, and regularly assess and refine professional development initiatives to ensure they meet the evolving needs of teachers and students (Glover et al., 2023; Lestari et al., 2022; Saka, 2021). Doing so can bridge the gap between professional development and student success. Ultimately, student success depends on teachers' effectiveness; therefore, teachers must be provided the support and development they need to thrive (Lindval et al., 2021; Odom et al., 2022; Thomas et al., 2020).

The effectiveness of content-focused teacher professional development relies on sustained, school-based programs that prioritize teacher learning and growth and acknowledge the critical importance of teacher perspectives (Westmoreland Jr. et al., 2019). Teachers' voices and experiences must be heard and valued to ensure initiatives are relevant, practical, and impactful. While such initiatives show promise, inconsistent implementation and support hinder desired improvements. Educators and administrators must prioritize teacher development, provide support and coaching, and regularly assess and refine initiatives with teachers to meet evolving needs. Doing this bridges the gap between professional development and student success, improving teacher effectiveness and student achievement. Additional strategies that foster teacher growth and collaboration are also essential, including active learning and collaboration approaches that promote peer-to-peer learning and shared responsibility for student success.

### **Active Learning and Collaboration**

Active learning through teacher collaboration is an effective teaching strategy where teachers collaborate to improve students' learning opportunities. Teachers can share knowledge, expertise, and resources by working together, leading to a more comprehensive and engaging learning experience for students (Lodge, 2022; Richter et al., 2022). Through collaborative planning, peer coaching, and reflective practice, teachers can develop innovative lesson plans, enhance instructional skills, and create a supportive learning environment that fosters student engagement, creativity, and academic achievement (Caena et al., 2022; Craig et al., 2022; O'Hara, 2019). Moreover, teacher collaboration promotes a culture of professionalism, mutual respect, and trust among educators, benefiting the entire school community and leading to better student outcomes. Professional development activities that provide collaborative opportunities

for teachers improve classroom practices, thus improving student achievement (Lodge, 2022; Richter et al., 2022). Collaboration promotes best practices through lesson study, peer observation, and data analysis and assessment (Bas-Ader et al., 2023; Lestari et al., 2022; Saka, 2021). Educators can continuously improve their pedagogical approaches through active engagement in collaborative learning (Sims et al., 2021).

Collaborative professional development has been identified as an effective approach to support teacher growth and improvement (Kelley, 2023; Özdemir, 2019; Saka, 2021). Research has consistently shown that collaborative professional development leads to improved teacher evaluation scores, enhanced instructional practices (Cravens et al., 2021), and a more positive school culture (Smith et al., 2020). Additionally, it has been linked to increased teacher morale and retention (Brennan et al., 2022; Elfaragy et al., 2022). However, despite these benefits, the relationship between collaborative professional development and student achievement remains inconclusive (Cravens et al., 2021). To better support student success, educators and administrators must acknowledge the relationship between collaborative professional development and student outcomes to implement professional development programs that promote teacher collaboration and the application of new knowledge and strategies in instructional practices (Odom et al., 2022; Thomas et al., 2020). Simply providing professional development opportunities is not enough; teachers must be able to employ the knowledge and skills learned to inform their teaching and improve student outcomes. By continuing to refine and improve professional development programs, educators can create more effective opportunities that ultimately benefit both teachers and students.

Although earlier studies have found collaboration to improve teacher instructional practices, the impact on student achievement must be more conclusive. While professional

development engagement enhances teacher instructional practice significantly, this improvement does not guarantee significant improvements in student outcomes (Liang et al., 2020; Lindvall et al., 2021). Moreover, the relationship between teacher collaboration and student achievement is complex and influenced by various factors, including school leadership and culture, teacher autonomy and empowerment, and using data analysis to address individual student needs (Partee et al., 2024; Westmoreland Jr. et al., 2019; Zeggelaar et al., 2022). By addressing these factors, educators and administrators can foster environments that support the correlation of teacher collaboration and student achievement. Therefore, the extent to which professional development leads to changes in instructional practices that increase student achievement needs further study.

Active learning through teacher collaboration is a powerful strategy that enhances teaching practices, fosters a supportive learning environment, and promotes a culture of professionalism (Craig et al., 2022). While research highlights the benefits of teacher collaboration, including improved instructional skills and a positive school culture, the impact on student achievement requires further investigation (Lindvall et al., 2021; Reddy, 2019). Moreover, teacher perception plays a crucial role in the success of collaborative initiatives, as teachers' beliefs and attitudes toward collaboration can significantly influence their engagement and motivation (Close et al., 2020; Colyar et al., 2022). Instructional coaching supports teachers as they implement collaborative learning approaches and refine their instructional practices to drive student success (van den Boom-Muilenburg et al., 2023; Regan et al., 2023). By exploring the intersection of teacher collaboration, coaching, and student outcomes, educators and administrators can design and implement more effective professional development programs that ultimately improve student achievement and social-emotional learning.

## Coaching

Instructional coaching is a form of professional development that allows teachers to collaborate one-on-one with an experienced coach to improve their instructional practice and student achievement (Glover et al., 2023; Kelly et al., 2023). This professional development technique can increase teacher effectiveness by providing targeted support, modeling, feedback, and guidance (Russell et al., 2019). As a professional learning tool, critical aspects of instructional coaching include collaboration, goal setting, observation, feedback, and reflective practice (Vargas et al., 2021). Essa (2015) supports instructional coaching (Desimone et al., 2016) as a method of professional development that encourages ongoing teaching improvement and positively affects students' entire educational experiences (Reddy et al., 2021; Saclarides et al., 2020; Walsh et al., 2020). Effective instructional coaching can transform the professional practices of teachers, improve student performance, and cultivate a positive school climate.

Instructional coaching necessitates creating collaborative partnerships based on trust, including active listening and feedback for targeted outcomes agreed upon by the coach and teacher, which was most influential across contexts (Eastman, 2019). Teachers improve their professional practice when coaches and teachers participate in research-based instructional coaching programs (Russell et al., 2019). Best practices in instructional coaching include lesson observation and reflection, thoughtful discussions, and feedback (Rutledge et al., 2023). By implementing these best practices, instructional coaches can effectively support teacher professional growth, leading to improved instructional practices, enhanced student engagement, and increased student achievement (Glover et al., 2023; Olsen et al., 2022). Effective instructional coaching involves trusting relationships that foster supportive collaboration and a

commitment to continuous improvement (Glover et al., 2023; Rutledge et al., 2023). Therefore, instructional coaching can enhance teacher efficacy by promoting confidence and competence.

While instructional coaching is supported by research, some factors might impede its effectiveness (Walsh et al., 2020). For instance, research suggests that while most schools have instructional coaches, teachers must receive coaching because other responsibilities limit their coaching time (Shelton et al., 2023). Further, effective coaching requires the development of a trusting relationship between the coach and the teacher, as a lack of trust might cause teachers to be less receptive to feedback and collaboration (Glover et al., 2023; Rutledge et al., 2023). Based on this, teachers need their coach to be non-evaluative, as research indicates that teacher resistance to coaching is a concern that needs to be evaluated, as well as how it impacts teacher performance reviews and job security (Comstock et al., 2021). Each barrier contributes to the teacher's perception of the coaching process. To overcome these obstacles, leadership must communicate the vision and purpose of instructional coaching, ensure sustained training and support for coaches and teachers, and foster a culture of trust and collaboration (Reddy, 2019).

Instructional coaching has the potential to positively impact the effectiveness of collaborative professional development in transforming teaching practices and improving student outcomes (Caneva et al., 2023; Renn et al., 2023). However, teacher perceptions of coaching, including concerns about trust, evaluation, and job security, can significantly influence the success of coaching initiatives (Comstock et al., 2021; Reddy, 2019). Another powerful approach to fostering collaborative growth and improvement is professional learning communities, which bring teams of educators together to share expertise, examine student data, and develop innovative solutions to instructional challenges (Parrish et al., 2020; Wan et al., 2020). By

exploring the principles and practices of professional learning communities, educators can further enhance teacher collaboration, student achievement, and school-wide success.

### **Professional Learning Communities**

Professional learning communities have emerged as the most promising school improvement professional development framework (Shah et al., 2024; Voelkel et al., 2023). School reform efforts concentrated improvement efforts on establishing cultures that promoted learning, emphasizing student achievement (Good, 2023; Peterson et al., 2022). The NCLB (2001) and ESSA (2015) are reauthorizations of the Elementary and Secondary Education Act of 1965 (ESEA), which has characterized federal education legislation for the past 50 years (Atchison, 2019; Vinovskis, 2019). Education reform laws provided targeted legislative actions designed to bring significant changes and improvements to the teaching and learning frameworks, prompting research into professional learning frameworks that promote student achievement (Etim et al., 2020; Nichols et al., 2021). Professional learning communities foster collaboration, data-driven decision-making, continuous professional development, teacher self-efficacy, reflective practice, school culture transformation, and alignment with educational objectives, all vital components of education reform (Anderson et al., 2022; Little, 2020).

### **Collaboration**

Professional learning communities promote educator collaboration by establishing cultures where teachers have inquiry-based discussions to discuss effective teaching strategies, student data, and curriculum implementation (Grace et al., 2023; Tabak et al., 2020). Participating in a professional learning community enhances student success by building collective teacher efficacy, strengthening teaching practices, and boosting student performance. (Dunn et al., 2019; Liu et al., 2024; Oakley, 2021). Further, proactive collaboration allows

teachers to use data to reflect on instructional teaching practices and the impact on student data, thereby providing a platform for reflection, instructional adaptations, and goal setting through data-informed decision-making (Pilotti et al., 2023; O'Connor et al., 2023). Teacher collaboration within a professional learning community helps create a continuous improvement culture. When educators participate in an ongoing culture of learning through real-time conversations centered on student data and equality, problems of practice are resolved (Ezzani, 2020).

Teachers can improve student performance and professional practice by engaging in collaborative learning within a professional learning community (Shah et al., 2024; Tabak et al., 2020). Educators collaborate within a structured environment, which promotes the opportunity to cooperate, exchange ideas, and work together to accomplish shared objectives (Ezzani, 2020). Through the professional learning community framework, educators can collaboratively share and access instructional resources, promoting the dissemination of best practices and enhancing teaching and learning. Notably, lesson study is an effective collaborative practice that elicits "changes in teacher knowledge and beliefs and less frequently in curriculum, learning community/professional norms, teaching practice, and student learning outcome" (Ding et al., 2023, p. 88). However, the effectiveness of lesson study depends on successful implementation, which includes knowledgeable facilitators, high levels of participant engagement, and supportive leadership (Hernández-Rodríguez et al., 2021; Seino et al., 2021). Professional learning communities and collaborative practices like lesson study can drive teacher growth and student success, but require strategic implementation and administrative support to drive meaningful change.

Teacher collaboration can only happen within a supportive culture inclusive of team building and trust (Antinluoma et al., 2021; Grace et al., 2023; Sims et al., 2021). Collaborative learning contributes to team building by developing supportive and trusting environments, which encourage open communication and risk-taking, leading to more effective collaboration. Professional learning programs like Educational Design Research (EDR) embody the characteristics of the professional learning community, requiring groups of teachers to continuously engage in collaborative inquiry through data collection and analysis to modify their instructional practices. Sustained participation of at least a year fosters changes in teacher practice ((Dunn et al., 2019; Eidin et al., 2023; Sjöblom, 2023). A supportive team-building, trust, and collaboration culture cultivates effective teacher partnership and growth, leading to better teaching and learning (Avidov-Ungar et al., 2021).

In a professional learning community, collaborative learning entails group analysis of student data designed to pinpoint patterns, advantages, and opportunities for improvement (Ezzani, 2020). Based on student formative and summative data, members decide on curricular changes, interventions, and instructional tactics. Teachers engage in conversations or data chats to examine student achievement data, identify patterns, and discuss instructional implications (Hopkins et al., 2021). Hence, the objective of the data chats dictated the information used, the methods of analysis, and the effect on their instruction. Accordingly, teacher instructional practices, lesson planning, and delivery result from data-based decision-making (O'Connor et al., 2023; Shah, 2024). Sharing concepts and data-driven insights also boosted their desire to improve their instructional strategies (Regan et al., 2023; van den Boom-Muilenburg et al., 2023). The primary goal is to use data to make informed decisions that could positively impact student learning and guide instructional planning.

## **Student Achievement**

The fundamental goal of educators working within a professional learning community is student achievement. Student achievement occurs through collective action, data-driven decision-making, and a commitment to ongoing professional development (O'Connor et al., 2023; Shah, 2024). The professional learning community framework fosters a student-centered focus, with educators prioritizing student needs while fostering a sense of collective responsibility for their academic growth and achievement (Regan et al., 2023; Muilenburg et al., 2023; van den Boom-Muilenburg et al., 2023). The collaborative approach allows educators to work together to create individualized and differentiated instruction to address students' diverse learning needs and learning styles.

The professional learning community (PLC) framework remains the most popular professional development approach, yet its impact on student achievement remains a topic of debate (Dunn et al., 2019; Liu et al., 2024; Oakley, 2021). Research suggests that sustained, collaborative, and supportive professional learning activities can enhance teacher self-efficacy, instructional practice, and student achievement (Little, 2020). Goal-specific collaboration can promote teacher professional excellence and improve student learning outcomes (Shah et al., 2023). However, the effectiveness of PLCs in boosting student achievement, especially on standardized tests, can vary depending on several factors (Çopur et al., 2022; Polasek, 2022). While empirical evidence on the specific aspects of PLCs that positively impact student achievement is inconclusive, fostering a culture of collaboration, data-driven decision-making, and continuous professional development within PLCs can potentially improve student achievement (O'Connor et al., 2023; Othman et al., 2020).

Within a professional learning community (PLC), shared goal-setting is proposed to initialize a common purpose among educators, which might enhance student success, learning outcomes, and student achievement (Pilotti et al., 2023; Othman et al., 2020). Educators collaborate to establish clear, measurable, and attainable goals focusing on student learning outcomes (Woo et al., 2022; Yang et al., 2023). These shared goals create a collective sense of purpose and direction, ensuring all teachers work towards a common objective. By setting specific targets for student achievement, PLC members can align their instruction, assessment, and intervention strategies to support student success (O'Connor et al., 2023; Shah, 2024). This collaborative approach enables teachers to identify and address student learning gaps, providing targeted support and enrichment opportunities that cater to diverse student needs. As a result, students benefit from a cohesive and coordinated learning experience that propels them towards achieving their full potential.

Professional learning communities foster data-driven collaboration that improves student achievement (Regan et al., 2023; Shenoy et al., 2024). Through data chats, teachers collaboratively share and examine student data to identify areas of strength and weakness and develop targeted strategies for improvement (Ezzani, 2020; Hopkins et al., 2021). During this, teachers examine a range of data, including assessments, formative and summative, to gain a comprehensive understanding of student learning and progress. Insights from data chats enable teachers to create a data-driven instructional cycle that is student-centered, evidence-based, and focused on continuous improvement and growth (Decabooter et al., 2024; Tay et al., 2021). Effective school leadership is crucial to sustaining and scaling up this collaborative and data-driven approach to improve student outcomes.

Research has shown that teacher perceptions of professional learning communities are closely tied to the support and leadership provided by school administrators (Close et al., 2020; Colyar et al., 2022). When school leaders foster a culture of collaboration, trust, and shared decision-making, teachers are more likely to view PLCs as a valuable and integral part of their professional growth and student success (Berkovich et al., 2021; Bozkurt, 2023; Volante et al., 2023). Conversely, when school leadership is lacking or unsupportive, teachers may view PLCs as an add-on or a burden rather than a vital component of their work (Hassan et al., 2024). Influential school leaders can influence teacher perceptions of PLCs by providing resources, time, and support for collaborative planning, data analysis, and professional development, ultimately leading to a more positive and productive experience for teachers and students (Mehmet, 2024; Zainal et al., 2021).

### **School Leadership and Improvement**

Influential leaders foster a culture of continuous learning, collaboration, and innovation, prioritizing teacher growth and well-being (Berkovich et al., 2021; Bozkurt, 2023; Volante et al., 2023). Therefore, school leaders must establish professional development programs that align with the school's mission, vision, and goals. Such programs must provide ongoing support, resources, and opportunities for teachers to enhance their knowledge, skills, and instructional strategies (Grace et al., 2023; Partee et al., 2024; Sims et al., 2021). Considering this, leadership must establish environments that cultivate open communication and trust and promote teacher autonomy and ownership (Grace et al., 2023; Hassan et al., 2024; Sims et al., 2021). Leaders engage with teachers to understand their needs, tailoring professional development initiatives accordingly (Mustafa et al., 2021; Smith et al., 2020). By facilitating collaborative learning communities, leaders enable educators to share experiences, reflect on practices, and co-

construct knowledge, enhancing teaching effectiveness and student achievement (Anderson et al., 2022; Liu et al., 2024). Influential leaders cultivate a trusting environment through sustained professional development, empowering educators to drive student success through a transformational approach (Baldwin, 2020).

Transformational leadership inspires and motivates individuals to achieve a shared vision and goals, driving positive change and growth. Therefore, transformational school leaders provide professional development opportunities that foster changes in instructional practice, improved student outcomes, teacher capacity, and self-efficacy (Odom et al., 2022; Thomas et al., 2020). The transformational leadership style prioritizes empowerment, cooperation, innovative thinking, and continuous growth over more conventional managerial duties, significantly impacting the school community (Thornton et al., 2022). Principal transformational leadership positively correlates with teachers' job attitudes. Moreover, the principal's transformational leadership indirectly influences teachers' self-efficacy and professional collegial support (Thomas et al., 2020). Given this, school leadership must create supportive, collaborative environments that promote innovation, growth, and continuous improvement.

Research supports the transformational leadership styles for school leaders. For example, transformational leadership is attributed to the successful implementation of school-based initiatives (Odom et al., 2022). Conversely, transactional leadership and passive leadership hindered the implementation process. Furthermore, compared to transactional and laissez-faire leadership behaviors, perceived transformational leadership has a statistically significant positive predictive association with job satisfaction, partially mediating the relationship between the two (Barnett, 2019). Transformational leaders seek to motivate and inspire teachers to improve

professional practices and student outcomes while establishing a sustainable culture (Bozkurt, 2023) that embraces innovation through personalized professional development (Bozkurt, 2023).

Transformative leaders often practice distributed leadership. Distributed and transformational leadership emphasize collaboration, shared responsibility, and the development of a positive school culture; however, there are differences in focus, approach, and implementation (Berkovich et al., 2021; Thornton et al., 2022). Distributed leadership leverages various stakeholders' expertise and knowledge to address challenges, implement change, and drive continuous improvement. Transformative leadership inspires and motivates stakeholders to embrace change and work collaboratively to achieve the school's vision (Zainal et al., 2021). School leadership must practice distributed and transformative leadership to leverage various stakeholders' diverse knowledge, skills, and expertise and foster a culture of shared responsibility to drive continuous improvement and innovation (Mehmet, 2024; Zainal et al., 2021).

Literature has sought to conceptualize distributed leadership in schools. Distributed leadership enables school leaders to implement systematic processes that foster effective organizational practices that empower stakeholders to improve organizational outcomes (Andreoli et al., 2020; Mette et al., 2024). Systematic organizational practices require continuous professional development within a professional learning community, which promotes collaboration and distributed leadership (Kruse, 2021; Medina et al., 2021). Lumby (2019) conceptualized distributed leadership as sharing ideas, decision-making, and innovation without redistributing or relinquishing the school leader's authority, expectations, or accountability. Highlighted in the research are various challenges in implementing distributed leadership in schools. The implementation of distributed leadership in schools is hindered by resistance to change, the uncertainty of expectations, and a lack of trust (Baştea et al., 2023; Nadeem, 2024).

