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Elementary Stakeholder Perceptions of Data Team Discussions Influence on Instructional Adjustments

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Walden University
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Abstract

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Michelle Shay

MS, Western Governors University, 2011

MS, Hawaii Pacific University, 2000

BS, University of Maryland University College, 1997

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

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Abstract

Federal law requires schools to conduct formative, summative, and diagnostic assessments to inform instructional strategies. However, the collection of student accountability compliance data has not always resulted in improved student academic achievement. The research problem addressed in this study is that little is understood about how data team discussions influence elementary teachers' instructional adjustments. The purpose of this basic qualitative study is to gain an in-depth understanding of elementary teacher and leader perceptions of how data team discussions influence teachers' data-driven decision making (DDDM) instructional adjustments. The conceptual framework for this study is based on the theory of planned behavior, which holds that attitude toward the behavior, subjective norms, and perceived behavioral control influence teachers' DDDM instructional adjustment intentions. Research questions explored how elementary teachers and school leaders perceive the influence of data team discussions on teachers' DDDM instructional adjustments. Data sources included semistructured interviews with 11 elementary teachers and five school leaders, which were analyzed qualitatively through a priori and open coding, followed by thematic analysis. The findings revealed that teachers' instructional adjustments were positively influenced when teachers take ownership of their data but negatively influenced by limited access to valid and timely student data due to the global pandemic. The study results may contribute to a positive social change when elementary stakeholders make informed decisions on data team discussions and teacher instructional adjustments, which in turn can help improve student outcomes.

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Dedication

I dedicate my dissertation journey to my husband, Patrick. He gave me the confidence that I could achieve this goal. Most importantly, he never gave up on me and supported me throughout all the highs and lows of this journey, and there were many. Pat, thank you for being my best friend. I dedicate this to our child to show that you are never too old to learn and accomplish a goal. I also could not have completed my dissertation without the volunteer school leaders and teachers. I appreciated their honest insights shared while balancing school demands during a global pandemic. Lastly, I could not have done this without all the Walden colleagues who gave me guidance and support by letting me vent my frustrations and share my joys. I could not have completed my dissertation journey without all of you. I thank you!

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Chapter 1: Introduction to the Study

Since No Child Left Behind (NCLB) was enacted in 2001, U.S. states have been required to collect accountability compliance data concerning student academic progress to address the achievement gap between student demographic groups (U.S. Department of Education [USDOE], 2001). The NCLB and Every Student Succeed Acts (ESSA; USDOE, 2018, 2001) require formative, summative, and diagnostic assessments to inform instructional strategies. Teachers are expected to use student data to monitor student progress and make data-driven decision making (DDDM) instructional adjustments to support student academic achievement. Thus, instructional adjustments, based on DDDM, is a current and meaningful topic in education.

Teachers have access to a variety of qualitative and quantitative student data to use for DDDM instructional adjustments. Teachers use DDDM to identify achievement gaps and change teaching strategies to meet student learning needs (Datnow & Park, 2018; Mandinach & Schildkamp, 2020). Dodman et al. (2019) found that teachers can access student data from data systems to make DDDM instructional adjustments. Garner et al. (2017) used benchmark assessments to make DDDM instructional adjustments, and Schildkamp and Datnow (2020) advised teachers to use classroom-based student data to make DDDM instructional adjustments. Instructional adjustments address student skill level and learning style, which are often implemented using student skills-based groupings and differentiated instruction (Datnow et al., 2018; Park & Datnow, 2017; Reeves, 2017). States, schools, and teachers collect a variety of academic and nonacademic student data. Teachers are expected to make DDDM instructional

adjustments based on the knowledge gained from analyzing qualitative and quantitative student data.

The data team is one method teachers and schools use to collaborate to make DDDM instructional adjustments. Although teachers are vital members of data teams, other school staff can participate in data teams. Ebbeler et al. (2016) stated effective data use required data team collaboration, which had been the focus of professional development since 2000. Schildkamp et al. (2019) suggested that supportive school leaders with a clear data vision can positively impact data team collaboration. Teacher data collaboration provides teachers an opportunity to share instructional strategies with grade-level or content-area colleagues. Keuning et al. (2016) suggested a culture of collaboration is a prerequisite for DDDM initiatives; however, limited research on effective collaboration to make DDDM instructional adjustments. Van Gasse et al. (2017b) found a statistically significant relationship between data use collaboration and increased individual teacher data use to make DDDM instructional adjustments. Collaborative school culture is vital for effective data teams to improve DDDM instructional adjustments. Also, school leaders' vision that emphasizes DDDM helps ensure that data teams remain focused on using student data to make DDDM instructional adjustments to support student academic achievement.

Researchers have found that the characteristics of school leaders connect to teacher DDDM instructional adjustments. Keuning et al. (2017) and Schildkamp et al. (2017) found when a school leader established a data culture focused on student achievement, they positively influenced teacher DDDM instructional adjustments. The

authors also found that school leaders established the environment for teachers to collaborate with student data. Harvey and Ohle (2018) recommended that school leaders ensure teachers understand the purpose of collecting student data and provide professional development on how to use data to make instructional adjustments. Administrative support for professional development helps teachers improve their data knowledge and skills (i.e., data literacy).

In addition to school leader characteristics, certain teacher characteristics can influence DDDM instructional adjustments. Keuning et al. (2017) found that teacher pedagogical knowledge and DDDM attitude significantly influenced teacher DDDM instructional adjustments. Schildkamp et al. (2017) and van Geel, Keuning, et al. (2017) found teacher DDDM instructional adjustments were influenced by teacher data literacy (i.e., data knowledge and skills). This understanding may inform efforts to improve teacher data literacy to support teacher DDDM instructional adjustments. So, both teacher and school leader characteristics are associated with improved teacher DDDM instructional adjustments (Hubers et al., 2017; Kippers, Poortman, et al., 2018). The study will provide additional insight into teacher and school leader characteristics and their connection to sustained DDDM instructional adjustments. This will inform efforts to improve DDDM instructional adjustments and, in turn, will promote positive social change through improved DDDM instructional adjustments to meet student learning needs and academic achievement.

Chapter 1 provides an overview of the current research on DDDM and data teams and the purpose of the study. Then, I describe the alignment of the research question,

conceptual framework, and the nature of the study. I also provide definitions of key concepts, assumptions, scope, delimitations, and limitations of the current study. Lastly, I describe the potential significance of a positive social change in education.

Background

The scope of the study includes U.S. public elementary teachers and school leaders who use data teams to improve teacher DDDM instructional adjustments. The study scope is centered on U.S. public elementary stakeholders because of limited knowledge concerning data team discussions influence on teacher DDDM instructional adjustments to support student academic achievement (Jimerson et al., 2021). Many U.S. public elementary teachers and school leaders use data teams with the intent to influence teacher DDDM instructional adjustments; however, sustained DDDM instructional adjustments focused on elementary student academic achievement are inconsistent. In a data team case study, Datnow et al. (2018) analyzed elementary teacher conversations about student achievement and ability. The authors recommended using more than high-stakes assessment data to address elementary student conceptual thinking to make instructional adjustments. Elementary teachers have access to various student data, but they often focus on high-stakes assessment data while excluding other student data types (van Geel et al., 2019). When teachers focus on a limited "snapshot" of student understanding, teachers may misinterpret student misconceptions to make appropriate instructional adjustments to help support student academic achievement (Miranda & Jaffe-Walter, 2018). Data team characteristics can either support or hinder teacher DDDM instructional adjustments. For example, Jimerson et al. (2021) found that data

teams were committed to using data because of the data culture; however, the data team members had limited data literacy, and instructional adjustments focused on accountability compliance instead of addressing student misconceptions and learning. These authors confirmed research (Bolhuis et al., 2016; Schildkamp, Smit, & Blossing, 2019; Van Gasse et al., 2020) concerning DDDM instructional adjustment challenges using data teams. Although many U.S. public elementary teachers and school leaders use data teams, little is understood about how the data team discussions influence elementary teacher DDDM instructional adjustments.

There is a gap in the scholarly literature about how the data team discussions influence teacher DDDM instructional adjustments. Kippers, Poortman, et al. (2018) found that even though teachers have access to student data, most teachers do not use data to make instructional adjustments. The authors did not investigate teacher and leader perceptions of how the data team discussions influence teacher instructional adjustments. Van Gasse et al. (2020) found that teacher self-efficacy and attitude influenced teachers' data use and recommended further research into how the data team discussions may influence teacher use of data for instructional adjustments. Farley-Ripple et al. (2019) found elementary teachers used data to differentiate student groupings and instruction. The authors did not explore elementary teachers' and leaders' perceptions of how the data team discussions influenced teacher instructional adjustments but suggested further research into data team connection to instructional adjustments. The study addressed this gap in the literature and generated an increased understanding of the influence of data team discussions on teacher DDDM instructional adjustments.

The study was needed to help improve student academic achievement. In the almost two decades since the enactment of NCLB (USDOE, 2001), the collection of student accountability compliance data has not accompanied significantly improved student academic achievement. For example, in 2019, only 41% of fourth-grade students scored at or above proficient in math and 35% in reading on the National Assessment of Educational Progress (NAEP; Nations Report Card [NRC], n.d.-c). NAEP progress is relatively stagnant (NRC, n.d.-a, n.d.-b, n.d.-c), which suggests that accountability compliance data, alone, does not result in significant improvement of student academic achievement. Schildkamp and Datnow (2020) recommended a shift from data use for accountability compliance purposes to data use for instructional purposes, which can help improve student academic achievement. Teachers and school leaders collaborate during data teams to discuss student data to make instructional adjustments; however, teacher DDDM instructional adjustments are not sustained to help student learning needs (Hubers et al., 2017; Lynch et al., 2016). The study improves understanding of the data team's perceived influence on teacher DDDM instructional adjustments. The knowledge gained from the study can help improve U.S. public elementary student academic achievement by focusing on the role of data team discussions in sustained DDDM instructional adjustments and instructional improvement.

Problem Statement

The research problem addressed in this basic qualitative study is that little is understood about how the data team discussions influence teacher DDDM instructional adjustments. Schildkamp, Smit, and Blossing (2019) concluded that "data use does not

happen in isolation" (p. 410) and that more research is needed to increase understanding about how the data team discussions can help improve teacher instructional adjustments. In a different study, Schildkamp et al. (2017) recommended that future qualitative research concerning data teams include teachers and school leaders. Schildkamp, Smit, and Blossing (2019) found that teacher and school leader perceptions differed concerning data team planning time and recommended more research into effective data team implementation. Datnow et al. (2018) recommended further research to identify how the data team discussions changed instructional adjustments. Additional research is needed to understand how the data team discussions influence teacher DDDM instructional adjustments (Jimerson et al., 2021).

The study builds upon previous research findings concerning the influence of data team discussions on instructional adjustments. In a quantitative study, Prenger and Schildkamp (2018) identified the psychological factors of self-efficacy, attitude, and subjective norms that influenced teacher DDDM instructional adjustments but did not address data team influences. Bolhuis et al. (2016) found the data team depth of inquiry was influenced by the data team perceptions concerning whether they had access to timely data that was valid and reliable. However, the authors did not address data team influence on teacher instructional adjustments. Schildkamp and Datnow (2020) showed a lack of trust between teachers and school leaders and that negative attitudes on the part of teachers hindered data team effectiveness, but the authors did not consider how the data team discussions influenced teacher DDDM instructional adjustments. Teacher and school leader perspectives are needed to provide an in-depth understanding of how the

data team discussions are perceived to influence teacher DDDM instructional adjustments.

A possible consequence of the research problem is a continued lack of improvement in the academic achievement of U.S. public elementary students (Goddard & Kim, 2018; NRC, n.d.-c). According to Ezzani (2020), when teachers and school leaders collaborate effectively, teacher DDDM instructional adjustments, like individualized and differentiated instruction, can support student academic achievement (Gannon-Slater et al., 2017). However, what is unknown is how the data team discussions can influence teacher DDDM instructional adjustments (Datnow et al., 2018; Schildkamp, Poortman, et al., 2019). McMaster et al. (2020) found that individualized student instruction improved with professional development for teachers but recommended further research concerning DDDM instructional adjustments. Abrams et al. (2020) found that the distributed leadership of the data team may have contributed to improved DDDM instructional adjustments. They recommended further research in team leaders' influence on data team efficacy to make DDDM instructional adjustments. Data team efficacy can help improve teacher DDDM instructional adjustments and contribute to improved student academic achievement (Voelkel & Chrispeels, 2017). There is a gap in the knowledge of U.S. public elementary teacher DDDM instructional adjustments using data teams to support student academic achievement.

Purpose of the Study

The purpose of this basic qualitative study is to explore U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher

DDDM instructional adjustments. Improved understanding of this phenomenon is important because student academic achievement has remained relatively stagnant on the fourth grade NAEP math and reading since 2003 (NRC, n.d.-a, n.d.-b, n.d.-c) even though NCLB and ESSA required the use of data to inform instruction (USDOE, 2018, 2001). Schildkamp, Smit, and Blossing (2019) emphasized the need to add to the literature on effective data teams to improve instructional adjustments. Jimerson et al. (2021) found a data use model effective in one U.S. public elementary school data team but mentioned the research focused on identifying data collaboration barriers instead of identifying potential solutions to create effective data teams. Schildkamp and Datnow (2020) found that data teams focused on data use for accountability compliance purposes instead of instructional purposes and recommended further research on data teams. The current study provides insight into potential solutions to create effective data teams to improve teacher DDDM instructional adjustments to help support student academic achievement.

Research Questions

The purpose of this basic qualitative study is to gain an in-depth understanding of elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. The research questions reflect the purpose of the study and are guided by the theory of planned behavior (TPB; Ajzen, 1991), which forms the basis for the conceptual framework of the study.

RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?

RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments?

Conceptual Framework

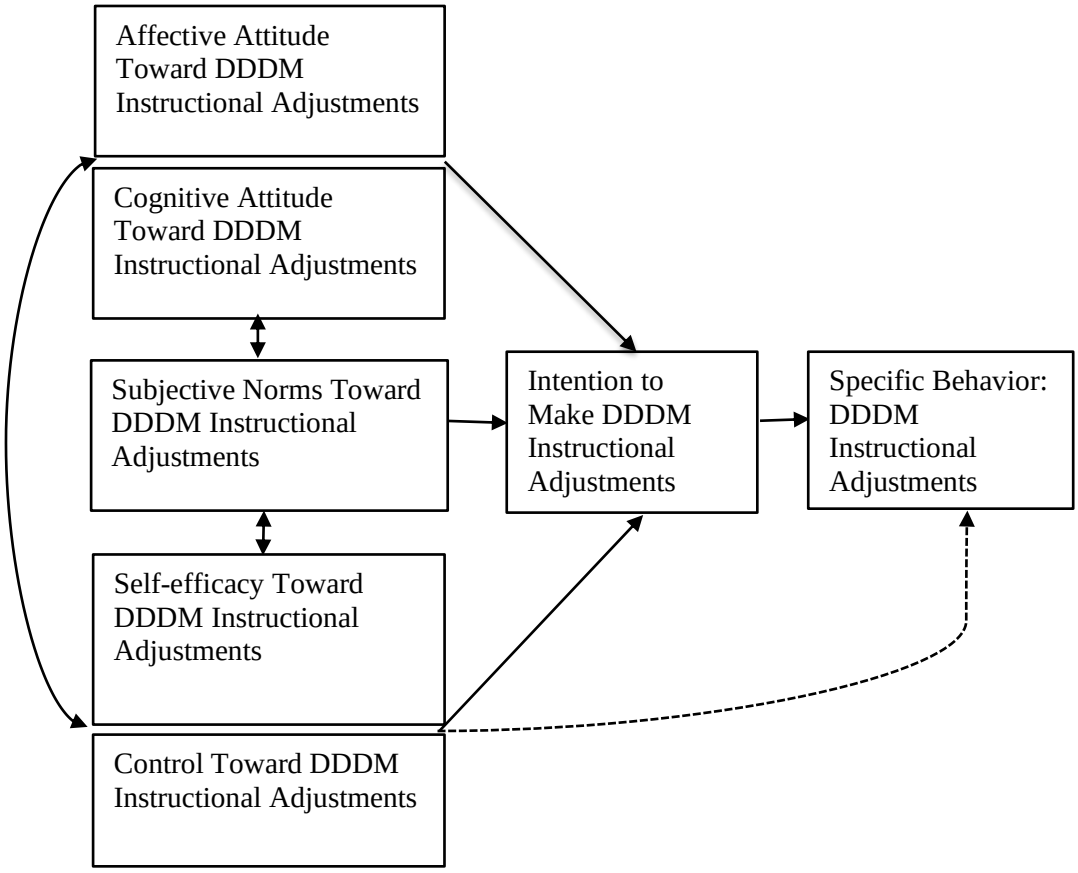
The conceptual framework of this study is based on TPB (Ajzen, 1991). TPB is a well-established theory in human action. The TPB assumption is that individuals utilize available information to make a reasonable decision while weighing the implications of performing or not performing the behavior of interest (Ajzen, 2005). TPB was appropriate to guide this study because teacher DDDM instructional adjustments are influenced by their beliefs concerning this behavior.

The TPB constructs most relevant to the study are (a) attitude toward the behavior, (b) subjective norms, (c) perceived behavioral control, and (d) intention (see Figure 1; Ajzen, 1991; Gretter & Yadav, 2018). Attitude toward the behavior consists of individual perceptions concerning the behavior of interest, including consequences and judgments of performing the behavior (Ajzen & Sheikh, 2013; Francis et al., 2004). The behavior of interest in the study is elementary teacher DDDM instructional adjustments. Subjective norms are defined as the perceived social pressures from important others to perform the behavior of interest (Francis et al., 2004; Sandberg et al., 2016). Subjective norms in the study are the elementary teacher perceptions of how data team members influence their intention to perform DDDM instructional adjustments. Perceived behavioral control consists of the amount of control and self-efficacy an individual has toward the behavior of interest (Ajzen, 2005; Gretter & Yadav, 2018). In this study, perceived behavioral control denotes the elementary teachers perceived self-efficacy and

control to make DDDM instructional adjustments. All these constructs predict intention. Intention is the individual's plan to perform the behavior of interest (Ajzen, 2005; Francis et al., 2004). In the study, the intention is the elementary teachers' plan to make DDDM instructional adjustments. TPB constructs will provide insight into how DDDM instructional adjustments are influenced by teacher attitude, social pressures, self-efficacy, control, and intention. The relevant TPB (Ajzen, 1991) constructs are discussed in more detail in Chapter 2.

Figure 1

A Visual of Study Theory of Planned Behavior Conceptual Framework



Note. Adapted from Icek Ajzen Theory of Planned Behavior Diagram, (https://people.umass.edu/aizen/tbp.diag.html). Copyright 2019 Icek Ajzen. Permission to copy and use this figure free of charge in a thesis, dissertation, presentation, poster, or journal article, so long as you retain the copyright notice.

This conceptual framework is grounded in a body of literature on the topic. Yan and Cheng (2015) used the TPB framework to explain teacher attitudes toward the behavior, subjective norms, and perceived behavioral control in formative assessment data use. Knauder and Koschmieder (2019) also used TPB to examine elementary teacher implementation of individualized student supports to meet student learning needs. Van

Gasse et al. (2020) found that teacher attitude and self-efficacy were prerequisites when analyzing student data collaboratively. Although researchers have studied teacher DDDM attitude (Bolhuis et al., 2019; Van Gasse et al., 2020), subjective norms (Knauder & Koschmieder, 2019; McMaster et al., 2020), and perceived behavioral control (McMaster et al., 2020; Van Gasse et al., 2020), there are limited studies that address the interaction and influence of all TPB constructs on U.S. public elementary teacher DDDM instructional adjustments. Attitude toward the behavior, subjective norms, and perceived behavioral control are relevant TPB constructs to understand elementary teacher intention to make DDDM instructional adjustments when working in a data team.

The conceptual framework grounded the qualitative research approach of the study. The purpose of the current study was framed by the proposition that elementary teacher intentions to adjust instruction are influenced by the TPB constructs (Prenger & Schildkamp, 2018). The research questions were designed to examine teacher and school leader perceptions of the influence data team discussions have on teacher DDDM instructional adjustments (Yin, 2016). The TPB conceptual framework constructs (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control (Ajzen, 1991) guided the interview questions concerning the phenomenon (Merriam & Grenier, 2019; Patton, 2015). For example, questions about the attitude toward behavior construct explored elementary data team stakeholders' affective and cognitive attitude concerning DDDM instructional adjustments. Additional questions addressed the subjective norm construct concerning the influence other data team members and school leaders have on teacher DDDM instructional adjustments. Lastly, questions addressed

elementary data team stakeholders' perceptions concerning their DDDM self-efficacy and DDDM control to support student learning and help improve student academic achievement.

The data analysis was grounded in the conceptual framework using a priori codes based on the relevant constructs of TPB (Ajzen, 1991; Ravitch & Carl, 2016; Saldaña, 2016). The appropriateness of a priori coding is supported by Kippers, Wolterinck, et al. (2018) who used a priori codes based on a conceptual framework in their analysis involving teacher views of DDDM practices. Lockton et al. (2019), in their study of teacher DDDM instructional adjustments, used a priori codes from the data use theory of action (DUTOA; Marsh, 2012). In addition to a priori coding, I used open coding with thematic analysis and axial coding (Guest et al., 2006; Saldaña, 2016).

Nature of the Study

I used a basic qualitative study to provide an in-depth understanding of U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments (Merriam & Tisdell, 2016). A basic qualitative design was appropriate for the current study for the following reasons. First, Merriam and Tisdell (2016) and Caelli et al. (2003) stated a basic qualitative design is the most used qualitative approach in education. Next, a basic design typically utilizes in-depth interviewing to understand a phenomenon without framing it in a specific epistemological or ontological tradition (Patton, 2015). A basic qualitative design can provide a rich understanding of individual perspectives in a naturalistic setting (Merriam & Tisdell, 2016). Also, a basic design is used to investigate a phenomenon that is not a

bounded case. A basic qualitative study, as with this study, is less focused on a phenomenon in a specific time and place (Merriam & Tisdell, 2016). Lastly, a basic qualitative design can be used to analyze data to discover patterns, categories, and themes that will contribute to the fundamental knowledge of the phenomenon (Creswell & Creswell, 2018; Merriam & Tisdell, 2016; Patton, 2015). Thus, a basic qualitative design is appropriate to study how U.S. public elementary teachers and school leaders perceive the data team discussions influence on teacher DDDM instructional adjustments.

The selected research design is supported by other researchers who have used a basic qualitative design to address DDDM instructional adjustments and data teams. For example, Van Gasse et al. (2017a) conducted a basic qualitative study concerning teacher data use interactions and found that without teacher interdependency of sharing or joint work, teachers independently used data. The authors recommended further understanding of teacher interactions while using data. Vanlommel et al. (2017) conducted a basic qualitative study concerning the elementary teacher decision-making process while using data. The authors found that teachers were affected by confirmation bias by focusing on data that confirmed their intuition concerning student achievement. The authors recommended improved teacher supports on DDDM to reduce the issues of confirmation bias. Beck et al. (2019) conducted a basic qualitative study using semistructured interviews with elementary and special education teacher candidates concerning data literacy for teaching. The authors recommended that teachers receive continuous professional development to improve teacher data literacy using student data to make instructional adjustments. A basic qualitative design was used in the current study to gain

an in-depth understanding of DDDM instructional adjustments using semistructured interviews.

The study phenomenon is U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. Teachers and school leaders collaborate in data teams to solve student academic problems by making DDDM instructional adjustments (Vanlommel et al., 2021). However, Schildkamp et al. (2017) explained that such data collaboration seldom resulted in DDDM instructional adjustments. Schildkamp, Smit, and Blossing (2019) recommended further data team research because DDDM instructional adjustments had mixed results in solving student academic problems. One potential reason is U.S. public elementary teachers and school leaders lack data literacy to identify student academic problems to implement effective instructional strategies (Jimerson et al., 2021). Reeves and Chiang (2019) suggested that data-literate teachers convert data into actionable knowledge to make instructional adjustments. Although U.S. public elementary teachers and school leaders have access to various student data, they may lack the skills necessary to make DDDM instructional adjustments (Beck et al., 2019; Mandinach & Gummer, 2016). Also, Dunn et al. (2019) found that U.S. preservice teachers had a disdain for DDDM instructional adjustments before an instructional unit on DDDM. If U.S. preservice teachers arrive at their first teaching position without instruction in DDDM, they could not only lack data literacy but have animosity toward DDDM instructional adjustments. Thus, an exploration of U.S. public elementary teacher and school leader

perceptions can identify how to establish effective data teams but also help improve teacher DDDM instructional adjustments to support student academic achievement.

The study utilized a basic qualitative approach. The data collection method was semistructured interviews with U.S. public elementary teachers and school leaders. Interviews were conducted via a videoconferencing application or telephone (Kaden, 2020). An interview protocol was developed with a limited number of TPB-guided questions (Patton, 2015). Follow-up questions and probes were developed to gain a rich description of the phenomenon (Rubin & Rubin, 2012). Interview data were analyzed with a priori codes guided by the TPB (Ajzen, 1991; Saldaña, 2016).

Definitions

For this study, the following terms are defined.

Accountability: ESSA (2018) requires U.S. states to collect data on the student subgroups of (a) economically disadvantaged students, (b) students from major racial and ethnic groups, (c) children with disabilities, and (d) English learners (p. 29) "based on the challenging state academic standards for reading or language arts and mathematics … to improve student academic achievement and school success" (p. 30).

Assessment literacy: Defined as an "interrelated set of knowledge, skills, and dispositions that a teacher can use to design and implement a coherent and appropriate approach to assessment within the classroom context and the school system" (Pastore & Andrade, 2019, pp. 134-135).

Data: Data can consist of quantitative and qualitative academic and nonacademic data concerning school, teacher, or student. Quantitative data can include high-stakes

assessments, formative assessments, benchmarks, behavior, and attendance, whereas qualitative data include observations, conversations, social and emotional data (Jimerson & Childs, 2017; Prenger & Schildkamp, 2018; Schildkamp, 2019; Schildkamp & Poortman, 2015).

Data-driven decision-making (DDDM): DDDM is also referred to as data-based decision-making (DBDM), data-informed decision-making (DIDM), and data-informed instruction or data use for short. Although different terminology is used, the definitions are similar. "DDDM focuses on identifying a problem, seeking and implementing a solution through the use of data or evidence, examining the consequences of the decision, and determining next steps" (Dodman et al., 2019, p. 5). Schildkamp and Kuiper (2010) define data use as "systematically analyzing existing data sources within the school, applying the outcomes of analyses in order to innovate teaching, curricula, and school performance, and, implementing (e.g., genuine improvement actions) and evaluating these innovations" (p. 482). The data or evidence is "based on a broad range of possible types of data" (Kippers, Poortman, et al., 2018, p. 21).

Data literacy: Kippers, Poortman, et al. (2018) define data literacy as "educators' ability to set a purpose, collect, analyze, and interpret data, and take instructional action" (p. 21). Mandinach and Gummer (2013) define data literacy "as the ability to understand and use data effectively to inform decisions" (p. 30).

Data self-efficacy: Dunn et al. (2013b) defined data self-efficacy as "teachers' beliefs in their abilities to effectively analyze and interpret student data in order to

successfully connect or apply their interpretations of data findings to classroom instruction and to improve student learning" (p. 90).

Data team: A data team for this study "consist of teachers and school leaders who analyze and use data collaboratively to improve their educational practice" (Schildkamp et al., 2016, p. 229).

Differentiation: Deunk et al. (2018) define differentiation as "an overall approach to teaching and can include combinations of many practices, like flexible (heterogeneous or homogeneous) grouping, detailed progress monitoring, using adaptive computer programs or learning materials, modifying learning content, adapting instruction for weaker students, and providing opportunities for acceleration for stronger students. Differentiation practices can be applied to areas of learning content, learning process, learning product" (p. 32).

School leader: For this study, a school leader is a school staff member not in the position of teacher but is involved with the data teams when teachers are discussing student data to make instructional adjustments. Each school may have different school leaders involved in the data team. A school leader can include a school principal, assistant or vice-principal, instructional leader, or data coach.

Assumptions

During the development of the study, I made certain assumptions. Assumptions are "something the researcher accepts as true without a concrete proof" (Ellis & Levy, 2009, p. 331). I assumed that participants are honest and complete in their responses to the interview questions. For example, teachers may be tempted to exaggerate the

astuteness of their instructional adjustments because to do otherwise could reveal their lack of data literacy or pedagogical knowledge (Beck et al., 2019). To reduce this, I informed interviewees that pseudonyms for the participants, schools, and district would be used throughout the entire research study (Ravitch & Carl, 2016). Participants were assured of the confidentiality of their identity (Patton, 2015).

Additionally, a constructivist perspective guided the ontological and epistemological assumptions (Burkholder et al., 2016). First, I assumed there is "not a single Truth or reality" (Ravitch & Carl, 2016, p. 6). Prior to conducting the interview, I reminded the study participants that there is not a "correct" response, but I am attempting to gain their perception of the study phenomenon. Second, I assumed that "knowledge is generated through the interactions of individuals who cocreate meaning" (Burkholder et al., 2016, p. 24). I assumed data team participants collaborate to gain data literacy to implement appropriate DDDM instructional adjustments.

Scope and Delimitations

The problem addressed in this study is that little is understood about how the data team discussions influence elementary teacher DDDM instructional adjustments. The population of the study was U.S. public elementary teachers and school leaders. The scope of this study included U.S. public elementary teachers and school leaders who use data teams to discuss student data to make DDDM instructional adjustments. This scope was chosen because Reeves (2017) found that elementary teachers used data more frequently than secondary teachers. Datnow et al. (2018) selected fourth- and fifth-grade data teams, and Barnes et al. (2019) selected kindergarten and fifth-grade data teams to

explore how data and data use beliefs influenced actual data use. The study scope includes kindergarten through fifth-grade data team participants. Therefore, the study built on the findings of these researchers.

There are several delimitations of the study. First is the omission of teachers outside kindergarten through fifth grade. Cech et al. (2018) found that data use in many secondary schools is focused on graduation rates and postsecondary attendance. Secondary school teachers generally teach one content area (e.g., mathematics, English, science, or history), teach more students, and focus on content-area instruction (Cech et al., 2018; Flannery & Kato, 2017). As content area specialists, secondary teachers focus on content-based instructional adjustments (Park et al., 2017), whereas elementary teachers teach multiple content areas to a smaller group of students while supporting students in a more holistic manner to address student learning needs (Flannery & Kato, 2017; Park et al., 2017).

Second, elementary schools outside the United States are omitted. European elementary schools have different data and educational policies. For example, schools in Flanders give teachers the autonomy to determine assessments and curriculum while not having a nationwide assessment during elementary school (Vanlommel & Schildkamp, 2018). Also, schools in Flanders focus on school improvement purpose of data use (Van Gasse et al., 2020). Schools in the Netherlands, like those in Flanders, allow teachers flexibility to select assessments, curriculum, and instructional strategies (Hubers et al., 2019). However, the Dutch Ministry of Education policies prioritized data use intending to increase data use to 90% by 2018 (Hubers et al., 2019). On the other hand, U.S.

elementary schools follow educational policies like ESSA (USDOE, 2018), and many states have implemented Common Core State Standards (Datnow et al., 2018).

Several different data-use conceptual frameworks and theories were considered but not selected for this study. First, attribution theory (Weiner, 1979) was considered for this study as a basis for the theoretical framework. The attribution theory (Weiner, 1979) has three attributes (a) locus of causality, (b) controllability, and (c) stability, and four constructs (a) ability, (b) effort, (c) task difficulty, and (d) luck. These attributes and constructs could have examined how the data team discussions influenced instructional adjustments. The attribution theory attributes and constructs have similar concepts as the TPB (Ajzen, 1991). Both theories address teacher ability, effort, and task difficulty, as well as controllability. However, the attribution theory does not consider the subjective norms of the data team and the data team social pressures to make teacher DDDM instructional adjustments.

A second theory I considered was the self-efficacy concept from the social learning theory (Bandura, 1977), which holds that self-efficacy influences events due to the individual's belief in their capability. According to Bandura (1977, 1994), four elements that contribute to self-efficacy are (a) mastery experiences, (b) verbal persuasion, (c) vicarious experiences, and (d) physiological arousal. As defined by Bandura (1977), self-efficacy is the basis of the addition of perceived behavioral control to the theory of reasoned action, thus creating the TPB (Ajzen, 1991). Self-efficacy is necessary to understand the phenomenon; however, the self-efficacy construct is missing

the social pressures of the data teams, controllability, and the elementary teacher and school leader attitude toward DDDM instructional adjustments.

Lastly, during the data, information, and knowledge stages of DUTOA (Marsh, 2012), teachers use sensemaking (Weick et al., 2005), where qualitative and quantitative data are converted to actionable knowledge to make instructional adjustments. Teachers make sense of data and use this knowledge to make instructional adjustments. Although, sensemaking is a vital aspect of the phenomenon, sensemaking does not consider the teacher and school leader attitude and self-efficacy to make DDDM instructional adjustments, subjective norms, and controllability.

The study scope is U.S. public elementary data teams that use student data to make instructional adjustments. In a qualitative study, transferability relates to the study findings application beyond the context of the study (Guba, 1981). Thick descriptions of the data can aid in the transferability to other participants or contexts (Ravitch & Carl, 2016). Each study participant's perspective is based on their school contexts; however, participant selection throughout U.S. public elementary schools can increase transferability to a similar context (Shenton, 2004).

Limitations

During the development of the study, I acknowledge there are several limitations. First, the potential limited access to U.S. public elementary teachers and school leaders who are currently participating in data teams to make instructional adjustments because of the current health situation of Coronavirus (COVID-19). The school learning environment changed due to the COVID-19 pandemic, which caused schools to utilize

various teaching strategies (e.g., face-to-face, virtual, and hybrid; Kaden, 2020). Next, elementary teachers and school leaders may not have student data to discuss instructional adjustments. To minimize this limitation, the study does not specify the type of student data used to make instructional adjustments. Also, data teams may meet using videoconferencing. To minimize this limitation, I define a data team as a collaboration between teachers and school leaders to make instructional adjustments (Schildkamp et al., 2016).

Researcher bias could be another limitation. In a qualitative study, the researcher is the data collection instrument (Burkholder et al., 2016). However, as the primary data collection tool, I needed to be aware of my potential bias regarding the participants' responses. My biases could have influenced the questions I asked, as well as what I heard or interpreted (Rubin & Rubin, 2012). My verbal and nonverbal responses and probes had to stay neutral so that I did not influence the participants' responses (Rubin & Rubin, 2012). As such, the interview protocol was developed to reduce researcher bias concerning the phenomenon by asking open-ended objective questions aligned to the study's purpose, research questions, and conceptual framework (Patton, 2015). Since there was a limited number of focused interview questions, I could adjust follow-up questions and probes to gain a thick description of the phenomenon (Ravitch & Carl, 2016; Rubin & Rubin, 2012). I also conducted member checking to improve accuracy and reduce researcher bias (Patton, 2015; Ravitch & Carl, 2016). I also used an audit trail to minimize bias by documenting the data collection process in a research journal (Merriam & Tisdell, 2016).

Significance

This study is significant because it advanced understanding of elementary teachers' and leaders' perceptions of how data team discussions influence teachers' DDDM instructional adjustments. A deeper understanding of how data team discussions influence U.S. public elementary teacher DDDM instructional adjustments addresses a gap in the literature (Datnow et al., 2018; Jimerson, 2021). U.S. public elementary teacher and school leader perspectives provided knowledge about how attitude, social pressures, self-efficacy, and control influence U.S. public elementary teachers' intention to make DDDM instructional adjustments (Ajzen, 1991). The knowledge gained about U.S. public elementary teachers' DDDM instructional adjustments can inform school stakeholders on how to effectively create data teams to sustain teacher DDDM instructional adjustments to meet student learning needs (Reeves & Chiang, 2019). The knowledge gained from this study can help support U.S. public elementary student academic achievement by improving understanding data teams to improve instructional strategies.

The study contributes to the advancement of teacher DDDM instructional adjustment practices. According to Keuning et al. (2017), sustained DDDM is not a prevalent practice in education. Hubers et al. (2017) found the lack of data team vision influenced the sustainability of DDDM instructional adjustments and recommended further study on how school stakeholders collaborate to make instructional adjustments. Van Geel, Visscher, and Teunis (2017) found that consistent and supportive school leaders improved teacher instructional adjustments during data team collaboration.

Teachers benefit from school leader support of data vision, leadership, and data team planning time. Bolhuis et al. (2019), Hubers et al. (2017), and Jimerson et al. (2021) implemented a data team professional development to improve teacher DDDM instructional adjustments. However, the researchers indicated that professional development did not change all teacher DDDM attitudes or DDDM ability to use data to make instructional adjustments. U.S. public elementary school stakeholders can use the study results to inform data team practices and DDDM professional development initiatives.

The study contributes to the social change issue of student academic achievement. Datnow et al. (2018) found that teachers focused on the skills students lacked to inform instructional adjustments when teachers used data for instructional purposes. On the other hand, the authors found that teachers focused on improving student scores and not improved learning and teaching when teachers used data for accountability compliance purposes. Students benefit from receiving instruction that addresses their learning gaps to improve their understanding and not just achieving "proficient" on a high-stakes accountability assessment. School stakeholders can use the study's findings to inform efforts to improve data team implementation. With improved data team implementation, data team collaboration can better solve student academic problems (Kippers, Poortman, et al., 2018; Poortman & Schildkamp, 2016). Students may have improved academic achievement when teachers collaboratively use data to address their academic gaps and misconceptions. Therefore, the study's findings will add to the literature on how to create

data teams that sustain teacher DDDM instructional adjustments to support student academic achievement.

Summary

In Chapter 1, I provided the background of the problem, which identified the literature gap concerning how the data team discussions influence elementary teacher DDDM instructional adjustments. Relevant TPB (Ajzen, 1991) constructs were discussed as the lens of the basic qualitative study, research questions, a priori coding, data collection tools, and how data analysis will be conducted. Also, I addressed the assumptions, scope, delimitation, and limitations of the current study. Lastly, I provided the significance of the current study, which will add to the literature. Chapter 2 will provide a literature review of the study phenomenon, conceptual framework, and key concepts of the study.

Chapter 2: Literature Review

Introduction

The research problem addressed in this basic qualitative study is that little is understood about how the data team discussions influence teacher DDDM instructional adjustments. The purpose of this study was to gain an in-depth understanding of U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. There is a gap in the literature concerning how the data team discussions influence teacher DDDM instructional adjustments.

An important literature topic is the understanding of the perceived influence the data team discussions have on teacher DDDM instructional adjustments. Student data are collected but used inconsistently for instructional adjustments within the school environment. Teachers have access to qualitative and quantitative academic and nonacademic data to make instructional adjustments; however, most student data are used for accountability compliance and not for instructional adjustments (Schildkamp et al., 2017). Wachen et al. (2018) concluded that using data to make instructional adjustments is not feasible without data collaboration. Schildkamp (2019) stated that researchers identified DDDM enablers and barriers, but what is unknown is how to create sustainable teacher DDDM instructional adjustments. Ebbeler et al. (2017) found that data team participants' attitude about DDDM improved after a data professional development. However, inconsistent inservice teacher DDDM professional development and preservice teacher DDDM instruction can create data teams that lack data literacy to make DDDM

instructional adjustments (Goddard & Kim, 2018; Merk et al., 2020; Reeves, 2017). Thus, U.S. public elementary teacher and school leader data efficacy and DDDM attitude can influence teacher DDDM instructional adjustments. Most U.S. public schools focus on improving high-stakes accountability compliance assessment scores (USDOE, 2018) with less focus on making DDDM instructional adjustments to support student academic achievement.

In Chapter 1, I presented an overview of the study problem, identifying the gap to support the study inquiry and the key terminology used to guide the study. Also, I presented the research questions concerning the phenomenon, which I examined using the TPB conceptual framework (Ajzen, 1991). In the first part of Chapter 2, I described the literature search strategy used to gain insight into the study phenomenon. The next section provides background on the conceptual framework, DDDM, data purposes, data types, data teams, and teacher instructional adjustments. The last section includes background on TPB (Ajzen, 1991) relevant constructs.

Literature Search Strategy

For the study literature review, I used articles concerning data teams and teacher DDDM instructional adjustments using databases Education Source, ERIC, Taylor and Francis Online, Academic Search Complete, and SAGE Journals. Articles were obtained from peer-reviewed journals, which were searched within 5 years concerning teacher DDDM instructional adjustments and data teams. Seminal work concerning conceptual framework, theories, and DDDM trends were searched beyond 5 years.

The keywords searched were *teacher data literacy, data-driven decision making, data-based decision making, data-informed decision making, data factors, data skills and knowledge, data teams, data coaches, professional learning communities,* and *data intervention.* Initially, each of the keywords was searched within 5 years from peer-reviewed journals. Then, the "education" qualifier was added to limit results to articles within the education field; however, the results extended beyond the K12 environment. Lastly, the qualifiers "elementary education" and "primary education" were added to limit results to the study scope. Additionally, Google Scholar was used for citation chaining to gain additional articles.

Phenomenon and conceptual framework seminal work extended past the 5-year limitation and included articles, guides, encyclopedias, books, and government agency websites. Seminal articles, guides, and encyclopedias were searched for the study phenomenon of DDDM instructional adjustments, data use, data teams, qualitative methodology, and study theory. Books provided trends in data use with references to peer-reviewed articles. Lastly, government agency websites (e.g., USDOE, NRC, and Institute of Educational Sciences) provide national-level policies and research.

Conceptual Framework

Many U.S. public elementary teachers inconsistently use student data to make instructional adjustments; however, there is an insufficient understanding of how the data team discussions influence teacher DDDM instructional adjustments (McMaster et al., 2020; Van Gasse et al., 2020). The phenomenon of interest in the study is elementary teacher and school leader perceptions of how the data team discussions influence teacher

DDDM instructional adjustments. The conceptual framework for the study was guided by the TPB (Ajzen, 1991). The TPB states that an individual's intention to perform the behavior of interest is predicted by the individual's attitude toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991).

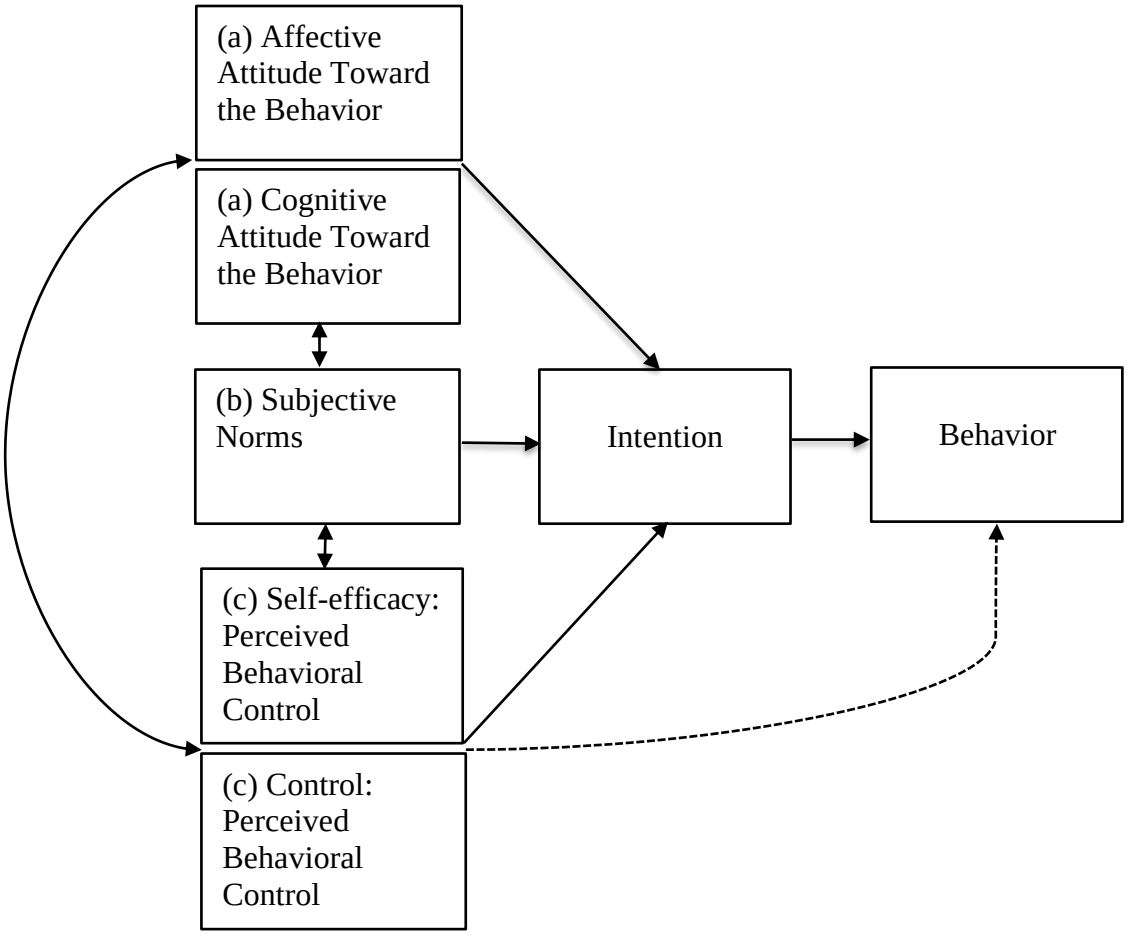
The TPB conceptual framework is appropriate to gain an in-depth understanding of U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. Ajzen (1991) posited that the TPB should be used to understand human behavior within a particular context. In the current study, through the lens of the TPB, I explored how participants perceived the influence of the data team discussions toward U.S. public elementary teacher DDDM instructional adjustments. Accordingly, I examined how data team participants perceived the influence data team discussions had on U.S. public elementary teacher and school leader (a) attitudes toward the behavior, (b) subjective norms, and (c) perceived behavioral control to predict U.S. public elementary teacher intention to make DDDM instructional adjustments. Steinmetz et al. (2016) found that initiatives, such as data teams, based on the TPB were effective in changing behavior. Prenger and Schildkamp (2018) conducted a quantitative study with elementary teachers and found that the TPB constructs of cognitive attitude, control of data use, and intention predicted teacher DDDM instructional adjustments. As justified above, the rationale to utilize the TPB conceptual framework to ground the study is appropriate to an in-depth understanding of the influence the data team discussions have on teacher DDDM instructional adjustments.

TPB

Ajzen (1991), in TPB, provided a theory to explain and predict human social behavior with antecedent constructs of (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control to predict intention to perform the behavior of interest (see Figure 2). Ajzen posited that the three antecedents of intention could predict the behavior of interest. As shown in Figure 2, affective and cognitive attitude toward the behavior, subjective norms, and self-efficacy and control constructs of perceived behavioral control directly affect intentions and indirectly affect behavior, whereas self-efficacy and control constructs of perceived behavior control interacts with attitude toward the behavior and subjective norms while directly affecting intention and behavior (Ajzen, 1991). Intention to perform the behavior of interest is predicted by the three independent antecedents, which is increased when the individual had experience with the behavior of interest (Doll & Ajzen, 1992). The TPB can be used to determine an individual's intention to perform an evidence-based educational practice, like DDDM (Ruble et al., 2018). The TPB constructs can guide the analysis of U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments (Prenger & Schildkamp, 2018).

Figure 2

A Visual of Theory of Planned Behavior



Note. Adapted from Icek Ajzen Theory of Planned Behavior Diagram, https://people.umass.edu/aizen/tbp.diag.html. Copyright 2019 Icek Ajzen. Permission to copy and use this figure free of charge in a thesis, dissertation, presentation, poster, or journal article, so long as you retain the copyright notice.

Behavior of Interest

There are a vast number of human experiences a researcher can study to explain and predict human behavior. For example, Steinmetz et al. (2016) identified eight TPB behavioral domains, consisting of (a) alcohol and drugs, (b) adherence to medical

regimens, (c) hygiene, (d) nutrition, (e) physical activity, (f) sexual behavior, (g) traffic, and (h) work and school behavior (p. 217). First the researcher must determine and define the behavior of interest (Fishbein & Ajzen, 2009). In the TPB, the construct "behavior" represents the behavior of interest to be performed. Since the behavior of interest is an observable event, Fishbein and Ajzen (2009) suggested the behavior construct has four elements including (a) action, (b) target, (c) context, and (d) time. In the current study, the behavior of interest is U.S. public elementary teacher DDDM instructional adjustments (action) during the data team (context) meetings (time) to help support student academic achievement (target; Fishbein & Ajzen, 2009). Analyzing the four elements creates "the definition of the behavior [that] will guide not only how the behavior is assessed but also the way we conceptualize and measure all other constructs" (Fishbein & Ajzen, 2009, p. 29). Any change to any of the four elements changes the behavior of interest.

First Construct: Attitude Toward the Behavior

The first intention antecedent is the attitude toward the behavior. The attitude toward the behavior construct is divided into affective and cognitive attitudes.

Affective Attitudes

Affective attitudes are based on emotions and feelings about the behavior of interest (Ajzen, 1991; Edwards, 1990). Both positive and negative DDDM experiences can influence an individuals' attitude toward the behavior, but Lynch et al. (2016) stated that a favorable teacher attitude toward data use is necessary to implement DDDM instructional adjustments. Van Geel, Visscher, and Teunis (2017) also found that teacher

attitude influenced teacher DDDM instructional adjustments. Bolhuis et al. (2019) recommended leveraging positive attitude data team members to a more active role to promote DDDM instructional adjustments to other data team members. Also, Copp (2016) concluded that having a positive attitude toward assessment data increased teachers' use of data. Thus, a positive attitude on the part of teachers had a significant positive influence on instructional adjustments. Teacher attitude toward DDDM instructional adjustments can be influenced by the data team members and school leaders.

Cognitive Attitudes

On the other hand, unlike affective attitudes, cognitive attitudes consist of the perceived costs and benefits (Ajzen, 1991) and instrumental knowledge (Millar & Tesser, 1986) concerning the behavior of interest. Teachers and school leaders may perceive that DDDM instructional adjustments positively or negatively influence student academic achievement outcomes (Lynch et al., 2016). When teachers perceived that their instructional adjustments had a positive influence on student outcomes, teachers' cognitive attitude toward the behavior was positively influenced. So, teachers' lack of data literacy can hinder positive cognitive attitudes toward appropriate DDDM instructional adjustments to help student outcomes (Green et al., 2016). Thus, the level of data literacy among teachers can influence their cognitive attitudes, which in turn bears upon their intentions to make DDDM instructional adjustments. Van Geel et al. (2016) found that when teachers misinterpreted student data, teachers used ineffective instructional adjustments, which reduced student academic achievement. Teachers'

cognitive attitude, then, can influence their intention to make DDDM instructional adjustments to help improve student academic achievement.

Second Construct: Subjective Norms

The next intention antecedent of TPB is the subjective norms (Ajzen, 1991). Subjective norms "refers to the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). Teachers can receive social pressure from other data team members (Gannon-Slater et al., 2017), school leaders (Huguet et al., 2017), school culture (Jimerson & Childs, 2017), and DDDM policies (Cowie & Cooper, 2017). Fishbein and Ajzen (2009) stated the social environment could influence an individual to put social norms before their own interests. Conversely, social pressures can have a deleterious effect. When Jimerson et al. (2021) compared elementary schools in the United States and the Netherlands, they found that social pressures from U.S. accountability compliance hindered data team instructional adjustments. Datnow et al. (2018) studied the data team social pressures caused by accountability compliance policies and found that when data teams focused on accountability assessments, they neglected student learning needs for the sake of improved student scores. This illustrates how a focus on improving accountability assessment scores can have a negative influence on teacher intention to make DDDM instructional adjustments (Ajzen, 1991).

Besides social pressures from U.S. educational accountability policies (e.g., NCLB and ESSA), teachers can experience social pressures from school leaders. For example, Yoon (2016) found school leaders DDDM practices did not have a direct influence on student outcomes. However, Yoon recommended understanding school

leaders influence on teacher buy-in of DDDM initiatives to support student outcomes. Thus, school leader DDDM practices can have a positive influence on teacher DDDM instructional adjustments and student outcomes, especially when teachers and school leaders collaborate in data teams. Abrams et al. (2020) found that collaboration between school leaders and teachers is vital to increase stakeholder data literacy and self-efficacy, which improves data use in schools. The authors' findings confirmed previous research (e.g., Datnow & Hubbard, 2015; Farley-Ripple & Buttram, 2014) concerning the positive influence a data-use school culture has on teacher DDDM instructional adjustments and student outcomes. Ajzen (1991), in the TPB, supported the idea that elementary teachers and school leaders may perceive data teams as a source of social pressure that could influence their intention toward the behavior of interest, DDDM instructional adjustments. So, through social norms, U.S. educational accountability compliance policies, organizational data team routines, and school stakeholders can influence teacher DDDM instructional adjustments.

Third Construct: Perceived Behavioral Control

Perceived behavioral control "refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). Perceived behavioral control is divided into two concepts, (a) self-efficacy and (b) controllability (Ajzen, 1991, n.d.). In the TPB, perceived behavioral control is demonstrated when individuals provide insight into their ability to perform the behavior of interest and the amount of control to perform the behavior (Ajzen, n.d.). According to Ajzen (1991), teachers' and school leaders' self-

efficacy and perceived control can influence their intention to make DDDM instructional adjustments.