Teachers struggle with distributed leadership regarding their roles in curriculum coordination, communication, and supporting classroom teachers (Ronan, 2023). While research validates distributed leadership as an effective leadership style for school improvement and teacher empowerment, implementation challenges limit stakeholder's effectiveness.

Influential school leaders integrate transformational, distributed, and instructional leadership styles to cultivate a positive school culture, encourage teacher collaboration, ensure high-quality instruction, and set clear goals and expectations (David et al., 2024; Kramer, 2023). However, instructional leadership provides informed leadership practices to shape teacher professional development by offering guidance, support, and resources to improve teaching practices and instructional effectiveness (Sanchez et al., 2021; Volante et al., 2023). According to Suyitno (2021), leaders prioritizing this approach collaborate closely with teachers to enhance their instructional abilities, offer feedback and support, and align instructional methods with the school's objectives and priorities. By fostering a continuous improvement and professional learning culture, instructional leaders promote pedagogical excellence and student-centered approaches to teaching and learning (Kramer, 2023; Suyitno, 2021; Volante et al., 2023).

Several studies support using instructional leadership as essential to the school improvement process. For instance, research by Jenssen et al. (2024) found that when instructional leaders facilitate data-driven decision-making processes among teachers, teacher instructional practices improve, resulting in higher student outcomes. Thus, instructional leadership practices advance educators' and students' teaching and learning experiences while nurturing higher teacher capacity and self-efficacy (Ma et al., 2021; Qadach et al., 2020). Therefore, influential instructional leaders prioritize student learning by facilitating supportive cultures that seek to provide a high-quality education for every student, every day, in every

classroom, by driving continuous improvement in instruction and student outcomes (David et al., 2024).

Despite its importance, instructional leadership can have several unintended negative consequences. For example, principal instructional leadership might unintentionally promote practices that stall school improvement efforts by widening achievement gaps (Urick et al., 2022). When instructional leaders overemphasize testing and accountability, they focus on test scores instead of the direct needs of teachers and students (Rodrigues, 2024). Further, instructional leadership can lead to micromanaging, limiting teacher autonomy and input, imposing top-down decisions, and disregarding teacher expertise and professionalism (Hassan et al., 2024). Instructional leaders who do not focus on building teacher capacity through supportive schemes can foster increased teacher stress and a sense of disempowerment, which stifles school improvement efforts (Hassan et al., 2024; Rodrigues, 2024; Urick et al., 2022). Therefore, instructional leaders must foster a collaborative school culture that empowers teachers and prioritizes student-centered instruction while remaining committed and adaptable to drive school improvement efforts (David et al., 2024; Kramer, 2023; Suyitno, 2021).

School leadership is essential in fostering a positive and productive educational environment and is critical in boosting student success, teacher engagement, and overall school excellence. Influential leaders must practice transformational, distributed, and instructional leadership to create environments that inspire and empower teachers, drive student success, and encourage a positive and productive school culture (David et al., 2024; Kramer, 2023; Thornton et al., 2022). Conversely, ineffective leadership can create a toxic and unproductive learning environment that hinders the school community's academic, social, and emotional growth, thwarting school improvement efforts (Hassan et al., 2024). Based on this, school leaders must

also participate in continuous professional development to refine their craft, stay updated on best practices, and create engaging and inclusive learning environments that foster student success

### **Student Achievement**

Professional development provides teachers with opportunities to improve their instructional practices. Effective teacher professional development is designed to expand teachers' knowledge and instructional capabilities, which helps educators improve their teaching skills and stay informed about the new standards and strategies (Bloom et al., 2020; Medina et al., 2021). Hence, by participating in professional development, teachers receive ongoing support to refine their pedagogies and adopt a holistic approach to developing teaching practices (Lodge, 2022; Richter et al., 2022). Therefore, sustained, job-embedded professional development opportunities tailored to the distinct needs of teachers and students, aligned with best practices and research, are most effective (Gupta et al., 2020; Medina et al., 2021; West, 2021). Additionally, continuous development can lead to improved teacher professional practices and student outcomes.

Research has consistently shown that teachers who engage in professional development schemes relevant to the students are more effective in the classroom and positively impact student achievement (Arifin et al., 2024; Kong et al., 2024). Therefore, schools and districts need to prioritize the implementation of professional development schemes that address the specific needs of students and teachers (Akiba et al., 2019; Mesutoglu et al., 2023; Whatley et al., 2023). Professional development opportunities can take many forms. However, the most effective professional development programs provide teachers with ongoing, collaborative, content-focused learning opportunities through constructive feedback and coaching are most effective (Westmoreland Jr. et al., 2019). Such professional development programs empower teachers to

refine their instructional practices, adapt to diverse student needs, and foster a culture of continuous improvement, ultimately leading to enhanced student achievement and success (Partee et al., 2024; Zeggelaar et al., 2022). Teacher professional development and student achievement are closely interconnected; therefore, prioritizing ongoing, relevant, and professional development opportunities for teachers is essential to support student success and improve educational outcomes.

Professional development helps teachers cultivate environments that support student achievement. Through ongoing training and support, teachers can refine their instructional strategies, deepen their content knowledge, and develop research-based teaching practices (Comstock et al., 2021). For instance, a study by Harrell et al. (2023) found that professional development programs grounded in the constructivist approach equip teachers with practical tools and strategies, increasing student performance in science. Özdemir (2019) concluded that lesson study boosted teachers' professional growth, enabling them to tackle challenges, explore new approaches, collaborate with colleagues, and gain insights into best practices. Through lesson study, teachers refine their instructional strategies, leading to more effective teaching, improved student engagement, and increased student achievement. Professional development opportunities like lesson study empower teachers to create learning environments aligned with the school's mission and vision, often including student social, emotional, and academic growth.

Through professional development, teachers become familiar with data analysis tools and techniques to improve student outcomes. However, teachers struggle to use data to drive instruction effectively, thus making its impact on achievement inconclusive (National Center for Education Evaluation and Regional Assistance (ED), 2019). Therefore, data-driven professional development schemes must integrate data skills training and usage within the teaching contexts,

enabling teachers to transfer knowledge and apply data insights to inform instruction (Boesdorfer et al., 2022). Hegestedt et al. (2023) conducted a study to understand the educational challenges teachers, principals, and administrative staff faced when utilizing data-driven methods to boost student achievement. The results indicated that the main obstacle was the lack of data literacy, further suggesting the need for intentional professional development to support effective and successful data-driven practices in schools. Based on this, targeted professional development is essential to help teachers bridge the data-skills gap and unlock the full potential of data-driven instruction for improved student outcomes.

### **Teacher Perceptions of Professional Development**

Teacher perceptions of professional development are often influenced by factors such as the nature and quality of professional development activities, individual teacher needs, and the overall school culture (Jones, 2020; Juan, 2023; Rodriguez et al., 2022). Professional development that provides applicable strategies, resources, and tools for the classroom heightens engagement and is more positively received (Hopkins, 2021). Further, teachers value differentiated professional development, enabling them to concentrate on topics related to their subject, grade level, or needs (Akiba et al., 2019; Mesutoglu et al., 2023; Whatley et al., 2023).

Educators also value collaborative learning opportunities that foster exchanging experiences, perceptions, and instructional strategies that can improve the efficacy of professional development (Grace et al., 2023). Sustained professional development that allows teachers to implement new information and skills into long-lasting modifications in classroom practice, tools, and follow-up support tends to affect teachers positively (Weimer, 2021).

Teachers must believe that the learning goals are relevant to optimize teacher participation and engagement in professional development activities. Thus, relevance to classroom practice

significantly impacts teachers' perceptions and the efficacy of professional development (Donath et al., 2023; Ennes et al., 2021). Accordingly, professional development that provides learning approaches that are immediately applicable is most effective, transformative, and valued (Perry-Hazan et al., 2021; Zeggelaar et al., 2023). Relevant learning opportunities consider the diverse needs of teachers across subjects and grade levels (Akiba et al., 2019; Mesutoglu et al., 2023). The content supports specific teaching contexts through differentiation. It ensures that the training resonates with each participant, is aligned with academic standards and that school curricula are viewed as more pertinent (Medina et al., 2021). Teachers are more inclined to participate in professional development when they perceive a clear link between the training objectives, academic standards, and school curriculum.

In addition to relevance, the perceived value, quality, and depth of professional development activities might affect teacher engagement in professional learning activities. The frequency and structure of professional learning activities significantly influenced teachers' attitudes and commitment, highlighting the importance of flexible and personalized development opportunities (Ilgan et al., 2022). A correlation between teacher participation in lesson study and self-efficacy exists (Delahunty et al., 2023). Therefore, it is essential to ensure that teachers clearly understand professional development's benefits, value, and relevance, enabling them to recognize its implications for their professional growth and students' academic achievement. (Gupta et al., 2020; Whatley et al., 2023). By prioritizing teacher understanding and buy-in, school leadership can foster a culture of continuous learning and improvement, leading to improved instructional practices and student performance.

Leadership has a significant impact on how teachers view professional development. Effective leadership inspires educators to participate in professional development by cultivating

cultures of encouragement and support, thus seeking to eliminate barriers and obstacles that deter teachers' willingness and motivation to participate (Close et al., 2020; Colyar et al., 2022). To accomplish this, leadership must communicate a clear vision for professional development that aligns with the school's value of professional growth and the school's improvement goals (Richter et al., 2022; Yang et al., 2023). Leadership that fosters a positive, supportive, and collaborative school climate can create an environment where teachers feel valued, encouraged, and motivated to engage in professional development (Gupta et al., 2020; Ilgan et al., 2022; Whatley et al., 2023). Effective leadership fosters a positive school climate, motivating teachers to pursue professional development (Li et al., 2023; Toropova et al., 2021). By being supportive and collaborative, leaders shape teachers' attitudes and drive a culture of excellence and student success.

Principals' instructional leadership strongly connects to teachers' self-efficacy, influencing their motivation to engage in professional growth and development (Özdemir, 2020). Therefore, leadership must prioritize positive, supportive, and strategic approaches to professional development so teachers are more likely to embrace growth opportunities with enthusiasm and confidence (Thomas et al., 2020; Thornton et al., 2022). This, in turn, fosters a culture of continuous learning and improvement, where teachers feel empowered to experiment with new instructional strategies, share best practices, and collaborate with colleagues (Bloom et al., 2020; Medina et al., 2021). As a result, teachers' professional practices become more effective, leading to enhanced student engagement, academic achievement, and overall learning outcomes (Baldwin, 2020; Li et al., 2023). By investing in teachers' growth and development, leadership demonstrates a commitment to excellence in education, paving the way for sustained school improvement and success.

## Summary

Professional development is essential to educator growth and school improvement (West, 2021). It encompasses various opportunities for teachers to enhance their knowledge, skills, and practices, ultimately impacting student achievement (Patfield et al., 2023; Yang et al., 2023). Professional learning communities (PLCs) play a vital role in professional development, fostering collaborative environments where educators share expertise, address challenges, and refine instructional strategies (Anderson et al., 2022; Little, 2020). Effective leadership is crucial in promoting and sustaining professional development, setting the tone for a continuous learning and improvement culture (Berkovich et al., 2021; Bozkurt, 2023; Volante et al., 2023).

Research has shown that professional development, teacher self-efficacy, and student achievement positively correlate (Aden, 2019; Anderson et al., 2022; Wan, 2020). Therefore, school leadership's commitment to providing high-quality professional development opportunities directly influences teachers' perceptions and is essential for motivating and engaging teachers in growth opportunities. (Parrish et al., 2020; Whatley et al., 2023). Moreover, teachers are more likely to find professional development valuable and impactful when it is tailored to their needs, provides supportive learning environments, and aligns with school objectives, ultimately leading to refined instructional strategies and improved student success (Mustafa et al., 2021; Smith et al., 2020). Schools can cultivate a culture of excellence by prioritizing professional development, driving student success, and teacher growth (Close et al., 2020; Colyar et al., 2022).

Several factors can negatively impact teacher perceptions of professional development, leading to disengagement and stifling school improvement initiatives (Rodgers et al., 2022). A significant obstacle is the need for more relevance and applicability to teachers' current teaching

contexts, rendering the training disconnected and useless (Westmoreland Jr. et al., 2019). This is exacerbated by mandatory or coercive participation, which can foster resentment and resistance when teachers are denied input and autonomy (Hassan et al., 2024; Rodrigues, 2024; Urick et al., 2022). Moreover, inadequate time and resources, including insufficient follow-up support and coaching, can hinder teachers' implementation of new learning (Fairman et al., 2020; Gupta et al., 2020; McKim et al., 2023). As a result, teachers may view professional development as a burden rather than a valuable opportunity for growth and improvement. Therefore, understanding teachers' perceptions is crucial for designing meaningful and motivating professional development initiatives, leading to increased teacher buy-in and commitment (Mustafa et al., 2021; Smith et al., 2020).

### Chapter 3: Research Method

Policymakers responded to concerns about student achievement with laws like NCLB (2001) and ESSA (2015) (Close et al., 2020; Colyar et al., 2022). The No Child Left Behind Act (2001) aimed to reduce achievement gaps but ultimately had a detrimental impact on education, leading to unintended consequences such as relaxed state academic standards, the exclusion of underprivileged students from accountability measures, and teacher exodus from lower-performing schools (Baldner, 2021; Etim et al., 2020; Nichols et al., 2021). The federal penalties of NCLB diminished educators' self-efficacy and widened the performance gap, disproportionately affecting urban areas and communities of color (Mette et al., 2020; Nichols et al., 2021). The Every Student Succeeds Act (2015) was enacted to counter NCLB's effects, giving states more control and establishing national learning standards (Close et al., 2020; Good, 2023; Ydesen et al., 2022). ESSA allowed states and districts to construct innovative assessment and accountability systems, incorporating the professional development of teachers into school improvement plans (Richerme, 2021; Troppe et al., 2020; Weiser et al., 2019). Both laws built on the Elementary and Secondary Education Act of 1965 (ESEA), shaping federal education legislation for 50 years (Atchison, 2019; Vinovskis, 2019). The professional learning community's framework became the guiding light for many school districts, aiming to serve communities in contextually relevant and responsive ways.

The professional learning community is a practical professional development framework that improves teacher instructional practices, teacher self-efficacy, and student achievement (Aden, 2019; Anderson et al., 2022; Wan, 2020). Professional learning communities enable instructors to hear multiple viewpoints, acquire colleagues' support, and develop a shared understanding of priorities (Liu et al., 2022; McBrayer et al., 2018; Tabak et al., 2020). Shared

personal practices, such as peer observations and feedback, positively impacted teacher instructional practices and self-efficacy (Miller, 2018; Visone, 2022; White, 2023).

Collaboration, a key PLC characteristic, promotes trust and shared responsibility amongst teachers, positively impacts collective self-efficacy, teacher instructional practices, and student achievement (Ninković et al., 2022; Weddle, 2022). Professional learning communities cultivate a collaborative learning environment, promoting student success by bringing teachers together to share knowledge, set goals, and support each other in their ongoing professional development (Battersby, 2019). Research showed that PLCs improved teacher self-efficacy, instructional practice, and student achievement (Little, 2020; Ninković et al., 2022; Weddle, 2022). Further research was needed to examine teacher perceptions of professional development and the impact on their instructional practice (Moulakdi et al., 2020; Wan, 2020).

The problem addressed in this qualitative descriptive case study was that without exploring how teachers described the influences of in-service professional development on their instructional practice, efforts to improve teacher instructional practices and student achievement via professional development might be impeded (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). Teacher perceptions could profoundly impact their commitment to professional development, influencing the successful implementation of new skills and concepts in the classroom (Parrish et al., 2020; Whatley et al., 2023). Thus, the purpose of this study was to explore how 3rd through 5th-grade math and reading teachers describe the influences of in-service professional development on their instructional practices. Therefore, this study aimed to uncover the intricacies of teacher perceptions and their impact on instructional practices, ultimately informing the development of effective professional development programs that genuinely support teacher growth and student success.

This chapter outlined the research methodology of the study, explaining the rationale behind the chosen methods and justifying the exclusion of alternative approaches. This in-depth review covered the research design, population, sampling procedures used to select participants, and data collection and analysis methods. Additionally, assumptions, limitations, and delimitations were addressed, along with the ethical protocols and safety measures implemented during data collection and analysis to ensure the integrity and trustworthiness of the findings.

### **Research Methodology and Design**

This qualitative descriptive case study explored how teachers describe the influence of in-service professional development on their instructional practices. A qualitative methodology was chosen for its ability to provide an in-depth exploration of teachers' thoughts, feelings, and beliefs (Saldaña et al., 2016). The descriptive qualitative design offered flexibility in incorporating various methods to address the research questions, prioritizing descriptive reliability and employing exploratory questions, observations, and surveys to gather data (Merriam et al., 2016; Yin, 2018).

Semi-structured interviews and focus groups were used to collect data, providing rich, personal responses and allowing for a comprehensive understanding of teacher perceptions and experiences (Patton, 2014; Yin, 2018). By combining multiple perspectives, a thorough narrative was created, providing a detailed description of their experiences and practices (Saldaña et al., 2016). This approach enabled a detailed understanding of teacher perspectives on the impact of professional development on their instructional practices, focusing on themes and patterns (Merriam et al., 2016; Yin, 2018). Ultimately, the qualitative descriptive case study design was the most suitable approach for this study, aligning with its purpose and research questions.

## **Population and Sample**

This qualitative descriptive case study explored how teachers describe the influence of in-service professional development on their instructional practices (Patton, 2014; Stake, 2010). The target population consisted of 3rd through 5th-grade math and reading teachers with at least two years of teaching experience in the designated content area, employed in a large school district in Southern Maryland. To gather data, six teachers were interviewed, and two focus groups of four participants each were recruited. These participants were different from the interviewees. This sample was ideal for the study as it was in alignment with the research questions, allowing for a detailed understanding of the local educational context and the impact of professional development on teaching practices in elementary education.

Recruitment involved purposive sampling, in conjunction with the school district, permission to interview from principals, and emailed recruitment letters. After permission to conduct the study was granted from the school district and the National University Institutional Review Board (NCU IRB), written consent was elicited from school principals. Teachers from the principal-approved sites were sent a recruitment email, which also contained a study prescreener. Each participant signed an informed consent letter before participating in the study. Participants were selected based on their willingness to share experiences, availability, and diverse backgrounds, ensuring a rich and dynamic discussion. By exploring the perspectives and experiences of these teachers, a deeper understanding of the impact of professional development on teaching practices and student outcomes in elementary education was gained.

Purposive sampling was the most appropriate method to address the study problem, purpose, and research questions. Purposive sampling is a deliberate approach to selecting participants for qualitative case studies, particularly when combined with focus groups (Yin,

2018). It enables researchers to recruit individuals with extensive knowledge and experiences relevant to the research questions, yielding in-depth insights and a richer understanding of the context, nuances, and complexities (Merriam, 2019). By purposefully selecting participants, researchers can assemble a diverse group with unique experiences and expertise, fostering a dynamic discussion that explores specific research questions and yields valuable data, insights, and in-depth understandings of the phenomenon (Crestwell et al., 2017; Saldaña et al., 2016). This approach is well-suited to achieve saturation, facilitating a comprehensive exploration of participants' experiences and perspectives through in-depth interviews and focus groups.