Self-efficacy

Self-efficacy addresses the individual's perception they can perform the behavior of interest (Fishbein & Ajzen, 2009). In the current study, self-efficacy addresses the elementary teachers' confidence in their ability to perform DDDM instructional adjustments. Van Gasse et al. (2020) studied teachers' self-efficacy during data team interactions using student outcome data. The authors found that teachers had confidence to use data; however, the teachers felt DDDM instructional adjustments was an independent responsibility, not a data team responsibility. Also, teacher self-efficacy is influenced by data teams (Schildkamp & Datnow, 2020; Uiterwijk-Luijk et al., 2017). Teachers require confidence to understand student data to make DDDM instructional adjustments (Dunn et al., 2020). When teachers have increased DDDM self-efficacy, the data teams can provide a venue for teachers and school leaders to share pedagogical and content knowledge to improve DDDM instructional adjustments (Looney et al., 2018). Elementary teacher intention to perform DDDM instructional adjustments is influenced by the teachers' confidence to make DDDM instructional adjustments.

Controllability

Perceived behavioral control also includes, in addition to self-efficacy, controllability, the individual's perceived control over their performance of the behavior of interest (Fishbein & Ajzen, 2009). Controllability can also include "an individual's belief in his or her ability to control an outcome" (Bertrand & Marsh, 2015, p. 865) and

"the subjective evaluation of actual environmental circumstances" (Schüller & Kröner, 2017, p. 187). For example, teachers can control the student data available to data teams, the data meeting planning time, and the instructional focus of the instructional adjustments. On the other hand, teachers may not control how and when to use student data to make instructional adjustments (Lasater et al., 2019). Jimerson et al. (2020) found when data teams developed an assessment, teachers perceived they had control to make DDDM instructional adjustments to meet their students' learning needs. When teachers control the student data analyzed, teachers' intention to make DDDM instructional adjustments increases (Hubers et al., 2017). If teachers' perceive they do not control data team planning, teachers' intention to make DDDM instructional adjustments can be negatively influenced (O'Brien et al., 2019). Lastly, data team DDDM instructional focus can influence controllability and thus, teachers' intention to make DDDM instructional adjustments. When data teams place their focus on specific high-stakes assessments or specific students, teachers lack control to make DDDM instruction adjustments to address student learning needs (Dodman et al., 2019). The amount of control over the data team process, instructional adjustments, and data can influence elementary teachers' intention to perform DDDM instructional adjustments.

TPB and Educational Research

Student learning needs are addressed when teachers make DDDM instructional adjustments; however, teacher attitude toward the behavior, subjective norms, and perceived behavioral control can influence teacher DDDM instructional adjustments (Ajzen, 1991). Researchers used the TPB (Ajzen, 1991) constructs to guide their research

concerning teachers' support of student learning needs. For example, the TPB had been used to ground research concerning student formative assessments (Yan & Cheng, 2015), individualized instructional adjustments (Knauder & Koschmieder, 2019), and instructional goals (Voet & DeWever, 2020).

Evidence to support the TPB conceptual framework was found in a study conducted by Yan and Cheng (2015). Yan and Cheng (2015) surveyed 450 teachers in 10 primary schools who used formative assessments in their classrooms. Teachers use formative assessments to make instructional adjustments to meet student learning needs (Black & Wiliam, 2010, 2018). Yan and Cheng found teachers with favorable cognitive attitudes, positive social pressures, and data self-efficacy used formative assessments more frequently in their classrooms. However, the authors stated that the TPB was not effective in describing teacher formative assessment practices in their classrooms. Formative assessments are one type of student data that data teams can use to make DDDM instructional adjustments. The use of semistructured interviews in a basic qualitative study can gain an in-depth understanding of data team stakeholders' perceptions of using formative assessments to make DDDM instructional adjustments.

Another study to support the TPB conceptual framework was Knauder and Koschmieder (2019) study. Knauder and Koschmieder (2019) surveyed 488 primary teachers who provided individualized instructional adjustments for their students. The authors found that self-efficacy and attitude toward the behavior were the strongest predictors of individualized student support. Teachers with more experience implemented individualized student instructional adjustments more frequently. The authors stated the

subjective norm verbiage concerning “important people” may have influenced responses since the “school influence” factor was a significant predictor of the teachers’ extrinsic intention to make individualized instructional adjustments. The authors suggested that people other than participants perceived “important people” may have influenced teachers’ intention to make individualized instructional adjustments. The study results indicated that data team participants and school context can influence teacher DDDM instructional adjustments.

Lastly, another study to support the TPB conceptual framework was Voet and DeWever (2020) study. The authors conducted a mixed methods study with 141 history teachers from 120 secondary schools concerning their instructional goals. Voet and DeWever found that teachers’ attitude and perceived behavioral control influenced their intention to make instructional goals. Armitage and Conner (2001) conducted a review of the TPB research and found that subjective norms were the weakest predictor of intention. However, Voet and DeWever found no relationship between subjective norms and intention. In the study, the data team participants’ subjective norms or social pressures may influence teachers to make DDDM instructional adjustments.

The TPB relates to the study because it purports that data team social pressures and teachers’ attitude, control, and self-efficacy influence teacher DDDM instructional adjustments (Ajzen, 1991). Teachers and school leaders require DDDM skillset or data literacy to implement DDDM instructional adjustments to support student academic achievement (Reeves & Chiang, 2019). Data team participants who lack data literacy or self-efficacy may also have a negative attitude toward DDDM instructional adjustments

(Van Gasse et al., 2020). Data teams require allocated collaboration time to analyze qualitative and quantitative student data to make instructional adjustments (Ezzani, 2020). However, data teams may not control planning time or access to valid student data to make DDDM instructional adjustments (Ahmed, 2019). Thus, data team participants' perceptions toward teacher DDDM instructional adjustments may be influenced by the data team social pressures, control over student data, and level of data literacy, which can influence their attitude toward teacher DDDM instructional adjustments.

The research questions relate to the TPB concerning how U.S. public elementary teachers and school leaders perceive that the data team discussions influence teacher DDDM instructional adjustments. The TPB constructs of (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control will guide the development of the data collection instrument (Ajzen, 1991; Patton, 2015). The interview and follow-up questions will address each of the TPB constructs from the U.S. elementary teacher and school leader perspective (Rubin & Rubin, 2012). The findings will extend knowledge of how the TPB constructs influence the behavior of interest, which is teacher DDDM instructional adjustments.

Literature Review Related to Key Concepts

In the literature review, I synthesized research on key concepts and the TPB conceptual framework constructs related to the study. I analyzed the iterative process of DDDM and DUTOA, which data teams utilize to make instructional adjustments. Then, I synthesized research on the data purposes and types of student data available to data

teams. Lastly, I synthesized the research on data teams and teacher instructional adjustments.

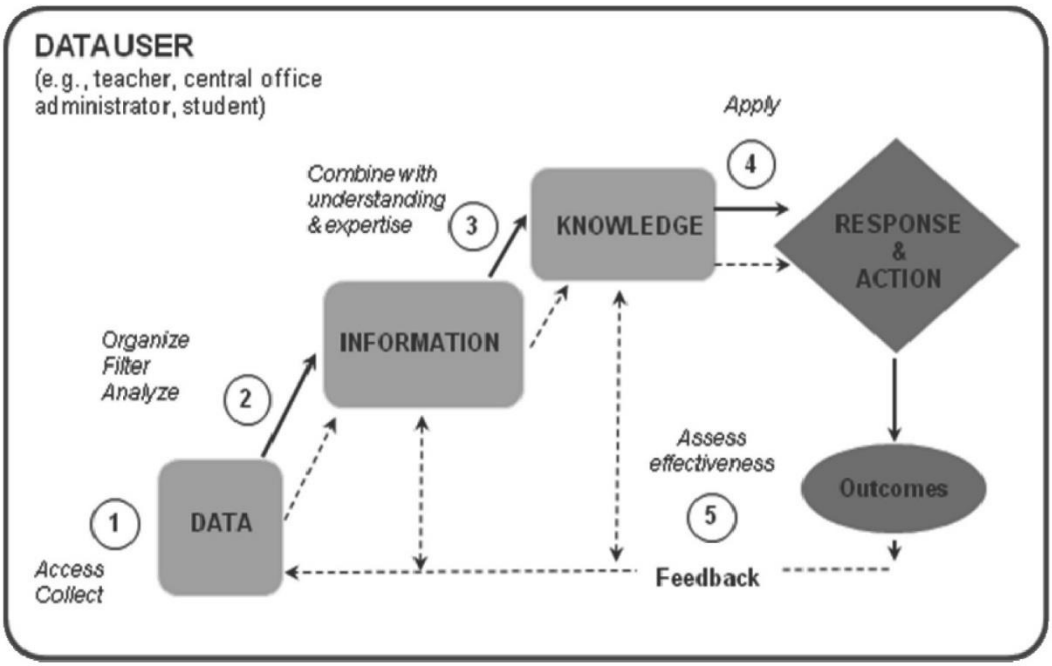
Instructional Adjustment Models

Several researchers (Gummer & Mandinach, 2015; Jimerson & Wayman, 2015; Keuning et al., 2017; Mandinach & Gummer, 2016; Schildkamp & Poortman, 2015) have developed data-use models to facilitate teachers' and school leaders' data-use practices. One of the first data-use models was DUTOA (Marsh, 2012; see Figure 3). DUTOA elements include (a) data, (b) information, (c) knowledge, (d) response and action, and (e) outcomes (Marsh, 2012, p. 4). DUTOA requires teachers to convert raw data into actionable knowledge to make instructional adjustments (Schildkamp et al., 2016). Also, DUTOA includes five leverage points throughout the data-use process. The first leverage point is to access and collect data. Teachers not only collect data but need access to reliable and timely data (Ahmed, 2019). The second leverage point is to organize, filter, and analyze data. The data are then organized, filtered, and analyzed to create usable information (Keuning et al., 2017). The third leverage point is to combine with understanding and expertise. Teachers combine pedagogical and content knowledge to understand the information to make instructional decisions (Lai & McNaughton, 2016). The fourth leverage point is to apply. Differentiated instruction, student groupings, and varied instructional strategies are applied in the classroom (Moosa & Shareefa, 2019). The fifth leverage point is to assess effectiveness. Students then respond and act on the instructional changes, as demonstrated in the outcomes. The outcomes are assessed for the effectiveness of the strategy selected. Throughout the entire DUTOA iterative

process, teachers utilize feedback to proceed or gain more data to understand the academic problem.

Figure 3

Data Use Theory of Action



Note. From "Interventions Promoting Educators' Use of Data: Research Insights and Gaps," by J. A. Marsh, 2012, *Teachers College Record*, p. 4. Reprinted with permission (see Appendix A).

Justification

Although the study does not address the DUTOA elements or leverage points, teachers and school leaders utilize the DUTOA iterative process to make DDDM instructional adjustments. For example, the data team implements the DUTOA elements and leverage points (a) data: access and collect; (b) information: organize, filter, and analyze; (c) knowledge: combine with understanding and expertise; to make DDDM instructional adjustments; and (d) apply (Marsh, 2012). However, during the DUTOA

process, the data teams may encounter barriers and enablers that influence the application of DDDM instructional adjustments (Keuning et al., 2017). School stakeholders may have different perceptions of the DUTOA barriers and enablers, which can influence school stakeholders' attitude toward DDDM instructional adjustments and social pressures to make DDDM instructional adjustments, self-efficacy, and controllability DDDM instructional adjustments (Ajzen, 1991; Marsh, 2012). School stakeholders can access student data found on data systems. However, Gannon-Slater et al. (2017) found teachers lacked the self-efficacy to use the data systems and the control to generate disaggregated student reports. Further, Miloş et al. (2019) found school stakeholders' use of these data systems did not significantly impact student academic achievement. Lastly, Will et al. (2019) suggested data from various sources should be presented in different ways to address the varied teachers' DDDM self-efficacy. The TPB constructs of (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control are relevant to data team implementation of the DUTOA process to make DDDM instructional adjustments.

DDDM

Various terms are used when describing teacher and school leader data use to make instructional adjustments. DDDM is common terminology used globally. Dunn et al. (2019) used DDDM concerning preservice teacher misconceptions and bias toward using data in their future classrooms. Walker et al. (2018) used DDDM when discussing teacher efficacy and anxiety of using data to improve instruction and student achievement. Another common data use terminology is data-based decision making.

Faber et al. (2018) used the terminology data-based decision making to determine the relationship between differentiated instruction and student achievement. Lastly, the shift in data types caused a change in the terminology from data-driven to data-informed decision-making (Brown et al., 2017). Young et al. (2018) used data-informed decision making to determine what data school leaders use and how they use it to make school improvements. Although several terms are used to describe teacher and school leader data use in the research, the general meaning is the same. Data are used to make decisions by school stakeholders for a specific educational purpose.

DDDM remains a global educational initiative challenge. Researchers from the Netherlands, Sweden, Belgium, Ireland, and the United States conducted studies to improve student academic achievement utilizing DDDM. For example, Lockton et al. (2019) researched the data-informed instructional improvement process in U.S. middle schools. They found school culture and the focus on accountability data limited teachers' instructional adjustments. Schildkamp, Smit, and Blossing (2019) conducted a data team study in Sweden and found teacher pedagogical content knowledge and attitude influenced the data team DDDM instructional adjustments. Ebbeler et al. (2017) stated many countries emphasized data use for school improvement; however, not enough emphasis was placed on the human factor of increasing school leader and teacher data literacy. Many DDDM studies were conducted globally, yet sustained teacher DDDM instructional adjustments to support student academic achievement remain challenging.

Implementation of DDDM had inconsistent teacher instructional adjustment results due to teacher data literacy. In a review of data-use research, Sun et al. (2016)

found that teachers lacked DDDM data literacy and required school leaders' support to use data for instructional adjustments. Also, Brown et al. (2017) and Schildkamp and Poortman (2015) indicated that the implementation of DDDM had proven to be difficult for in-service teachers due to a lack of data literacy. Reeves (2017) identified that pre-service elementary teachers' DDDM skills were inadequately addressed during college coursework. The fact that preservice teachers are not data literate when they arrive on-the-job further adds to the DDDM challenges in schools. Teachers' lack of data literacy creates barriers to effective DDDM implementation, limiting teachers' DDDM instructional adjustments.

Data Purposes

School stakeholders can collect student data for different purposes. Accountability, school improvement, and instruction are student data collection purposes (Bolhuis et al., 2019; Brown et al., 2017; Schildkamp, 2019). Schildkamp et al. (2017) contended that data use for accountability, school improvement, and instruction together could achieve the goal of increased student academic achievement. Ebbeler et al. (2016) suggested that although data are collected for one purpose does not mean data cannot be used for other uses. For example, accountability data can also be used for school improvement purposes. The reason and purpose student data are collected may be different for each school stakeholder.

Accountability

In 2001, NCLB focused U.S. schools on using data for accountability compliance purposes. Accountability data collection focuses on short-term instructional adjustments

to improve student high-stakes assessment scores (Datnow & Park, 2018). Wachen et al. (2018) found that study participants mentioned both positive and negative aspects of collecting data for accountability. On the positive side, student achievement data were analyzed; however, on the negative side, the focus was on increasing student scores and not instructional adjustments. Teachers focused on math standards and not student mathematical thinking when teachers analyzed math benchmarks because they focused on high-stake assessment accountability (Garner et al., 2017). When teachers focus only on accountability, they concentrate on reteaching instead of teaching for deeper understanding (Garner et al., 2017). The accountability policies, such as NCLB and ESSA, do not provide the necessary time or resources to achieve the expected student academic achievement growth (USDOE, 2001, 2018). Teachers focus more on raising high-stake assessment scores than identifying student learning needs, which can have a long-term negative impact on student academic achievement (Wachen et al., 2018).

School stakeholders' focus on accountability can have other negative consequences. Datnow and Park (2018) found that accountability data can create inequities if the focus is on accountability compliance instead of instructional adjustments. Dodman et al. (2019) recommended teachers not focus on "bubble" students or students close to obtaining a proficient score on high-stakes accountability assessments. Teachers should focus on instructional adjustments that meet student-specific learning needs and not raising "bubble" student high-stakes assessment scores. Also, Jimerson and Childs (2017) stated focusing solely on accountability data diminishes the value of the nonacademic data like socio-emotional and student interests

when making instructional adjustments. Although national-level policies (USDOE, 2018) require the collection of accountability compliance data, school stakeholders can shift the focus from increasing high-stakes assessment scores to focusing on student learning needs with DDDM instructional adjustments.

School Improvement

The following data use purpose is school improvement. Schildkamp (2019) stated school improvement is an iterative process to achieve a goal, with data as one collection tool. The school improvement goal can involve improved teaching and learning, as measured by student achievement outcomes (Kippers, Poortman, et al., 2018). Ahmed (2019) suggested educational policies concerning school improvement must align with school and classroom implementation of DDDM. Bolhuis et al. (2019) found that the data teams used data more for school improvement than instruction. Unlike the U.S., other nations' educational policies focus on school improvement. For example, Flanders schools make instructional strategy decisions to meet the standards autonomously; thus, school improvement is the focus of DDDM (Van Gasse et al., 2017b, 2017c). As part of the Irish School Self-Evaluation process, data was used for school improvement instead of improvements in instruction (O'Brien et al., 2019). The authors found schools used mostly quantitative data from school stakeholders (e.g., teachers, students, and parents) to measure improvements. The focus of school improvement is not to improve teacher instructional adjustments but to focus on the school as a system.

Instruction

The last data use purpose is for instructional decision making. Researchers identified four factors that influence data use in the classroom, (a) assessment instruments, (b) students, (c) teachers, and (d) school context (Hoogland et al., 2016; Mandinanch & Jackson, 2012; Schildkamp & Kuiper, 2010). The first factor is the different assessment instruments available to teachers. Datnow et al. (2018) found that teachers challenged how assessment data can exclusively determine student achievement when other factors, like student behavior and home life, can also influence student academic achievement. The next factor is the students. Mandinach and Jimerson (2016) recommended data should drive instructional strategies to gain the desired student learning. Student learning needs should be the focus of DDDM instructional adjustments and not improving high-stakes assessment outcomes. Also, instructional decision-making factors are the teachers and the school context. Schildkamp et al. (2017) found that teacher and school characteristics impacted data use for instruction. The authors identified data vision, leadership, and collaboration were organizational contexts. Also, teacher data literacy influenced DDDM instructional adjustments. Teacher and school leader instructional decision-making must identify the appropriate data to support student learning needs and not focusing on improving high-stakes assessment outcomes.

Teachers can use a variety of data to make instructional adjustments. In Datnow et al. (2018) study, the researchers found teachers challenged how assessment data can exclusively determine student achievement when other factors, like student behavior and home life, can also impact student academic achievement. When data was perceived as

numbers and linked to student understanding, teachers' instructional adjustments were reduced (Bolhuis et al., 2019). Also, teachers may have limited perceptions of what constitutes data. For example, teachers may consider only statistical, numerical data like high-stakes assessments and benchmarks as student data to make instructional adjustments (Datnow & Park, 2018). The authors stated using a variety of data sources or a more holistic view creates a complete picture of students' ability and learning while uncovering learning issues not observed in the numerical data. When teachers utilize a variety of qualitative and quantitative student data, teachers can make instructional adjustments to meet all students learning needs.

Student Data

District- and state-level assessments are one type of data used to make instructional adjustments. Datnow et al. (2018) found teachers labeled students based on high-stakes assessment levels (i.e., struggling, proficient, and advanced) instead of using data to understand student learning and achievement. In comparison, Dodman et al. (2019) indicated the importance of teachers analyzing school data instead of state-level data. The authors suggested that teachers engage with various data and not focus on state-level high-stakes assessments to measure student academic achievement. Also, state-level mandatory assessments' purpose is often misunderstood by teachers for instructional value. For example, Harvey and Ohle (2018) found 42% of kindergarten teachers used the state-mandated Alaska Development Profile, a kindergarten entry assessment, to inform instruction, while 32% felt the data impacted student achievement. State-level assessments provide a standard measurement for student academic achievement and

growth; however, these assessments offer teachers limited use to make instructional adjustments. Also, the use of state-level assessments focuses on accountability compliance instead of identifying instructional adjustments.

The next type of data is the school and classroom data, including qualitative and quantitative data. Many teachers believe classroom assessments provide a complete view of students' growth than do external assessments (Wachen et al., 2018). However, the authors found that students do not put effort into benchmarks compared to high-stakes assessments. Besides assessments, teachers gather data about their students through observations, questioning techniques, peer relations, students' interests, and learning preferences (van Geel et al., 2019). Teachers can share this student data during collaborative team meetings (Datnow & Park, 2018). Standard assessment data provides teachers with similar data to discuss collaboratively to identify student misconceptions. When teachers use a variety of data sources, teacher instructional adjustments better match student learning needs. Also, teachers have access to qualitative data that allow more effective instructional adjustments.

Data Teams

Data teams create an environment for teachers to collaborate; however, the effectiveness of data teams in different schools is varied. Datnow and Park (2018) found that teachers focused on completing the principal developed protocol in some data team meetings while other meetings focused on meaningful data discussions. But without purpose and focus, data teams did not change teacher data-use practices. Huguet et al. (2017) study demonstrated two different principals' implementation of the district-

mandated data-use data meeting. One principal's data meetings focused on compliance with the routines and tools; in comparison, the other principal provided teachers the time and responsibility to implement student data analysis. Data team and DDDM policies create an environment in which instructional adjustments are made to meet student learning needs. But focus on accountability compliance appears to limit the number and quality of instructional adjustments by teachers.

While teachers and school leaders collaborate, the focus of teacher collaboration can include student misconceptions and school- or classroom-level data. Xu and Brown (2016) discussed the value of teacher assessment collaboration to share assessments, conduct professional discussions, and introduce innovative strategies. During a two-year DDDM collaborative professional learning, Keuning et al. (2016) found that teacher collaboration changed when discussing student performance. On the other hand, the collaboration did not influence discussions on instructional strategies. Additionally, the authors found that smaller collaboration teams increased the sharing of DDDM knowledge and skills.

Also, the use of local data and academic problems changed the focus of collaboration. While teachers are collaborating, Garner et al. (2017) stated teachers should focus on understanding students' misconceptions to improve students' understanding instead of just trying to raise students' high-stakes assessment data. Voelkel and Chrispeels (2017) found teacher goal setting positively affected teacher perceptions of meeting all student academic needs. When teachers discussed school student data, Kennedy (2016) found if teachers are not guided in a collaborative

environment, student learning is minimal. Although a data team creates a collaborative environment, teachers require support to ensure discussions are focused on improving instructional strategies to meet students' learning needs.

School leaders are vital in the creation of a collaborative data team culture. Datnow and Park (2018) found principal data culture can influence teacher data use from accountability compliance purposes to instructional adjustments to address student understandings or misconceptions. Also, data team meetings allow teachers to discuss various data, which moved teachers from focusing on student deficits to focusing on DDDM instructional adjustments. Huguet et al. (2017) found when school leaders give teachers more opportunities to engage with student data; students benefit from DDDM instructional adjustments. School leaders set the tone of data collaboration and the focus of the data team meetings.

Research had identified barriers and enablers to data use collaboration. In Wachen et al. (2018) study, the teachers felt the lack of planning time to analyze data to make instructional adjustments was a barrier. Due to the lack of planning time, most teachers conducted data analysis individually and not collaboratively. Although collaboration is an enabling factor, the school leaders in Keuning et al. (2017) study identified planning time as a barrier. Many teachers in O'Brien et al. (2019) study were concerned about the additional planning time necessary to utilize data. In the Sun et al. (2016) literature review, the authors identified a lack of time and collaboration as barriers to teacher DDDM instructional adjustments. On the other hand, a culture of collaboration was considered a promoting factor for teacher DDDM instructional adjustments in Keuning et

al. (2017) study where teachers shared instructional strategies in a safe and open environment. DDDM barriers and enablers differed between school context.

Teacher Instructional Adjustments

Teacher DDDM is a complex process to take raw data into actionable knowledge to make instructional adjustments. Although research suggested teachers struggle with data analysis, Schildkamp et al. (2016) found that teachers require support throughout the data-use cycle. To make DDDM instructional adjustments, teachers need data literacy or knowledge and skills (Dodman et al., 2019; Keuning et al., 2017; Kippers, Poortman, et al., 2018; Schildkamp et al., 2017). Teacher instructional adjustments can include differentiated instruction and materials.

One outcome of the DDDM instructional adjustments is differentiated instruction. Ebbeler et al. (2016) suggested that data use for instruction can increase student achievement and improve differentiated instruction implementation. However, student achievement was not the same for all students utilizing differentiated instruction. Van Geel et al. (2019) confirmed that teachers need to know their students and content-area knowledge to differentiate instruction or make instructional adjustments. In other words, they suggested teachers require data literacy for teaching. Faber et al. (2018) found that differentiated instruction can mitigate students' characteristics like self-efficacy concerning the material, concept, or topic, especially for lower-performing students. However, the authors' study did not examine the relationship between DDDM and differentiated instruction. Teachers require knowledge of a variety of instructional

strategies to address student learning needs the data identified. The appropriate instructional strategy must be used to address specific misconceptions and learning needs.

Additionally, teachers can utilize formative assessments to make instructional adjustments. Researchers identified positive effects on student achievement when formative assessments were an instructional strategy (Andersson & Palm, 2017; Kippers, Wolterinck, et al., 2018; Lai & McNaughton, 2016). Formative assessments are used to create flexible groups to provide instructional adjustments for differentiated instruction (Datnow & Park, 2018). Differentiated instruction meets students' academic needs by analyzing quantitative and qualitative data (Bolhuis et al., 2019; Datnow & Park, 2018; Schildkamp, Smit, & Blossing, 2019). Formative assessments provide teachers with data to make instructional adjustments to meet all students' learning needs prior to summative assessment.

DDDM Attitude and Barriers to Instructional Adjustments

Teacher DDDM attitude can influence instructional adjustments. Ahmed (2019) found that DDDM attitude influenced teacher DDDM for instruction. Prenger and Schildkamp (2018) also found that the teachers' intention and DDDM attitude, specifically the teachers' affective attitude, influenced DDDM instructional adjustments. Thus, teacher DDDM attitude influenced DDDM instructional adjustments. Ebbeler et al. (2017) results concerning teacher DDDM attitudes were mixed. However, the authors found that teacher attitudes were mostly positive concerning DDDM instructional adjustments after a data team professional development. Both negative and positive

teacher attitudes can influence teacher DDDM instructional adjustments, supporting student academic achievement.

A potential barrier to teacher DDDM instructional adjustments is teachers' previously held attitude toward DDDM. In several studies of Pacific Northwest school districts, Dunn et al. (2013a, c) found teachers were resistant to support school district DDDM reform initiative. Dunn et al. (2019) suggested pre-service teachers' and new in-service teachers' resistance to DDDM could stem from their personal experiences of implementing NCLB while students in the K-12 environment. The authors also found that pre-service teacher perception before DDDM instruction was from a K-12 student perspective; however, post DDDM instruction, the pre-service teachers gained a better understanding of the value of data. On the other hand, suppose in-service teachers did not have a college course or receive professional development on DDDM. In that case, the question arises whether in-service teachers may continue to have the same negative perception of DDDM.

Data Literacy

DDDM requires a specific set of knowledge and skills or data literacy. Teacher DDDM self-efficacy can influence DDDM instructional adjustments. In Schildkamp et al. (2017) study, the authors suggested that the number of teachers "I don't know" survey response indicated that schools and teachers lacked data literacy to lead to student growth changes. Jimerson et al. (2019) studied elementary teachers implementing student involved data use. The authors found nine of the 11 teachers became more aware of student strengths and weaknesses, which caused 10 of the 11 teachers to address students'

misunderstanding. Teachers gaining an understanding of students' learning can aid in their DDDM instructional adjustments.

Throughout the DDDM process, teachers require different skills and knowledge, including data, content, and pedagogical. Teachers need pedagogical knowledge to understand the students' academic problem (Brown et al., 2017). Mandinach and Jimerson (2016) emphasized the influence pedagogical and content knowledge had on teacher DDDM instructional adjustments. For example, after data are converted into actionable knowledge, a teacher requires pedagogical and content knowledge to make instructional adjustments to select the appropriate instructional strategies to address student academic needs. Teacher content or subject matter expertise aids in determining what curriculum, activities, and supports are necessary to meet student learning needs (van Geel et al., 2019). Van Gasse et al. (2017b) found that the different stages of the DDDM process required different skills and involved varied collaborative interactions between teachers. However, Kippers, Poortman, et al. (2018) found that educators struggled to increase their data skills and knowledge. Teachers require data, content, and pedagogical skills to make DDDM instructional adjustments to address student learning needs. However, DDDM is a complex skill that requires teachers to identify student learning gaps and determine what learning strategies and curriculum are needed to address student misconceptions and learning needs.

School Context

Teacher intention to make DDDM instructional adjustments are influenced by the school context of the data teams. School context can include data policies, norms, and

vision. Data policies, norms, and vision are at the national, state, district, and school levels (Lasater et al., 2019). Incorporating DDDM into a school district requires a systems approach, including data vision and policies (Cowie & Cooper, 2017). To sustain data vision, all school stakeholders must be involved in identifying instructional strategies to help support student academic achievement (Ciampa & Gallagher, 2016). Jimerson and Childs (2017) search of state and local policies concerning data use found no explicit mention of strategies to increase teacher data literacy. In Hubers et al. (2017) study, the authors found limited mention of the vision or policy for implementing data teams in Dutch secondary schools. The authors also found no vision or policy on data use and suggested that the lack of vision impeded teacher data use. They found to increase teacher buy-in and established the importance of data use, a school-wide data vision or policy is necessary. Although researchers recommended data use policies, DDDM and data team policies at the state, district, and school levels are lacking.

Organizational Culture

School leaders are responsible for creating a culture to promote teacher DDDM instructional adjustments. Creating a safe culture for teachers is necessary to increase teacher affective attitude toward DDDM instructional adjustments (Prenger & Schildkamp, 2018). Mandinach and Jimerson (2016) recommended data use must become part of the school culture for DDDM instructional adjustment sustainability. School leaders create a data culture to address an academic problem while involving all school stakeholders (Hoogland et al., 2016). Teacher buy-in to DDDM instructional adjustments are influenced by an organization's data culture (Gannon-Slater et al., 2017).

Jimerson and Childs (2017) recommended policy changes to provide school leaders with guidance to create a culture of collaboration. The authors recommended time for teachers to implement the DDDM inquiry process while using a variety of data. A positive organizational data culture creates an environment for teachers to collaboratively use data to solve academic problems to support student achievement.

A culture of collaboration requires a school to develop organizational routines that support teacher DDDM instructional adjustments. Hubers et al. (2017) stated that continuous and supportive organizational routines created a culture that influenced sustained data use. In Ahmed (2019) study of primary schools, the author found data and school organizational characteristics influenced instructional data-use. The author also noted each school might require different supports or professional development to improve DDDM instructional adjustments. For example, Wachen et al. (2018) found that data chats focused more on the school-level results instead of guiding instructional changes in the classrooms. Organizational routines can promote or hinder teachers' data-use practices, so school leaders must adapt to meet the school and teacher levels' needs.

Both school leaders and teachers play a role when using data use to make instructional adjustments. In a literature review, Sun et al. (2016) found that teachers with more significant student achievement discussed instructional strategies collaboratively but individually made instructional adjustments. Although O'Brien et al. (2019) participant teachers were positive while learning to use data, they did not feel that data use should be a teacher role. School leaders and teachers play a role in all student growth

and not just students in their class (Datnow & Park, 2018). School stakeholders have a role in student academic achievement by creating an environment of collaboration.

School Leader Support

School leaders influence DDDM instructional adjustments by providing necessary supports to meet the teachers' needs. Mandinach and Jimerson (2016) stated school leaders must provide resources, professional learning, and time in a nonevaluative environment to make DDDM instructional adjustments. Sun et al. (2016) identified three categories of school leader support (a) person support, (b) technical support for data systems and professional learning, and (c) creating a collaborative environment. Schildkamp et al. (2019) identified leadership support necessary for data teams included individualized support, networking, vision, and climate for data use. Ahmed (2019) stated school leaders influenced teacher data use through teacher mentoring. School leader support can create an environment that either promotes or hinders teacher DDDM instructional adjustments.

Summary and Conclusions

Several themes were identified during my review of the literature concerning the study conceptual framework, DDDM, student data, data purposes, instructional adjustments, and data teams. First, student data use in elementary schools can be for accountability, school improvement, and instructional purposes (Brown et al., 2017). However, student data use for instruction is the least used purpose (Bolhuis et al., 2019). Teachers can use qualitative and quantitative data like formative, summative, benchmark, and diagnostic assessments as well as nonacademic data like behavior and attendance to

make instructional adjustments (van Geel et al., 2019). However, teachers do not use data in isolation without colleagues and school leaders (Barnes et al., 2019). DDDM professional development had mixed results to create sustained teacher DDDM instructional adjustments to support student academic achievement (Ebbeler et al., 2017; Garner et al., 2017).

The study was guided by the TPB conceptual framework. Educational researchers have used the TPB constructs of attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). For example, in a quantitative study using the TPB, Knauder and Koschmieder (2019) studied individualized student supports and lesson design. However, there are limited basic qualitative studies that use the TPB as the conceptual framework to address teacher DDDM instructional adjustments using data teams.

Researchers have identified internal and external factors that promote or hinder DDDM instructional adjustments (Bolhuis et al., 2016; Schildkamp, 2019). However, DDDM instructional adjustments are not sustained practice in classrooms (Keuning et al., 2017). The influence data teams have on teacher DDDM instructional adjustments are unknown (Schildkamp, Smit, & Blossing, 2019). The study addresses the gap in scholarly literature concerning how data team influence teacher DDDM instructional adjustments. The findings will extend the knowledge of how to help create data teams to sustain teacher DDDM instructional adjustments to help support student academic achievement.

Chapter 3 provides a detailed explanation of the study research method. First, a discussion of the research design and rationale and role of the researcher. Second, the

methodology of participant selection, data collection instrument, and data analysis plan. Lastly, the issues of trustworthiness and ethical procedures are explained.

Chapter 3: Research Method

Introduction

The purpose of this basic qualitative study is to gain an in-depth understanding of U.S. public elementary teachers' and school leaders' perceptions of how data team discussions influence teacher DDDM instructional adjustments. In Chapter 2, I analyzed current and seminal literature to identify a gap, which led to the development of the study's purpose and research questions. In Chapter 3, I provide the methodology and research design to be used to answer the research questions. I also discuss the target population, selection process, and data collection, as well as my role as the researcher, instrumentation, and data plan. Lastly, the issues of trustworthiness and ethical procedures are discussed.

Research Design and Rationale

The purpose of this basic qualitative study was to gain an in-depth understanding of U.S. public elementary teacher and school leader perceptions of how data team discussions influence teacher DDDM instructional adjustments. The research questions reflect the purpose of the study and are guided by the TPB conceptual framework (Ajzen, 1991).

RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?

RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments?

A basic qualitative study is an appropriate qualitative approach for my research. The study explored U.S. public elementary teacher and school leader perspectives concerning how data teams influence teacher DDDM instructional adjustments. A basic qualitative study design is used to understand how individuals make sense of the phenomenon using inductive analysis (Merriam & Tisdell, 2016). The rationale for choosing a basic qualitative design includes several points. A basic qualitative design utilizes in-depth interviewing to understand a phenomenon (Patton, 2015). A basic qualitative design can provide a rich understanding of individual perspectives concerning a phenomenon in a naturalistic setting (Merriam & Tisdell, 2016). Lastly, a basic qualitative design can be used to analyze data to discover patterns, categories, and themes that will contribute to the fundamental knowledge of the phenomenon (Creswell & Creswell, 2018; Merriam & Tisdell, 2016; Patton, 2015). Thus, a basic qualitative design is appropriate to study how U.S. public elementary teachers and school leaders perceive data teams influence on teacher DDDM instructional adjustments.

Prior to selecting a basic qualitative design, other qualitative designs were considered but not selected. For example, ethnography, narrative, and phenomenology would not be appropriate approaches to support the study purpose or answer my research questions (Merriam & Tisdell, 2016; Patton, 2015). In the ethnographic design, the researcher conducts fieldwork within the culture to understand how the phenomenon affects the culture (Merriam & Tisdell, 2016; Patton, 2015). In a narrative approach, the researcher gathers a participant's "stories" concerning their understanding of the phenomenon, including the phenomenon's history and context (Merriam & Tisdell, 2016;

Patton, 2015). Both the basic and the phenomenological approaches allow researchers to gather data concerning the participants' lived experiences of the phenomenon. However, the phenomenological approach topics focus on intense human experiences (Merriam & Tisdell, 2016). The study topic is teacher DDDM instructional adjustments, which is not an intensely human experience (Merriam & Tisdell, 2016; Patton, 2015). Also, I considered using a case study approach. A case study collects data from a bounded setting about participants' understanding of the phenomenon (Merriam & Tisdell, 2016; Patton, 2015). My research questions use the term "perspectives," which limits data collection to interviews while eliminating document analysis (Patton, 2015). Thus, ethnography, narrative, phenomenology, and case study designs were not appropriate for my study to understand U.S. public elementary teacher and school leader perspectives on how data teams influence teacher DDDM instructional adjustments.

Role of the Researcher

A researcher in a qualitative study has several roles. A qualitative researcher determines the purpose of the study, is the primary data collection instrument, and responsible for the data analysis (Ravitch & Carl, 2016). I used the conceptual framework as the lens to develop the interview questions (Ravitch & Carl, 2016). As the primary investigator, I was responsible for locating study participants who met the study inclusion criteria. Also, I will not have prior professional or personal relationships with the selected study participants. For example, I was employed as special education and general education fifth-grade teacher at a U.S. public elementary school during the 2015 to 2018 school years; however, I have not been employed by a school district since that time. To

reduce potential professional or personal relationships, U.S. public elementary participants were recruited via social media, and U.S. public elementary websites. I did not send emails to my local public elementary schools.

Potential Bias

As a qualitative researcher, I must be aware of my potential biases during the entire research process. The study topic came from my passion for using student data to make instructional adjustments. However, I had to understand that the study participants may not have a similar passion for DDDM instructional adjustments, so my interview questions, follow-up questions, and probes needed to remain neutral to not influence the participants' responses (Liu, 2016; Rubin & Rubin, 2012). Also, I avoided leading questions to avoid potential bias concerning my assumptions (Merriam & Tisdell, 2016). Before conducting the interview, I reminded each participant that I wanted to obtain the candid perceptions of U.S. public elementary teachers and school leaders concerning their experiences with data teams and DDDM instructional adjustments as well as explain there is no "correct" response.

As an incentive, I provided participants a $25 Amazon e-gift card intended to improve recruitment and express thanks to participants. A $25 gift card was an appropriate amount for the time required to conduct a 60-minute qualitative interview because the amount is commensurate of an hourly rate of U.S. public elementary teachers and school leaders. The amount was not excessive to unduly influence participants' honest and in-depth responses (Patton, 2015).

Methodology

Participant Selection

The study participants were U.S. public elementary teachers in first through fifth grade and elementary school leaders who support them. Elementary school participants were selected because elementary teachers generally teach multiple content areas (e.g., reading/language arts, math, science, and social studies). Elementary teachers can provide insight into how teachers use DDDM to make instructional adjustments without specifying a particular content area (Park et al., 2017).

Selection Criteria

To be included in the study, U.S. public elementary teachers and school leaders must participate in DDDM collaboration to make instructional adjustments. DDDM collaboration meetings or data team can also go by different names (e.g., professional learning communities, communities of practice, and grade-level). Also, the data team members must conduct DDDM concerning student data to make instructional adjustments. Due to the global pandemic impact on teacher and school leader collaboration, data team meetings were generally virtually even when teachers returned to the classroom; however, a few face-to-face meetings occurred.

Participants not included in the study were secondary school, private, charter, or outside the United States. Secondary teachers (e.g., middle and high school) do not meet the selection criteria due to their focus on one content area (Cech et al., 2018). Also, U.S. elementary data team members who work in private and charter schools were excluded from the participant pool because of differences in data-use policies (USDOE, 2018).

Lastly, elementary data team members from schools outside the United States were excluded because of the potential differences in data-use purpose (Vanlommel et al., 2017).

Sampling Strategy

The specific sample size for the different qualitative studies is still debated (Baker et al., 2012; Guest et al., 2006; Mason, 2010). My study is a basic qualitative study using semistructured interviews. Guest et al. (2006) found that after 12 interviews, saturation was achieved. However, the strategy used to select participants also plays a role in the sample size. Even though purposeful sampling is used to determine participants, the participant characteristics can influence the sample size. Guest et al. (2006) stated that "if a selected group is relatively heterogeneous, the data quality is poor, and the domain of inquiry is diffuse and/or vague" (p. 79), the sample size may need to be larger than 12 participant interviews. If the participants are a "group of relatively homogeneous individuals" (p. 79), 12 interviews may be sufficient. For my study, I used typical case purposeful sampling, which "are average to understand, illustrate, and/or highlight what is typical, normal, and average" (Patton, 2015, p. 267) concerning the study phenomenon.

Data collection aims to achieve data saturation while gathering enough data to answer the study research questions. Data saturation means there are no additional new themes or patterns from the data analysis (Burkholder et al., 2016; Patton, 2015). I recruited 11 U.S. public elementary teachers and five school leaders who participate in data team meetings to make DDDM instructional adjustments (Guest et al., 2006). The selection of 10 to 14 U.S. public elementary teachers fits with the sample size suggested

by Guest et al. (2006), especially since I selected typical case sampling technique. Because there are generally only one or two school leaders per data team, I selected five school leader participants for the study. Since no new themes were introduced during the interviews, and the data gathered answered the research questions, I stopped at 11 teacher interviews and five school leader interviews (Burkholder et al., 2016; Ravitch & Carl, 2016). Due to the research questions and sampling technique, the sample size of 10 to14 teacher participants and five school leader participants gave me the flexibility to stop interviewing if my data analysis did not produce additional themes or continue until sufficient data collected until saturation was reached (Burkholder et al., 2016; Ravitch & Carl, 2016).

Recruitment Procedures

Study participants were recruited through a variety of techniques to gain typical cases throughout U.S. public elementary school data teams. For example, social media sites (e.g., FaceBook, LinkedIn), and U.S. public elementary school district websites were sources to recruit potential study participants. A participant recruitment request was emailed and posted on social media sites to gain potential participants. The request for research study participants does not guarantee that only participants that meet the inclusion criteria will respond to the social media post or email.

Potential participants were provided inclusion questions to confirm potential study participants met the inclusion requirements. Also, the social media potential participant answered the inclusion question via direct messaging and then provided their email address. Initial communication with the potential participants made via email

gained from school websites were given the inclusion criteria questions after they responded to the request for research study participants email. Email communication was used to provide participants the consent forms and set up the interview time and modality.

Instrumentation

For the study, I used semistructured interviews as the data collection instrument. Besides the interview questions, I will ask follow-up questions based on participants' responses to gain rich descriptions as well as probes to clarify responses (Rubin & Rubin, 2012). I designed the teacher interview protocol (see Appendix B) and school leader interview protocol (see Appendix C) based on the relevant literature using the TPB constructs of (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control (Ajzen, 1991) to address the research questions.

I developed the open-ended semistructured interview questions for the study. Meho (2006) indicated that both face-to-face and email interviewing have similar qualities. I created the interview protocols to be conducted via a video conferencing tool to gain an in-depth understanding of the phenomenon (Kaden, 2020). I consulted DDDM researchers and qualitative experts from other universities to improve content validity (Burkholder et al., 2016). The panel consisted of two prominent DDDM researchers, two qualitative methodologist professors, and an academic coordinator. Feedback received from the panel guided changes to the teacher and school leader interview protocols. The changes ensured the interview questions answered the research questions from the study's conceptual framework perspective (Ajzen, 1991; Burkholder et al., 2016).

The primary data collection instrument was semistructured interviews with U.S. public elementary teachers and school leaders. The interview questions were developed using the TPB constructs of (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control (see Appendices A and B) to answer the research questions (Ajzen, 1991). The attitude toward the behavior construct addresses the participants' affective and cognitive attitudes (Edwards, 1990; Millar & Tesser, 1986). Also, the perceived behavior construct addresses the participants' self-efficacy and control concerning the behavior of interest (Fishbein & Ajzen, 2009; Schüller & Kröner, 2017). Addressing each construct of the TPB in the interview protocol ensures the sufficiency of data collection to answer the research questions.

Procedures for Recruitment, Participation, and Data Collection

When I received Walden Institutional Review Board (IRB) approval, I posted my request of research study participants on social media sites and used U.S. public elementary school websites to gain school leader and teacher email addresses. I used email to schedule interviews day and time, and method (e.g., telephone or Zoom) convenient for the participant (Davis & Winter, 2019).

The average interview was approximately 56 minutes. Prior to the interview, each participant was emailed a consent form for their review and participants emailed an "I consent" response. Prior to recording, I asked permission to record the interview. I used Zoom (n.d.) audio conferencing tool and Audacity (n.d.) to record the interviews. I took notes on each participants' interview protocol pages. The audio recordings from each interview were used to accurately record the responses of the participants. Each

participant was reassured of their confidentiality and thanked for their participation in the study. A follow-up email with potential themes was emailed to each participant. A $25.00 Amazon e-gift card was sent after the interview to the email address provided by the participant as a thank you for their participation in the research study.

For the study, I interviewed 11 U.S. public elementary teachers and five school leaders. I began a search for U.S. public school leaders two days after Walden IRB approval. However, after a week I did not have enough participants using social media, so I used other recruitment options. For example, I extended my participant pool search to include U.S. public school websites to gain both school leader and teacher study participants. The additional recruitment option was necessary to gain additional participants to reach data saturation (Patton, 2015; Ravitch & Carl, 2016).

As a qualitative researcher, I was the primary data collection instrument. Data collection began after Walden IRB approval and continued until data saturation was reached (Guest et al., 2006). The goal was to conduct all interviews during a 4- to 6-week period. Data collection was accomplished between May 6 and June 4, 2021. Each interview was recorded on a computer (Zoom, n.d.) and another digital device application (Audacity, n.d.), as a back-up. Each participant was interviewed once and a follow-up email to provide each participant potential study findings, thank you note, and e-gift card.

Data Analysis Plan

A data analysis plan was developed to analyze interviews. Creswell and Creswell (2018) created a qualitative data analysis plan with steps to analyze raw data into thick descriptions of the study's themes.

1. Organize and prepare study data for analysis: Audio files from Zoom and telephone interviews were transcribed. Then, I uploaded the transcripts into MAXQDA (n.d.) qualitative software. I listened to the audio while reading the transcription to ensure accuracy. I used MAXQDA and Excel for coding and analysis.
2. Read all data: I read the data to gain a general understanding. As I read the data, I took notes concerning my perceptions.
3. Start deductive coding: During the first cycle, I used a priori codes developed from the conceptual framework and peer-reviewed literature to code the data (see Appendix D).
4. Validated data using reflective journal notes to improve trustworthiness.
5. Second cycle coding using emergent patterns: During the second cycle coding (see Appendix E), I used emergent coding patterns to develop categories (see Saldaña, 2016).
6. Validated data using reflective journal notes to improve trustworthiness.
7. Generate themes: I used the codes, emergent patterns, and categories to develop themes.
8. Validated data using reflective journal notes to improve trustworthiness.
9. Interpreting the meaning of themes: I created a narrative description of the study's themes. Also, I used tables and visuals to support the narrative description.

Discrepant Cases

A discrepant case is one that does not fit into the emerging patterns and themes (Patton, 2015). During the U.S. public teacher and school leader semistructured interviews, I encountered discrepant cases that contradict other participants' responses and a priori codes (Anney, 2014). In the study, I addressed the discrepant cases when I analyzed and discussed the theme it contradicts (Saldaña, 2016). Discrepant cases require a more thorough examination of the data. Although these cases can challenge other codes, they can generate a more thorough understanding of the study's phenomenon, as well as adding to the trustworthiness of my study (Ravitch & Carl, 2016).

Issues of Trustworthiness

To assess the rigor of qualitative research, trustworthiness components of (a) credibility, (b) dependability, (c) transferability, and (d) conformability were established (Burkholder et al., 2016). These trustworthiness components help reduce research bias, and aid in the objective analysis and presentation of the study's findings (Merriam & Tisdell, 2016). During the study, I used several techniques to address the components of trustworthiness.

Credibility

Credibility is established with rigorous research design, instruments, and data collection and is compared to internal validity in quantitative research (Ravitch & Carl, 2016). Shenton (2004) stated that credibility ensures that the data collected addresses the intention of the study. Merriam and Tisdell (2016) and Yin (2016) provided that credibility is how the researcher, who is the primary data collection instrument, collected

and analyzed the data. Hence, the findings match the "reality" of the phenomenon. Yin (2016) also stated that credibility considerations should be addressed before data collection. Thus, I used data triangulation, member checking, and reflexivity to improve the study's credibility (Ravitch & Carl, 2016; Toma, 2011).

Data Triangulation

Triangulation can include different methods, researchers, theories, and sources (Onwuegbuzie & Leech, 2007). Data triangulation in the current study will be accomplished by using multiple data collection sources (Anney, 2014). For example, the data collection sources included two different participant groups (e.g., U.S. public elementary teachers and school leaders) from different states and U.S. public elementary schools. This provided appropriate levels of triangulation because the different participant groups had different perspectives concerning the study phenomenon (Anney, 2014). For example, Schildkamp, Smith, and Blossing (2019) found school leaders felt they provided teachers enough time to conduct DDDM; however, the teachers felt the opposite. Jick (1979) mentioned the context could bring to light the different perspectives of the phenomenon. For the study, the selection of U.S. public schools throughout the U.S. (e.g., West, Midwest, and East) and different school communities (e.g., urban, suburban, and rural) allowed an examination of the phenomenon from different perspectives. This data triangulation strategy helped to minimize researcher bias in the study, gain thick descriptions, and aid in developing the themes due to the participants' different perspectives (Anney, 2014; Creswell & Creswell, 2018; Miles & Huberman, 1994).

Member Checking

I used member checking to improve the credibility of the study. During the interview, I used reflective listening (Ravitch & Carl, 2016). Since the participants were only interviewed once, member checking using reflective listening allowed me to understand the participants' perception of the phenomenon. I utilized follow-up and clarifying questions as well as repeating participants' responses to ensure I gained an in-depth understanding of the phenomenon (Patton, 2015). Member checking also was conducted in the participant follow-up emails. In the email, I presented preliminary themes and provided a quote the participants stated in the interview to confirm if I made a correct analysis (Burkholder et al., 2016; Merriam & Tisdell, 2016; Onwuegbuzie & Leech, 2007).

Reflexivity

Reflexivity refers to the researcher's position (Merriam & Tisdell, 2016) as the primary data collection instrument. I remained aware of my personal biases, assumptions, and theoretical orientation, which may influence data collection and analysis (Burkholder et al., 2016; Merriam & Tisdell, 2016). I used reflexivity, that is, self-reflection of the entire research process (Koch & Harrington, 1998; Schwandt, 2011). For example, Patton (2015) recommended reflecting on three perspectives (a) self as a researcher, (b) study participants, and (c) study reader. During the study, I used a reflexive journal to document these perspectives during the entire research process as well as document how my values and subjectivity influence my data collection and analysis (Auerbach & Silverstein, 2003).

Transferability

Transferability in qualitative research is providing descriptive findings that could be applicable to other contexts and is compared to external validity in quantitative research (Ravitch & Carl, 2016). I improved transferability with the use of thick descriptions (Merriam & Tisdell, 2016). Patton (2015) described thick description as "contextual details captures and communicates someone else's experience of the world in his or her own words" (p. 54). Thick descriptions were gained by asking in-depth interview and follow-up questions. I also provided contextual details concerning the study participants' school setting, data team participant compositions, and specific data used to make instructional adjustments (Cope, 2014). Transferability is the researcher's responsibility to provide thick, rich description of the study participants' perspectives and findings so the reader can determine transferability (Anney, 2014; Burkholder et al., 2016; Shenton, 2004). When I provided contextual details and thick descriptions, the reader can determine if the study findings can transfer to their context. Purposeful sampling to select the study participants aids in the transferability to other contexts (Anney, 2014). For the study, I used purposeful sampling and thick descriptions of the study phenomenon's participants' perspectives.

Dependability

Dependability in qualitative research indicates the data's consistency and stability (Miles & Huberman, 1994; Ravitch & Carl, 2016). The goal for dependability is that another researcher given the same data would concur with the findings (Merriam & Tisdell, 2016; Patton, 2015). I used teacher and school leader interview protocols to

ensure I was consistent with asking each participant the same interview questions (Ravitch & Carl, 2016). I improved dependability by using an audit trail (Anney, 2014; Ravitch & Carl, 2016). Merriam and Tisdell (2016) defined an audit trail as the "detail how data were collected, how categories were derived, and how decisions were made throughout the inquiry" (p. 252). Ravitch and Carl (2016) stated that dependability involves creating a data collection plan that supports the research questions and a reliable research design. During the study, I used an audit trail to document my research process. I used a research journal to document each step of the research, problems as well as decisions made (Merriam & Tisdell, 2016; Shenton, 2004).

Confirmability

Although qualitative research is subjective, the goal of confirmability is to present the data findings so that the data are confirmable by others (Anney, 2014; Burkholder et al., 2016). Confirmability is compared to objectivity in quantitative research, where confirmability attempts to "minimize bias, maximize accuracy, and report impartially" (Patton, 2015, p. 106). I will improve confirmability in the study by using triangulation, a clear audit trail, and reflexivity, as described above (Anney, 2014; Ravitch & Carl, 2016).