## **Materials**

This qualitative descriptive case study explored how teachers described the influence of in-service professional development on their instructional practices through semi-structured interviews and two virtual focus groups. Interviews provided in-depth insights into teacher experiences and perceptions, while focus groups captured group dynamics and rich qualitative data (Patton, 2014; Saldaña et al., 2016). Combining perspectives created a detailed narrative, making this design the best fit for the study. Data collected from interviews and focus groups ensured the accuracy and transferability of the results (Saldaña et al., 2016). To ensure credibility and accuracy, an interview protocol (Appendix A) guided semi-structured interviews, which were field-tested with three non-participant individuals to refine the questions. Both interviews and focus groups were conducted via Zoom, recorded, and transcribed verbatim, with participant identities protected to maintain confidentiality. Transcripts were reviewed by the interview participants within 72 hours for accuracy. If interview transcripts were not returned, it was assumed that the transcripts were accurate. This process ensured the accuracy, transferability,

and confidentiality of the results, with any necessary revisions due within 72 hours, after which it was assumed that the participant was satisfied with the transcript's accuracy.

Triangulation was achieved in this study through two virtual focus groups, each consisting of four teachers who met the same recruitment criteria as the interviewees (see Appendix B). Using the focus group protocol ensured consistency and rigor, outlining objectives, participant selection, duration, procedure, and questions to explore how professional development influenced instructional practices (Patton, 2014; Saldaña et al., 2016). Using a combination of interviews and focus groups provided a comprehensive understanding of the topic, ensuring the accuracy and transferability of the study's results (Saldaña et al., 2016). This multi-method approach enabled the researcher to capture diverse perspectives and experiences while also allowing for an exhaustive exploration of the research questions. Ultimately, the triangulation of data sources and methods enhanced the validity and reliability of the findings, providing a robust foundation for future research and practice.

### **Study Procedures**

This study involved recruiting teachers from a Maryland school district to explore their experiences with professional development and its impact on instructional practices. Before recruitment procedures began, permission from the school district to conduct the study was attained, as evidenced by the site authorization form (See Appendix C). The school district's site authorization procedures were as follows: a committee-approved study proposal and a school district-approved research application, along with written permission from the principal of each school. After receiving the site authorization letter, permission to conduct the study was granted by the National University Institutional Review Board (NCU IRB). After receiving Institutional Review Board (IRB) approval, teachers from designated schools were recruited for the study via

email, using contact information available on the schools' websites. Before participating in the study, each teacher digitally signed the informed consent letter (Appendix D), agreeing to participate voluntarily. Recruitment efforts continued until the minimum sample was attained.

Upon agreeing to participate, respondents completed a pre-screener Google Form to verify their eligibility for the study. Individuals not meeting the specified criteria were excluded from participation. Once verified, participants were assigned to either a semi-structured interview or a focus group and received an identifying label (RTI-1, reading teacher interview 1) to ensure privacy and confidentiality. The researcher then scheduled six individual interviews and two focus groups, with each lasting approximately 60 minutes. All sessions were recorded, transcribed, and supplemented with notes that informed follow-up questions. Data analysis employed Braun and Clarke's (2006) thematic analysis framework, using the NVivo qualitative data analysis software to identify themes and interpret findings. Recordings were stored securely in a password-protected folder, adhering to the Belmont report. Throughout the study, ethical standards as defined by the Belmont Report were upheld to ensure privacy and confidentiality.

A total of 14 participants were involved in this study, with each engaging in either a semi-structured interview or a focus group. Six participants took part in semi-structured interviews (Appendix A), while 8 different participants were assigned to either the math focus group or the reading focus group (Appendix B). All eligible participants received an email invitation to schedule a 60-minute virtual session. The email also prompted them to review the informed consent and notified them that the session would be recorded using Zoom's transcription feature for accurate data collection. The sessions were conducted via Zoom, recorded, and transcribed. Transcripts were returned to participants within 72 hours for their review and revision. Participants had 72 hours to verify and modify their transcripts to ensure the

authenticity of their experiences. After this period, any unmodified transcripts were considered final.

## **Data Analysis**

NVivo software was used to employ Braun and Clarke's (2006) six-phase thematic analysis approach for qualitative data analysis, utilizing an inductive methodology without pre-defined codes. The first step in the approach was familiarization, which necessitated the engagement in an intensive and iterative process of reading, re-reading, and reflection to develop a comprehensive understanding of participant perceptions and experiences. Next, coding was done to identify initial patterns and categories, followed by the development of initial themes, during which emerging themes will be organized and described. Themes were then analyzed and refined during the developing themes phase, ensuring accuracy and clarity during the revising of themes phase. Finally, the findings were presented in a finalized report, allowing for a comprehensive understanding of the data. Through this approach, themes were identified, analyzed, organized, described, and represented, providing insight into teacher perceptions of the in-service professional development they receive. A detailed explanation of Braun and Clarke's (2006) is listed below.

### **Step 1: Familiarization**

The virtual semi-structured interviews and two focus groups, conducted with 3rd through 5th-grade math and reading teachers with at least two years of teaching experience in the designated content area, employed in a large school district in Southern Maryland, were transcribed into Word documents. I became familiar with the data by reading and rereading the transcripts generated from the interviews as described by Braun and Clarke (2006). The initial

readings of the data served two purposes: the verification of the accuracy of the transcription software and the attainment of a preliminary understanding of the data. Follow-up readings initiated the interpretation process, which helped to determine the significance of the data and identify underlying themes. Repeated readings of the data facilitated a deeper understanding of how the data connected to the purpose of the study. Further, inductive reasoning was used to identify trends or patterns by carefully examining the data and looking for patterns that could be categorized.

### **Step 2: Coding**

The data analysis began with open coding. The transcripts were uploaded into NVivo, which was used to assign codes to relevant lines of data without preconceived categories. Codes emerged naturally as the data were examined, grouped, and defined, accompanied by illustrative examples from the text. This process aided the facilitation of the identification of recurring ideas while also grouping data that conveyed similar concepts, which led to the development of meaningful categories that informed an inductive thematic analysis, as recommended by Braun and Clarke (2006). Illustrative quotes from participants were documented for future reference during theme development, and this step laid the groundwork for a comprehensive analysis.

### **Step 3: Initial Themes**

The codes were consolidated into initial themes through axial coding, which involved identifying connections between codes that supported the same ideas and recoding data to ensure cohesion within a theme. Codes not contributing to the development of emerging themes were discarded. An NVivo table was used to categorize and organize the codes, facilitating the coalescence of codes into initial themes. The initial themes, which reflected recurring ideas and

opinions, were evaluated for their significance in relation to the research questions, as outlined by Braun and Clarke (2006). Themes that lacked relevance to the research questions were discarded, ensuring that only meaningful and pertinent themes were retained.

#### **Step 4: Themes**

The initial themes were refined and condensed into cohesive themes. Following Braun and Clarke's (2006) guidelines, relationships between initial themes were analyzed to identify connections and patterns. A table was used to catalog initial themes, which were then merged into unified themes. This process involved examining the meaning of codes, data, and exemplifiers to distinguish relationships. The data was reviewed to ensure that each theme accurately represented the underlying data. In this phase, the researcher verified each theme's clarity, distinctness, and accuracy, ensuring that they did not overlap. Each theme was then defined by a concise statement, capturing the underlying idea revealed by the codes, rather than a single word.

#### **Step 5: Revised Themes**

During this stage, the data was consolidated into broad, meaningful categories. These names were concise phrases that summarized the central idea represented by the grouped data. Exemplary participant quotes informed the naming process, ensuring that theme labels accurately reflected the data. The named themes provided answers to the research questions. Themes that did not address a research question were either discarded or integrated into a relevant theme.

#### **Step 6: Final Report**

The final report (Step 6) included an executive summary, introduction, methodology, results, discussion, conclusion, and recommendations. The report provided clear answers to the

research questions by synthesizing the thematic analysis results. Future research directions, practical implications, and policy recommendations were also outlined, based on the conclusions drawn from the study.

### **Assumptions**

A well-designed qualitative research study recognizes and acknowledges potential assumptions and biases that may shape the study's findings (Yin, 2018). Three essential assumptions guided this study, supporting the methodology and theoretical foundation. Firstly, it was assumed that teachers would provide truthful and thoughtful responses to interview questions about their professional development practices, which was crucial for the study's transferability. Secondly, it was assumed that the target population, comprising teachers in the selected schools, adhered to the professional learning community reform model and engaged in various forms of professional development, making this assumption necessary for the study's conduct. Lastly, the assumption was made that the study's data would accurately represent the professional development experiences of teachers in the selected schools based on the existing literature on teacher professional development. By acknowledging and addressing these assumptions, the study aimed to increase its transferability and reliability, ultimately contributing to a deeper understanding of teacher professional development in the context of professional learning communities (Demirbaga, 2024).

### **Limitations**

This qualitative study had limitations related to its reliance on self-reported data, which characteristically contain biases and inaccuracies, and its focus on a specific timeframe and setting, which may not represent other contexts (Yin, 2018). The study's sample size and selection process might have impacted the transferability of the findings. To address these

limitations, purposeful sampling was used to select participants with diverse experiences and perspectives, data triangulation was employed to enhance data reliability, and rigorous data analysis protocols were implemented to minimize biases. The study findings were also contextualized within the specific setting and timeframe, to transparently report the limitations, enabling readers to evaluate the quality and transferability of this study. By acknowledging and addressing these limitations, the study's design and methods aimed to increase the trustworthiness and credibility of the findings.

### **Delimitations**

This study was delimited by three key factors that defined its scope and boundaries (Yin, 2018). Firstly, the population of teachers in selected schools identified the specific group from which the data was collected. Secondly, the context of professional development settings within these schools defined the environment for data collection. Finally, the 2024-2025 academic year timeframe represented the data collection period. Collectively, these delimiting factors focused the study's scope on teachers in selected schools within professional development settings during the 2024-2025 academic year, aligning with existing literature and grounded in the study's theoretical framework. By defining the scope of the study, these delimiting factors addressed the problem statement and purpose statement and shaped the research questions to investigate specific aspects of teacher professional development within this scope.

### **Ethical Assurances**

Ethical considerations were evident throughout the study, as the moral guidelines dictated by the IRB will be followed. Ethics in research encompassed two key domains: ethics within the research community and society, and protecting research participants, which were carefully observed and addressed throughout the study to ensure a rigorous and responsible research

approach (Throne et al., 2024). The data used to conduct the research and the study participants were not manipulated. The assessment was not modified for the purposes of the study. The IRB review process evaluated the informed consent documents and site authorization letters, including the appendices. The IRB ensured that the required ethical conditions were met before the initiation of data collection procedures.

The Belmont report also informed the ethical considerations of this study. Following the Belmont Report published by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1978), the ethical principles of respect for persons, beneficence, and justice were upheld. To uphold ethical principles, the importance of autonomy and respect for individuals in research was acknowledged in this study. This approach ensured anonymity, allowing participants to make decisions and express their opinions without fear of harm, thereby fostering a safe and empowering research environment. Anonymity was maintained, as neither the school district, schools, teachers, nor any links to student assessment data were specifically identified in the study. Adequate information about the study was provided as part of the informed consent process. The principles of beneficence and justice were prioritized in the well-being of participants, requiring careful consideration of the anticipated benefits in relation to potential risks. Adherence to these principles provided safeguards for the welfare and rights of participants (Throne et al., 2024). Participation was voluntary and free from coercion, and there was no compensation for participants.

Consent to conduct the study was obtained from the school district's research department. Each teacher received an email inviting them to participate in the case study as an individual interviewee or as a participant in one of two focus groups. Before participating in this study, participants completed an informed consent form and acknowledged the confidentiality

statement. The teachers were permitted to decline participation without prejudice. The participating teachers did so without compensation. The ethical standards posed by Northcentral University's Institutional Review Board (IRB) and those of the participating school district were met.

### **Summary**

This qualitative descriptive study was to explore how teachers described the influences of in-service professional development on their instructional practices. Federal laws like NCLB and ESSA have emphasized teacher professional development as a key strategy for improving student achievement, making it a critical component of school improvement plans and teacher evaluations (Atchison, 2019; Robinson, 2018; Vinovskis, 2019). Research indicated that professional learning communities (PLCs) could lead to improvements in teacher self-efficacy, instructional practices, and student achievement (Aden, 2019; Anderson et al., 2022; Wan, 2020). This study explored how teachers described the influences of in-service professional development on their instructional practices. The findings might inform the design of professional development programs to ensure that teacher and student success is realized. The results of this study are presented in Chapter 4, where the findings have been analyzed and discussed in detail, providing insights into the impact of professional development on teaching practices and student learning.

## Chapter 4: Findings

While professional development is essential to the improvement of teacher instructional practices and student outcomes, understanding its impact from the perspective of teachers is crucial for assessing its effectiveness. The problem addressed in this qualitative descriptive case study is that without exploring how teachers describe the influences of the in-service professional development they receive on their instructional practices, efforts to improve teacher instructional practices and student achievement via professional development might be hindered (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). The purpose of this study was to explore how teachers described the influences of in-service professional development on their instructional practices. The research questions guiding this study were designed to explore how professional development influenced teacher instructional practices by prompting teachers to detail their experiences. Included in this chapter is a comprehensive description of the data, which addresses trustworthiness, data analysis procedures, a presentation and evaluation of the findings, and a summary of the key points.

### Trustworthiness of the Data

The trustworthiness of the data was established by integrating credibility, dependability, confirmability, and transferability into data collection and analysis (Enworo, 2023; Lim, 2024; Novak, 2024). Accordingly, Northcentral University's IRB and the participating school district's research department reviewed the interview and focus group protocols, which further ensured the trustworthiness of the data. The readability of the semi-structured interview questions was assessed, and all participant names were replaced with pseudonyms during data collection and analysis processes to maintain confidentiality as required by the Belmont Report (Lieke et al., 2021; Mosley et al., 2025). Additionally, trustworthiness was reinforced through member

checking, which promoted constructive feedback, facilitated ongoing communication, and involved participants in shaping future research directions (Kullman et al., 2025; Schafer et al., 2025). Collectively, these efforts ensured a strong foundation for the integrity of the research findings.

### **Credibility**

Several steps were taken to ensure the trustworthiness and credibility of this research study. Initial credibility was established by obtaining participant informed consent, which involved reviewing and accepting the terms of the consent form (Abbasinia et al., 2022; Godskesen et al., 2023; Sindhuri et al., 2023). This credibility was further enhanced by triangulating data from six interviews and two focus groups to mitigate bias and threats to validity. Per ethical standards, participants were assured the right to skip any question and to withdraw from the interview process, encompassing six semi-structured interviews and two focus groups (Cornelissen, 2025; Pastor-Andrés et al., 2025). Additionally, member checking was used to establish credibility, allowing participants to verify the accuracy of the transcripts (Bruan et al., 2021). Therefore, the transcripts, recorded via Zoom, were emailed to each study participant for member checking. The trustworthiness and credibility of the study were upheld by warranting participant consent, data triangulation, and member checking.

### **Transferability**

In this qualitative research, the researcher considered the transferability of findings, which is the extent to which results could be applied to other contexts. Like generalizability in quantitative research, transferability in qualitative research pertains to whether the findings of a study can be used in different populations or settings (Drisko et al., 2025; Milacci, 2024). Specifically, the researcher evaluated whether the findings from this qualitative descriptive case

study on teacher perspectives on in-service professional development and its influence on their instructional practices could be useful in similar educational settings and with comparable teacher populations. The researcher anticipated that these findings would contribute valuable insights to the broader understanding of how professional development shapes instructional practices in various contexts (Creswell & Poth, 2017). For instance, while this study focused on a specific group of teachers in a particular setting, the findings might offer valuable insights for professional development programs in other school districts or with teachers working with different student populations.

### **Dependability**

To ensure the dependability of this research, several procedural steps were implemented in data collection and handling. This qualitative descriptive study established the dependability, consistency, and stability of the findings through a detailed and auditable process (Alonzo et al., 2023; Azman et al., 2024). Approval to distribute recruitment emails was granted by National University's Institutional Review Board (IRB) and the participating school district's research policy. Following this approval, principals at schools serving fourth and fifth graders granted permission to interview their teachers. To ensure accuracy in data capture, Zoom was used to record the six interviews and the two focus groups, which were then transcribed verbatim. The researcher thoroughly reviewed the transcripts, redacting any identifying participant information or location details. Finally, participants were emailed the transcripts for member checking (Braun & Clarke, 2021).

### **Confirmability**

In this qualitative research, a crucial component, confirmability, pertains to the extent to which the study's findings are supported by the data (Galli et al., 2021; Alonzo et al., 2023). The

aim was to ensure that the findings were not fabricated, but a reflection of the participants' experiences and the data itself (Creswell & Poth, 2017). To establish confirmability, researchers employed several techniques. For instance, the use of audit trails, which involved keeping detailed records of the research process (including data collection, analysis, and decision-making), was a key strategy. Reflexivity was also important; the researcher reflected on their own biases, assumptions, and how these might have influenced the research process and findings. Triangulation, another valuable technique, involves the use of multiple sources of data or methods to confirm the findings. Additionally, member checking, which involved asking participants to review the findings to ensure they accurately reflected their experiences, contributed significantly to establishing confirmability (Alonzo et al., 2023; Azman et al., 2024; Piol et al., 2024). These strategies collectively enhanced the confirmability of the research findings.

## **Results**

Teacher perceptions were the focus of this qualitative descriptive case study, which aimed to explore how teachers described the influences of in-service professional development on their instructional practices. The two research questions guiding this study were designed to explore how professional development influenced teachers' instructional approaches: RQ1) How do reading teachers describe the influence of in-service professional development on their instructional practices? and RQ2) How do math teachers describe the influence of in-service professional development on their instructional practices? To address each research question, 3<sup>rd</sup> through 5<sup>th</sup> grade math and reading teachers were recruited from a southern Maryland school district to participate in a one-to-one unstructured interview or one of two focus groups. Interested participants qualifying for the study were sent emails that explained the research and a

link to the consent form. A total of 14 teachers participated in the study. They were informed that participation was voluntary and that all information collected would remain anonymous and confidential. Table 1 below represents a summary of the teacher participant demographics. The participants identified their teaching experience, the subjects, and the grade levels they currently teach.

**Table 1**

***Demographic Data: Research Question 1***

<b>Teacher</b>	<b>Experience</b>	<b>Subject</b>	<b>Grade-Level</b>
<b>RTI-1</b>	6 years	All Subjects	4th
<b>RTI-2</b>	8 years	Reading/ Math	4th
<b>RTI-3</b>	31 years	All Subjects	4th
<b>RFGT-1</b>	10 years	Reading	3rd
<b>RFGT-2</b>	19 years	Reading	3rd
<b>RFGT-3</b>	28 years	Reading	4th
<b>RFGT-4</b>	23 years	Reading	5th

*Note:* RTI-Reading Teacher Interviewee, RFGT-Reading Focus Group Teacher

**Table 2**

***Demographic Data: Research Question***

<b>Teacher</b>	<b>Experience</b>	<b>Subject</b>	<b>Grade-Level</b>
<b>MTI-1</b>	24 years	Math	3rd
<b>MTI-2</b>	30 years	Math	4th
<b>MTI-3</b>	10 years	Math	4th
<b>MFGT-1</b>	20 years	Math	3rd
<b>MFGT-2</b>	11 years	Math	3rd
<b>MFGT-3</b>	38 years	Math	3rd
<b>MFGT-4</b>	25 years	Math	3rd

*Note:* MTI- Math Teacher Interviewee, MFGT- Math Focus Group Teacher

## Data Collection and Analysis

Data were gathered through six virtual unstructured interviews and two Zoom focus groups, with all sessions recorded and transcribed automatically by Zoom, then manually corrected for accuracy. The finalized transcripts were sent to participants for member checking to verify accuracy and clarify perspectives. Subsequently, the transcripts were uploaded to NVivo for thematic analysis using Braun and Clarke's (2021) six-phase framework. This process involved the process of becoming familiar with the data, generating initial codes, searching for themes, reviewing and defining themes, and writing the report. Coding focuses on identifying specific segments of information to enable a deeper review of thematic categories (Byrne, 2021). These codes were then reorganized into new categories based on emerging similarities, resulting in an expanded list used to form broader categories.