Ethical Procedures

During the conduct of a semistructured interview, the research participant may be deemed as either at "minimal risk" or "at risk" of harm (Burkholder et al., 2016). My research would place the study participants at minimal risk. Protection of Human Subjects (2020) defines minimal risk as "the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those

ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests" (para j). Since I did not know my study participants, I cannot guarantee there was no risk concerning their study phenomenon experiences. I also followed Walden University guidelines and gained Walden University IRB approval before conducting the study.

Even though I did not ask personal questions, U.S. public elementary teachers and school leaders may have had negative experiences with data being used to punish or negatively affect their evaluation. If a participant seemed distressed describing an experience concerning the phenomenon, I did not pressure them to continue (Rubin & Rubin, 2012). I reminded the participant that participation is voluntary, and they do not have to answer questions that make them uncomfortable.

The study data collection instruments, research journal, and audio recording must be kept secure. I will use participant numbers instead of names to maintain participant confidentiality (Ravitch & Carl, 2016; Rubin & Rubin, 2012). All study digital materials (e.g., audio recordings, data analysis tools) will be maintained on a password protected computer used only by me. All other study materials to include backup USB flash drives, interview protocols, will be stored in a fireproof lockbox. When the study is complete, all study data was removed from the computer and placed on a USB flash drive, and placed in the fireproof lockbox with other study documents and kept for five years. At the end of the five years, the paper documents will be cross shredded, and the digital data will be erased, and the USB flash drive reformatted to permanently remove data.

Summary

This chapter provided the study research method to address the purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how data team discussions influence teacher DDDM instructional adjustments. I discussed my role as the researcher, my potential biases, and the research design and rationale for using a basic qualitative approach. Then I discussed the sampling strategy, procedures for recruitment, participation, and data collection. Next, I discussed the development of the instrumentation and data analysis plan. Lastly, I discussed the issues of trustworthiness and ethical procedures. In the next chapter, I discussed the results and findings.

Chapter 4: Results

Introduction

The purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how data team discussions influence teacher DDDM instructional adjustments. The research questions addressed the perception of each participant group.

RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?

RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments?

In Chapter 4, I discuss the data collection and analysis process and study results. First, I discuss the participants' educational settings and demographics. Next, I discuss how I collected and analyzed the interview data. Then, I discuss the evidence of the trustworthiness of the study. Lastly, I discuss the study's results.

Setting

The setting for the study was U.S. public elementary schools' data teams. I received Walden IRB approval on May 3, 2021 (05-03-21-0978432), which was in the last few weeks of schools and during end-of-year testing for some participants. Social media and school email addresses were used to gain potential study participants. Social media was meant as the primary source of potential participants. However, I gained only one teacher participant using social media. Thus, the social media postings did not achieve the number of required participants.

Next, I used U.S. State Department of education websites to locate U.S. public school districts and elementary school websites to gain school leader and teacher email addresses. However, I experienced trouble finding school leader and teacher email addresses. For example, some public elementary school websites did not provide the email address or position titles. Also, I had difficulty finding school districts and school websites. To contact some potential participants, I had to complete a form instead of an email. In Table 1, I provide a breakdown of potential participants emailed.

Table 1

Breakdown of Emails Sent to Gain Study Participants

Number of states/ district	Census regions	Census subregions	School leaders emailed	Teachers emailed
2	Midwest	East North Central	18	59
1	South	East South Central	9	0
7	South	South Atlantic	266	1159
1	South	West South Central	16	0
2	West	Mountain	20	43
1	West	Pacific	11	56

The study participants came from different public elementary schools, school districts, and states. Although potential participants were contacted from various U.S. regions, I received participant responses from elementary schools in the East North Central, South Atlantic, and Mountain regions of the United States. However, all the study participants were from public elementary schools on the U.S. East coast (see Table 2). Two potential participants decided not to participate after their initial consent. Nine

potential participants showed interest in participating but did not schedule an interview. I sent potential participants two reminder emails to schedule an interview.

Table 2

Breakdown of Positive Responses to Participant Request Emails

Census subregions	School leaders	Teachers
East North Central	0	1
South Atlantic	6	18
Mountain	0	2

Additionally, the study was conducted during a global pandemic impacting schools for the past 15 months (Kaden, 2020). In March 2020, most U.S. public elementary schools switched to virtual and remote learning (Kim et al., 2021). During my interviews, participants' schools utilized a combination of face-to-face, hybrid, and remote learning during the 2020/2021 school year. The pandemic influenced how and where students learned, which impacted the quantity and quality of student data available (Bâcă, 2020). Some participants experienced issues with students logging into the virtual classroom. Also, some participants found even though students were logged into the virtual classroom, the students were not engaged in the learning activities. Most participants expressed concerns about students not completing classwork while learning virtually. They felt that when students returned to face-to-face learning, work completion improved. Since students completed district assessments and classwork at home, the elementary stakeholders questioned the validity of the data due to seeing parents in the camera helping students. Data team discussions were impacted by student data availability and validity and the global pandemic. For example, how the data teams met,

data team members, frequency of the meeting, what student data was used to make instructional adjustments, and the content area focus.

The global pandemic affected elementary stakeholders' access to student data during data team discussions; however, the participants' information did not influence my interpretation of the data. I implemented my data analysis plan as designed in Chapter 3. The global pandemic did not influence my interpretation of the participants' data. However, the study participants were affected by the global pandemic for the past 15 months, both professionally and personally; thus, the data I received were the elementary stakeholders' perceptions of data team discussions during the global pandemic. However, many participants provided accounts of how student data and data team discussion had changed due to the pandemic.

Demographics

The study participants were U.S. public elementary school leaders and teachers who participated in data team discussions. The school leader participants held different leadership positions, supporting the typical case sampling strategy (see Table 3). Many school leaders held multiple positions or were new to the position during the current school year. For example, School Leader 1 (SL1) was an assistant principal but was also the school's reading specialist. SL3 was the data coach, testing coordinator, and elementary math coordinator. Due to the pandemic, SL2 was pushed into a school as a reading specialist and tier 2/3 lead. SL4 was a new instructional resource teacher at a new school.

Although the school leaders held different positions, the focus of most data teams was reading. Each school leader (SL1–SL5) was a member of multiple data teams, which included supporting the entire school, grade-level, content areas, or individual teachers (see Appendix F). Additionally, the type of student data discussed during these teams differed. Generally, whole school data teams focused on state or district assessments, whereas the other teams focused on school-based student data. The members of the data team and data team frequency varied depending on the purpose of the meeting. For example, district assessments were given three times per year, whereas classroom-based assessment were based on the unit or standard not time based. When discussing student interventions, additional participants were included in the discussion and generally held monthly to discuss student progress to determine additional or removal of supports.

Table 3

School Leader Demographics

ID	Position	Years on data team	Years in elementary	School location	School area
SL1	Assistant principal	3	13	Mid-Atlantic	Suburban
SL2	Instructional coach/reading specialist	2	13	Mid-Atlantic	Urban
SL3	Data coach/testing coordinator/ math EC	19	19	Mid-Atlantic	Suburban
SL4	Instructional resource teacher Grades 1, 3, 5	9	9	Mid-Atlantic	Rural
SL5	Reading specialist	8	14	Mid-Atlantic	Suburban

The teacher participants (T1–T11) taught in first through fifth grade (see Table 4). Seven of the teachers taught all subjects, including math, reading, writing, science, social studies, and health. In the primary grades (kindergarten to second), teachers also taught phonics. However, four of the teachers were departmentalized. The specific content areas varied from teaching one subject, reading, to teaching multiple subjects, math, science, and social studies. Also, one teacher participant taught in a separate setting environment. Ten of the 11 teachers were mid- to late-career teachers. One teacher had only taught for 2 years. Many teachers held different positions and taught in multiple states during their careers. Many of the teacher participants were members of different data teams (see Appendix G). Each data team had different participants, and student data discussed depending on the data team purpose. For example, departmentalized teachers attended multigrade level meetings to discuss content area standards but also met with their grade-level teachers to discuss common instructional adjustments to improve student outcomes.

Table 4

Teacher Demographics

ID	Grade level/subject	Years on data team	Years in elementary	School location	School area
T1	3-5 separate setting all subjects	23	23	Southeast	Urban
T2	2nd all subjects	15	19	Mid-Atlantic	Suburban
T3	5th all subjects	13	13	Mid-Atlantic	Suburban
T4	3rd math/science/ health	15	13	Mid-Atlantic	Suburban
T5	4th reading	14	16	Mid-Atlantic	Suburban
T6	3rd reading/ social studies	2	2	Mid-Atlantic	Suburban
T7	2nd all subjects	8	8	Mid-Atlantic	Suburban
T8	5th math/science/ social studies	13	19	Southeast	Rural
T9	2nd all subjects	18	18	Southeast	Suburban
T10	1st all subjects	10	5	Mid-Atlantic	Suburban
T11	4th all subjects	7	8	Mid-Atlantic	Suburban

Data Collection

After receiving Walden University IRB approval on May 3, 2021, I posted an announcement on various social media sites to gain potential study participants on May 4, 2021. I posted on my personal social media sites and social media education groups. On May 7, 2021, I began searching for school leader email addresses. I started with conducting an internet search of "data coach," "instructional coach," "reading specialist," and "elementary school." I located several states that mentioned these job positions. I began my search for school leaders in these states.

To gain the teachers' and school leaders' email addresses, I began searching the state department of education. I searched for the list of school districts or local education agencies. Once I gained a list of the school districts, I went to the district website. On the

district website, I located a list of the elementary schools (see Table 5). In some cases, the website provided was incorrect. Also, not all elementary schools provided staff email addresses, grade-level, or position titles. In some cases, I needed to complete a form with email verification and reCAPTCHA.

Table 5

Breakdown of Emails Sent to Gain Study Participants

Number of states/ district	Census regions	Census subregions	School leaders emailed	Teachers emailed
2	Midwest	East North Central	18	59
1	South	East South Central	9	0
7	South	South Atlantic	266	1035
1	South	West South Central	16	0
2	West	Mountain	20	43
1	West	Pacific	11	56

When I received a positive response, the participant's email included a warning statement that my email came from an external source. Although I was able to gain participants using my Walden email address, I am not sure how many of my email requests were blocked or placed in a spam or junk folder. When I sent the consent form, I would include it as an attachment to an email. After a participant commented on not receiving the email, I included the consent forms as part of the email. As part of the school warning statement, it mentioned not to open documents.

Data collection began after I received Walden IRB approval. The teacher data collection period was between May 6, 2021, and June 4, 2021. One interview was conducted during Week 1. Five interviews were conducted during Week 3. Two interviews were conducted during Week 4 and three interviews during Week 5. The

school leader data collection period was between May 12, 2021, and May 27, 2021. One interview was conducted during Week 2. Three interviews were conducted during Week 3. One interview was conducted during Week 4. The average length of the 11 teacher and five school leader semistructured interviews was approximately 56 minutes, ranging from 44 minutes to 73 minutes. The semistructured interview length varied to gain an in-depth understanding of the phenomenon from each school leader and teacher perceptions of how data team discussions influenced teacher instructional adjustments.

Participants were provided an option to be interviewed via Zoom (n.d.) or telephone. All five school leader participants chose the Zoom option. However, two participants used their cell phones to conduct the interview while commuting to or from work. Three teacher participants chose the phone option, and eight chose the Zoom option. There were technical difficulties during one school leader and one teacher interview; however, once connection was reestablished, the interview continued. All participants allowed the interview to be recorded, which was done using Zoom and Audacity (n.d.) as a backup. Each participant was interviewed once. School leader follow-up emails with potential themes were emailed on May 31, 2021. Three responded that they concurred with the information provided. Teacher follow-up emails with potential themes were emailed on June 10, 2021. Eight responded that they concurred with the information provided.

There was no variation from the data collection methods described in Chapter 3. I thought I would gain more teacher participants via social media sites and groups. However, in the Chapter 3 plan, I stated open-source school websites were a method to

gain participants. I also did not anticipate the difficulty in locating school leader and teacher email addresses. I emailed 340 potential school leaders and 1193 potential teachers during the period of May 7, 2021, to June 4, 2021.

Data Analysis

Data analysis included the process of deductive and second cycle coding to identify categories and themes. I used the data analysis process to analyze raw data into thick descriptions of the study's themes based on Creswell and Creswell (2018) qualitative data analysis plan. The process was iterative and began with organizing interview audio and transcription data and using reflective journaling. After interviews were transcribed, I uploaded the transcriptions into MAXQDA (n.d.). I labeled each document with the participant identification number. Then, I conducted my first active listening of each participants' audio file while reading the transcript. I also made corrections, as needed, to the transcript. Lastly, I added the theory of planned behavior (Ajzen, 1991) a priori codes into MAXQDA (n.d.) with descriptions from my proposal.

Codes

The coding process began with a priori codes, which aligned with the conceptual framework (see Appendix D). The TPB constructs used to develop the a priori codes were affective and cognitive attitude, subjective norms, and perceived behavioral control, which included self-efficacy and control. During the first read of each interview transcript, I identified and marked the a priori codes in MAXQDA (n.d.). I also added reflective notes, in which I began to identify patterns within each of the TPB constructs.

While coding, I noticed patterns in the data, so I created subcodes to add specificity to the a priori codes (Saldaña, 2016). The first pattern concerned the TPB affective attitude construct, which represented the participants' feelings toward the phenomenon. Participants' affective attitudes were both positive and negative concerning data team discussions and instructional adjustments. The second pattern was concerning the TPB subjective norms construct, which included subcodes related to the teacher participant, administrator/coach, and colleagues. The last pattern concerned the TPB perceived behavior control construct where the participants' expressed both control and lack of control concerning student data analyzed and instructional adjustments. The self-efficacy construct included data literacy and professional development (Ajzen, 1991).

During the second cycle coding, I actively listened to the recordings and read the transcripts several times. I began adding open codes (see Appendix E) and continued adding reflective notes (Elliott, 2018; Saldaña, 2016). The open codes added clarity to the a priori codes. The study was conducted during the fifteenth month of a global pandemic, which impacted student learning and instruction and impacted data team discussions and student data available (Kaden, 2020). The open codes were grounded in the a priori codes but developed on the data provided by the participants concerning the impact the global pandemic had on the phenomenon. For example, many students continued to receive instruction virtually. The participants mentioned technology, home environments, and social-emotional learning also affected student outcomes related to cognitive attitudes and instructional adjustments (Kim et al., 2021). Also, participants mentioned they were members of various data teams, which analyzed different student data.

Categories

After identifying open codes and a priori codes in the participants' interviews, I exported the codes from MAXQDA (n.d.) into an Excel spreadsheet. I began to place the codes into categories to answer the research questions. I created separate sheets in Excel for each code and subcode to continue the iterative data analysis process. I continued to read and combine codes to create categories for each research question. Then, I combined these into one sheet for each research question to continue the iterative process. I also color coded then printed the codes and categories. Lastly, I placed the combined codes into categories, which were used to develop the study themes.

Themes

Themes for each research question were identified from the categories created during the iterative process. The iterative process involved printing out the codes and dividing them into categories. I then began looking at the categories and combining them to identify the themes. I documented the results in an Excel spreadsheet. I shuffled the codes and categories and began the process again to determine if I would get the same results. I continued this process until the iterative process resulted in the same themes and subthemes.

The iterative process resulted in research question themes and subthemes. RQ 1 (How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?) resulted in three themes and eight subthemes which are described in the Results section below. RQ 2 (How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-

based instructional adjustments?) resulted in two themes and two subthemes which are described in the Results section below.

Discrepant Data

A discrepant case is one that does not fit into the emerging patterns and themes (Patton, 2015). During the U.S. public teacher and school leader semistructured interviews, I encountered discrepant cases that contradict other participants' responses and a priori codes (Anney, 2014). I addressed the discrepant cases when I analyzed and discussed the theme it contradicts (Saldaña, 2016).

The discrepant cases involved teachers. One discrepant case was T9, who mentioned data "…can feel weaponized." Although, T4 stated, "…data is tied into our evaluations" and "the data is used to see if the teachers are teacher." However, the tone of "weaponized" was discrepant to other participants' responses concerning data.

Another discrepant case involved T3, who felt completing the data sheet as "homework." No other teacher mentioned feeling that entering data was homework. However, SL1 required their teachers to do pre-work before data meetings. SL3 mentioned they give teachers homework prior to data meetings.

Evidence of Trustworthiness

Trustworthiness components helped reduce my researcher bias, aided in my objective analysis of the data, and my presentation of the study's findings (Merriam & Tisdell, 2016). During the study, I used several techniques to address the trustworthiness components of (a) credibility, (b) dependability, (c) transferability, and (d) conformability (Burkholder et al., 2016). Trustworthiness adds to the rigor of a

qualitative study (Burkholder et al., 2016). Qualitative analysis is an iterative and reflexive process to identify patterns and themes (Wood et al., 2020).

Credibility

As stated in Chapter 3, I used data triangulation, member checking, and reflexivity to improve the study's credibility (Ravitch & Carl, 2016; Toma, 2011). U.S. public elementary school leaders and teachers in various positions, schools, and states provided data triangulation (Anney, 2014). Although I wanted to gain perspectives from participants throughout the United States, I interviewed participants from the East coast of the United States. The data triangulation strategy helped minimize researcher bias, gain thick descriptions, and aided in theme development due to the participants' different perspectives (Anney, 2014; Creswell & Creswell, 2018; Miles & Huberman, 1994).

Member checking was conducted during the interview and follow-up email. During each interview, I used reflective listening (Ravitch & Carl, 2016). I asked clarifying and follow-up questions to gain an in-depth understanding of the participants' perception of the phenomenon (Patton, 2015). I also repeated participants' responses to ensure I understood their perspectives. Two participants made corrections to my interpretations of their responses. Member checking was also conducted in the participant follow-up emails. In the email, I presented preliminary themes and provided quotes the participants stated in the interview to confirm if I made a correct analysis (Burkholder et al., 2016; Merriam & Tisdell, 2016; Onwuegbuzie & Leech, 2007). Three school leaders and eight teachers responded to the follow-up emails. They all agreed with the information provided.

As the primary data collection instrument, I remained aware of my personal biases, assumptions, and theoretical orientation during the data collection and analysis process (Burkholder et al., 2016; Merriam & Tisdell, 2016). I used self-reflection or reflexivity throughout the entire research process (Koch & Harrington, 1998; Schwandt, 2011). I reflected on myself as the researcher, the study participants, and the study reader (Patton, 2015). During the study, I used a reflexive journal to document these during the entire research process as well as document how my values and subjectivity influence my data collection and analysis (Auerbach & Silverstein, 2003). For example, the interviews were conducted at the end of a school year, which was impacted by a global pandemic.

Transferability

Thick descriptive findings, as defined by Patton (2015), are "contextual details [that] capture and communicate someone else's experience of the world in his or her own words" (p. 54). I gained thick descriptions by asking in-depth interview and follow-up questions. I also provided contextual details concerning the study participants' school setting, data team participant compositions, and specific data used to make instructional adjustments (Cope, 2014). The reader determines transferability based on the thick, rich descriptions I, the researcher, provided of the study participants' perspectives, contextual details, and findings (Anney, 2014; Burkholder et al., 2016; Shenton, 2004). Study participants were selected utilizing purposeful sampling, which aids in the transferability to other contexts (Anney, 2014). For the study, I used purposeful sampling, contextual details, and thick descriptions of the study participants' perspectives of the phenomenon.

Dependability

Data consistency and stability are indicators of qualitative research dependability, with the goal that another researcher would concur with the findings (Merriam & Tisdell, 2016; Miles & Huberman, 1994; Ravitch & Carl, 2016). I used teacher and school leader interview protocols to ensure I was consistent with asking each participant the same interview questions (Ravitch & Carl, 2016). An audit trail improved my study's dependability (Anney, 2014; Ravitch & Carl, 2016). I documented my decisions throughout the data collection and analysis process. My audit trail documented my research process and included how I collected the data, issues gaining participants, and decisions made to determine the codes, categories, and themes.

Confirmability

Although qualitative research is subjective, I took steps to improve the study's confirmability. I used triangulation, a clear audit trail, and reflexivity, as described above (Anney, 2014; Ravitch & Carl, 2016). I presented the findings in a manner that can be confirmable by others (Anney, 2014; Burkholder et al., 2016). These steps reduced my personal bias and improved the accuracy of the findings (Patton, 2015).

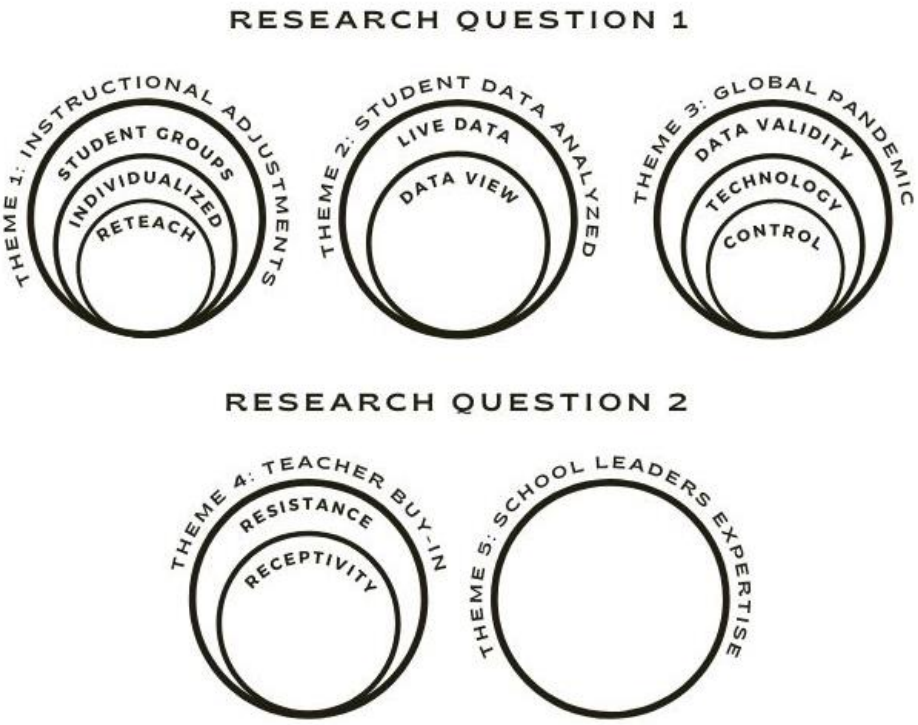
Results

The purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. During the data analysis process, I developed patterns based on the codes, and the patterns were used to develop the categories and themes. In this section, I present the findings in relation to each of the two research questions for

each participant group. Research Question 1 had three themes and eight subthemes and Research Question 2 had two themes and two subthemes (see Figure 4).

Figure 4

Research Questions, Themes, and Subthemes



Research Question 1

Research question one addressed U.S. public elementary teachers' perceptions of the phenomenon. RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments? Analysis of the teacher interviews resulted in three themes and eight subthemes based on a priori and emergent codes (see Appendix H).

Theme 1: Teacher Instructional Adjustments

Theme 1 is that elementary teachers utilized various instructional adjustments to support students' learning based on the data team discussions. Teachers discussed several different instructional adjustments during data meetings, and some teachers were "making their own decisions" as mentioned by T3, to "tweak" instruction on their own. The instructional adjustments fell into three subthemes: (a) student grouping, (b) individualized instructional adjustments, and (c) reteaching.

Grouping. Most teachers utilized student groups, which included same class or multiple classes, as an instructional adjustment technique. Both T7, a second-grade teacher, and T8, a fifth-grade teacher, created student groups based on a specific skill, not on a specific class. For example, during T7's data meetings, they "go check and see how everyone did on this standard… in order to group students" within the grade level. During assessment review "bootcamp," T8 worked with the grade-level team to "sit down and create the problems together and changed students out" during non-pandemic times. Another non-pandemic example was from T9, a second-grade teacher, who used "flex rooms at the end of the day" based on student levels on the measures of academic progress (MAP) assessment. A third-grade math teacher, T4's district required teachers to utilize small group instruction. However, they mentioned:

> I was one at the beginning that used very little small group instruction because I did not like it. I thought it took a lot of time. But this year has really focused me on how beneficial small groups are.

Teachers used small group instructional adjustments to differentiate instruction to meet students' learning needs.

Individualized Instructional Adjustments. Teachers utilized different individualized instructional adjustment techniques after data team discussions. Although teachers created lesson plans where instructional adjustments were discussed, generally, teachers "tweaked" the lesson plans to meet their students' learning needs. T1, a separate setting teacher, T3, a fifth-grade teacher, T10, a first-grade teacher, and T2 and T9, second-grade teachers, mentioned "tweak," "differentiate," or "adjustments" to their instruction after data team meeting discussions. T1 and T3 made a similar comment concerning instructional adjustments are left up to the individual teacher. T3 further added that it is "tough to think about the other teachers' data." Both T5, a fourth-grade reading teacher, and T9 mentioned the timeliness of the instructional adjustments. T5 stated, "adapt each moment," and T9 mentioned, "quick adjustments." Teachers make instructional adjustments based on observations made in the classroom. During a grade-level data team meeting, T11, a fourth-grade teacher, mentioned they discuss "how can teachers change their instruction in the moment or in the unit, and planning ahead for that different instruction." A technique used by T4, a third-grade math teacher, was to ensure students understood the skill prior to moving on instead of following the district pacing guide.

Another individualized instructional adjustment was to utilize students to support other students' learning. T2, a second-grade teacher, created a classroom where students could "feel open and free in the classroom to ask questions." Either the students or T2

could answer a student's questions. Also, T2 allowed "kids [to] be the teacher and teach the kids the strategy." T5, a fourth-grade teacher, used a similar technique allowing "students to explain things as well." While students are working on the computer and they are stuck, they are allowed to "ask a friend or they can phone a friend" in T8's, a fifth-grade math teacher, classroom. A different technique used by T4, a third-grade math teacher, was to allow students to select their student groups, which was not based on data. T4 found that "the students are working together…[and]… stopped playing around" while in the breakout rooms.

Teacher instructional adjustments addressed the different learning needs of their students. Most teachers focused on addressing the needs of struggling students; however, T2 and T9, both second-grade teachers, specifically addressed "enrichment" and "challenging" students. T9 created "individualized folders specifically for higher-level students." T11, a fourth-grade teacher, discussed their data team meetings concerning addressing the needs of enrichment and remediation:

> We look at what are the skills, who are the students, we think about steps to enrich or steps to remediate. But this is really focused on the teacher, and how they can change their instructional practices and bounce ideas off each other.

Whereas T5, a fourth-grade reading teacher, and T6, a third-grade reading teacher, addressed student expectations. T5 provided students "a variety of ways for students to respond." Also, T5 adjusted "the assignment based on the student," which is similar to T6 providing students "a different way for them to show mastery of the information."

T7, a second-grade teacher, and T6 addressed interventions based on students' learning needs, which could be one-on-one, pulled out, or in-class small groups. T6 vertical data team meetings created common strategies "because we want them to have a smooth transition across grades. We're trying to build them up to go to the next grade level." Besides grade levels, these strategies were used "across content" areas.

Reteaching. Teachers utilized reteaching as an instructional adjustment technique after data team discussions. Several teachers mentioned the struggles of incorporating reteaching into their lesson plans. Teachers need to find the time to reteach but also determine if the reteaching was successful and the next steps. "The hardest part is to find time to reteach the skills and give exit ticket" was mentioned by T2, a second-grade teacher. After conducting the reteaching, T6, a third-grade reading teacher, then "collect[ed] new data to see if those strategies are effective." T11, a fourth-grade teacher, mentioned the requirement to "follow up or reassessment, where you might identify other specific students, again, for enrichment or for support." After an assessment, T3's, a fifth-grade teacher, data team discussed student misconceptions and then utilized "small, differentiated groups and reteach the standards" and utilized "exit slips" to assess student learning. T8, a fifth-grade math teacher, utilized reteaching to differentiate reteaching based on the analysis of assessment standards.

Theme 2: Student Data Analyzed

Theme 2 is elementary teachers perceived the "live" data analyzed during data meetings positively influenced their instructional adjustments to meet students' learning needs. Generally, teachers participated in multiple data meetings, which utilized different

student data in these discussions (see Appendix G). Due to the global pandemic, data team meetings generally occurred virtually, even though most teachers were in the school. Student data can include more standardized data, which was district or state data, and "live" data, which was school or classroom data. Also, data teams can include whole school, grade-level, or vertical teams, which had multiple grade levels.

Many teachers mentioned "data sheets" during the interviews, which were used to discuss student data during data meetings. Generally, the data sheets included both standardized data and "live" data. However, the student data may not assist data teams in determining instructional adjustments. T11, a fourth-grade teacher, mentioned, "can't see where some of the strengths and where some of the weaknesses, it's almost like there's just a raw score." T3, a fifth-grade teacher, felt completing the data sheet was "homework," which builds on T7, a second-grade teacher, comment "it's not a complete comprehensive picture of every student, then we need to make sure that we also take into account teacher input and observation and other assessments as well and class work." In reference to data sheets, T4, a third-grade math teacher, remarked, "I know for a fact that a lot of the teachers think it's just another thing to put on our plate." Whereas T8, a fifth-grade math teacher, created their own data sheet and stated, "I like to put my numbers into spreadsheets" to create "a bigger picture with the numbers and the color coding," which they used to group students.

Live Data. Live data can include student work, attendance, teacher-created common assessments, running records, spelling, and observations are used during data team discussions to make instructional adjustments. T7, a second-grade teacher,

"appreciate[d] the discussion and not just looking at numbers." Many teachers indicated the data discussions influenced instructional adjustments. "So, I think that in order for these data conversations to be helpful, you need specific instructional strategies and things to try out, rather than just get your kids to this score," as mentioned by T11, a fourth-grade teacher.

Formative assessments are a type of student data mentioned by most teachers used during data team discussions. Two second-grade teachers, T2 and T9, created common assessments that were used to inform instructional adjustments. T2's data team common assessment process:

> We were talking about what formative assessment that we're giving out during collateral planning. Then we would give it; we will come back and input the data in a table so that we can all see in our agenda. Then analyze it and then we would think of our next steps.

Using a similar strategy, T9's data team common assessment process:

> We'll make a common assessment and will say we're going to assess on Thursday. Let's have it graded by Monday, so that we'll input all of our scores in a Google spreadsheet and place all the kids in the grade level of like, needs improvement, approaching mastery, mastery. Then we'll talk about so now let's take two days to remediate and enrich. Let's see how that went, so that when we talk next Tuesday and see how it's going.

However, T3, a fifth-grade teacher, felt that formative assessments are just for teachers to make their own decisions on instructional adjustments. T1, a separate setting teacher,

stated the need for a "district common assessments" for their separate setting students, which would allow them "… to see how students are doing, where their pitfalls might be, where their strengths might be. It's a really good way to measure midpoint progress," but without this data limited their data team discussions.

Other live data can be collected and used during data team meetings. For example, T2, a second-grade teacher, uses "collaborative planning, we plan as a team and then we have to reteach sometimes using the data that we have" or uses a "pretest, we'll see what skill we could just skip, we can brush past that a little bit… and look at the other areas that we need to focus on." Data can also include student attendance data. T6's, a third-grade reading teacher, data team focuses on the "whole student," including attendance to drive instruction. Whereas T9, a second-grade teacher, used social-emotional and attendance data to guide instruction and intervention supports.

Data View. Data team members and student data analyzed also were viewed differently to make instructional adjustments. During grade-level data teams, T2 and T7, both second-grade teachers, and T5, a fourth-grade reading teacher, conducted a deep analysis of student data to make instructional adjustments. T2 analyzed the questions students missed. Whereas T5 conducted a "good drill down all the way down to the bottom, and this many students and here's who they are, this is what they did." T7 discussed the "importance of looking at that by standard data ... not just looking at the number, but also going deeper... they [administration] don't take that time to go deeper into that number, they just see that one number." A data room is used to post all grade-level data at T4's, a third-grade math teacher, school. "We have our overall [data], and

then we break it down to get that data to see how our subgroups are doing." T5 had a new data team leader who viewed student data as "Let's all pull it up and let's take a look. Let's talk about the things that we're all seeing more of a group process… let's all work together towards some of these bigger holes as opposed to drilling so far down." Similarly, T11's, a fourth-grade teacher, instructional leadership team data team meetings view data from:

> So that was the bigger data. We would look at PARCC testing scores and trends… when we have those meetings, that's just looking at the past at that big data. We're not really looking at individual unit test scores amongst a grade level, just that bigger more standardized testing type things.

Student data was viewed differently when data teams included multiple grade-level members to make instructional adjustments. Student data was analyzed to determine "trends" between the grade levels according to T10, a first-grade teacher. Building on T10's comment, T5, a fourth-grade reading teacher, added, "I think one of the great things that we have because our team is vertical, is that we can see what's happening year to year." During multiple grade meetings, teachers can share academic gaps. For example, T11, a fourth-grade teacher, who created her grade-level math instruction, was able to share with her grade-level team "when I would sit down with my team just for the weekly planning, I explain they [third-grade] didn't get to fractions last year. That's why we're starting with the basics and not going into what we normally do."

Theme 3: Global Pandemic

Theme three is elementary teachers perceived the global pandemic influenced data team discussion, which resulted in more individualized instructional adjustments. The study was conducted 15 months after most schools were closed due to the global pandemic (Bâcă, 2020). During the interviews, elementary teachers described their data team experiences during the current school year 2020/2021, while mentioning changes to data team discussions and instructional adjustments due to the pandemic.

The global pandemic theme includes three subthemes concerning data validity, control, and technology. Teachers expressed their concerns about the student data validity and how this impacted their instructional adjustments. Teachers also felt they lacked control over student data analyzed during discussions by focusing on specific content areas. Lastly, teachers addressed the benefits and challenges of technology used to gain student data, which were used during data team discussions.

Data Validity. Generally, elementary teachers expressed concerns about recommending instructional adjustments during data team discussions based on student data collected during the pandemic. Since benchmarks and assessments were taken at home, teachers questioned the validity of the student data. T2, a second-grade teacher, stated that since the district benchmarks were taken at home, the students' scores were "not valid." Although students taking assessments on the computer was not new due to the pandemic, T4, a third-grade grade teacher, suggested a potential reason for teachers' data validity concerns was because they "can monitor students in school [but] can't monitor students at home." Both T5, a fourth-grade teacher, and T7, a second-grade

teacher, agreed about home distractions having a negative effect on the validity of student data. For example, T7 described students' home environment while students were taking an assessment as:

> people yelling in the background; some kids had parents helping them even though we begged them not to, and then some kids finished in five minutes. Because they're not at school, I can only do so much to a computer screen.

T6's, a third-grade teacher, data team questioned, "is it the child taking the test? Or is it the parent taking the test?" Teachers utilized student data during data teams to suggest instructional adjustments. However, "it's tough to really truly get … reliable data this year" according to T3, a fifth-grade teacher.

On the other hand, two teachers felt their student data was valid. T8, a fifth-grade math teacher, felt the data was valid for students going to six-grade. T8 used small groups with additional instructional support, and the students were face-to-face. During state testing, T8 mentioned that they could not assess their own students. A first-grade teacher, T10, also mentioned the student data was valid. T10's parents were not "helicopter parents" and allowed her to teach without interruptions, unlike T10's colleagues, who experienced "helicopter parents."

Control. Elementary teachers described areas they lacked control concerning student data collected during the pandemic, which influenced data team discussions. T10, a first-grade teacher, mentioned they had not created common formative assessments since being virtual. Also, T10 does not get district assessment data in a timely manner, which resulted in "we haven't been able to really sit down to look at the data." Teachers

do not have control over certain data. T1, a separate setting teacher, did not receive student data from the previous teacher due to the pandemic, which limited effective data meeting discussions. If teachers do not have student data, they are unable to have DDDM discussions to make instructional adjustments.

The pandemic and hybrid teaching had caused schools to modify how students are taught, which impacted the student data available for data team discussions. For example, two departmentalized teachers, who used to teach multiple sections, now taught all the students in one section. T5, a fourth-grade reading teacher, mentioned, "lower performing students would take more risks…[and]…ask more question when with homeroom." Now that all three homerooms are being instructed at once, the lower performing students "hide" and T5 found it difficult to "draw them into the conversations." T6, a third-grade reading teacher, combined homerooms and teaches 47 students with the support of the math teacher. T6 discussed students' writing with the vertical reading data team to share writing strategies but did not mention a change in student behavior with the combined classes. Combining classes had mixed results on gaining student data to utilize in data team discussions. However, when teachers lack student data, they need to independently determine students' learning gaps and determine effective instructional strategies.

Teachers' experiences with school and district policies influenced data team discussions. Since a fifth-grade teacher, T3's math and reading data meetings occurred monthly, they felt that instructional adjustments are "really left more to the individual teacher at that point." Whereas T10, a first-grade teacher, was told not to do running records and "discouraged to do guided reading virtually;" however, T10's data team

realized the need and decided to use "some of the reading resources to work within a text for our students." Similarly, T2, a second-grade teacher, stated, "we're not supposed to do any reading groups," even though they felt the students needed this instructional adjustment. Also, T5, a fourth-grade teacher, mentioned their district did not allow breakout rooms without an adult in each room, which limited instructional adjustments.

Lastly, several teachers discussed their school district told them specific content areas or standards to focus instruction. For example, a third-grade teacher, T4's district math department selected "priority standards" they were to focus on during the current school year. Similarly, T7, a second-grade teacher, stated their "county also took our standards and picked the standards that we needed to emphasize throughout the year." These restrictions limited student data to make instructional adjustments. T2, a second-grade teacher, mentioned data teams discussions focused on math, reading, and guided reading "power standards." When school districts limited content areas and standards, teachers concentrated on instructional adjustments to meet students' learning needs and did not always follow district policies.

Technology. Several teachers mentioned the technology benefits and challenges of obtaining student data to be used during data team discussions. Home environments caused issues gaining student data. T8, a fifth-grade math teacher, and T10, a first-grade teacher, mentioned students having internet issues, which caused issues logging into class. When students do not log into class or have internet issues, teachers have limited student data to utilize during data team discussions. Also, T10 mentioned "virtual learning everything is faster paced than in person," which limited instructional

adjustments. T5, a fourth-grade teacher, mentioned both students at home and at school are still learning on the computer; however, there was a difference in student outcomes. “I’m seeing definitely more work. I’m seeing more attempts, even if the attempt is not up to where I think it should be, or where my hope would be” according to T5. The pace of instruction, student work, and internet challenges added to teachers’ ability to gain student data for data team discussions.

During the global pandemic, the teachers used technology features that benefitted instruction while gathering student data to be used in data team discussions. T2, a second-grade teacher, used the computer microphone to record students’ reading. Then they were able to use students’ reading fluency strengths and gaps data during data team discussions. “I liked Zoom this year, because it allows them to annotate on my screen” was another student data collection method mentioned by T2. Additionally, T2 used technology, which “allows for certain student speech to text to get student work.” Teachers used breakout rooms to implement instructional adjustments. T4, a third-grade math teacher, allowed students to “choose who they want to work with, which is different from looking at the data was saying,” however, they have found “if I let them choose, they seem to work very well together, and I’ve seen their grades and their data go up.” On the other hand, T4, a fourth-grade reading teacher, used breakout rooms to differentiate instruction. However, since their district required an adult in each breakout room, the other grade-level teachers assisted in their instruction. Similarly, T6, a third-grade teacher, used breakout rooms and the ESOL teacher to support instructional adjustments.

Research Question 2

Research question two addressed U.S. public school leaders' perceptions of the phenomenon. RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments? During the school leader interviews, I asked questions (see Appendix C) based on the conceptual framework, which resulted in two themes and two subthemes and based on a priori and emergent codes (see Appendix I).

Theme 4: Teacher Buy-in

Theme four is school leaders perceived gaining teacher buy-in positively influenced data team discussion, which resulted in more instructional adjustments, but many school leaders experienced resistance to change. School leaders used a variety of techniques to gain teacher buy-in and mentioned barriers to gain teacher buy-in.

Resistance. School leaders experienced different attitudes when teachers utilized data to make instructional adjustments. In some cases, the school leader can see attitude changes depending on student outcomes on assessments or teacher mindset. For example, SL2, an instructional coach (IC) and reading specialist (RS), noted that "I don't have very many that come to me to do it before the school year." Instead, "I normally have to wait for them to get their benchmarks in before they're really invested in really looking at it." Teachers who do not value the importance of DDDM can impact other teachers. SL2's teachers mentioned they were missing student data. SL2 responded, "Yeah, that's because your colleagues didn't do it." When teachers have missing student data, teachers

are required to identify the student learning gaps instead of seeing the trends in students' learning.

Student data are not a new concept for teachers; however, teachers' experience can have an impact on teacher buy-in. Since veteran teachers feel they understand student data, SL1, an assistant principal (AP), stated, "the buy-in of it has taken a little bit longer with some of the veteran teachers, versus some of the new teachers who may not be set in their ways of looking at data." Although "once they [veteran teachers] started seeing the impact on student outcomes, then that really helped with the buy-in because they were like, 'Oh, now I can see why we're doing this, and I can see how it's working'." Similarly, SL5, an RS, described how individual teachers can influence a data teams' discussions:

> Individual teachers can sometimes change the dynamic of a team some, … we have one team that there's a teacher who is close to retirement age, and doing everything with technology has been really, really challenging for her. So, she is just burnt out, she's frustrated. So, for that team, things have just kind of become a little disjointed, because there's a second-year teacher on the team who is making sure that she does come with her data and is all of that. And then there's this other teacher who has sort of the other teachers say, I don't have any concerns and then the teachers will say, well, really, because in my math class, the student can't read a word problem. So, I have some reading concerns.

On the other hand, SL3, a data coach, found that teacher experience was not an indicator but the teachers' mindset of either "not going to change" or "hungry to learn" was an indicator of DDDM instructional adjustments.

Some school leaders experienced teacher resistance to "interact" with the student data to make instructional adjustments. SL3, a data coach, felt that teachers do not "use the data with fidelity," because they have to "continue to remind them, anytime you give a child an assessment, you have to go back and make that assessment." SL2, an IC/RS, made a similar statement concerning teachers' interaction with student data "because they put it in, but they didn't look at it. They don't look at it until the end of the marking period to put in grades." SL4, an instructional resource teacher (IRT), also experienced resistance. "I do think teachers tend to be a little bit resistant when you talk about data, and then you ask them to do something different… because you know, they're just so stretched so thin." In the case with SL5, an RS, they emphasized the grade-level team leaders influenced data teams interaction with student data:

> I think the teams that have a really strong team leader who gives all of their teachers a voice, kind of sets the expectation that we are coming here prepared, we are going to have our data, we're going to discuss all this, and kind of makes it known that you do not show up to these meetings, without actually having looked at your own data and having whatever students you want to bring up at those meetings.

Most school leaders interviewed were not in an administration role (e.g., principal or assistant principal). Thus, SL2 mentioned, "if they don't do it, then that's all they wrote. I

can't force anybody to do anything." Similarly, SL3 stated, "I also try to let them know I'm not here for punitive because I, technically, I'm not here for that. I'm here to do what's best for kids."

Receptivity. School leaders implemented different techniques to gain teacher buy-in or have teachers take ownership of their students' data. SL2, an IC/RS, is "trying to highlight those wins for some of the team members." Although "fresh data" is needed, SL2 encouraged teachers to "see where they came from. So, when they get their benchmarks in, typically I can get them to look at it and kind of see if there was a trend from last year to this year. Did they dip a little bit?" During SL5, an RS, data team meetings, they felt "everyone sees it as a worthwhile" and "definitely a helpful process" to identify students for additional supports. However, SL5's school district also required teachers to answer questions, which the teachers felt answering those questions were a "chore," "task to check off," and "met with eye rolls." To gain teacher ownership, SL4, an IRT, would "listen to teachers since they are in the classroom with the students" and the teachers were "very receptive and … started to see the benefits." Similarly, SL2 emphasized to teachers that they were "not tattling on them" and "a lot of them that I have worked with find a huge benefit in it."

School leaders emphasized student growth during data team discussions to support teacher instructional adjustment. For SL1, an AP, this process was multistep. During whole school and individual teacher data team meetings, SL1 and teachers shared instructional strategies, scripted reteach lessons, and then SL1 observed reteach lesson. SL1 mentioned the reteaching standards process resulted in "some pretty significant

growth, sometimes double-digit growth." SL2, an IC/RS, mentioned "growth takes time and there's just an impatience there" and continued to remind teachers "little growth is growth." SL4, an IRT, who was new to the school and position, focused on supporting the teachers by scaffolding the changes. During the pandemic, one technique was to "revamp all of our intervention groups based on who was here [and] who wasn't" and substitutes were brought in to support the intervention groups. The results were "astronomical growth that kids who've been back in the building."

One SL technique that received mixed results to gain teacher buy-in was having teachers take ownership of their data. During whole school data meeting breakout rooms SL1, an AP, found that "teachers starting to take ownership" and they "would feel comfortable that the group is working" analyzing student data without constant SL presence. On the other hand, SL3, a data coach, required the teachers to take ownership of their student data. "I will not analyze the data, and I will not speak to your data; this is your assignment" and "you need to be able to speak to me about why your kids are stagnant or declining or rising." However, SL3 felt the teachers were "shaking your head, yes and then you leave back out and you go right back to doing what you did before. Your results are going to be the same."

Theme 5: School Leaders Expertise

Theme five is school leaders used their expertise to support teachers during data team discussions, which resulted in more instructional adjustments. Pre-work, modeling, whole school to one-on-one teacher support, and student interventions were techniques used while focusing on student outcomes.

Prior to data team meeting with teachers, SL1, an AP, and SL3, data coach, required teachers to accomplish a task prior to the meeting. For instance, SL1 data meeting has a routine:

> We have the teachers look through a sample of student work. So, sometimes we looked at all the student work samples, sometimes we just put like a representative sample … and then what the teacher will do, we look at error patterns. So, we're kind of tallying to see where the error is so that the teacher can go back and pinpoint ... where's the highest leverage gap to go back and reteach.

SL3 gave teachers homework assignments so they can understand their data.

> We plan on doing the next step is always a little homework assignment. Try this with your below grade level, try this on grade level, your above grade level, your SPED or ESOL … but again, sometimes they do it, sometimes they don't.

Inconsistent teacher implementation of instructional adjustments caused SL3 to remark, "I have to tell them that when you don't, when you continue to do the same thing, you're going to get the same result." When teachers do not utilize instructional adjustments, student outcomes are impacted.

School leaders support teachers in a variety of techniques. SL1, an AP, supported teachers by sparring. Both SL1 and the teacher write a script for reteaching and "have their plan ready to go and … we practice the delivery of it." SL1 focused on reteaching the highest leverage gap. SL1 mentioned teachers struggled identifying which gap to address. However, SL1's school had participated in a data team process for the last three year and the teachers who had participated were better able to identify the leverage gap.

All school leaders utilized several techniques to model for teachers. For example, when teachers needed assistance, SL5, a RS, would "model a 20-minute word study lesson." When teachers struggled teaching virtually, SL3, a data coach, would utilize "instant modeling" by taking over virtual instruction to support the teacher. Afterward, SL3 communicates with the teacher to provide "instant feedback" in order to support both the teacher and student outcomes. Besides modeling and co-teaching, SL2, an IC/RS, would "video myself while I'm teaching and then we watch it back or stop it and talk about it." Similarly, SL4 utilized modeling to support teachers "I think if you're willing to walk the walk with them, go and model let me do this a couple of times for you. They're very receptive." During professional development, SL1, an AP, would model different educational technology applications teachers can use to make instructional adjustments.

Data team discussion are influencing teachers using data to make instructional adjustments. SL2 found that "they're starting to use strategies that they didn't use before … because the data showed that they were probably missing this." Teachers not only added the strategies to the small groups but applied these strategies to other content areas. SL1, an AP, found teachers know "how to look through student work samples, to find the trends in the error patterns," However, school leaders need to find a balance or a "combination of finding something that works [and] that's easy to implement" as mentioned by SL4, an IRT. Besides school leaders supporting teachers, SL1 found opportunities for teachers to "practice with their peers, as well, for the peers are able to give feedback on some of those strategies."

The purpose of data team discussion and instructional adjustments was to support student academic outcomes. During the global pandemic, school leaders needed to support teachers and students both academically and social emotionally when suggesting instructional adjustments. School leaders focused instructional adjustments on the academic or "leverage" gaps. SL4, an IRT, was concerned about how to address the gaps:

> I just think that data is going to be just really important to look at, to understand how are we going to tackle the gaps. How are we going to fill in the gaps for these students who are really struggling or who, for whatever reason, have not been back in the building and have not been participating virtually.

Additionally, SL4 mentioned "we do have kind of a running list of kids that we're concerned about emotionally, because obviously that impacts their learning." SL5's, an RS, school was concerned about student learning:

> We were still fully virtual in the fall. We actually took desks from the school building and brought them to some kids houses just to give them a place to sit and learn rather than their bedroom floor or something like that. So, just trying to help us figure out some of those type things that we have some concerns about, like the structure of what's going on at home.

Students' home environment was a concern for school leaders and how teachers' instructional adjustments can support students both academically and emotionally. SL3, a data coach, mentioned the home environment created "barriers" and influenced students' "mindset," which impacted their learning. During monthly meetings, SL1, an AP, feels teachers are provided "feedback on how they're doing with their instructional practices

and how the student outcomes are progressing." Teachers created exemplars for students. SL1 stated the exemplars had made "a big impact for us as we're looking at student work." The new instructional strategies implemented by SL2's, an IC/RS, teachers influenced students' outcomes. "We can better equip the teachers that we have with the tools to make them successful, but also their kids successful." School leaders supporting teachers can have a direct impact on student outcomes.

Summary

The chapter results were premised on the study's purpose, which was to explore U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. The research questions were RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments? and RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments? The interview questions are aligned with the research questions and the TPB conceptual framework. Five school leaders and 10 teachers were recruited via their school email address, and one teacher was recruited via social media. The interviews were conducted Zoom (n.d.) and phone. Although emails were sent to teachers and school leaders in multiple U.S. regions, all participants were from the east coast of the United States. The interviews were transcribed, and data was analyzed in an iterative process to gain codes, categories that resulted in the emerging themes. For research question one, three themes and eight subthemes emerged. Theme 1 is instructional adjustments with the subthemes of grouping, individualized instructional

adjustments, and reteaching. Theme 2 is student data analyzed with subthemes of live data and data view. Theme three is global pandemic with subthemes of data validity, technology, and control. Research question two had two themes, and two subthemes emerge. Theme four is teacher buy-in with resistance and receptivity as subthemes. Theme five is school leader expertise. Discrepant cases were discussed in the themes. Lastly, evidence of trustworthiness was addressed.

In Chapter 5, I present the interpretations of the findings related to DDDM literature and conceptual framework addressed in Chapter 2. I discuss the limitations of the study, recommendations for future research, and positive social change implications are also addressed in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how data team discussions influence teacher DDDM instructional adjustments (Merriam & Tisdell, 2016). The data collection method utilized video-conferencing or telephone to conduct semistructured interviews with U.S. public elementary teachers and school leaders (Kaden, 2020; Patton, 2015). The interview data were analyzed with a priori codes guided by the TPB and open coding (Ajzen, 1991; Saldaña, 2016). The knowledge gained about U.S. public elementary teachers' DDDM instructional adjustments can help support U.S. public elementary student achievement as well as inform elementary school stakeholders on how to effectively establish data team discussions to sustain teacher DDDM instructional adjustments to meet student learning needs (Jimerson, 2021; Reeves & Chiang, 2019; Schelling & Rubenstein, 2021). Since DDDM is not a prevalent practice in education, the study contributes to the gap in the literature on how different data team discussions can support instructional adjustments to improve student academic achievement (Bolhuis et al., 2019; Keuning et al., 2017; Schelling & Rubenstein, 2021).

The findings addressed the perceived influence of data team discussions on teacher DDDM instructional adjustments. The findings indicated that elementary teacher data team discussions were influenced by the availability and validity of the student data analyzed. Elementary school leaders required elementary teachers' buy-in and data

ownership to influence teacher instructional adjustments. The findings addressed the following research questions:

- RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?
- RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments?

The scope of the study included U.S. public elementary teachers and school leaders who used data teams to influence teacher DDDM instructional adjustments.

Interpretation of the Findings

The perspectives of U.S. public elementary stakeholders who participated in data team discussions using student data to make instructional adjustments were viewed through the lens of the TPB constructs of attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). The two research questions of the study resulted in five themes and 10 subthemes. An analysis of the study themes and subthemes resulted in the following findings, which aligned with the conceptual framework and literature as well as extended the literature because of the global pandemic.

Finding 1

Finding 1 was that elementary teachers perceived their instructional adjustments were negatively influenced because data teams had limited access to valid and timely student data to discuss due to the global pandemic. Finding 1 addresses RQ 1, which resulted in three themes and eight subthemes (see Figure 4). The finding aligns with and extends the current literature on how data team discussions influence teacher instructional

adjustments. Ajzen (1991) posited that participants' attitudes predicted the behavior of interest. Elementary teachers' attitude toward data team discussions influenced their instructional adjustments, which confirms the TPB.

Elementary teachers had limited student data with which to collaborate for instructional adjustments. Throughout the entire school year of 2020/2021, elementary teachers taught in various learning environments from the entire school virtual to hybrid instruction (Kuhfeld et al., 2020). Even though many elementary teachers returned to their school building, most elementary data team meetings continued virtually. During the global pandemic, elementary teachers needed to rethink how to collect student data as well as what data to utilize during data meeting discussions to make instructional adjustments.