The thematic analysis revealed key themes related to professional development, which emphasized participant perceptions of its impact and outcomes, the quality of PD delivery, and the nature of support and collaboration each experienced. While the data predominantly reflected positive perceptions and contributing factors, some negative views were noted. Examples of categories and related codes for each research question are presented in Tables 3 and 4, providing detailed elaborations of the main themes identified for Research Questions 1 and 2.

**Table 3**  
**Codes, Categories, and Themes for Research Question 1**

Code Names	Category	Theme
Admin Prescribed Applicable Change in Instructional Practice Content-Specific Cross-Curricular High-Student Engagement No Impact on Student Achievement Student Learning	Impact on Instruction and Student Outcomes	Perceived Impact of PD on Instruction and Student Outcomes
Beneficial Feedback Good Facilitation of PDS Negative Perception Not Relevant Poor Facilitation Positive Perception Redundant, Relevant Wasted Time	Perceptions of Professional Development Quality	Shaping Teacher Attitudes and Efficacy through PD
Asynchronous District-Based Isolated PDS Professional Learning School-Based Self-Selected Self-Taught	Delivery Modalities and Structure of PD	Implementing Professional Learning Experiences

Virtual

Admin Facilitated Coaching Admin-Chosen Facilitators Coaching Collaboration Continuous PD is Necessary Differentiation	Support and Collaborative Aspects of PD	Fostering Supportive PD Environments
High Teacher Engagement Student Needs	Teacher Needs and Engagement	Aligning PD with Educator and Student Requirements

**Table 4***Codes, Categories, and Themes for Research Question 2*

Code Names	Category	Theme
Continuous Engagement Change in Practice Continuous Use Student Achievement New Approaches Student Student Engagement	Impact and Outcomes of Professional Development	Sustained Impact and Observable Outcomes of Professional Development
Positive Perception Relevant Relevance Negative Perspective Isolated Listen to Teacher Feedback Not Relevant Poor Facilitation	Perceptions of Professional Development Quality and Relevance	Teacher Perspectives on Professional Development Quality and Relevance

Time to Implement		
Wasted Time		
School-Based		
Coaching		
Self-Selected		
County-Based	Delivery Modalities and Structure of Professional Development	Diverse Approaches to Professional Development Delivery
Differentiation		
Vendor Facilitated		
Virtual PDS		
PD Follow-Up Completion		
Informal		
Instructional Support	Support and Collaborative Aspects of PD	Strategies for Professional Support and Collaboration
Admin- Prescriptive		
Collaboration		
Content-Based		
Administrator Feedback		
Feedback		
Professional Development	Participant Needs and Operational Considerations	Understanding Educator Needs and Implementation Factors in Professional Development
Teacher Needs		
Compensation		

Reading and math teachers described the influence of in-service professional development (PD) on their instructional practices, focusing on its impact on teaching practices and student achievement. Both groups highlighted themes, including the "perceived impact of PD on instruction and student achievements." Insights related to "teacher perceptions of PD quality and relevance" included their attitudes, satisfaction, and the perceived usefulness of the training they received. Themes concerning "implementing aspects and diverse approaches to PD

delivery" outlined various formats and structures through which professional learning was offered. Both groups mentioned "fostering a supportive PD environment" and described the collaborative strategies that support professional growth. A recurring theme was the need for "aligning PD with the specific requirements of both educators and students." These themes demonstrate how these influences shaped instructional practices across disciplines.

### **Research Question 1**

Research Question 1: How do reading teachers describe the influence of in-service professional development on their instructional practices? The data collected revealed several central themes regarding the impact of professional development (PD) on teacher instructional practices and student outcomes. Respondents shared that PD sessions had significantly influenced their teaching practices, thereby enhancing student engagement and achievement despite initial struggles as new teachers (Lodge, 2022; Richter et al., 2022). While many teachers value the insights gained from PD, some expressed frustration with the lack of differentiation in the sessions, suggesting the need for personalized support similar to what they offer their students (Whatley et al., 2023). The follow-up feedback from the administration on specific observed practices proved beneficial in influencing teacher efficacy and clarity in focus areas for improvement (Anderson et al., 2022). Additionally, practical and interactive PD experiences were preferred, asserting that facilitators must be knowledgeable and responsive to the current needs of educators and students in their districts. Ultimately, the findings emphasized the need for PD to be relevant, hands-on, and aligned with teacher goals, ensuring that all learners thrive in the school community.

### **Table 7**

*RQ1-Final Themes and Excerpts*

Final Themes	Excerpts
Perceived Impact of PD on Instruction and Student Outcomes	<p>When I first started, I had to navigate various curricula, which was challenging since I had taught in another state with a high poverty rate and low reading levels. It was a struggle for me. During this time, I attended numerous Professional Development Sessions (PDS), focused on improving my skills and finding ways to support my students' growth. While I may not have been able to bring them up to grade level, my primary goal was to help them make progress. (RFGT-1)</p> <p>It was a quality experience because it taught me how to connect the standards and see how each grade level relates to the next. I gained insights into what students need to know and understand to master concepts. It was valuable because I had to engage deeply with the information myself. (RTI-1)</p>
Shaping Teacher Attitudes and Efficacy through PD	<p>Professional development has been frustrating for me. Just as we are expected to differentiate and scaffold for our students, we are not given the same consideration. After a certain amount of time, much of the information in these sessions feels recycled unless new insights are introduced. (RFGT-4)</p> <p>They always provide us with the specific domain they observed, such as "creating a welcoming classroom environment," sometimes after a discussion and sometimes without. They then gave me feedback that included a "glow" (strength) and a "grow" (area for improvement) related to that domain. Our admin team consistently follows up, even if they introduce a new domain. They are very clear about the teaching practices they expect us to improve, which has been incredibly helpful for me, as I know exactly what to focus on—no questions about it. (RTI-2)</p>
Implementing Professional Learning Experiences	<p>I've noticed a significant increase in student engagement in my classroom since implementing what I've learned. It's been a while since the students have been so engaged, and this shift has come from knowing what to teach and how to involve them in the lessons. I can say that professional development has boosted student engagement. They genuinely enjoy our activities; they want to participate every day because it allows them to engage in their learning and take ownership of it by building their vocabulary. (RFGT-2)</p> <p>Previously, during our novel studies, we primarily read books aloud or used YouTube videos, but there was little focus on applying the content to its relevance. However, after attending a professional development session on metacognition, I learned how to model my thinking for students. This approach makes the material</p>

	<p>more relevant and helps them perform better on state assessments. (RTI-2)</p> <p>If presenters are not knowledgeable about their topic and cannot answer questions, it can disengage participants. They need to consider whether the content is relevant to the needs of the districts and schools. A needs assessment should be conducted to gather feedback directly from staff rather than relying solely on district input, as district officials may not have an accurate understanding. (RTI-3)</p>
Fostering a Supportive PD Environment	<p>She prompted me to think about this. I agree with her emphasis on practicality, which RFGT-2 also addressed. It's one thing to deliver a presentation but another to ensure understanding by asking, "Can you show me?" or "How can we make this hands-on and tailored to different learning styles?" I believe we need to focus on making professional development more applicable and interactive rather than just presenting information and leaving participants uncertain about how to implement it. I hope this makes sense. (RFGT-3)</p>
Aligning PD with Educator and Student Requirements	<p>I think that over the years, I have tried to perfect my craft. I am seeing the students be more engaged. They're getting the material. They are answering higher-order thinking questions, thinking critically, and transferring that into writing. And, of course, I'm always going to be a lifelong learner (RFGT-1)</p> <p>Previously, I had a very effective math director or specialist in the district who led professional development sessions. They supported teachers, regardless of their experience level, from beginners to those with over 35 years in the field. They encouraged us to reflect on the curriculum and explore various instructional methods while addressing the assessments we needed to consider. (RTI-3)</p>

**Perceived Impact of PD on Instruction and Student Outcomes.** The theme "Perceived Impact of PD on Instruction and Student Outcomes" reflects each reading teacher's belief that continuous engagement in PD fosters meaningful and sustained change in instructional practices (Chuang, 2021; Nichols et al., 2021). Participants regard PD as the opportunity to learn and apply new approaches, which they believe promotes student achievement. This theme recognizes the lasting impact that continuous engagement in PD has on the instructional practices of teachers, student engagement, and learning outcomes.

While study participants acknowledged varied levels of engagement, they consistently reported regular participation in professional development activities. For example, RTI-1 reported, “It's strong at the beginning of the year, and then it kind of falls off toward the end. But I do at least three a year.” When asked if they regularly participate in professional development, RTI-2 stated, “I do.” Similarly, RTI-3 reported engaging in PD every year, saying, “Every year, and then there are some that I choose to take, if I think it's worthwhile.” The responses from each teacher reflect a commitment to professional development for both the school district and their own professional growth.

The reading teachers described their school's approach to professional development as a structured system that supports continuous teacher growth and positively impacts student outcomes. RTI-3 described a combination of campus- and district-level professional development, stating, “At the campus level, they choose professional development, focusing on what they think is most important, such as differentiation and classroom management. At the district level, options are more varied, including reading, math, science, social studies, differentiation, inquiry, critical thinking workshops, and STEM-related professional development.” RTI-2 stated that professional development schedules typically included district-based workshops organized by subject and grade level, along with campus-based team or vertically structured sessions. They reflected, “Most recently, for our state assessments, we've been doing professional development for reading passages and breaking down the passages that the kids are going to see on their state test.” Additionally, RTI-1 described instances when principal designees would attend district-based PD sessions, then conduct in-service trainings for school-based colleagues. “Last year and the year before, I was on the writing committee, where we took standards from grades K through 5 and learned the language used in the writing

standards. We created graphic organizers and writing templates for each grade level, which we then taught to our staff.” These responses describe a PD system that supports continuous engagement, sustained changes in instructional practices, and the ongoing implementation of new approaches, which participants perceive as enhancing student engagement and achievement.

According to the interviewees, professional development has influenced their teaching practices by encouraging continuous engagement in a variety of targeted learning opportunities that lead to meaningful instructional changes. RTI-1 shared how PD introduced new strategies, which are in continuous practice in their 4th-grade classroom. They said, “It gives me new ideas on teaching content; for example, an in-house reading PD taught me to use large Post-its for kids to write and share their central ideas, which I still use in my classroom.” Similarly, RTI-2 emphasized that PD helped them become more intentional in planning authentic, relevant lessons and in being responsive to real-time student needs through informal assessments. “Professional development has made me more intentional as an educator because, drawing from less positive experiences, I know I don’t like to feel like I’m wasting time. Therefore, I ensure that what I bring to my students is relevant to their actual needs, not just what I think is relevant.” Furthermore, RTI-3 described a mindset shift fostered by professional development, emphasizing student strengths and helping students distinguish between simple mistakes and contextualized misunderstandings. They noted, “Instead of looking at what the kids are having a hard time with, it's a mindset shift. You're looking at the positives first and then addressing the incorrect answers by asking, ‘But why?’.” Collectively, these experiences reflect a professional development system that is structured, collaborative, and targeted to support the ongoing implementation of practical approaches intended to improve teaching practices and increase student engagement and achievement.

Focus group participants described professional development in their school districts as a diverse system that positively impacts their instructional practices. RFGT-2 described the impact of highly structured professional development on a research-based reading program that fostered student engagement through hands-on learning kits and physical representation of phonemes. They remarked, “Professional development changed how I teach by making me more systematic and intentional, using research from the science of reading to incorporate hands-on activities and tactile learning, which resulted in a paradigm shift in my approach to teaching reading.” RFGT-1 explained how, at their school, PD extends beyond formal sessions to include collaboration, mentoring, and self-paced courses, reflecting, “The most applicable professional development for me this year has been meeting with my colleagues to share and adopt different strategies that work for us, both content-wise and across grade bands.” Moreover, RFGT-3 noted that PD was once frequent and integrated into the school day, covering multiple subjects, but has shifted to after-school sessions due to staffing challenges, which often limits teacher participation. However, they stated, “I think this district has done a great job of helping our teachers prepare to be professionals.” Although in-service PD is very popular in their buildings, focus group participants felt it lacks the richness of learning from peers in external settings.

In addition to describing the structure and impact of professional development, participants also shared how PD has influenced their instructional practices. For example, RFGT-1 shared how professional development taught them to effectively use technological programs like Padlet, noting, “Due to the pandemic, professional development focused on technology tools that created more engaging opportunities for the kids.” Moreover, RFGT-2 credits professional development with the shift toward more systematic, intentional, and hands-on teaching based on the science of reading and research-based practices. RFGT-3 reflected on personal growth, citing

increased patience, reflection, and adaptability, especially during the transition to online and hybrid learning amid the pandemic. Additionally, as a PD facilitator, RFGT-3 stated, “I focus on how to help the teachers I'm presenting PD to understand and consistently apply what I'm teaching so they can enhance student learning.” They also stressed the importance of presenting teachers with engaging, relevant PD opportunities that are applicable, inclusive of continuous monitoring and support, thus ensuring effective implementation. These responses show that PD supports teachers in integrating new tools and strategies, fostering collaboration, deepening understanding of research-based methods, and adapting to changing educational contexts. Participants value practical, relevant, and engaging PD, enabling ongoing professional growth and improved instructional effectiveness.

**Shaping Teacher Attitudes and Efficacy through PD.** The theme "Shaping Teacher Attitudes and Efficacy through PD" captures how professional development (PD) experiences influence educators' feelings, beliefs, and confidence in their teaching abilities. Teachers' perceptions of PD vary widely, shaped by content relevance, facilitation quality, and opportunity for meaningful (Hernández-Rodríguez et al., 2021; Partee et al., 2024). When PD is well-facilitated, relevant, and introduces beneficial strategies, teachers tend to view it positively, feeling supported and more effective in their practice. Conversely, poorly organized or repetitive sessions that lack applicability often lead to negative perceptions, with teachers feeling that time is wasted and their needs unmet (Rodgers et al., 2022). This theme reflects the dynamic impact of PD on teacher motivation and professional growth, maintaining that the usefulness and delivery of PD are crucial in fostering constructive attitudes and enhancing teaching efficacy (Sanchez et al., 2021; Delahunty et al., 2023).

The interview participants emphasized that professional development (PD) is essential for preventing stagnation and keeping teaching practices fresh and engaging. RTI-1 stressed that PD must be relevant and helpful to their specific teaching area to be valuable. “It has to be something that relates to what you're teaching, as professional development in math is not useful to someone who's an ELA teacher, so it must be useful in a classroom.” They also highlighted the need for strategies that support diverse learners, including students below grade level. RTI-2 preferred hands-on, practical PD sessions where teachers actively work with materials or technology during training, making it easier to apply new skills immediately and increasing positive attitudes toward PD. Specifically stating, “Whether it's a book or if it's a computer program, I want to interact with it during the PD so that I don't have to figure it out on my own.” RTI-3 highlighted the importance of PD: “It's very important to stay on top of new strategies and learning components, especially with technology, like MagicSchools or ChatGPT.” They noted that PD must match their skill level, directly apply to classroom needs, and offer activities that capture student interest without adding extra workload. Overall, participants viewed PD as essential when it is relevant, interactive, and tailored to their instructional context, helping them improve teaching effectiveness and student engagement.

Focus group participants acknowledged the positives and challenges when trying new teaching strategies learned through professional development. For instance, RFGT-2 stated, “I feel like there's an adjustment period for what works with your demographic, your group of students, your teaching style, and their learning style, so it can be trial and error, which is a negative setback, but trying new teaching strategies has positive aspects as well.” They believe the benefits include reaching more students using diverse learning approaches and improving reading activities based on current research. RFGT-1 echoed this sentiment, appreciating the

chance to refine new strategies across multiple classes, while recognizing that initial lessons may not be as practical during the experimentation phase. They stated, “You must figure out what works, what doesn't work, because everyone's different.” Additionally, RFGT-3 expressed frustrations with inconsistent curriculum changes that disrupt continuity, stating, “It is very difficult to stick with something that may only last a couple of months or a year,” which makes it hard to commit to new strategies long-term. They also pointed out challenges when PD expectations don't align with student backgrounds or pacing needs, leading to skipped or ineffective implementations. Generally, participants emphasized the importance of meaningful, well-paced strategies that fit their students while acknowledging the trial-and-error process and systemic challenges that can hinder sustained success.

**Implementing Professional Learning Experiences.** The "Implementing Professional Learning Experiences" theme captures how educators engage with professional development (PD) opportunities across their schools and districts, reflecting diverse formats and delivery methods. Teachers participate in district-based and school-based PD sessions, which may be asynchronous, virtual, or in-person, providing flexibility to accommodate different schedules and learning preferences (Odom et al., 2022). Many educators exercise autonomy by self-selecting PD that aligns with their instructional needs and interests, and some engage in self-taught learning when formal offerings are limited or less relevant. However, a challenge arises when PD occurs in isolation, meaning it lacks connection or coherence with other professional learning efforts, limiting collaboration and reducing the overall impact. This theme describes how teachers navigate a complex PD landscape, balancing structured, well-facilitated programs, such as those combining research-based strategies and hands-on activities, with more flexible, sometimes disconnected experiences (Gupta et al., 2020; Medina et al., 2021; West, 2021).

Effective implementation depends on integrating these varied modalities to support continuous instructional improvement, foster positive teacher attitudes, and address diverse student needs, ultimately enhancing teaching efficacy and student outcomes.

Educators experience professional development (PD) through various formats and supports, reflecting the theme of “implementing professional learning experiences”. According to RFGT-1, “Professional development has always been a requirement, but talking with peers opened my mind up to what it could really be.” They described PD as more than just district-sponsored sessions, including collaboration, mentoring, and self-paced courses, such as a new teacher series offering virtual and in-person classes. RFGT-3 said, “When I started in the district, we had a ton of professional development happening every week, but now, due to a lack of substitutes, it’s on the back burner and done after school hours instead of during the school day.” They stressed that while PD was once frequent and integrated across multiple subjects, it has shifted to mainly after-school, in-house sessions due to staffing challenges, which some find less compelling than external peer learning opportunities. Meanwhile, RFGT-2 emphasized the value of school-based support: “I have voiced some things to my principal, and we ended up discussing them in professional development, which made me appreciate that they value my input and all of our teachers who are there.” This highlights how having trained colleagues and a principal's backing helps guide the implementation of new programs. These varied delivery methods, from formal training to informal coaching and peer collaboration, show how educators navigate a complex PD landscape to enhance their instructional practices and professional growth.

Building on the varied professional development delivery experiences described by the focus group, the interviewees' insights further illustrate how implementing PD strategies influences classroom practice. For example, RTI-1 noted that many strategies learned through

PD are research-based and, when applied, often lead to positive student outcomes by addressing their specific abilities, stating, “The effectiveness of strategies I implement is going to reflect on the kids' abilities.” RTI-2 emphasized that PD is most impactful when it provides concrete tools that can be directly transferred to student learning, stating, “Less impactful are those PD sessions that focus more on the teacher experience or learning without providing anything tangible for student learning; however, the most impactful sessions are those where I connect to the material and can transfer that connection to the classroom.” This expresses a concern about the limited benefit of sessions focused solely on the teacher experience without clear classroom relevance. Meanwhile, RTI-3 highlighted a shift in mindset encouraged by PD, moving from focusing on student weaknesses to recognizing strengths and distinguishing between simple mistakes and more profound misunderstandings. They stated, “We're constantly asking why? This helps the kids slowly but surely realize that they can say, 'Oh, this is why I got this one wrong,' or 'This is a simple mistake. This is how I could fix it.’” This approach fosters student reflection on their learning, encourages ownership of their progress, and promotes a more positive attitude toward challenging subjects like math and reading. These perspectives demonstrate how diverse and well-supported professional learning experiences encourage meaningful instructional changes and enhance student engagement and achievement.