Aligns With the Literature

The finding indicated that teachers had limited access to valid and timely student data to discuss during data team meetings to make instructional adjustments. Before the pandemic, many data team meetings focused on state and district-based assessments (Datnow & Park, 2018; Wachen et al., 2018). However, many U.S. public elementary students did not take the state assessments during school years 2019/2020 and 2020/2021 (USDOE, 2021). Andersen (2020) found that the teachers distrusted data, while Ahmed (2019) found concerns about assessment data validity. Due to the varied instructional environments, most students took their district assessments at home. Although students were familiar with taking assessments on the computer, teachers could not control the students' home environment. Even though parents were requested not to assist,

elementary teachers observed parents helping students during the assessment. Also, student assessments scores were discrepant between the standardized assessments and teacher-based assessments, which caused teachers to question the validity of the data collected.

Elementary teacher participants did not always have access to timely student data to utilize during data team discussions. Andersen (2020) found the same result, that teachers did not have access to timely student data. Teacher participants administered assessments virtually in small groups, requiring more instructional time than in-person assessment administration. Therefore, student assessment results were not always made available to elementary teacher participants in a timely manner to discuss in data team meetings to make instructional adjustments. Ahmed (2019) found similar teacher concerns about assessment timeliness. Due to the delays in student assessment data, elementary teachers needed to utilize different assessment strategies to gain valid and timely student data to make instructional adjustments.

The finding indicated that elementary teacher participants needed to rethink what student data to collect for data team discussions to make instructional adjustments. Elementary teachers began to collect "whole student" data to make instructional adjustments. Before the pandemic, Jimerson and Childs (2017), Datnow et al. (2018), and van Geel et al. (2019) addressed socioemotional, students' interests, and student home life as student data, which were taken into consideration during instructional planning. Additionally, Schelling and Rubenstein (2021) found teachers were concerned about students' social, emotional, behavioral, and home environments. According to Cardichon

(USDOE, 2021), deputy assistant secretary of K-12, Office of Planning, Evaluation, and Policy Development, “States are working hard to respond to the unique circumstances they are facing and maintain their immediate focus on supporting students’ social, emotional, and academic development” (para. 8). During the 2020/2021 school year, elementary teacher data team discussions utilized students’ socioemotional learning and student home environment to make instructional adjustments (Darling-Hammond & Hyler, 2020). The elementary teachers were concerned about the students’ socioemotional learning, which was addressed utilizing different techniques. Some school districts provided a socioemotional learning curriculum for teachers to address these concerns as well as other materials and equipment to reduce the impact of learning from home. However, “additional evidence shows that even when teachers made themselves and their instructional materials available online, many students lacked the means to access online materials from home” (Kuhfeld et al., 2020, p. 552). Furthermore, the elementary teachers felt students’ social and emotional needs had a negative effect on student learning and created learning gaps that will need to be addressed during summer school or the next school year. Elementary teachers perceived that data team discussions needed to be focused on supporting the “whole student” when making instructional adjustments to be implemented in their classrooms.

Extends the Literature

There are limited studies concerning how data team discussions influenced teachers to make instructional adjustments during a global pandemic. The findings from the current study extend the literature pertaining to elementary teacher perceptions of the

influence of data team discussions on their instructional adjustments. Elementary teacher participants perceived that there was a lack of valid and timely student data available, which negatively influenced data team discussions to make instructional adjustments. Elementary teachers implemented the following strategies to gain valid and timely student data to discuss during data team meetings to make instructional adjustments.

Elementary teacher participants overcame technology barriers to positively influence the validity and timeliness of student data to use in data team discussions to make instructional adjustments. Kuhfeld et al. (2020) identified the inequity of technology access to many portions of the United States. Some school districts provided students with technology (e.g., iPads and Chromebooks) to address technology inequities. However, a lack of reliable internet limited discussion participation and assignment completion for some students (Trust & Whalen, 2020). Elementary teacher participants also found some elementary students reduced their participation during entire grade-level virtual discussions. Teacher participants utilized virtual breakout rooms to influence student engagement and gain timely student data positively. Furthermore, teacher participants created an environment for students to support each other to improve learning outcomes. However, some struggling elementary students became disengaged in the virtual instruction and did not ask for assistance. When students did not participate in the discussions or complete assignments, teacher participants had limited student data to discuss during data meetings to make instructional decisions. Teacher participants leveraged technology and peers to engage students to gain valid and timely student data to utilize during data team discussions.

During the global pandemic, elementary teacher participants in this study used student attendance data during data team discussions to make instructional adjustments. Some elementary teacher participants mentioned elementary student attendance was an issue prior to the global pandemic. However, the global pandemic created a different type of attendance issue. Coker (2020) found most juvenile delinquents disappeared from school attendance rolls. Some elementary teacher participants stated some students did not log into the classroom for weeks. Elementary students who were not attending virtual instruction or completing assignments limited student data available for data team discussions to make instructional adjustments. Since learning environments changed throughout the school year 2020/2021, many elementary students began to return to the classroom for instruction. Elementary teacher participants noticed an increase in elementary student attendance when students were able to return to school. Cech et al. (2018) found students who attended class had improved academic outcomes. When elementary students returned to school, elementary students began to complete more classwork. But in many cases, elementary teacher participants found the student classwork was not always at the expected level. The data team discussions made instructional adjustments based on student classwork available.

Conceptual Framework

The finding addressed the teachers' feelings or affective attitude about how the data teams' discussions influence their instructional adjustments. Affective attitude is one of the constructs of the conceptual framework. Affective attitude is based on emotions and feelings about the behavior of interest (Ajzen, 1991; Edwards, 1990). Due to the

study being conducted during a global pandemic, the elementary teachers expressed affective attitudes toward data team discussions to make instructional adjustments. Teachers expressed negative attitudes over the timeliness and validity of available student data. Also, teachers expressed concerns over students' socioemotional learning. The data team discussions used socioemotional student data to make instructional adjustments.

Researchers (Bolhuis et al., 2019; Copp, 2016; Lynch et al., 2016) found that teachers needed a positive attitude to influence DDDM instructional adjustments. However, Andersen (2020) and Schelling and Rubenstein (2021) found that teachers predominantly had a negative attitude toward student data. Andersen mentioned "data overload" (p. 8), and Schelling and Rubenstein (2021) mentioned that teachers found the data "overwhelming, stressful, anxiety-provoking, embarrassing, upsetting" (p. 229). These were sentiments expressed by several participants. For example, student assessment results were "weaponized" during a whole school data meeting, which invoked similar attitudes to what Schelling and Rubenstein (2021) mentioned.

Finding 2

Finding 2 was that elementary school leaders perceived gaining teacher buy-in and data ownership positively influenced data team discussions and instructional adjustments. RQ2 resulted in two themes and two subthemes (see Figure 4). The finding aligns with and extends the current literature on data team discussions influence on teacher instructional adjustments. Also, the finding confirmed the TPB subjective norms construct influence on the behavior of interest.

Elementary school leaders participated in multiple data team discussions to support elementary teacher instructional adjustments. Throughout the entire 2020/2021 school year, many elementary school leaders participated in virtual data team discussions due to the global pandemic, even when school staff was in the school building (Kuhfeld et al., 2020). Elementary school leaders demonstrated their own data ownership and buy-in to positively influence elementary teachers. During data team discussions, elementary school leaders supported elementary teachers to positively influence teacher buy-in and data ownership.

Aligns With the Literature

The finding indicated that when school leaders gained elementary teachers' buy-in, data team discussions positively influenced teacher instructional adjustments. Yoon (2016) found school leaders influenced teacher DDDM buy-in to make instructional adjustments which helped improve student outcomes. The elementary school leaders found when elementary teachers were receptive to analyzing student data during data team discussions; the teachers were more likely to implement the instructional adjustments in their classrooms. Lasater et al. (2021) found data use buy-in must be shared between the school leaders and the teachers. The elementary school leaders demonstrated their data use buy-in during data team discussions. Several elementary school leaders modeled or "sparred" instructional adjustments based on the analysis of the student data during the data meeting. Also, after the data team discussions, the elementary school leaders supported the teachers in their classrooms to implement the instructional adjustments. Hubers et al. (2017) found a school-wide data vision positively

influenced teacher data use buy-in. Several elementary school leaders expressed their data use buy-in came from a previous school leader. Thus, elementary teachers' data use buy-in is positively influenced when a school leader models the importance of data use.

The finding indicated that when elementary teachers demonstrated data ownership during data team meetings, school leaders positively influenced teacher instructional adjustments. Bohlius et al. (2016) found when data team discussions focused on current student data, teachers' data use ownership improved instructional adjustments to solve a problem. However, Andersen (2020) found teachers used their expertise and intuition to make instructional adjustments in their classrooms. During data team discussions, the elementary school leaders expressed similar situations of teachers using their intuition instead of data to make instructional adjustments. However, Datnow et al. (2018) stated DDDM requires a balance of data and teacher intuition to make instructional adjustments. Several elementary school leaders demanded elementary teachers use their data to explain their instructional adjustments during data team discussions. To gain teacher data ownership, school leaders need to use data to recommend instructional adjustments. Still, they must also consider teacher pedagogical knowledge and knowledge of their students when making instructional adjustments.

Extends the Literature

The finding extends the literature concerning how elementary school leaders gained elementary teachers' buy-in during a global pandemic. Elementary school leaders discussed the benefits of using video conferencing and breakout rooms for data team discussions to make instructional adjustments (Kuhfeld et al., 2020). Some school leaders

mentioned the data team discussions were more productive when analyzing and discussing student data. Also, due to the convenience of video conferencing implemented during the global pandemic, some school leaders mentioned creating new district-wide data teams to support student outcomes. Furthermore, the district staff participated in school-based data team discussions because they did not need to travel between schools. Several school leaders wanted the virtual data team meetings to continue even when school staff and students returned to the school building.

Conceptual Framework

The second finding addresses the conceptual framework subjective norms construct, which are the "perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). Elementary school leaders can perceive social pressures from other data team members (Gannon-Slater et al., 2017), school culture (Jimerson & Childs, 2017), and DDDM policies (Cowie & Cooper, 2017). Elementary school leader data team discussions included whole-school, grade-level, content-area, and one-on-one. Therefore, the pressure from leaders could influence the teachers individually or as part of a data team (Ajzen, 1991). Ajzen (1991) found,

> attitudes toward the various behaviors made significant contributions to the prediction of intentions, whereas the results for subjective norms were mixed, with no clearly discernible pattern. This finding suggests that, for the behaviors considered, personal considerations tended to overshadow the influence of perceived social pressure. (p. 189)

The study finding supports Ajzen's finding concerning subjective norms. Elementary teachers' personal beliefs concerning data team discussions to make instructional adjustments were stronger than the perceived school leader social pressures. Bohlius et al. (2016) found teachers' data use attitudes, another TPB construct, influences teacher data use buy-in. For example, several elementary school leaders mentioned elementary teachers did not come to the meetings prepared to discuss their student data. Also mentioned, an elementary school leader created materials based on the data team discussion, but the teacher did not utilize these materials in their classroom.

To help increase student outcomes, elementary school leaders must gain teacher buy-in to complete the DUTOA elements and leverage points (see Figure 3; Marsh, 2012). Andersen (2020) found data team discussions resulted in the conversion of student data into instructional adjustments, but teachers did not necessarily act on this information. Thus, their participants completed the DUTOA elements of data, knowledge, and information, but did not complete the response, action, and outcomes elements or the "apply" leverage point (Marsh, 2012, p. 4). Elementary school leaders had similar results during data team discussions on the analysis of student data, which led to instructional adjustment recommendations. However, when the elementary teachers went back to their classrooms, they made instructional adjustments based on their student learning needs, not necessarily those discussed in the data meetings. Fjørtoft and Lai (2021) found when numerical and narrative (e.g., student behavior, background knowledge, and participation) were utilized, teachers data use increased, which led to improved student outcomes. Elementary school leaders felt the data team discussions

positively influenced student outcomes when discussions included various student data and not just analyzing the quantitative student data. Data team discussions must go beyond just looking at the numbers and looking at the "whole student" to improve student outcomes.

Limitations of the Study

There are several limitations of the study. The first limitation of the study was based on my ability to gain participants. Since I do not have a significant presence on social media, I only gained one participant via this data collection method. I utilized my second data collection method of open-source email addresses. Since each state, school district, and school provided various levels of access to staff positions and email addresses, I was limited in the number of teacher and school leader email addresses.

The second limitation was the participants. This limitation was the changes in data team discussions and student data available due to the global pandemic. The school learning environments changed due to the global pandemic, which caused schools to utilize various teaching strategies (e.g., face-to-face, virtual, and hybrid) (Kaden, 2020). Also, data teams met using video conferencing even though many teachers were in the schools.

Researcher bias was a possible limitation. In a qualitative study, the researcher is the data collection instrument (Burkholder et al., 2016). However, as the primary data collection tool, I need to be aware of my potential bias regarding the participants' responses. My biases can influence the questions I asked and what I heard or interpreted (Rubin & Rubin, 2012). Thirteen participants conducted the interview via Zoom and

three participants were phone interviews. I kept my verbal and nonverbal responses and probes neutral, so I did not influence the participants' responses (Rubin & Rubin, 2012). As such, the interview protocol I developed reduced my bias concerning the phenomenon when I asked open-ended objective questions aligned to the study's purpose, research questions, and conceptual framework (Patton, 2015). I used follow-up questions and probes to gain a thick description of the phenomenon (Ravitch & Carl, 2016; Rubin & Rubin, 2012). I also conducted member checking throughout the interview process to improve accuracy and reduce researcher bias (Patton, 2015; Ravitch & Carl, 2016). An audit trail was used to minimize my bias (Merriam & Tisdell, 2016).

Recommendations

Recommendation 1

The findings of the study indicated that the elementary stakeholders used a variety of student data during data team discussions to make instructional adjustments. Also, elementary stakeholders were members of different data teams, which also used additional student data during these data team discussions (see Appendices D and E). Future research can use common formative assessments as student data analyzed. Data team discussions can make the team instructional adjustment decisions to help improve student academic achievement.

Recommendation 2

The scope of the study was U.S. public elementary teachers and school leaders. However, the study's participants were from the east coast of the United States. The scope could be focused on one school district. The study participants could be extended

to include district instructional leadership, as mentioned during a school leader interview. Also, data collection could consist of data team meetings and artifacts. For example, data meetings could include at the school and district levels. Many study participants mentioned a "data sheet," which was provided to the school district. Gaining insight on the three levels of student data collection and analysis can add to the literature on improving student data analysis to make instructional adjustments to improve student learning outcomes.

Recommendation 3

The third recommendation is to use the results of this study and current DDDM literature to conduct a mixed-method study. The current study participants were to gain typical data team participants. However, the study participants generally identified themselves as "data nerds." A quantitative survey acquires more data concerning a broader population of data team stakeholders concerning data team discussions. The researcher can purposively select diverse participants based on the survey results.

Recommendation 4

The fourth recommendation is to conduct a study concerning student-involved data use. Many study participants mentioned involving students in goal setting; however, they mentioned this strategy was used inconsistently. Jimerson et al. (2016) recommended further research, and this study confirmed the need to gain an in-depth understanding of student-involved data use. The study could identify what strategies are used to involve students in their data as well as identify which strategies influenced student outcomes.

Implications

There is a gap in practice about how U.S. public elementary teachers use DDDM discussions to make instructional adjustments to support student academic achievement. The purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments. The findings indicated elementary school leaders perceived gaining teacher buy-in and data ownership positively influenced data team discussions and instructional adjustments. Also, the findings indicated elementary teachers perceived their instructional adjustments were negatively influenced because data teams had limited access to valid and timely student data to discuss due to the global pandemic.

The global pandemic created educational consequences for U.S. public elementary schools for two school years. Each U.S. public elementary school stakeholder, school, and district adapted data teams during the global pandemic. The knowledge gained from this study can inform efforts to improve data team discussions to promote positive social change through improved DDDM instructional adjustments to meet student learning needs and academic achievement.

Positive Social Change

This study contributes to the social change issue of student academic achievement. As suggested in both the literature (Kuhfeld et al., 2020; Trust & Whalen, 2020) and the study participants, elementary students will be returning to school with unknown learning gaps because of the teaching and learning environments due to the global pandemic during school years 2019 - 2021. The study findings provide insight into

supporting elementary school data team discussions to make instructional adjustments to help improve student academic achievement.

Effective data team discussions are needed to identify the high-leverage student learning gaps. Elementary stakeholders must first identify student learning gaps. Then, stakeholders identify appropriate instructional adjustments to meet the identified student learning gaps. One technique uses live student data or common formative assessments (Datnow & Park, 2018; Kippers, Wolterinck, et al., 2018; Schelling & Rubenstein, 2021). During data team discussions, elementary stakeholders can analyze the common formative assessments to determine the appropriate instructional adjustments. Then, elementary stakeholders can make instructional adjustments to support student learning needs and help improve student academic achievement. Also, lessons learned from the data team discussions that occurred during the virtual and hybrid teaching and learning environments can better prepare elementary stakeholders to address the student learning gaps and help academic achievement.

Theoretical Implications

The relevant TPB constructs are (a) attitude toward the behavior, (b) subjective norms, and (c) perceived behavioral control (Ajzen, 1991). The findings and literature (Knauder & Koschmieder, 2019; Schelling & Rubenstein, 2021; Van Gasse et al., 2020) indicated that the TPB was an appropriate conceptual framework to gain elementary stakeholder perceptions of the influence data team discussion on teacher instructional adjustments. Schelling and Rubenstein (2021) used the TPB concerning U.S. public elementary teacher perceptions of DDDM using formative assessments. The TPB was

appropriate to understand the influence of data team discussions on teacher instructional adjustments from both the elementary teacher and school leader perspectives.

Attitude Toward the Behavior

The attitude toward the behavior construct consists of affective and cognitive attitudes (Ajzen, 1991; Edwards, 1990; Millar & Tesser, 1986). Elementary stakeholders expressed the importance of using data to make instructional adjustments. Knauder and Koschmieder (2019) and Van Gasse et al. (2020) used the TPB to examine teachers analyzing student data, and the results were similar concerning the influence of teacher attitude toward DDDM instructional adjustments. Elementary stakeholders provided examples of positive student outcomes when data teams discussions focused on analyzing student data to make instructional adjustments.

Subjective Norms

The subjective norms construct relates to the social pressures to conduct the behavior of interest (Ajzen, 1991). The elementary school leaders' remarks align with what Ajzen (1991) indicated concerning social pressures did not outweigh an individual's needs. The elementary school leaders required elementary teacher buy-in to perform the behavior of interest. When elementary school leaders gained elementary teacher buy-in, the school leaders indicated this had a positive influence on data team discussions to make instructional adjustments.

Perceived Behavioral Control

The perceived behavioral control construct consists of self-efficacy and control (Ajzen, 1991). The elementary teachers expressed concerns of lack of control over

student data used during data team discussions due to the global pandemic. The elementary stakeholders demonstrated control over the instructional adjustments implemented based on the data team discussions. Elementary stakeholders expressed they had data literacy or data self-efficacy; however, most participants self-identified as "data nerds."

Recommendations for Practice

The findings of the study have the potential to improve data team discussions to influence instructional adjustments to help student academic outcomes. The global pandemic influenced the validity and access to student data. The study results indicated that when data team discussions focused on classroom data like common formative assessments, elementary stakeholders implemented more instructional adjustments, which generally improved student outcomes. Also, elementary school leaders emphasized using data instead of teachers' feelings. Schelling and Rubenstein (2021) U.S. public elementary teacher participants mentioned using student data instead of their judgments to make instructional adjustments. The recommendation for practice is for data team discussions to focus on current student data, including attendance, socioemotional, and formative assessments, and not always focus on quantitative data. Also, when analyzing student data, elementary stakeholders should dig deeper into the data to determine student misconceptions and learning gaps. The focus of data team discussions and DDDM instructional adjustments should focus on improving student understanding and not improving student assessment scores (Datnow et al., 2018; Wachen et al., 2018).

Conclusions

The purpose of this basic qualitative study was to explore U.S. public elementary teacher and school leader perceptions of how the data team discussions influence teacher DDDM instructional adjustments (Merriam & Tisdell, 2016). The repercussions of the global pandemic on U.S. public elementary schools generally resulted in student learning gaps (Kuhfeld et al., 2020; Trust & Whalen, 2020). Now more than ever, elementary stakeholders must effectively analyze student data to make the appropriate instructional adjustments to fill the learning gaps while continuing instruction on grade-level standards. Elementary stakeholders must effectively collaborate using student data to address the learning gaps to ensure students are prepared for the next grade, college, career, and beyond. Also, elementary stakeholders from all levels must take ownership of student data, including district and school stakeholders and students. Students are the "consumer" of education and thus know how best they learn and help address their learning misconceptions. U.S. public elementary school stakeholders must act on lessons learned from the data team and instructional adjustments made during the global pandemic to improve data team discussions to help support student academic achievement.

References

Abrams, L. M., Varier, D., & Mehdi, T. (2020). The intersection of school context and teachers' data use practice: Implications for an integrated approach to capacity building. *Studies in Educational Evaluation, March*, 1–13. https://doi.org/10.1016/j.stueduc.2020.100868

Ahmed, A. Y. (2019). Data-based decision making in primary schools in Ethiopia. *Journal of Professional Capital and Community*, *4*(3), 232–259. https://doi.org/10.1108/JPCC-11-2018-0031

Ajzen, I. (n.d.). *Theory of planned behavior*. https://people.umass.edu/aizen/index.html

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*(4), 665–683.

Ajzen, I. (2005). *Attitudes, personality and behaviour* (2nd ed.). Handbook of Attitudes. Open University Press.

Ajzen, I., & Sheikh, S. (2013). Action versus inaction: Anticipated affect in the theory of planned behavior. *Journal of Applied Social Psychology*, *43*(1), 155–162. https://doi.org/10.1111/j.1559-1816.2012.00989.x

Andersen, I. G. (2020). What went wrong? Examining teachers' data use and instructional decision making through a bottom-up data intervention in Denmark.

International Journal of Educational Research, *102*, 1–11. https://doi.org/10.1016/j.ijer.2020.101585

Andersson, C., & Palm, T. (2017). The impact of formative assessment on student achievement: A study of the effects of changes to classroom practice after a comprehensive professional development programme. *Learning and Instruction, 49*, 92-102. https://doi.org/10.1016/j.learninstruct.2016.12.006

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5*(2), 272–281.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471-499. https://doi.org/10.1348/014466601164939

Audacity (n.d.). *Free, open source, cross-platform audio software.* https://audacityteam.org

Auerbach, C., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis*. New York University Press.

Bâcă, E. (2020). Teaching and learning on the edge of a pandemic: Providing continuity and re-building an online learning community. *Ovidius University Annals, Series Economic Sciences*, *20*(1), 252–255.

Baker, S. E., Edwards, R., & Doidge, M. (2012). *How many qualitative interviews is enough? Expert voices and early career reflections on sampling and cases in qualitative research.* http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Barnes, N., Brighton, C. M., Fives, H., & Moon, T. R. (2019). Literacy teachers' beliefs about data use at the bookends of elementary school. *Elementary School Journal*, *119*(3), 511–533. https://doi.org/10.1086/701655

Beck, J. S., Morgan, J. J., Brown, N., Whitesides, H., & Riddle, D. R. (2019). "Asking, learning, seeking out": An exploration of data literacy for teaching. *Educational Forum*, 1–16. https://doi.org/10.1080/00131725.2020.1674438

Bertrand, M., & Marsh, J. A. (2015). Teachers' sensemaking of data and implication for equity. *American Educational Research Journal*, *52*(5), 861-893. https://doi.org/10.3102.0002831215599251

Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, *92*(1), 81–90. https://doi.org/10.1002/hrm

Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. *Assessment in Education: Principles, Policy & Practice*, *25*(6), 551–575. https://doi.org/10.1080/0969594X.2018.1441807

Bolhuis, E., Schildkamp, K., & Voogt, J. (2016). Data-based decision making in teams: Enablers and barriers. *Educational Research and Evaluation*, *22*(3-4), 213-233. https://doi.org/10.1080/13803611.2016.1247728

Bolhuis, E., Voogt, J., & Schildkamp, K. (2019). The development of data use, data

skills, and positive attitude towards data use in a data team intervention for teacher educators. *Studies in Educational Evaluation*, *60*(December 2018), 99-108. https://doi.org/10.1016/j.stueduc.2018.12.002

Brown, C., Schildkamp, K., & Hubers, M. D. (2017). Combining the best of two worlds: A conceptual proposal for evidence-informed school improvement. *Educational Research*, *59*(2), 154-172. https://doi.org/10.1080/00131881.2017.1304327

Burkholder, G. J., Cox, K. A., & Crawford, L. M. (2016). *The scholar-practitioner's guide to research design* [Vital Source e-reader]. Laureate Publishing.

Caelli, K., Ray, L., & Mill, J. (2003). 'Clear as mud': Toward greater clarity in generic qualitative research. *International Journal of Qualitative Methods*, *2*(2), 1-13. https://doi.org/10.1177/160940690300200201

Cech, T. G., Spaulding, T. J., & Cazier, J. A. (2018). Data competence maturity: Developing data-driven decision making. *Journal of Research in Innovative Teaching & Learning*, *11*(2), 139–158. https://doi.org/10.1108/JRIT-03-2018-0007

Ciampa, K., & Gallagher, T. L. (2016). Teacher collaborative inquiry in the context of literacy education: Examining the effects on teacher self-efficacy, instructional and assessment practices. *Teachers and Teaching: Theory and Practice*, *22*(7), 858–878. https://doi.org/10.1080/13540602.2016.1185821

Coker, D. C. (2020). Education, policy, and juvenile delinquents: A mixed methods investigation during COVID-19. *Journal of Education and Learning*, *10*(1), 22. https://doi.org/10.5539/jel.v10n1p22

Cope, D. G. (2014). Methods and meanings: Credibility and trustworthiness of qualitative research. *Oncology Nursing Forum*, *1*(4), 89–91. https://doi.org/10.1188/14.ONF.89-91

Copp, D. T. (2016). The impact of teacher attitudes and beliefs about large-scale assessment on the use of provincial data for instructional change. *Education Policy Analysis Archives*, *24*(109), 1–29. https://doi.org/10.14507/epaa.24.2522

Cowie, B., & Cooper, B. (2017). Exploring the challenge of developing student teacher data literacy. *Assessment in Education: Principle, Policy & Practice*, *24*(2), 147-163. https://doi.org/10.1080/0969594X.2016.1225668

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.