**Fostering a Supportive PD Environment.** The theme "Fostering a Supportive PD Environment" centers on creating professional development (PD) settings that promote ongoing growth, collaboration, and tailored support for educators. This environment is shaped by intentional leadership, where administrators play a key role in facilitating PD by selecting skilled facilitators and providing coaching that addresses specific teacher needs. Continuous PD is recognized as essential, ensuring educators have regular opportunities to refine their practices

and adapt to evolving instructional demands. Collaboration among teachers is also a critical component, enabling the sharing of strategies, peer mentoring, and collective problem-solving that enrich learning experiences (O'Connor et al., 2023; Pilotti et al., 2023). Differentiation within PD ensures that training is relevant and responsive to diverse teaching contexts and individual educator goals (Mesutoglu et al., 2023; Whatley et al., 2023). Combined, these elements cultivate a dynamic, supportive culture where teachers feel empowered to fully engage in PD schemes, effectively implement new approaches, consistently apply learned strategies that enhance instruction and improve student outcomes..

A supportive professional development (PD) environment is characterized by diverse, practical, and collaborative opportunities that meet educators' individual needs. RFGT-1 emphasized that PD extends beyond formal, district-sponsored sessions to include mentoring, peer collaboration, and self-paced courses, providing teachers with choices that align with their interests and goals. “So last year, I did a new teacher series because I am new to this school district, and it was a great series. It was like 3 different classes. Some were in person, some were virtual.” They described participation in the new teacher PD as a valuable experience. RFGT-2 shared the importance of school-based support, noting, “I was fortunate to have a reading specialist, my principal's support, an instructional lead teacher, and other teachers in the building who were already trained on the program to guide me through it.” RFGT-4 advocated for a more hands-on, collegial approach to PD: “I think professional development should have a more practical approach and not just theory, right? We don't get enough collegial time, so our PD could involve me coming to watch you teach, and then we can discuss what your curriculum provides and the strategies you're using that are working, and vice versa.” They suggested that observing peers and engaging in ongoing, differentiated conversations aligned with

administrative support would better address specific classroom needs. They emphasized the necessity of scheduling support, such as coverage during observations, to make these collaborative PD experiences feasible. Together, these perspectives illustrate that fostering a supportive PD environment involves facilitation by administrators, meaningful collaboration among teachers, practical and differentiated learning opportunities, and continuous coaching, all essential for sustained professional growth and improved instructional practice.

Teachers emphasize that fostering a supportive professional development (PD) environment requires ongoing, relevant, and individualized growth opportunities. RTI-3 described how regular walkthroughs and evaluations serve as mini-PD sessions: “Those walkthroughs are a mini professional development in themselves because they're designed to help you grow and improve,” providing targeted feedback that helps teachers focus on specific areas like differentiation and encourages consistent improvement over time. RTI-2 stressed the importance of being a lifelong learner: “I would say, as a teacher, I believe I'm probably the biggest learner in the classroom; if I'm not constantly learning, there's no way my kids can be constantly learning.” They also admit to seeking out varied PD opportunities beyond what schools or districts offer to avoid stagnation and find strategies that best fit their teaching style and students' needs. Similarly, RTI-1 highlighted that PD must be valid and relevant to their subject area: “It has to be something that relates to what you're teaching; a professional development in math is not useful to someone who's an ELA teacher.” They noted that while in-house PD offers more choice and applicability, some county or district sessions may not always align with individual teaching contexts. These perspectives explain that a supportive professional development environment integrates continuous feedback through evaluations, personalized learning experiences tailored to individual teacher needs and subject areas, and relevant, practical

content (Seino et al., 2021). Such an environment encourages ongoing teacher engagement, helps prevent stagnation, and fosters sustained professional growth by providing meaningful opportunities that teachers can apply directly in their classrooms.

**Aligning PD with Educator and Student Requirements.** The theme "Aligning PD with Educator and Student Requirements" highlights the necessity of professional development (PD) that directly connects with teacher instructional goals and learning needs. High teacher engagement is achieved when PD is relevant, practical, and tailored to educator classroom contexts, enabling them to address diverse student populations effectively. PD that focuses on real-world challenges incorporates research-based strategies, offers hands-on, collaborative learning opportunities, and fosters sustained motivation and confidence among teachers. When PD aligns with student needs, educators are better equipped to implement targeted instructional practices that enhance student engagement and achievement. Conversely, misaligned or irrelevant PD can result in disengagement, frustration, and reduced efficacy. This theme underscores continuous, differentiated, and well-facilitated PD, responsive to educator input and student demands, which is essential for meaningful professional growth and improved educational outcomes.

The focus group discussions centered on the theme "Aligning Professional Development with Educator and Student Requirements," highlighting the importance of PD that is relevant, practical, and tailored to both teacher growth and student learning needs. Participants emphasized how well-structured PD bridges the gap between educational theory and classroom application, helping teachers refine their practice to better support diverse learners. RFGT-1 described a journey from early challenges to greater confidence: "The professional development opportunities have changed the way I teach. I'm now more systematic and intentional, using the

culmination of research based on the science of reading. This has caused a paradigm shift in how I teach reading.” They credited PD with enabling them to tailor curriculum content, foster critical thinking, and implement research-based programs, which yielded measurable improvements in student engagement and achievement. RFGT-3 shared a more selective approach to PD: “Before, I attended as much professional development as I could to build my craft, but now I’m very selective because I want the PD to enhance both my teaching and my learning.” They prioritize sessions that offer meaningful, actionable learning over repetitive content, stressing the necessity of consistent application and feedback to sustain instructional growth and enhance student outcomes. RFGT-2 highlighted the gradual release of responsibility model as an effective strategy: “I started out with modeling, then saw my kids really engage with reading, make connections, and remember what they read instead of just reaching the end of the page without understanding it.” They noted that they learned through PD while identifying challenges in managing student independence and behavior during group work. Together, these insights demonstrate how targeted professional development supports both teacher effectiveness and student success.

The individual reading teacher interviews emphasize the critical need to align professional development (PD) with educator and student needs to maximize its impact. RTI-1 stressed that PD must be well-prepared and relevant. “I attended a professional development that felt like it could have been an email. I’ve also been to PD sessions where we were supposed to dissect the curriculum, but instead ended up putting things together, which was stressful and not what I expected. I wanted to learn, not do the job of the person running the session.” This suggests that facilitators should be prepared to explicitly model best practices, thus ensuring the training is meaningful and applicable. RTI-2 described recent PD: “For our State assessments,

they had us doing professional development focused on and breaking down the reading that the kids would see on their state test.” While this analysis of the reading passages was helpful, many PD sessions rely too heavily on passive formats like lectures rather than hands-on, practical activities that teachers can readily apply in their classrooms. RTI-3 recognized the value of PD in addressing writing integration and math routines but pointed out a significant gap in addressing diverse student needs. They noted that some PD assume all students learn at the same level: “The presenter stated that she used her child as an example to see how well these lessons would work with other kids, not understanding that we are teaching at-risk, Title-1 students who are having a very difficult time with math reasoning. She overlooked the challenges faced by at-risk and Title I students, particularly those still affected by the aftereffects of COVID-19.” This lack of differentiation in PD content limits its effectiveness for teachers working with varied learners.

Building on these insights, the focus group discussions and other teacher reflections stress that effective PD delivery must offer diverse formats that support varied learning styles and instructional contexts, including school-based, district-level, virtual, and self-selected. Teachers like RFGT-1 and RFGT-2 highlighted the importance of ongoing collaboration, mentoring, and administrative support in fostering a supportive PD environment that encourages continuous professional growth. Meanwhile, RFGT-3 emphasized the necessity of relevant, engaging PD that avoids repetition and promotes consistent application to positively impact student learning. Therefore, aligning PD with educator and student needs requires well-organized, differentiated, and interactive professional learning experiences that are coherent, supported by leadership, and responsive to classroom realities. Such alignment fosters high teacher engagement, prevents stagnation, and leads to meaningful instructional improvements that enhance student outcomes across diverse educational settings.

## Research Question 2

How do math teachers describe the influence of in-service professional development on their instructional practices? The data collected reveals several key themes regarding the impact and quality of teacher professional development (PD) experiences. First, PD is impactful with observable outcomes when teachers are coached to analyze data to improve student performance (Parrish et al.,2020; Wan et al.,2020). Teachers acknowledged significant shifts in their instructional practices and grouping methods due to strategies learned through PD sessions, yet some expressed concerns over time limitations and follow-up coaching (Weimer, 2021). Teachers attested to valuing diverse approaches to PD delivery, including mentoring and virtual training, as they promote collective collaboration amongst educators (Akiba et al.,2019; Mesutoglu et al., 2023). Additionally, math teachers emphasized the importance of leadership understanding and addressing educator needs, particularly regarding flexible in-service training and collaborative efforts like co-teaching and peer tutoring to tackle specific challenges. These insights emphasized the necessity for ongoing reflection and adaptation in professional development to support teacher growth and student learning effectively (Pilotti et al., 2023; O'Connor et al., 2023).

**Table 8**

***RQ2- Final Themes and Excerpts***

Final Themes	Excerpts
Sustained Impact and Observable Outcomes of Professional Development	<p>One aspect I appreciate about the math professional development (PD) sessions is that they are helpful, particularly the data discussions. Before coming to the county, I hadn't had access to this, so I value the opportunity to analyze data and gain ideas on utilizing it, along with effective math strategies. (MFGT-3)</p> <p>At the beginning of the year, we decide which students and areas to target for improvement in their scores. For me, that focus is on math. We select a group of</p>

	<p>students to help raise their performance levels. Mid-year, our principal meets with us to assess progress. We use the XXXXX test to check for score improvements from the beginning of the year. At the end of the year, around May, we evaluate whether the students achieved the necessary growth to enhance their abilities. (MTI-2)</p>
<p>Teacher Perspectives on Professional Development Quality and Relevance</p>	<p>The professional development (PD) I attended significantly changed my perspective as a teacher regarding the classroom environment. I adapted my student grouping methods and became more flexible in my small group instruction to ensure I meet the diverse learning needs of all my students. (MFGT-4)</p> <p>It felt as if everything was being crammed into a short time frame. While the foundational content was good, one day, I could not cover the topic thoroughly. (MTI-3)</p>
<p>Diverse Approaches to Professional Development Delivery</p>	<p>At my current school, most professional development has focused on mentoring. PD isn't limited to formal training but includes one-on-one mentoring sessions. As the leader of a team of second, third, and fourth-grade teachers, I mentor and provide informal advice in the hallway. Any opportunity to share or receive information contributes to professional development. (MFGT-1)</p> <p>I also prefer virtual training since it is more comfortable and allows me to participate more easily. (MTI-1)</p>
<p>Strategies for Professional Support and Collaboration</p>	<p>We engage in a lot of collaborative planning, which, as MFGT-1 mentioned, also serves as a form of professional development. Over the years, I've experienced nearly every approach shown in the graphic you provided. However, this is my first year in significant peer tutoring, where we visit other teachers' classrooms. For instance, one teacher may lead a math data session. (MFGT-3)</p> <p>We visited a highly performing school to observe lessons in actual classrooms with students present. We watched the strategies used and noted how teachers facilitated student engagement. When I started teaching, the approach was more prescriptive, focusing on "You do, we do" for math. However, there's an emphasis on allowing children to struggle and develop problem-solving skills. (MTI-2)</p>
<p>Understanding Educator Needs and Implementation Factors in Professional Development</p>	<p>The in-service training conducted within the school offers more flexibility. It would improve if administrators or coaches gathered input at the year's beginning, middle, and end. This way, it can be more responsive to teachers' immediate needs. (MFGT-2)</p>

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In my class, math vocabulary posed a challenge for my ESOL students. I worked with the ESOL teacher, who helped me find alternative ways to support math vocabulary in my classroom. Collaborating with other educators in this manner can significantly enhance student learning. (MTI-3)

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**Sustained Impact and Observable Outcomes of Professional Development.** The theme "Sustained Impact and Observable Outcomes of Professional Development" reflects the ongoing influence of PD on teacher instructional practices and student learning. Accordingly, continuous engagement in PD encourages educators to adopt new approaches and consistently apply them in their classrooms, leading to meaningful changes in teaching methods (Decabooter et al., 2024; Tay et al., 2021). This sustained use of strategies fosters higher student engagement by making learning more relevant and interactive (Özdemir, 2019). As teachers integrated these innovative practices over time, they observed tangible improvements in student achievement, demonstrating the lasting benefits of effective PD. The theme characterized ongoing participation and implementation as vital to processes regarding the transformation of professional learning into measurable positive outcomes for educators and students.

The theme "Sustained Impact and Observable Outcomes of Professional Development" is reflected in teacher perceptions of ongoing, practical support designed to promote continuous growth and professional learning. MFGT-1 emphasized that PD extends beyond formal sessions to include mentoring and informal advice, which provide valuable, day-to-day professional learning. MFGT-4 highlighted the role of PD in fostering teamwork and instructional support among colleagues, regardless of experience level, creating a collaborative culture focused on mutual growth. As a newcomer, MFGT-2 described structured supports like the New Teachers Academy. "In those sessions, facilitated by either the principal or the math coach, we received

tips and tricks on delivering content, and since we were new to the profession and the school, we gained a lot of information on strategies for behavior management,” along with regular coaching sessions, both internal and external, that offer targeted strategies and personalized guidance to improve teaching and behavior management. MFGT-3 shared how being part of a team has increased opportunities for collaborative planning, ” We even do peer tutoring where we visit another teacher's classroom, and they might run a math content session, or a math data session.” They found that learning from experienced colleagues marked a shift from solitary teaching to shared professional learning. These experiences demonstrate that sustained engagement with diverse PD formats, including mentoring, coaching, collaboration, and peer-led sessions, leads to meaningful instructional improvements and stronger professional communities that benefit teachers and students (Jones, 2020; Juan, 2023; Rodriguez et al., 2022).

Teachers consistently emphasized the importance of ongoing professional development in enhancing their instructional skills and improving student learning outcomes (O'Connor et al., 2023; Shah, 2024). MTI-1 stated, “PD has allowed me to continue building my teacher toolbox, especially since I’ve been out of school for years, and things keep changing. To stay current, you have to keep adding to your toolbox,” explaining that it enables educators to continually improve and stay current with evolving practices while providing a more accessible and efficient alternative to formal coursework. MTI-2 described a structured, goal-oriented approach to PD using Danielson’s Framework for Teaching, where teachers work with administrators to identify target students and monitor teacher effectiveness through student assessment results: “At the beginning of the year, we decide which students and areas to target for improvement, such as math scores. Midyear, the principal meets with us to review student progress using assessment scores. At the end of the year, around May, we assess whether the students have made the needed

improvements while also measuring our instructional effectiveness.” MTI-3 highlighted the value of PD in addressing diverse student needs, particularly around vocabulary and math concepts, recognizing the importance of tailoring instruction to varied backgrounds. They commented, “Professional development encourages collaboration among professionals. Whether you’re a General Ed math teacher, a SPED math teacher, or an ESOL math teacher, everyone comes together to support the students.” They also stressed that PD contributes to long-term professional growth, even if its benefits are not immediately visible.

**Teacher Perspectives on Professional Development Quality and Relevance.** The theme "Teacher Perspectives on Professional Development Quality and Relevance" reflects the diverse views of teachers on the value and relevance of frameworks. Teachers communicated positive perceptions when PD was relevant to their instructional needs, well-facilitated, and allowed adequate time to implement new strategies effectively (Donath et al., 2023; Ennes et al., 2021). Such PD often incorporates teacher feedback, fostering engagement and practical use in the classroom (Hernández-Rodríguez et al., 2021). However, teachers frequently develop negative perspectives when PD is irrelevant, poorly facilitated, or occurs in isolation, meaning it lacks connection or alignment with other PD efforts (Westmoreland Jr. et al., 2019). Isolated PD can feel disconnected and fragmented, reducing collaboration and continuity, which contributes to feelings of wasted time and unmet professional growth needs. This theme highlights that for PD to be impactful, it must be coherent, responsive to teachers' voices, and provide meaningful, connected learning experiences that teachers find useful and applicable (Sanchez et al., 2021; Volante et al., 2023).

The theme "Teacher Perspectives on Professional Development Quality and Relevance" reflects educators' varied PD experiences, emphasizing relevance, practical application, and

engagement. MFGT-3 shared that PD feels most valuable when it aligns with their teaching needs and interests. “If I’ve been forced to attend something that didn’t fit my needs, I’m not walking away with anything. But if it’s something I’ve chosen or that aligns with what I’m teaching, that is what I enjoy the most.” They noted that mandatory PD unrelated to their subject area or needs often feels wasteful. MFGT-1 reflected, “The professional development focused on the curriculum and technology is what I think has made a difference in the way I teach,” asserting that it significantly changed their teaching by helping them navigate new tools essential for third-grade instruction. MFGT-4 valued PD tailored to understanding English Language Development (ELD) students. “My favorite PD focused on the 7 Keys of ESL Strategies. Since our school is 99% ELD, this PD helped me see and apply these strategies, which are basically mandatory in our building to improve our scores.” It informed their differentiated instruction and improved engagement, noting that the strategies learned were applicable beyond the classroom, even during parent events. MFGT-2 described a transformative PD experience with Dreambox software, “Oh, man, that was life changing for me because I got to understand the software better, how to intervene, assign lessons on particular standards for struggling students, and use it for my small group instruction. I never looked back,” which enhanced their ability to monitor student progress efficiently and personalize learning. It also provided a helpful behavior management session that supported classroom control and student engagement.

Individual math teacher interviews reveal essential insights into the quality and relevance of professional development (PD) and its impact on teaching and student learning. MTI-1 preferred engaging, practical, and time-efficient PD, favoring virtual formats that focus directly on content without unnecessary activities such as icebreakers: “I prefer professional development to be short, especially on workdays, because it’s all about time. I also like virtual training

because it's very comfortable." They also appreciated recognition, like badges, that acknowledged their professional growth. MTI-2 described an experience where collaborating with peers significantly impacted their instructional practice: "I enjoyed the hour-long interaction with other county teachers, whose experiences helped me improve my craft. I realized I wasn't alone in struggling to organize groups under time constraints. They explained that while you may not meet with every group daily, focusing on middle and high groups each day leads to more noticeable growth." MTI-3 commented on a PD session that felt rushed: "They were trying to cram everything into one session, which felt rushed. Although the foundation was good, it will take more than one day to cover that specific topic." They surmised that PD sessions should be broken into smaller, focused sessions to allow teachers a deeper understanding of the content and its application. Hence, professional development is effective when it is context-specific, hands-on, teacher-informed, and addresses classroom challenges while improving teaching and learning.

**Diverse Approaches to Professional Development Delivery.** The theme "Diverse Approaches to Professional Development Delivery" showcases the various formats and methods of PD available to teachers, reflecting the school district's commitment to meeting their diverse learning needs, preferences, and instructional contexts (Akiba et al.,2019; Mesutoglu et al., 2023). The effectiveness of PD is improved when delivered through multiple formats, such as school-based sessions that foster collaboration and immediate applicability, and county-based or district-wide programs that provide broader, standardized training. Educators might also engage in self-selected PD opportunities, which provide opportunities to engage in learning schemes specific needs and interests. Teachers also value vendor-facilitated PD for its external expertise

and resources, as well as coaching for personalized, ongoing support. Additionally, virtual PD sessions offer flexible access to learning.

The differentiation of professional development offerings ensures that PD content and delivery match varying teacher experience levels and instructional goals (Akiba et al.,2019; Mesutoglu et al., 2023; Whatley et al.,2023). Informal professional learning, such as peer collaboration and mentoring, complements formal PD by providing continuous, context-specific growth. Professional development schedules that include follow-up activities and completion requirements promote sustained engagement through reinforced learning over time. These diverse delivery approaches create a comprehensive PD system that supports continuous professional development and responsive instructional improvement.

The math focus group highlighted the theme "Diverse Approaches to Professional Development Delivery," emphasizing the variety of formats and supports that contributed to professional teacher learning and growth (Akiba et al.,2019; Mesutoglu et al., 2023). Teachers described PD as a multifaceted process spanning beyond formal workshops, which includes mentoring, coaching, peer collaboration, and self-directed opportunities. MFGT-1 emphasized the importance of mentoring as a form of PD. "At my current school, the majority of the professional development has been a lot of mentoring. Professional development is not just a formal thing. It can also be where you have one-on-one mentoring sessions," noting that both formal sessions and informal interactions, like sharing advice in the hallway, provide valuable professional learning. Similarly, MFGT-4 described PD as fostering teamwork and instructional support among colleagues. "It's knowing how to help your teammates, new and veteran. That's what PD looks like in our building." They state that, regardless of the experience level, it's about creating a collaborative culture focused on mutual growth. As a newcomer, MFGT-2 shared how

structured programs like the New Teachers Academy, “It’s also a time for us to offer support to other new colleagues as well as improve my practice.” MFGT-3 reflected on the transition from being a sole teacher to working within a team, “I’ve probably done every type of traditional PD there is, but this is the 1st year that I have done a lot of collaborative planning.” Noting that these teacher-led sessions are critical PD components that expand learning opportunities beyond administrative-led PDs. This variety contrasts with the more limited PD options typically available in smaller schools.

Building on these insights, individual math teachers shared how PD is implemented and experienced in their classrooms. For example, MTI-1 suggested an organized system of informal, ongoing check-ins throughout the year to assess how PD strategies are working. “Okay, this is March Madness month. We’re going to come into your room to see if you need help reaching these goals or if we notice anything that could improve things. It’s an informal check to see if the PD is working—are you doing it correctly? What are your accomplishments and shortfalls? As teachers, we use criticism to grow.” They also emphasized the importance of timely feedback and support as teachers implement new practices. MTI-2 appreciated virtual PD opportunities: “My most recent PD focused on working with children in small group settings, showing how to guide them to work together effectively. It was an online video demonstrating how to set up small group instruction.” They noted that virtual PD allows flexible learning and the ability to revisit content as needed. They also valued in-person, interactive sessions with fellow teachers that provide practical strategies for managing time constraints and prioritizing student groups to maximize growth. MTI-3 highlighted the reflective aspect of PD, where administrator feedback helps identify areas for improvement that teachers might not initially recognize. They stated, “They provide feedback that helps you identify support needs you might not have recognized

initially, guiding you to areas for improvement and necessary resources. For example, I was asked about progress monitoring during instruction. They asked, ‘How do I assess their understanding? Did I write down anything that I noticed as I walked around the room? Did I write down anything that I would need to reteach?’” These perspectives reveal a dynamic PD environment combining formal sessions, personalized mentoring, collaborative learning, and self-selected experiences. By embracing multiple delivery methods, the PD system supports continuous professional growth, enhances teacher effectiveness, and improves student outcomes.

**Strategies for Professional Support and Collaboration.** The "Strategies for Professional Support and Collaboration" theme focuses on the methods and structures that foster adequate instructional support and collaborative growth among educators. This theme highlights the role of collaboration as a key strategy, where teachers work together to share content-based expertise, exchange feedback, and collectively refine their instructional practices (Akiba et al., 2019; Mesutoglu et al., 2023; Whatley et al., 2023). Administrators provide prescriptive support and targeted feedback, guiding teachers toward specific goals and ensuring alignment with district priorities. Constructive administrator feedback helps create a culture of continuous improvement and professional accountability. Instructional support within this framework is responsive and content-focused, addressing the unique needs of teachers while promoting teamwork (Anderson et al., 2022; Chaipidech et al., 2021; Westmoreland Jr. et al., 2019). These strategies build a supportive professional environment where collaboration and leadership feedback work together to enhance teaching effectiveness and student outcomes.

Strategies for professional support and collaboration are essential components of effective professional development that enhance teaching practices and improve student learning (Caena et al., 2022; Craig et al., 2022; O’Hara, 2019). The math focus group provided rich

examples of how collaboration, targeted support, and shared resources foster sustained instructional growth. MFGT-1 described how subject-specific staff meetings allowed teachers to develop practical skills. “I remember a staff meeting where we were divided into math and language arts teams. This teacher-led session made a difference in my classroom, as I learned about using data and grading strategies.” They also noted the impact of specialized PD focused on special education, which deepened their understanding of the needs of diverse learners. MFGT-3 described the impact of regular math data meetings. “We’re required to have an intervention plan in place. So, after every round of testing, we have meetings to review the data and update the intervention plan.” They explained that these data meetings require administrators and teachers to review student progress and update intervention plans while prioritizing collaboration with special education colleagues to set goals, adapt instruction, and manage behaviors for students with IEPs. MFGT-2 shared, “Once, I had that PD session on how to use the Dream Box software; I was able to bring more structure to the technology period during my 75-minute block.” They emphasized that the Dreambox software PD brought structure and student ownership to lessons by fostering collaborative initiatives, such as data walls, to motivate students to achieve weekly goals.

The math teachers provided several examples of effective strategies gained through professional support and peer collaboration that enhanced their instructional practice and positively impacted student learning. MTI-1 described a whole-school approach to PD: “We prepared for state testing with PD that required using data to improve student outcomes. By analyzing benchmarks and checkpoints, we selected focus areas, making it a whole-school effort in both reading and math.” They explained that this collaborative effort fostered collective goal-setting and alignment. MTI-2 emphasized the value of collaborative planning among grade-level

teams, including input from adjacent grades to address gaps and support advanced learners. They shared a PD experience visiting a high-performing school to observe classroom strategies: “A group of us teachers visited a high-performing school where we sat in actual classrooms and observed other teachers teach. We saw identified strategies and watched what the children did and what the teachers allowed them to do.” They stated that this experience provided practical insights into facilitating student struggle and independence. Further, MTI-3 highlighted collaboration with an ESL teacher to address challenges with math vocabulary for English learners: “I had students in my class struggling with math vocabulary, especially my ESOL students. The ESOL teacher pushed into my classroom to show me other ways to support math vocabulary. Collaborating with other educators like this can really help in your classroom.” These perspectives align with earlier findings that effective professional support and collaboration involve data-driven planning, peer observations, interdisciplinary teamwork, and sustained PD engagement (Bas-Ader et al., 2023; Lestari et al., 2022; Saka, 2021), thus demonstrating how collaboration enhances teacher development and student outcomes.

### **Understanding Educator Needs and Implementation Factors in Professional.**

**Development.** The theme "Understanding Educator Needs and Implementation Factors in Professional Development" centers on recognizing and addressing the specific needs of teachers to ensure effective implementation of PD (Akiba et al., 2019; Mesutoglu et al., 2023; Whatley et al., 2023). Included is the acknowledgment that PD must align with educators' instructional goals, learning preferences, and classroom realities to be meaningful and relevant (Chuang, 2021; Gilson et al., 2022). Teachers emphasize the importance of practical, differentiated, and responsive PD to their unique contexts, fostering high engagement and positive attitudes.

Additionally, factors such as adequate compensation for PD participation and sufficient time for implementation are critical to supporting the sustained use of new strategies and ongoing professional growth (Fairman et al., 2020; Gupta et al., 2020; McKim et al., 2023). Understanding these educators' needs, alongside thoughtful planning and support, enables PD to have a lasting impact on teaching practices and student outcomes. This theme highlights that successful PD requires balancing teacher input, relevant content, logistical considerations, and appropriate incentives to create a supportive environment conducive to continuous learning and instructional improvement (Baldwin, 2020).

From the individual math teacher's perspective, MTI-1 shared that online PD videos provide practical strategies for improving student learning, particularly in increasing engagement and understanding of math. They also valued opportunities to observe teaching practices at high-performing schools, noting a shift toward encouraging students to struggle productively rather than simply following established routines. MTI-3, reflecting on feedback received during PD, acknowledged that some sessions may be less necessary for experienced teachers but still contribute to ongoing professional growth. These insights underline that effective PD must be relevant, flexible, and responsive to school-wide priorities and individual teacher goals (Grace et al., 2023; Partee et al., 2024; Sims et al., 2021). Incorporating a combination of formal resources, personalized coaching, ongoing feedback, and opportunities for practical application ensures that PD meets educators' diverse needs and supports meaningful instructional improvements.

### **Evaluation of the Findings**

The findings related to professional development (PD) provide valuable insights into how in-service PD influences instructional practices in both reading and math, framed through the lens of constructivist learning theory. Constructivism emphasizes that learning is an active,

social, and reflective process where teachers build new knowledge based on their experiences and collaborate with peers to make meaning relevant to their contexts (Vygotsky, 1978). This theoretical framework helps explain how PD shapes teacher growth and student outcomes, as explored in the two research questions.

The results of this study align with the principles of constructivist learning theory, demonstrating how professional development can enhance instructional practices through collaborative processes. This theory emphasizes that knowledge acquisition is rooted in personal experiences and existing research on learning (Vygotsky, 1978). Accordingly, the study depicts PD as a collaborative process that involves data-informed discussions and innovative teamwork amongst peers to address challenges while also increasing the individual and collective knowledge of teachers (Chuang, 2021; Elhussain et al., 2020; Gilson et al., 2022). Studies have established a connection between constructivist learning theory and PD, supporting Vygotsky's view of learning as an active, collaborative endeavor that integrates new information with prior knowledge to foster a deeper comprehension of the material (Chuang, 2021; Deng et al., 2022; Epps et al., 2021). Factors such as active learning and the alignment between learning activities and practices embedded in the job are crucial for effective professional development (Chuang, 2021; Gilson et al., 2022). According to constructivist learning theory, it is essential for teachers to participate in efforts aimed at enhancing their instructional practices through ongoing professional growth.

**RQ1: How do reading teachers describe the influence of in-service professional development on their instructional practices?** Reading teachers described PD as essential to fostering meaningful changes to their instructional practices, thereby aligning with constructivist principles by actively integrating research-based strategies into classroom practice. These

educators emphasized the need for relevant and differentiated PD, addressing their needs as diverse learners while also promoting mindset shifts that encourage student reflection and ownership of learning (Mustafa et al., 2021; Smith et al., 2020). Also noted were collaborative PD environments, including mentoring and peer support, which reinforce the application of new strategies in authentic settings (Grace et al., 2023; Tabak et al., 2020). However, teachers also mentioned frustrations when PD content dismisses the variances in student abilities or the lack of direct relevance, suggesting PD must be closely aligned with fundamental classroom dynamics to have an impact (Partee et al., 2024; Zeggelaar et al., 2022).

**RQ2: How do math teachers describe the influence of in-service professional development on their instructional practices?** Math teachers described a multifaceted PD experience involving mentoring, coaching, collaborative planning, and technology integration, reflecting the constructivist theory of learning through social interaction and hands-on engagement (Khurma et al., 2024). They discussed data-driven PD processes that support goal setting, reflection, and iterative refinement of instruction, enabling adaptive teaching responsive to student needs (Regan et al., 2023; van den Boom-Muilenburg et al., 2023). The balance between district mandates and individual professional goals explains why PD must consider the prior knowledge and contextual realities of teachers. Collaboration with special education colleagues and differentiated instruction further exemplifies the social and personalized aspects of constructivist learning (Wan, 2020). Math educators also emphasized PD's role in building teacher efficacy through relevant, practical experiences that respect teacher autonomy.

Both reading and math educators emphasize the importance of PD, which is continuous, collaborative, and tailored to educator and student needs. Diverse delivery methods, including formal workshops, virtual sessions, mentoring, coaching, and peer collaboration, provide

multiple pathways for teachers to engage meaningfully with PD (Anderson et al., 2022; Little, 2020). Informal interactions and ongoing feedback loops support reflection and professional growth, essential elements of constructivist theory (Grace et al., 2023; Partee et al., 2024; Sims et al., 2021). While PD formats vary, the common thread is the need for relevance, practical application, and sustained support.

Teachers across disciplines and grade levels identified challenges such as scheduling difficulties, PD content misalignment, and conflicts between standardized district goals and individual teacher goals. These issues highlight the importance of flexible, responsive PD schemes that incorporate teacher input and are understanding of classroom realities (Jones, 2020; Juan, 2023; Rodriguez et al., 2022). Constructivism encourages learner-centered PD that empowers teachers to actively structure their learning, collaborate with peers, and apply new knowledge in authentic contexts, enhancing their instructional practice and student success.

## **Summary**

This qualitative descriptive case study explored how 3<sup>rd</sup> through 5<sup>th</sup> -grade math and reading teachers perceive the influence of in-service professional development on their instructional practices. Researchers characterized effective PD as being content-driven, interactive, collaborative, model-based, supported by coaching and expertise, feedback-rich, and ongoing or integrated into daily work (Gupta et al., 2020; Lestari, 2022). This study sought to gain insight into teacher perceptions of how PD enhances their instructional practices. (Medina et al., 2021; West, 2021). The findings offer school leadership a framework for designing PD that more effectively addresses the learning needs of both teachers and students (Mustafa et al., 2021). Additionally, the focused examination of teacher perspectives might inform the design and implementation of more effective PD generalizable schemes across many domains.

After conducting 6 semi-structured interviews of three reading teachers and three math teachers, and two focus groups with four reading teachers and 4 math teachers, the data from participant replies were analyzed in response to the following research questions:

RQ1: How do reading teachers describe the influence of in-service professional development on their instructional practices?

The data revealed key themes regarding the influence of professional development on reading teachers' instructional practices: perceived impact of PD on instruction and student outcomes; shaping teacher attitudes and efficacy through PD; implementing professional learning experiences; fostering a supportive PD environment; aligning PD with educator and student requirements. Each theme correlates the reading teachers' perceptions of PD with the effectiveness of their instructional practices and student outcomes. Also communicated is the need for structured, supportive PD engagement activities aligned to both educator and student needs to ensure meaningful professional growth (Caena et al., 2022; Craig et al., 2022; Ezzani, 2020). Accordingly, these themes provide leadership with the opportunity to ensure that teachers engage in PD schemes designed to improve instructional practices and effectiveness and student achievement (Rodgers et al., 2022).

RQ 2: How do math teachers describe the influence of in-service professional development on their instructional practices?

The data revealed key themes regarding math teachers' professional development: sustained impact and observable outcomes of PD; teacher perspectives on PD quality and relevance; diverse approaches to PD delivery; strategies for professional support and collaboration; and understanding educator needs and implementation factors in PD. Also

communicated is the need for PD programs to be thoughtfully designed and paced, ensuring depth and practical application, while providing ongoing feedback and support (Gupta et al., 2020; Lestari, 2022). This approach fosters teacher engagement, addresses diverse learning needs, and promotes continuous instructional improvement that ultimately benefits student achievement (Anderson et al., 2022; Pilotti et al., 2023).

The findings of this study align with research suggesting that professional development most effectively influences instructional practices when it is based on constructivist principles (Chuang, 2021; Gilson et al., 2022). Professional Development that fosters active engagement, collective collaboration, differentiation, and ongoing reflection, all of which enable teachers to construct new knowledge, address student needs, and participate in sustained professional learning (Kohlmeier et al., 2020; Pischetola et al., 2023). Professional development that is responsive, differentiated, and well-supported promotes meaningful instructional improvements and leads to measurable gains in student outcomes (Sanchez et al., 2021; Volante et al., 2023). This comprehensive understanding affirms the critical role of thoughtfully designed and implemented PD in advancing educational quality across grade and content areas.

## Chapter 5: Implications, Recommendations, and Conclusions

Student achievement is closely related to the quality of professional development that teachers receive. Therefore, understanding teacher perspectives on the professional development (PD) they receive is essential to evaluating its overall effectiveness. The problem addressed is that without exploring how teachers describe the influences of in-service PD on their instructional practices, efforts to improve teacher instructional practices and student achievement via PD might be impeded (Rodgers et al., 2022; Shogren et al., 2019; Westmoreland Jr. et al., 2019). The purpose of this study was to explore how teachers describe the influences of in-service PD on their instructional practices. Therefore, the findings might inform the development and design of effective PD programs to support teacher growth and student success.

The qualitative descriptive case study method and design were used to explore how teachers describe the influence of in-service PD on their instructional practices. A qualitative methodology was chosen to provide an in-depth exploration of teachers' thoughts, feelings, and beliefs (Saldaña et al., 2016). The descriptive design offered flexibility in incorporating various methods to address the research questions, prioritizing descriptive reliability and employing exploratory questions, observations, and surveys to gather data (Merriam et al., 2016; Yin, 2018). Thus, this qualitative descriptive case study addressed the “why” and “how” questions (Yin, 2018) by exploring societal processes, examining individual perceptions of specific events, and attempting to understand why people thought and responded the way they did (Yazan, 2015). Specifically, two focus groups and interviews explored the perspectives of reading and math teachers.

The findings describe how teachers perceive in-service PD influences their instructional practices. The use of purposive sampling allowed recruitment of individuals with extensive

knowledge and experience relevant to the research questions (Merriam, 2019). In this study, purposeful sampling resulted in 14 participants: 6 individuals in one-on-one, semi-structured interviews and 8 individuals in two focus groups. The interview and focus group protocols gathered data from 3rd through 5th grade math and reading teachers in a southern Maryland school district.

Data were collected virtually through 6 unstructured interviews and two focus groups. All sessions were recorded and automatically transcribed by Zoom, with transcripts manually edited for accuracy. The finalized transcripts were uploaded to NVivo for thematic analysis using Braun and Clarke's (2021) six-phase framework. After becoming familiar with the data, generating initial codes, searching for themes, reviewing and defining themes, a final analysis was conducted in response to the research questions.

Each research question yielded five themes, providing a comprehensive framework for analyzing the data. Themes that emerged from examining math and reading teacher responses revealed common perspectives across different contexts. For instance, included in the themes related to the effectiveness of professional development is the importance of relevant, targeted PD that directly addresses the needs of individual teachers. Additionally, several themes emphasize the importance of continuous feedback from walkthroughs and evaluations as essential for teacher growth. Lastly, the significance of collaboration among educators emerged, showing that shared experiences and peer support foster supportive PD environments. In general, the identification of these themes not only enriches understanding of the research questions but also provides actionable recommendations for future PD initiatives.

The limitations of this study are related to the reliance on self-reported data, which may contain biases and inaccuracies. For example, the study focuses on a specific timeframe and

setting that may not represent other contexts (Yin, 2018). The study's sample size and selection process might impact the transferability of the findings. These limitations were addressed through purposeful sampling, which provided the opportunity to collect data from participants with diverse experiences and perspectives. Additionally, data triangulation was used to improve reliability, while rigorous analysis protocols were applied to reduce biases (Focarile et al., 2025; Warmoes et al., 2025). The study findings were presented within the specific setting and timeframe to transparently report the limitations, allowing readers to evaluate the quality and transferability of the study (Dorukbaşı et al., 2024; Howell et al., 2025). Despite these limitations, the study offers valuable insights that contribute to understanding teacher perspectives on how in-service professional development impacts their instructional practices.

### **Implications**

The implications of this study highlight the essential role of understanding how teachers describe the influences of in-service professional development on their instructional practices. Instructional leadership might use the study's results to design in-service PD that integrates evidence-based teaching practices and fosters meaningful connections (Deng et al., 2022; Lestari, 2022; Mustafa et al., 2021). The findings may provide valuable qualitative data for policymakers, school districts, teachers, and other members of the academic community. Studies on teacher PD can influence policy and funding decisions, as PD is critical to the nation's school improvement plan (Colyar et al., 2022; Hunter, 2019). Furthermore, the results can inform instructional coaching protocols with teacher perspectives in mind, impacting PD at both the school and broader levels.

The implications of this research, based on the question "How do reading teachers describe the influence of in-service professional development on their instructional practices?"

suggest that in-service PD plays a crucial role in shaping reading teacher instructional practices and improving student outcomes (Mustafa et al., 2021; Smith et al., 2020). Effective PD should offer personalized support tailored to individual teacher needs, much like the differentiated instruction teachers provide to their students (Partee et al., 2024). Ongoing, specific feedback from administrators enhances teacher efficacy by clarifying areas for growth (Anderson et al., 2022). Additionally, PD must be practical, interactive, and led by knowledgeable facilitators who understand the current challenges faced by educators and students (Grace et al., 2023; Tabak et al., 2020).

The implications of this research, based on the question "How do math teachers describe the influence of in-service professional development on their instructional practices?" highlight that effective PD leads to observable improvements when teachers are coached to analyze data for enhancing student performance (Parrish et al., 2020; Wan et al., 2020). While teachers reported significant changes in instructional practices and grouping strategies from PD, concerns about time constraints and insufficient follow-up coaching remain. The research shows that teachers value diverse PD delivery methods, including mentoring and virtual training, which foster collaboration among educators (Akiba et al., 2019; Mesutoglu et al., 2023). Furthermore, math teachers stressed the importance of leadership that understands and addresses their needs, advocating for flexible training schedules and collaborative practices such as co-teaching and peer tutoring to address specific challenges (Pilotti et al., 2023; O'Connor et al., 2023).

Several factors may have influenced the interpretation of the results, including the reliance on self-reported data, which could introduce response bias (Focarile et al., 2025; Warmoes et al., 2025). Additionally, the specific timeframe and setting of the study may have limited the diversity of experiences captured, potentially affecting the transferability of the

findings (Dorukbaşı et al., 2024; Howell et al., 2025). Participants' prior experiences with professional development and varying levels of engagement may also have shaped their perspectives, influencing how they described the impact of PD on their instructional practices.

The findings align with existing research emphasizing the importance of relevant, targeted professional development and ongoing collaboration among educators (Deng et al., 2022; Mustafa et al., 2021). However, some teachers expressed frustration with the lack of differentiation in PD sessions, which contrasts with studies advocating for personalized support (Smith et al., 2020). This discrepancy may be explained by differences in district-level PD implementation or resource availability. Furthermore, while systems support sustained feedback for teacher growth, some participants noted inconsistencies in feedback quality, suggesting challenges in PD delivery that warrant further investigation.

By considering these factors, the study provides a practical understanding of professional development's impact on instructional practices, contributing valuable insights to the existing literature and informing more effective, tailored PD initiatives. The implications of this study highlight the essential role of understanding how teachers describe the influences of in-service professional development. Instructional leadership might use these findings to design PD that integrates evidence-based teaching practices and fosters meaningful connections. The results may guide policymakers, school districts, and educators in developing relevant, engaging professional learning programs that increase teacher buy-in, commitment, and ultimately, student achievement.

The problem was addressed by actively exploring and incorporating teacher perspectives on the professional development they receive (Rodgers et al., 2022; Shogren et al., 2019). Through detailed interviews and focus groups, the study gathered firsthand accounts of how PD

influences instructional practices, allowing for a deeper understanding of its effectiveness and areas for improvement (Mustafa et al., 2021; Smith et al., 2020). MFGT-4 shared:

“The professional development I attended significantly changed my perspective as a teacher regarding the classroom environment. I adapted my student grouping methods and became more flexible in my small group instruction to ensure I meet the diverse learning needs of all my students”.

This approach provided valuable insights that can guide school leadership in designing and implementing more relevant, tailored, and impactful PD initiatives. By prioritizing teacher input, the study helps prevent the continuation of ineffective, generic PD programs and supports the development of professional learning experiences that foster greater teacher engagement, instructional growth, and improved student outcomes (Bellibaş et al., 2021; Deng et al., 2022).

The purpose of the study was addressed by gathering detailed descriptions from teachers through interviews and focus groups, allowing an in-depth exploration of how in-service professional development influenced their instructional practices (Saldaña et al., 2016; Merriam et al., 2016). Using a qualitative descriptive case study approach provided rich, contextual insights into teacher experiences, perceptions, and the specific ways PD impacted their teaching methods (Merriam & Tisdell, 2016). This approach directly aligned with the goal of understanding the influences of PD from the teachers’ perspectives. For example, RTI-3 described a mindset shift fostered by professional development that emphasized student strengths and helped students distinguish between simple mistakes and contextualized misunderstandings. The findings of this study generally support existing research and theory on PD, though some differences emerged that can be attributed to specific contexts and variations in how PD was implemented (Rodgers et al., 2022; Yazan, 2015).

The results of this study are largely consistent with existing research and theory emphasizing the critical role of professional development in educator growth and school improvement (West, 2021). Like prior studies, the findings highlight the importance of tailored, relevant PD that aligns with teacher needs and school improvement goals, which aim to foster improved instructional strategies and enhanced student outcomes (Mustafa et al., 2021; Smith et al., 2020). The study also supports the value of professional learning communities and effective leadership in sustaining a culture of continuous growth (Anderson et al., 2022; Berkovich et al., 2021; Little, 2020). However, some divergent results emerged, particularly regarding teacher frustrations with mandatory PD and lack of relevance, which align with research identifying these factors as barriers to engagement and implementation (Hassan et al., 2024; Rodgers et al., 2022; Westmoreland Jr. et al., 2019). These divergences can be explained by variations in PD design, autonomy, and support, emphasizing the need for meaningful, context-specific professional development that promotes teacher buy-in and sustained instructional improvement (Mustafa et al., 2021; Smith et al., 2020).

The most significant implications of this study center on improving the quality and effectiveness of professional development (PD) for educators, which directly influences teacher practices and student achievement. MFGT-4 reflected:

The professional development I attended significantly changed my perspective as a teacher regarding the classroom environment. I adapted my student grouping methods and became more flexible in my small group instruction to ensure I meet the diverse learning needs of all my students.

Positively, by highlighting the importance of tailored, relevant, and collaborative PD aligned with teacher needs, the study supports the development of more impactful schemes that can

enhance instructional quality and promote equitable student outcomes (Mustafa et al., 2021; Smith et al., 2020). RFGT-2 noted:

I've noticed a significant increase in student engagement in my classroom since implementing what I've learned. It's been a while since the students have been so engaged, and this shift has come from knowing what to teach and how to involve them in the lessons.

This contributes to broader societal goals of educational equity, improved literacy and numeracy skills, and better preparation of students for future academic and career success (West, 2021; Colyar et al., 2022). Additionally, fostering teacher buy-in and ongoing professional growth can create more sustainable school improvement efforts (Parrish et al., 2020; Anderson et al., 2022).

On the other hand, negative consequences may arise if PD remains generic, mandated without teacher input, or lacking follow-up support, which can lead to teacher disengagement, instructional stagnation, and declining student achievement (Rodgers et al., 2022; Hassan et al., 2024; Westmoreland Jr. et al., 2019). RFGT-4 expressed frustration, saying,

Professional development has been frustrating for me. Just as we are expected to differentiate and scaffold for our students, we are not given the same consideration. After a certain amount of time, much of the information in these sessions feels recycled unless new insights are introduced.

MTI-3 shared:

It felt as if everything was being crammed into a short time frame. While the foundational content was good, one day, I could not cover the topic thoroughly.

Such outcomes could impede efforts to close achievement gaps and weaken public trust in educational systems.

Probable implications include increased teacher effectiveness and student success when PD is thoughtfully designed and implemented, along with enhanced collaboration among educators and leaders (Akiba et al., 2019; Pilotti et al., 2023). Improbable implications would be immediate, large-scale systemic change solely from PD without addressing other factors like resource allocation, policy support, and community involvement (Hunter, 2019; McBrayer et al., 2018). Therefore, while PD is crucial, it must be part of a comprehensive approach to achieving desired societal educational outcomes.

### **Research Question 1**

How do reading teachers describe the influence of in-service professional development on their instructional practices? The five themes associated with this research question were perceived impact of PD on instruction and student outcomes; shaping teacher attitudes and efficacy through PD; implementing professional learning experiences; fostering a supportive PD environment; and aligning PD with educator and student requirements. Together, these themes provide a comprehensive understanding of how reading teachers perceive professional development and its influence on their instructional practices and student learning.

**Perceived Impact of PD on Instruction and Student Outcomes.** Teachers shared how professional development (PD) influenced their instructional practices and student outcomes, highlighting both challenges and growth. RFGT-1 reflected on the struggle of adapting to new curricula after moving from a different state with different student needs:

When I first started, I had to navigate various curricula, which was challenging since I had taught in another state with a high poverty rate and low reading levels. It was a struggle for me. During this time, I attended numerous Professional Development Sessions (PDS), focused on improving my skills and finding ways to support my

students' growth. While I may not have been able to bring them up to grade level, my primary goal was to help them make progress.

RTI-1 described a positive PD experience that deepened their understanding of curriculum progression and student learning needs:

It was a quality experience because it taught me how to connect the standards and see how each grade level relates to the next. I gained insights into what students need to know and understand to master concepts. It was valuable because I had to engage deeply with the information myself.

These accounts illustrate how PD can support teachers in overcoming challenges and enhancing instructional effectiveness to promote student growth. For example, PD provided practical strategies that teachers could immediately apply in their classrooms, helping them adapt to diverse student needs (Medina et al., 2021; Mustafa et al., 2021). Additionally, ongoing collaboration during PD sessions fostered a supportive community where teachers shared insights and problem-solved together, reinforcing their professional development (Grace et al., 2023; Tabak et al., 2020).

**Shaping Teacher Attitudes and Efficacy through PD.** Teacher attitudes and sense of efficacy toward professional development (PD) varied, reflecting both frustration and appreciation for targeted support. RFGT-4 expressed dissatisfaction with PD sessions:

Professional development has been frustrating for me. Just as we are expected to differentiate and scaffold for our students, we are not given the same consideration. After a certain amount of time, much of the information in these sessions feels recycled unless new insights are introduced.

RTI-2, in contrast, highlighted the value of clear, specific feedback from administrators:

They always provide us with the specific domain they observed, such as ‘creating a welcoming classroom environment,’ sometimes after a discussion and sometimes without. They then gave me feedback that included a ‘glow’ (strength) and a ‘grow’ (area for improvement) related to that domain. Our admin team consistently follows up, even if they introduce a new domain. They are very clear about the teaching practices they expect us to improve, which has been incredibly helpful for me, as I know exactly what to focus on—no questions about it.

These contrasting perspectives emphasize the importance of meaningful, personalized PD and consistent administrative support in shaping positive teacher attitudes and enhancing instructional efficacy (Anderson et al., 2022; Mustafa et al., 2021). When professional development addresses individual teacher needs and provides actionable feedback, educators feel more motivated and equipped to improve (Parrish et al., 2020). Additionally, ongoing support from administrators reinforces accountability and fosters a collaborative environment that encourages continuous growth (Grace et al., 2023; Whatley et al., 2023).

**Implementing Professional Learning Experiences.** Teachers shared how implementing professional learning experiences positively influenced their classrooms and student engagement. RFGT-2 noted an increase in student engagement after implementing concepts learned through PD:

I’ve noticed a significant increase in student engagement in my classroom since implementing what I’ve learned. It’s been a while since the students have been so engaged, and this shift has come from knowing what to teach and how to involve them in

the lessons. I can say that professional development has boosted student engagement. They genuinely enjoy our activities; they want to participate every day because it allows them to engage in their learning and take ownership of it by building their vocabulary.

RTI-2 provided an example of how PD transformed their approach to instruction:

Previously, during our novel studies, we primarily read books aloud or used YouTube videos, but there was little focus on applying the content to its relevance. However, after attending a professional development session on metacognition, I learned how to model my thinking for students. This approach makes the material more relevant and helps them perform better on state assessments.

These examples illustrate how effective PD can transform teaching practices, leading to greater student involvement and improved academic outcomes. By equipping teachers with new strategies and deeper content knowledge, PD empowers them to meet the diverse needs of learners more effectively (Mustafa et al., 2021; Medina et al., 2021). Furthermore, ongoing professional development fosters a culture of continuous improvement that benefits both educators and students (Grace et al., 2023; Parrish et al., 2020).

**Fostering a Supportive PD Environment.** Teachers emphasized the importance of fostering a supportive professional development (PD) environment where presenters are knowledgeable and responsive to participants' needs. RTI-3 noted the importance of facilitator knowledge and preparing prior to conducting PDs:

If presenters are not knowledgeable about their topic and cannot answer questions, it can disengage participants. They need to consider whether the content is relevant to the needs of the districts and schools. A needs assessment should be conducted to gather feedback directly from

staff rather than relying solely on district input, as district officials may not have an accurate understanding.

RFGT-3 reflected on the need for practicality and interactivity in PD:

She prompted me to think about this. I agree with her emphasis on practicality, which RFGT-2 also addressed. It's one thing to deliver a presentation but another to ensure understanding by asking, 'Can you show me?' or 'How can we make this hands-on and tailored to different learning styles?' I believe we need to focus on making professional development more applicable and interactive, rather than just presenting information and leaving participants uncertain about how to implement it. I hope this makes sense.

These insights highlight that effective PD requires knowledgeable facilitators and a focus on relevant, engaging, and practical learning experiences to support teacher growth (Chuang, 2021; Mustafa et al., 2021). When presenters are well-prepared and responsive, teachers feel more confident and motivated to apply new strategies (Grace et al., 2023; Patton, 2014). Additionally, incorporating interactive, hands-on activities tailored to diverse learning styles ensures that PD is meaningful and directly applicable to classroom practice (Smith et al., 2020; Anderson et al., 2022).

**Aligning PD with Educator and Student Requirements.** Teachers highlighted the importance of aligning professional development (PD) with both educator growth and student needs. RFGT-1 reveals a strong commitment to continuous learning and professional development:

I think that over the years, I have tried to perfect my craft. I am seeing the students be more engaged. They're getting the material. They are answering higher-order thinking

questions, thinking critically, and transferring that into writing. And, of course, I will always be a lifelong learner.

RTI-3 emphasized the value of supportive leadership in PD:

Previously, I had a very effective math director or specialist in the district who led professional development sessions. They supported teachers, regardless of their experience level, from beginners to those with over 35 years in the field. They encouraged us to reflect on the curriculum and explore various instructional methods while addressing the assessments we needed to consider.

These experiences underscore the need for PD that fosters continuous teacher growth and directly addresses curriculum and assessment demands to enhance student learning (Parrish et al., 2020; Pilotti et al., 2023). Research shows that targeted PD aligned with classroom realities leads to more effective instructional practices (Lestari et al., 2022). Furthermore, ongoing support and feedback help sustain teacher development and positively impact student achievement (O'Connor et al., 2023; Regan et al., 2023).

## **Research Question 2**

How do math teachers describe the influence of in-service professional development on their instructional practices? The data revealed key themes regarding math teachers' professional development: sustained impact and observable outcomes of PD; teacher perspectives on professional development quality and relevance; diverse approaches to professional development delivery; strategies for professional support and collaboration; and understanding educator needs and implementation factors in PD. Together, these themes provide a comprehensive

understanding of how math teachers perceive PD and its influence on their instructional practices and student learning.

**Sustained Impact and Observable Outcomes of Professional Development.** Teachers recognized the sustained impact and observable outcomes of professional development (PD), particularly in data-driven instruction. MFGT-3 shared their appreciation for the data chat PDs:

One aspect I appreciate about the math professional development (PD) sessions is that they are helpful, particularly the data discussions. Before coming to the county, I hadn't had access to this, so I value the opportunity to analyze data and gain ideas on utilizing it, along with effective math strategies.

MTI-2 described a structured approach to monitoring student progress:

At the beginning of the year, we decide which students and areas to target for improvement in their scores. For me, that focus is on math. We select a group of students to help raise their performance levels. Mid-year, our principal meets with us to assess progress. We use assessments to check for score improvements from the beginning of the year. At the end of the year, around May, we evaluate whether the students achieved the necessary growth to enhance their abilities.

These reflections illustrate how targeted PD and regular progress monitoring contribute to meaningful student growth and instructional effectiveness. Teachers can make informed decisions that directly impact learning outcomes by focusing on specific student needs and using data to guide instruction (Parrish et al., 2020; O'Connor et al., 2023). Additionally, ongoing progress checks enable timely adjustments to teaching strategies, ensuring that interventions remain effective throughout the school year (Pilotti et al., 2023; Regan et al., 2023).

**Teacher Perspectives on Professional Development Quality and Relevance.** Teachers shared varied perspectives on the quality and relevance of professional development (PD) and its impact on their instructional practices. MFGT-4 discussed how PD transformed their approach to the classroom environment:

The professional development (PD) I attended significantly changed my perspective as a teacher regarding the classroom environment. I adapted my student grouping methods and became more flexible in my small group instruction to ensure I meet the diverse learning needs of all my students.

MTI-3 expressed concerns about the pacing and depth of PD sessions:

It felt as if everything was being crammed into a short time frame. While the foundational content was good, one day, I could not cover the topic thoroughly.

These contrasting views highlight the importance of delivering PD that is both relevant and paced appropriately to support meaningful teacher growth (Mustafa et al., 2021; Smith et al., 2020). When PD is thoughtfully structured, teachers have the time and space to deeply engage with the content and apply new strategies effectively (Partee et al., 2024; Anderson et al., 2022). Conversely, rushed or overly broad sessions risk overwhelming educators, limiting their ability to integrate learning into their practice.

**Diverse Approaches to Professional Development Delivery.** Teachers emphasized the importance of diverse approaches to professional development delivery, recognizing that PD extends beyond formal training sessions. MFGT-1 shared their experience with in-service PD:

At my current school, most professional development has focused on mentoring. PD isn't limited to formal training but includes one-on-one mentoring sessions. As the leader of a

team of second, third, and fourth-grade teachers, I mentor and provide informal advice in the hallway. Any opportunity to share or receive information contributes to professional development.

MTI-1 expressed a preference for virtual training:

I also prefer virtual training since it is more comfortable and allows me to participate more easily.

Perspectives like these highlight the value of flexible, varied PD formats that accommodate different learning styles and promote continuous professional learning through both formal and informal means (Akiba et al., 2019; Mustafa et al., 2021). Offering multiple delivery options allows teachers to engage in PD at their own pace and in ways that best fit their schedules and preferences (Mesutoglu et al., 2023; Patton, 2014). This flexibility can increase participation and help sustain ongoing growth by making professional learning more accessible and relevant (Anderson et al., 2022; Smith et al., 2020).

**Strategies for Professional Support and Collaboration.** Teachers highlighted the importance of professional support and collaboration as key strategies for growth. MFGT-3 shared how, after years of teaching, in-service PDs offer new experiences:

We engage in a lot of collaborative planning, which, as MFGT-1 mentioned, also serves as a form of professional development. Over the years, I've experienced nearly every approach to PD there is. However, this is my first year in significant peer tutoring, where we visit other teachers' classrooms. For instance, one teacher may lead a math data session.

MTI-2 described a valuable learning experience from visiting a high-performing school:

We visited a highly performing school to observe lessons in actual classrooms with students present. We watched the strategies used and noted how teachers facilitated student engagement. When I started teaching, the approach was more prescriptive, focusing on ‘You do, we do’ for math. However, there's an emphasis on allowing children to struggle and develop problem-solving skills.

Collaborative practices and peer observations provide teachers with opportunities to learn from one another’s experiences and refine their own teaching strategies. These interactions create a supportive learning community that encourages continuous professional growth (Grace et al., 2023; Tabak et al., 2020). Ultimately, this fosters improved student engagement and achievement (O’Connor et al., 2023; Regan et al., 2023).

**Understanding Educator Needs and Implementation Factors in Professional Development.** Teachers emphasized the importance of understanding educator needs and implementation factors to make professional development more effective. MFGT-2 noted how coaching offers differentiated PD:

The in-service training conducted within the school offers more flexibility. It would improve if administrators or coaches gathered input at the year's beginning, middle, and end. This way, it can be more responsive to teachers' immediate needs.

MTI-3 highlighted the value of collaboration in addressing specific challenges:

In my class, math vocabulary posed a challenge for my ESOL students. I worked with the ESOL teacher, who helped me find alternative ways to support math vocabulary in my classroom. Collaborating with other educators in this manner can significantly enhance student learning.

These perspectives demonstrate the need for PD that is adaptable, responsive, and grounded in collaborative efforts to effectively support diverse educator and student needs (Mustafa et al., 2021; Parrish et al., 2020). When PD incorporates these qualities, it can more effectively address the diverse needs of educators and students (Smith et al., 2020; Anderson et al., 2022), thus leading to stronger teaching practices and improved student learning outcomes.

### **Recommendations for Practice**

The findings of this study offer valuable recommendations for both practice and theory. In practice, schools and districts should design professional development (PD) programs that are personalized, relevant, and responsive to teachers' specific needs (Mustafa et al., 2021; Smith et al., 2020). This includes promoting differentiated instruction and flexible delivery methods such as mentoring, virtual sessions, and peer collaboration (Akiba et al., 2019; Mesutoglu et al., 2023). Leaders must prioritize ongoing, specific feedback and coaching to support teacher growth and ensure effective implementation of new strategies (Anderson et al., 2022; Parrish et al., 2020).

Additionally, fostering a collaborative PD environment can enhance teacher engagement and sustain instructional improvements (Grace et al., 2023). Theoretically, the study supports constructivist frameworks that emphasize active, social learning and the importance of context in shaping teacher development (Chuang, 2021; Yazan, 2015). Future models of PD should integrate these principles, recognizing the complex relationship between teacher beliefs, instructional practices, and student outcomes (Pilotti et al., 2023; Smith et al., 2020). By aligning theory with practical insights, educational stakeholders can develop more effective, impactful PD that drives meaningful change in classrooms.

The study's findings reinforce several key recommendations. For instance, math teachers emphasized the need for personalized and relevant PD that addresses diverse learner needs. MFGT-4 explained how adapting student grouping methods allowed better support for all learners, aligning with literature advocating differentiated instruction as a best practice (Mustafa et al., 2021; Smith et al., 2020). The importance of ongoing, specific feedback from administrators was highlighted by RTI-2, who valued clear "glow" and "grow" feedback to focus their instructional improvements, supporting prior research on continuous feedback and coaching (Anderson et al., 2022; Parrish et al., 2020). Collaboration also emerged as a powerful element of effective PD, with MFGT-3 stating an appreciation for peer tutoring and mentoring that foster shared learning, consistent with research on professional learning communities (Grace et al., 2023; Tabak et al., 2020). Finally, MTI-3 and RFGT expressed the need for PD to be practical and contextually relevant was evident, as teachers expressed frustration when sessions were rushed or disconnected from classroom realities, reinforcing theoretical frameworks that link context and active learning to PD effectiveness (Chuang, 2021; Yazan, 2015). Together, these findings support the literature and offer clear guidance for designing PD that is meaningful, effective, and responsive to educator needs.

### **Recommendations for Future Research**

The results of this qualitative descriptive case study provided an understanding of how teachers perceive the impact of in-service professional development on their instructional practices. Future research should address the reliance on self-reported data, which may introduce potential bias even with efforts at triangulation (Focarile et al., 2025; Warmoes et al., 2025). To overcome this limitation, studies should incorporate multiple data sources such as classroom observations, student assessment data, and administrator feedback, thus providing a more

comprehensive and objective understanding of PD's impact (Meylani et al., 2025; Tinnes-Vigne et al., 2025) Additionally, studies could extend beyond a single timeframe and setting to incorporate diverse educational contexts and longer durations, enhancing the transferability of findings. To further support this, future research should include larger, more varied samples to ensure representation across different schools, districts, and teacher demographics (Dorukbaşı et al., 2024; Howell et al., 2025). These approaches would help overcome the current study's limitations and yield more applicable insights into how teachers perceive the impact of in-service professional development on their instructional practices.

## **Conclusions**

This study explored how teachers perceive the influence of in-service professional development on their instructional practices, addressing the problem that without understanding these perceptions, efforts to improve teaching and student achievement through PD may be hindered (Rodgers et al., 2022; Shogren et al., 2019). By capturing detailed teacher insights, the study highlights the critical role of relevant, tailored, and collaborative PD in fostering instructional growth and positive student outcomes (Mustafa et al., 2021; Smith et al., 2020). Its findings underscore the importance of designing meaningful professional development that meets educators' needs, ultimately supporting sustained school improvement and enhanced learning experiences (Anderson et al., 2022; Parrish et al., 2020).

The take-home message of this study is that effective professional development must be relevant, personalized, and collaborative to truly impact teachers' instructional practices and improve student learning. MFGT-4 shared, "The professional development I attended significantly changed my perspective as a teacher regarding the classroom environment. I adapted my student grouping methods and became more flexible in my small group instruction to

ensure I meet the diverse learning needs of all my students.”RFGT-4 expressed frustration with generic PD, stating, “Professional development has been frustrating for me... much of the information in these sessions feels recycled unless new insights are introduced.” RTI-2 discussed the importance of ongoing feedback was also highlighted: “Our admin team consistently follows up, even if they introduce a new domain. They are very clear about the teaching practices they expect us to improve, which has been incredibly helpful for me, as I know exactly what to focus on—no questions about it.” These teacher perspectives demonstrate that incorporating relevant content, tailored support, and collaborative practices is essential for fostering meaningful professional growth and improving student outcomes.

The results of this study reinforce and extend previous research by confirming that professional development is most effective when relevant, individualized, and collaborative, thus aligning with established findings on teacher growth and student achievement (Mustafa et al., 2021; Smith et al., 2020). Teacher experiences as highlighted in this study reiterate prior research emphasizing the need for differentiated PD that addresses diverse classroom realities and promotes ongoing administrator feedback and support (Parrish et al., 2020; Pilotti et al., 2023). Moreover, the study adds depth by showing how the absence of relevance and follow-up coaching can hinder teacher engagement in PD schemes, a concern noted in earlier studies (Hassan et al., 2024; Rodgers et al., 2022). Overall, these findings underscore the critical role of responsive, well-structured PD in sustaining instructional improvement, supporting the broader literature advocating for tailored and collaborative professional learning environments.

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## Appendix A: Interview Protocol

### Participant Invitation Process

The recruitment process will occur via email, where potential participants will be invited to take part in a study exploring how teachers describe the influences of in-service professional development on their instructional practices. Interested 3<sup>rd</sup> through 5<sup>th</sup> -grade math and reading teachers will email the researcher with their contact information to express interest in participating. A Google Form link will then be emailed to the participants, where they will provide informed consent to participate in the study. On the day of the interview, the researcher will review the informed consent details with each participant to ensure understanding, and participants will be asked to confirm their agreement to participate in the study before the interview begins.

### Interview Setup and Location

- **Interview Location:** Data collection will occur through individual interviews conducted via Zoom video teleconferencing. The researcher will participate in the video conference with their camera on while giving participants the option to join with or without their camera enabled. All interviews will be audio and video recorded through Zoom to ensure accurate capture of participant responses.
- **Materials:** To ensure consistency and rigor, the primary researcher will conduct all interviews with a printed copy of the interview protocol and questions. Additionally, the researcher will take field notes during each interview using a notebook, which will be used to support future data analysis. This approach will enable the researcher to maintain a consistent interview structure while also capturing important contextual details and observations.

**Interviewer:** – primary researcher

### **Process of the interview**

The researcher will extend a warm welcome to participants and express gratitude for their time. The interviews will be simultaneously audio and video recorded via Zoom. In the event of technical difficulties, the researcher will utilize the Zoom chat box to document the research questions and corresponding participant responses. The researcher will initiate each interview by reading the introduction, followed by an opportunity for participants to pose any questions or clarifications. The researcher will then proceed to ask each question, allowing participants sufficient time to respond, and subsequently pose follow-up questions to elicit more in-depth and nuanced responses.

### **Consent form/Ethical Consideration**

This study will commence only after receiving IRB approval and obtaining written consent from all participants. Prior to each interview, the researcher will thoroughly review the consent form with participants, ensuring they comprehend the details. The researcher will emphasize the measures taken to maintain confidentiality, including the assignment of an ID code for anonymity, and remind participants of their right to withdraw from the study at any time without consequence. Additionally, participants will be reminded that their involvement is entirely voluntary. To uphold confidentiality, all interview transcripts, audio recordings, and video footage will be securely stored on a private, password-protected laptop, accessible solely to the researcher.

**Interview Introduction**

Hello (participant name), I appreciate you taking the time to participate in this interview. As outlined in the consent letter, I am a doctoral student at Northcentral University conducting a study to explore how teachers describe the influences of in-service professional development on their instruction. Please be assured that your anonymity and confidentiality will be maintained throughout the study. Any personal information shared will be kept secure and separate from your identity. You are free to withdraw from the interview at any time or decline to answer any questions. I will audio and video record our conversation via Zoom to ensure accuracy, and the recordings and transcripts will be kept confidential for three years before being deleted and destroyed. Thank you again for your participation.

Do you have any questions before we begin? Do I have your permission to record our conversation?

**Interview Conclusion**

Thank you very much for taking the time to participate in this interview with me. I will email you a copy of the transcript of the interview once it has been transcribed. Please reach out by email if you have any questions or concerns with the transcription. Please remember that all data will be kept confidential and anonymous and will be secured for three years, after which time it will be deleted or destroyed. Do you have any final questions for me before we close?

**Participant:** \_\_\_\_\_

**ID Code:** \_\_\_\_\_

**Date/Time:** \_\_\_\_\_

## **Interview Questions and Probing Questions**

**Section 1: Background and Context** What can you tell me about your teaching experience and background?

- What subject and grade level do you currently teach?
- Have you taught for at least 2 years?
- Do you regularly engage in professional development?
- How would you describe your school's approach to professional development?

### **Section 2: Professional Development Experiences**

- What types of professional development have you participated in recently, if any?
- How would you describe the content and quality of these experiences?
- Have you had any particularly positive or negative experiences with professional development?

### **Section 3: Impact on Teaching Practices**

- How has professional development influenced your teaching practices?
- Can you give specific examples of changes you've made to your instruction?
- To what extent do you think professional development has impacted your students' learning?

**Section 4: Perceptions and Attitudes** What are your thoughts on the importance of professional development for teachers?

- Explain how professional development is relevant to your needs and interests.
- How do you think professional development could be improved?

### **Conclusion and Final Thoughts**

- Is there anything else you'd like to share about your experiences with professional development?
- Do you have any suggestions for future research or improvements to professional development programs?

## **Appendix B: Focus Group Protocol**

### **Participant Invitation Process**

The recruitment process will occur via email, where potential participants will be invited to take part in a study exploring how teachers describe the influences of in-service professional development on their instructional practices. Interested 3<sup>rd</sup> through 5<sup>th</sup> -grade math and reading teachers will email the researcher with their contact information to express interest in participating. A Google Form link will then be emailed to the participants, where they will provide informed consent to participate in the study. On the day of the interview, the researcher will review the informed consent details with each participant to ensure understanding, and participants will be asked to confirm their agreement to participate in the study before the interview begins.

### **Interview Setup and Location**

- Interview Location: Data collection will occur through individual interviews conducted via Zoom video conferencing. The researcher will participate in the video conference with their camera on while giving participants the option to join with or without their camera enabled. All interviews will be audio and video recorded through Zoom to ensure accurate capture of participant responses.
- Materials: To ensure consistency and rigor, the primary researcher will conduct all interviews with a printed copy of the interview protocol and questions. Additionally, the researcher will take field notes during each interview using a notebook, which will be used to support future data analysis. This approach will enable the researcher to maintain

a consistent interview structure while also capturing important contextual details and observations.

- **Interviewer:** – primary researcher

### **Process of the interview**

The researcher will extend a warm welcome to participants and express gratitude for their time. The interviews will be simultaneously audio and video recorded via Zoom. In the event of technical difficulties, the researcher will utilize the Zoom chat box to document the research questions and corresponding participant responses. The researcher will initiate each interview by reading the introduction, followed by an opportunity for participants to pose any questions or clarifications. The researcher will then proceed to ask each question, allowing participants sufficient time to respond, and subsequently pose follow-up questions to elicit more in-depth and nuanced responses.

### **Consent form/Ethical Consideration**

This study will commence only after receiving IRB approval and obtaining written consent from all participants. Prior to each interview, the researcher will thoroughly review the consent form with participants, ensuring they comprehend the details. The researcher will emphasize the measures taken to maintain confidentiality, including the assignment of an ID code for anonymity, and remind participants of their right to withdraw from the study at any time without consequence. Additionally, participants will be reminded that their involvement is entirely voluntary. To uphold confidentiality, all interview transcripts, audio recordings, and video footage will be securely stored on a private, password-protected laptop, accessible solely to the researcher.

**Interview Introduction**

Hello (participant name), I appreciate you taking the time to participate in this interview. As outlined in the consent letter, I am a doctoral student at Northcentral University conducting a study to explore how teachers describe the influences of in-service professional development on their instruction. Please be assured that your anonymity and confidentiality will be maintained throughout the study. Any personal information shared will be kept secure and separate from your identity. You are free to withdraw from the interview at any time or decline to answer any questions. I will audio and video record our conversation via Zoom to ensure accuracy, and the recordings and transcripts will be kept confidential for three years before being deleted and destroyed. Thank you again for your participation.

Do you have any questions before we begin? Do I have your permission to record our conversation?

**Interview Conclusion**

Thank you very much for taking the time to participate in this interview with me. I will email you a copy of the transcript of the interview once it has been transcribed. Please reach out by email if you have any questions or concerns with the transcription. Please remember that all data will be kept confidential and anonymous and will be secured for three years, after which time it will be deleted or destroyed. Do you have any final questions for me before we close?

**Focus Group:** \_\_\_\_\_

**ID Code:** \_\_\_\_\_

**Date/Time:** \_\_\_\_\_

### **Focus Group Questions and Probing Questions**

#### **Icebreaker (5 minutes)**

- Icebreaker activity: Ask participants to briefly share their name, teaching experience, and grade level/subject taught

#### **Discussion Questions (40 minutes)**

##### **Discussion Questions (40 minutes)**

1. Let's talk about the professional development opportunities in your school or district. What's it been like for you?"
2. In what ways have the professional development sessions you've attended changed how you teach? Have you noticed any differences in your classroom?
3. When you've tried out new teaching strategies, what's worked well, and what's been tough? What are some of the positives and negatives you've encountered?
4. When it comes to putting new teaching methods into practice, what challenges have you run into? What makes it difficult?
5. If you could make changes to how professional development is done, what would you suggest? How could it be more helpful for you??"

#### **Probe and Follow-up Questions (10 minutes)**

- The researcher will:
  - Ask follow-up questions to clarify or seek more information on participants' responses
  - Encourage participants to share examples or elaborate on their experiences

#### **Closing and Final Thoughts (5 minutes)**

- Thank participants for their time and input
- Ask if they have any final thoughts or comments
- Provide an opportunity for participants to ask questions

### Appendix C: Site Authorization Form

March 7, 2025

Dear Ms. King:

The review of your request to conduct the research entitled “Examining Teachers' Perceptions of Professional Development: A Qualitative Case Study” has been completed. Based on the examination, I am pleased to inform you that the Department of Testing, Research, and Evaluation (DTRE) has granted authorization for you to proceed with your study.

This approval applies to the 2024-2025 school year. We reserve the right to withdraw approval at any time or decline to extend the approval if the implementation of your study adversely impacts any of the school district’s activities. If you are not able to complete your data collection during this period, you must submit a request for an extension through the online tool located on our website. You will be required to submit a status report of your study, any changes to your procedures and methods, and all appropriate consent forms and instruments.

Regarding the recruitment materials, please be aware that only approved copies (stamped ‘APPROVED’) can be distributed to your target subjects or distributed in schools from which you plan to recruit research subjects. The wording of the consent forms must be exactly as the version submitted to our office. Should you change the procedure or materials, any revisions must be approved by this office before being used in this study. Please be aware that participation in your project is on a strictly voluntary basis.

An abstract and one copy of your study’s final report should be forwarded to the Department of Testing, Research, and Evaluation within one month of the successful completion of your study. Do not hesitate to contact the Research and Evaluation office if you have any questions. I wish you success with your study.

Best regards,

Supervisor, Office of Research & Evaluation

## Appendix D: Consent Form

My name is LaSonya King, and I am a doctoral student at National University (NU).

I'm asking you to take part in a research study. I am conducting a research study to investigate how in-service professional development impacts instructional practices as perceived by teachers. The name of this research study is "Examining Teachers' Perceptions of Professional Development: A Qualitative Case Study."

You may participate in this research if you meet all of the following criteria:

1. Teach within the identified school district
2. Teach 3rd-5th grade reading or math within the current school for two or more years.

I hope to include 12-20 people in this research.

Please read this form carefully and ask any questions you may have before agreeing to take part in this study.

**What you will be asked to do:** If you agree to participate in this study, you will be asked to do the following activities:

1. Participate in a 30- 60-minute online interview or focus group over Zoom.
2. Review the interview transcript via email for 10-15 minutes.

**During these activities, you will be asked questions about:**

- Your accessibility needs at a fully online university
- Any accessibility barriers you have experienced while attending a fully online university

**Risks:** There are no foreseeable risks or discomforts associated with this study. You can skip any question you do not wish to answer, skip any activity, or stop participation at any time.

**Benefits:** If you participate, there are no direct benefits to you. This research may increase the body of knowledge in the subject area of this study.

**Recording:** I would like to audio/video record your responses with Zoom during the interview. You can turn off the video function of the online meeting platform at any time.

**Compensation:** Participation is non-compensatory

**Confidentiality:** I will keep records of this study private and take reasonable measures to protect the security of all your personal information. In any report I make public, I will not include any information that will make it possible to identify you. I will securely store your data for 3 years. Then, I will delete electronic data and destroy paper data.

**Taking part is voluntary:** Participation in this study is entirely voluntary. You can refuse participation or withdraw from the study without penalty or negative consequences.

**If you have questions:** Please ask any questions you have now. If you have questions later, you may contact me at [l.king7312@o365.ncu.edu](mailto:l.king7312@o365.ncu.edu)

**If you have any questions or concerns regarding your rights as a subject in this study,** you may contact the Institutional Review Board (IRB) via email at [irb@nu.edu](mailto:irb@nu.edu)

**I agree to participate in this study.** I understand that my participation is voluntary and that I can withdraw at any time without penalty or negative consequences. I have read and understood the information above and agree to participate in this study.

**Print Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Please sign and date the form to indicate your agreement to participate in the study.