Darling-Hammond, L., & Hyler, M. E. (2020). Preparing educators for the time of COVID … and beyond. *European Journal of Teacher Education*, *43*(4), 457–465. https://doi.org/10.1080/02619768.2020.1816961

Datnow, A., Choi, B., Park, V., & St. John, E. (2018). Teacher talk about student ability and achievement in the era of data-driven decision making. *Teacher College Record, 120*(4), 1-34.

Datnow, A., & Hubbard, L. (2015). Teachers' use of assessment data to inform instruction: Lessons from the past and prospects for the future. *Teachers College Record, 117*(4), 1-26.

Datnow, A., & Park, V. (2018). Opening or closing doors for students? Equity and data use in schools. *Journal of Educational Change, 19*(2), 131-152.

https://doi.org/10.1007/s10833-018-9323-6

Davis, M. & Winter, R. (2019). Team teaching the active way: A case study about the student learning experiences. *Journal of Instructional Research, 8*(1), 33-38. https://doi.org/10.9743/JIR.2019.1.3

Deunk, M. I., Smale-Jacobse, A. E., de Boer, H., Doolaard, S., & Bosker, R. J. (2018). Effective differentiation Practices: A systematic review and meta-analysis of studies on the cognitive effects of differentiation practices in primary education. *Educational Research Review*, *24*(December 2017), 31–54. https://doi.org/10.1016/j.edurev.2018.02.002

Dodman, S. L., DeMulder, E. K., View, J. L., Swalwell, K., Stribling, S., Ra, S., & Dallman, L. (2019). Equity audits as a tool of critical data-driven decision making: Preparing teachers to see beyond achievement gaps and bubbles. *Action in Teacher Education, 41*(1), 4-22. https://doi.org/10.1080/01626620.2018.1536900

Doll, J., & Ajzen, I. (1992). Accessibility and stability of predictors in the theory of planned behavior. *Journal of Personality and Social Psychology, 63*(5), 754-765. https://doi.org/10.1037/0022-3514.63.5.754

Dunn, K. E., Airola, D. T., & Hayakawa, T. (2020). Pre-service teacher's efficacy, anxiety, and concerns about data and the new idea of anchored judgment. *Current Issues in Education*, *21*(1), 1–26.

Dunn, K. E., Airola, D. T., Lo, W. J., & Garrison, M. (2013a). Becoming data driven: The influence of teachers sense of efficacy on concerns related to data-driven

decision making. *Journal of Experimental Education, 81*(2), 222-241. https://doi.org/10.1080/00220973.2012.699899

Dunn, K. E., Airola, D. T., Lo, W. J., & Garrison, M. (2013b). What teachers think about what they can do with data: Development and validation of the data driven decision-making efficacy and anxiety inventory. *Contemporary Educational Psychology, 38*(1), 87-98. https://doi.org/10.1016/j.cedpsych.2012.11.002

Dunn, K. E., Skutnik, A., Patti, C., & Sohn, B. (2019). Disdain to acceptance: Future teachers' conceptual change related to data-driven decision making. *Action in Teacher Education, 41*(3), 193-211. https://doi.org/10.1080/01626620.2019.1582116

Ebbeler, J., Poortman, C. L., Schildkamp, K., & Pieters, J. M. (2016). Effects of a data use intervention on educators' use of knowledge and skills. *Studies in Educational Evaluation, 48,* 19–31. https://doi.org/10.1016/j.stueduc.2015.11.002

Ebbeler, J., Poortman, C. L., Schildkamp, K., & Pieters, J. M. (2017). The effects of a data use intervention on educators' satisfaction and data literacy. *Educational Assessment, Evaluation and Accountability*, *29*(1), 83–105. https://doi.org/10.1007/s11092-016-9251-z

Edwards, K. (1990). The interplay of affect and cognition in attitude formation and change. *Journal of Personality and Social Psychology*, *59*(2), 202–216. https://doi.org/10.1037/0022-3514.59.2.202

Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report*, *23*(11), 2850-2861. https://doi.org/10.46743/2160-

3715/2018.3560

Ellis, T. J., & Levy, Y. (2009). Towards a guide for novice researchers on research methodology: Review and proposed methods. *Issues in Informing Science and Information Technology*, 6, *323-337.* https://doi.org/10.28945/3325

Ezzani, M. D. (2020). Principal and teacher instructional leadership: A cultural shift. *International Journal of Educational Management*, *34*(3), 576–585. https://doi.org/10.1108/IJEM-02-2019-007

Faber, J. M., Glas, C. A. W., & Visscher, A. J. (2018). Differentiated instruction in a data-based decision-making context. *School Effectiveness and School Improvement*, *29*(1), 43–63. https://doi.org/10.1080/09243453.2017.1366342

Farley-Ripple, E. N., & Buttram, J. L. (2014). Developing collaborative data use through professional learning communities: Early lessons from Delaware. *Studies in Educational Evaluation*, *42*, 41–53. https://doi.org/10.1016/j.stueduc.2013.09.006

Farley-Ripple, E. N., Jennings, A. S., & Buttram, J. (2019). Toward a framework for classifying teachers' use of assessment data. *AERA Open*, *5*(4), 1–18. https://doi.org/10.1177/2332858419883571

Fishbein, M., & Ajzen, I. (2009). *Predicting and changing behavior: The reasoned action approach* [electronic version]. Psychology Press.

Fjørtoft, H., & Lai, M. K. (2021). Affordances of narrative and numerical data: A social-semiotic approach to data use. *Studies in Educational Evaluation*, *69*. https://doi.org/10.1016/j.stueduc.2020.100846

Flannery, K. B., & Kato, M. M. (2017). Implementation of SWPBIS in high school: Why

is it different? *Preventing School Failure*, *61*(1), 69–79. https://doi.org/10.1080/1045988X.2016.1196644

Francis, J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J. M., Foy, R., Kaner, E. F. S., Smith, L., & Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behavior: A manual for health services researchers*. Centre for Health Services Research, University of Newcastle upon Tyne. https://openaccess.city.ac.uk/id/eprint/1735

Gannon-Slater, N., La Londe, P. G., Crenshaw, H. L., Evans, M. E., Greene, J. C., & Schwandt, T. A. (2017). Advancing equity in accountability and organizational cultures of data use. *Journal of Educational Administration*, *55*(4), 361–375. https://doi.org/10.1108/JEA-09-2016-0108

Garner, B., Thorne, J. K., & Horn, I. S. (2017). Teachers interpreting data for instructional decisions: Where does equity come in? *Journal of Educational Administration*, *55*(4), 407–426. https://doi.org/10.1108/JEA-09-2016-0106

Goddard, Y. L., & Kim, M. (2018). Examining connections between teacher perceptions of collaboration, differentiated instruction, and teacher efficacy. *Teachers College Record*, *120*(1), 1–24.

Green, J. L., Schmitt-Wilson, S., Versland, T., Kelting-Gibson, L., & Nollmeyer, G. E. (2016). Teachers and data literacy: A blueprint for professional development to foster data driven decision making. *Journal of Continuing Education and Professional Development*, *3*(1), 14–32. https://doi.org/10.7726/jcepd.2016.1002

Gretter, S., & Yadav, A. (2018). What do preservice teachers think about teaching media

literacy? An exploratory study using the theory of planned behavior. *Journal of Media Literacy Education*, *10*(1), 104–123. https://doi.org/10.23860/jmle-2018-10-1-6

Guba, E. G. (1981). Criteria for assessing naturalistic inquiries. *Education Communication and Technology*, *29*(2), 75–91.

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

Gummer, E. S., & Mandinach, E. B. (2015). Building a conceptual framework for data literacy. *Teachers College Record*, *117*(4), 1–22. https://doi.org/10.1097/01.HJ.0000470891.91317.17

Harvey, H., & Ohle, K. (2018). What's the purpose? Educators' perceptions and use of a state-mandated kindergarten entry assessment. *Education Policy Analysis Archives*, *26*(142), 1–33. https://doi.org/10.14507/epaa.26.3877

Hoogland, I., Schildkamp, K., van der Kleij, F., Heitink, M., Kippers, W., Veldkamp, B., & Dijkstra, A. M. (2016). Prerequisites for data-based decision making in the classroom: Research evidence and practical illustrations. *Teaching and Teacher Education*, *60*, 377–386. https://doi.org/10.1016/j.tate.2016.07.012

Hubers, M. D., Poortman, C., Schildkamp, K., & Pieters, J. M. (2019). Spreading the word: Boundary crossers building collective capacity for data use. *Teachers College Record*, *121*(1), 1–45.

Hubers, M. D., Schildkamp, K., Poortman, C. L., & Pieters, J. M. (2017). The quest for

sustained data use: Developing organizational routines. *Teaching and Teacher Education*, *67*, 509–521. https://doi.org/10.1016/j.tate.2017.07.007

Huguet, A., Farrell, C. C., & Marsh, J. A. (2017). Light touch, heavy hand: Principals and data-use PLCs. *Journal of Educational Administration*, *55*(4), 376–389. https://doi.org/10.1108/JEA-09-2016-0101

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, *24*(4), 602–611. https://doi.org/10.2307/2392366

Jimerson, J. B., & Childs, J. (2017). Signal and symbol: How state and local policies address data-informed practice. *Educational Policy*, *31*(5), 584–614. https://doi.org/10.1177/0895904815613444

Jimerson, J. B., Cho, V., Scroggins, K. A., Balial, R., & Robinson, R. R. (2019). How and why teachers engage students with data. *Educational Studies*, *45*(6), 667–691. https://doi.org/10.1080/03055698.2018.1509781

Jimerson, J. B., Cho, V., & Wayman, J. C. (2016). Student-involved data use: Teacher practices and considerations for professional learning. *Teaching and Teacher Education*, *60*, 413–424. https://doi.org/10.1016/j.tate.2016.07.008

Jimerson, J. B., Garry, V., Poortman, C. L., & Schildkamp, K. (2021). Implementation of a collaborative data use model in a United States context. *Studies in Educational Evaluation*, *6*. https://doi:10.1016/j.stueduc.2020.100866

Jimerson, J. B., & Wayman, J. C. (2015). Professional learning for using data: Examining teacher needs & supports. *Teachers College Record*, *117*(April), 1–36.

Kaden, U. (2020). COVID-19 school closure-related changes to the professional life of a K–12 teacher. *Education Sciences*, *10*(165), 1-13. https://doi.org/10.3390/educsci10060165

Kennedy, M. M. (2016). How does professional development improve teaching? *Review of Educational Research*, *86*(4), 945–980. https://doi.org/10.3102/0034654315626800

Keuning, T., Van Geel, M., & Visscher, A. (2017). Why a data-based decision-making intervention works in some schools and not in others. *Learning Disabilities Research & Practice*, *32*(1), 32–45. https://doi.org/10.1111/ldrp.12124

Keuning, T., Van Geel, M., Visscher, A., Fox, J.-P., & Moolenaar, N. M. (2016). The transformation of schools' social networks during a data-based decision making reform. *Teachers College Record*, *118*(9), 1–33.

Kim, D., Wortham, S., Borowiec, K., Yatsu, D. K., Ha, S., Carroll, S., Wang, L., & Kim, J. (2021). Formative education online: Teaching the whole person during the global COVID-19 pandemic. *AERA Open*, *7*(1), 1–12. https://doi.org/10.1177/23328584211015229

Kippers, W. B., Poortman, C. L., Schildkamp, K., & Visscher, A. J. (2018). Data literacy: What do educators learn and struggle with during a data use intervention? *Studies in Educational Evaluation*, *56*, 21–31. https://doi.org/10.1016/j.stueduc.2017.11.001

Kippers, W. B., Wolterinck, C. H. D., Schildkamp, K., Poortman, C. L., & Visscher, A. J. (2018). Teachers' views on the use of assessment for learning and data-based

decision making in classroom practice. *Teaching and Teacher Education*, *75*, 199–213. https://doi.org/10.1016/j.tate.2018.06.015

Knauder, H., & Koschmieder, C. (2019). Individualized student support in primary school teaching: A review of influencing factors using the Theory of Planned Behavior (TPB). *Teaching and Teacher Education*, *77*, 66–76. https://doi.org/10.1016/j.tate.2018.09.012

Koch, T., & Harrington, A. (1998). Reconceptualizing rigour: The case for reflexivity. *Journal of Advanced Nursing*, *28*(4), 882–890. https://doi.org/10.1046/j.1365-2648.1998.00725.x

Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher*, *49*(8), 549–565. https://doi.org/10.3102/0013189X20965918

Lai, M. K., & McNaughton, S. (2016). The impact of data use professional development on student achievement. *Teaching and Teacher Education*, *60*, 434–443. https://doi.org/10.1016/j.tate.2016.07.005

Lasater, K., Albiladi, W. S., Davis, W. S., & Bengtson, E. (2019). The data culture continuum: An examination of school data cultures. *Educational Administration Quarterly*, https://doi.org/10.1177/0013161x19873034

Lasater, K., Bengtson, E., & Albiladi, W. S. (2021). Data use for equity?: How data practices incite deficit thinking in schools. *Studies in Educational Evaluation*, *69*, 1–10. https://doi.org/10.1016/j.stueduc.2020.100845

Liu, L. (2016). Using generic inductive approach in qualitative educational research: A case study analysis. *Journal of Education and Learning*, *5*(2), 129–135. https://doi.org/10.5539/jel.v5n2p129

Lockton, M., Weddle, H., & Datnow, A. (2019). When data don't drive: Teacher agency in data use efforts in low-performing schools. *School Effectiveness and School Improvement*, 1–23. https://doi.org/10.1080/09243453.2019.1647442

Looney, A., Cumming, J., van Der Kleij, F., & Harris, K. (2018). Reconceptualising the role of teachers as assessors: Teacher assessment identity. *Assessment in Education: Principles, Policy & Practice*, *25*(5), 442–467. https://doi.org/10.1080/0969594X.2016.1268090

Lynch, D., Smith, R., Provost, S., & Madden, J. (2016). Improving teaching capacity to increase student achievement: The key role of data interpretation by school leaders. *Journal of Educational Administration*, *54*(5), 575–592. https://doi.org/10.1108/JEA-10-2015-0092

Mandinach, E. B., & Gummer, E. S. (2013). A systemic view of implementing data literacy in educator preparation. *Educational Researcher*, *42*(1), 30–37. https://doi.org/10.3102/0013189x12459803

Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate: Laying out the skills, knowledge, and dispositions. *Teaching and Teacher Education*, *60*, 366–376. https://doi.org/10.1016/j.tate.2016.07.011

Mandinach, E. B., & Jackson, S. S. (2012). *Transforming teaching and learning through data-driven decision making*. Corwin.

Mandinach, E. B., & Jimerson, J. B. (2016). Teachers learning how to use data: A synthesis of the issues and what is known. *Teaching and Teacher Education*, *60*, 452–457. https://doi.org/10.1016/j.tate.2016.07.009

Mandinach, E. B., & Schildkamp, K. (2020). Misconceptions about data-based decision making in education: An exploration of the literature. *Studies in Educational Evaluation, September 2019*, 1–10. https://doi.org/10.1016/j.stueduc.2020.100842

Marsh, J. A. (2012). Interventions promoting educators' use of data: Research insights and gaps. *Teachers College Record*, *114*(11), 1–48.

Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, *11*(3), article 8. http://www.qualitative-research.net/index.php/fqs

MAXQDA. (n.d.). *The art of data analysis.* https://www.maxqda.com

McMaster, K. L., Lembke, E. S., Shin, J., Poch, A. L., Smith, R. A., Jung, P.-G., Allen, A. A., & Wagner, K. (2020). Supporting teachers' use of data-based instruction to improve students' early writing skills. *Journal of Educational Psychology*, *112*(1), 1–21. https://doi.org/10.1037/edu0000358

Meho, L. I. (2006). E-mail interviewing in qualitative research: A methodological discussion. *Journal of the American Society for Information Science and Technology*, *57*(10), 1284–1295. https://doi.org/10.1002/asi.20416

Merk, S., Poindl, S., Wurster, S., & Bohl, T. (2020). Fostering aspects of pre-service teachers' data literacy: Results of a randomized controlled trial. *Teaching and Teacher Education*, *91*, 1–9. https://doi.org/10.1016/j.tate.2020.103043

Merriam, S. B., & Grenier, R. S. (2019). *Qualitative research in practice: Examples for discussion and analysis* (2nd). Jossey-Bass.

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

Miles, M., & Huberman, A. M. (1994). *Analyzing qualitative data*. Sage.

Millar, M. G., & Tesser, A. (1986). Effects of affective and cognitive focus on the attitude-behavior relation. *Journal of Personality and Social Psychology*, *51*(2), 270–276. https://doi.org/10.1037/0022-3514.51.2.270

Miloş, L. R., Chidmi, B., & Miloş, M. C. (2019). Does data matter? Statewide longitudinal data systems and student performance in the U.S. *Applied Economics Letters*, *26*(16), 1369–1372. https://doi:10.1080/13504851.2018.1558342

Miranda, C. P., & Jaffe-Walter, R. (2018). When data use devolves into deficit talk: Creating the conditions for productive teacher collaboration using data. *Journal of Cases in Educational Leadership*, *21*(4), 3–11. https://doi.org/10.1177/1555458917751567

Moosa, V., & Shareefa, M. (2019). The impact of teachers' experience and qualification on efficacy, knowledge and implementation of differentiated instruction. *International Journal of Instruction*, *12*(2), 587–604. https://doi.org/10.29333/iji.2019.12237a

Nations Report Card. (n.d.-a). NAEP mathematics report card https://www.nationsreportcard.gov/math_2017/nation/achievement/?grade=4

Nations Report Card. (n.d.-b). NAEP reading report card.

https://www.nationsreportcard.gov/reading_2017/nation/achievement/?grade=4

Nations Report Card. (n.d.-c). How did U.S. students perform on the most recent assessments? https://www.nationsreportcard.gov/

O'Brien, S., McNamara, G., O'Hara, J., & Brown, M. (2019). Irish teachers, starting on a journey of data use for school self-evaluation. *Studies in Educational Evaluation, 60*(March 2019), 1–13. https://doi.org/10.1016/j.stueduc.2018.11.001

Onwuegbuzie, A. J., & Leech, N. L. (2007). Validity and qualitative research: An oxymoron? *Quality and Quantity*, *41*(2), 233–249. https://doi.org/10.1007/s11135-006-9000-3

Park, V., & Datnow, A. (2017). Ability grouping and differentiated instruction in an era of data-driven decision making. *American Journal of Education*, *123*(2), 281–306. https://doi.org/10.1086/689930

Park, V., St. John, E., Datnow, A., & Choi, B. (2017). The balancing act: Student classroom placement routines and the uses of data in elementary schools. *Journal of Educational Administration*, *55*(4), 390–406. https://doi.org/10.1108/JEA-09-2016-0098

Pastore, S., & Andrade, H. L. (2019). Teacher assessment literacy: A three-dimensional model. *Teaching and Teacher Education*, *84*, 128–138. https://doi.org/10.1016/j.tate.2019.05.003

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

Poortman, C. L., & Schildkamp, K. (2016). Solving student achievement problems with a

data use intervention for teachers. *Teaching and Teacher Education*, *60*, 425–433. https://doi.org/10.1016/j.tate.2016.06.010

Prenger, R., & Schildkamp, K. (2018). Data-based decision making for teacher and student learning: A psychological perspective on the role of the teacher. *Educational Psychology*, *38*(6), 734–752. https://doi.org/10.1080/01443410.2018.1426834

Protection of Human Subjects, 45 C.F.R. §46.102 (2020). https://ecfr.federalregister.gov/current/title-45/subtitle-A/subchapter-A/part-46/subpart-A/section-46.102

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

Reeves, T. (2017). School level and other differences in Illinois teachers' use of data to inform instruction. *Mid-Western Educational Researcher*, *29*(4), 332–354.

Reeves, T. D., & Chiang, J. L. (2019). Effects of an asynchronous online data literacy intervention on pre-service and in-service educators' beliefs, self-efficacy, and practices. *Computers and Education*, *136*(January 2018), 13–33. https://doi.org/j.compedu.2019.03.004

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed.). SAGE.

Ruble, L. A., McGrew, J. H., Wong, W. H., & Missall, K. N. (2018). Special education teachers' perceptions and intentions toward data collection. *Journal of Early Intervention*, *40*(2), 177–191. https://doi.org/10.1177/1053815118771391

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE Publications.

Sandberg, T., Hutter, R., Richetin, J., & Conner, M. (2016). Testing the role of action and inaction anticipated regret on intentions and behaviour. *British Journal of Social Psychology, 55*(3), 407-425. https://doi.org/10.1111/bjso.12141

Schelling, N., & Rubenstein, L. D. (2021). Elementary teachers' perceptions of data-driven decision-making. *Educational Assessment, Evaluation and Accountability, 33,* 317-344. https://doi.org/10.1007/s11092-021-09356-w

Schildkamp, K. (2019). Data-based decision-making for school improvement: Research insights and gaps. *Educational Research*, *61*(3), 257–273. https://doi.org/10.1080/00131881.2019.1625716

Schildkamp, K., & Datnow, A. (2020). When data teams struggle: Learning from less successful data use efforts. *Leadership and Policy in Schools,* 1–20. https://doi:10.1080/15700763.2020.1734630

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education*, *26*(3), 482–496. https://doi.org/10.1016/j.tate.2009.06.007

Schildkamp, K., & Poortman, C. (2015). Factors influencing the functioning of data teams. *Teachers College Record*, *117*(4), 1–42.

Schildkamp, K., Poortman, C. L., Ebbeler, J., & Pieters, J. M. (2019). How school leaders can build effective data teams: Five building blocks for a new wave of data-informed decision making. *Journal of Educational Change*, *20*(3), 283–325.

https://doi.org/10.1007/s10833-019-09345-3

Schildkamp, K., Poortman, C. L., & Handelzalts, A. (2016). Data teams for school improvement. *School Effectiveness and School Improvement*, *27*(2), 228–254. https://doi.org/10.1080/09243453.2015.1056192

Schildkamp, K., Poortman, C., Luyten, H., & Ebbeler, J. (2017). Factors promoting and hindering data-based decision making in schools. *School Effectiveness and School Improvement*, *28*(2), 242–258. https://doi.org/10.1080/09243453.2016.1256901

Schildkamp, K., Smit, M., & Blossing, U. (2019). Professional development in the use of data: From data to knowledge in data teams. *Scandinavian Journal of Educational Research*, *63*(3), 393–411. https://doi.org/10.1080/00313831.2017.1376350

Schüller, E. M., & Kröner, S. (2017). A pink dog with 20 legs - An explorative study on the beliefs of elementary school children explaining engagement in artistic leisure activities. *Journal for Educational Research Online*, *9*(2), 183–204.

Schwandt, T. A. (2011). Reflexivity. In *The SAGE dictionary of qualitative inquiry* (p. 261). SAGE Publications. https://dx.doi.org/10.4135/9781412986281

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63-75. https://doi.org/10.3233/EFI-2004-22201

Steinmetz, H., Knappstein, M., Ajzen, l., Schmidt, P., & Kabst, R. (2016). How effective are behavior change interventions based on the theory of planned behavior? *Zeitschrift fur Psychologie*, *224*(3), 216-233. https://doi.org/10.1027/2151-2604/a000255

Sun, J., Przybylski, R., & Johnson, B. J. (2016). A review of research on teachers' use of student data: From the perspective of school leadership. *Educational Assessment, Evaluation and Accountability*, *28*(1), 5–33. https://doi.org/10.1007/s11092-016-9238-9

Toma, J. D. (2011). Approaching rigor in applied qualitative research. In C. F. Conrad & R. C. Serlin (Eds.), *The SAGE handbook for research in education: Pursuing ideas as the keystone of exemplary inquiry* (pp. 263-280). SAGE Publications. https://dx.doi.org/10.4135/9781483351377

Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the COVID-19 pandemic. *Journal of Technology and Teacher Education*, *28*(2), 189-199.

Uiterwijk-Luijk, L., Krüger, M., Zijlstra, B., & Volman, M. (2017). The relationship between psychological factors and inquiry-based working by primary school teachers. *Educational Studies*, *43*(2), 147–164. https://doi.org/10.1080/03055698.2016.1248901

U.S. Department of Education. (2001). No child left behind act. https://www2.ed.gov/policy/elsec/leg/esea02/index.html

U.S. Department of Education. (2018). Every student succeeds act. https://www.ed.gov/essa

U.S. Department of Education (2021, February 22). U.S. Department of Education releases guidance to states on assessing student learning during the pandemic.

https://www.ed.gov/news/press-releases/us-department-education-releases-guidance-states-assessing-student-learning-during-pandemic

Van Gasse, R., Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2017a). Individual, co-operative and collaborative data use: A conceptual and empirical exploration. *British Educational Research Journal*, *43*(3), 608–626. https://doi.org/10.1002/berj.3277

Van Gasse, R., Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2017b). The impact of collaboration on teachers' individual data use. *School Effectiveness and School Improvement*, *28*(3), 489–504. https://doi.org/10.1080/09243453.2017.1321555

Van Gasse, R., Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2017c). Unravelling data use in teacher teams: How network patterns and interactive learning activities change across different data use phases. *Teaching and Teacher Education*, *67*, 550–560. https://doi.org/10.1016/j.tate.2017.08.002

Van Gasse, R., Vanlommel, K., Vanhoof, J., & Van Petegem, P. (2020). Teacher interactions in taking action upon pupil learning outcome data: A matter of attitude and self-efficacy? *Teaching and Teacher Education*, *89*, 1-9. https://doi.org/10.1016/j.tate.2019.102989

van Geel, M., Keuning, T., Frèrejean, J., Dolmans, D., van Merriënboer, J., & Visscher, A. J. (2019). Capturing the complexity of differentiated instruction. *School Effectiveness and School Improvement*, *30*(1), 51–67. https://doi.org/10.1080/09243453.2018.1539013

van Geel, M., Keuning, T., Visscher, A. J., & Fox, J.-P. (2016). Assessing the effects of a

school-wide data-based decision-making intervention on student achievement growth in primary schools. *American Educational Research Journal*, *53*(2), 360–394. https://doi.org/10.3102/0002831216637346

van Geel, M., Keuning, T., Visscher, A., & Fox, J. -P. (2017). Changes in educators' data literacy during a data-based decision making intervention. *Teaching and Teacher Education*, *64*, 187–198. https://doi.org/10.1016/j.tate.2017.02.015

van Geel, M., Visscher, A. J., & Teunis, B. (2017). School characteristics influencing the implementation of a data-based decision making intervention. *School Effectiveness and School Improvement*, *28*(3), 443–462. https://doi.org/10.1080/09243453.2017.1314972

Vanlommel, K., & Schildkamp, K. (2018). How do teachers make sense of data in the context of high-stakes decision making? *American Educational Research Journal*, *56*(3), 792–821. https://doi.org/10.3102/0002831218803891

Vanlommel, K., Van Gasse, R., Vanhoof, J., & Van Petegem, P. (2017). Teachers' decision-making: Data based or intuition driven? *International Journal of Educational Research*, *83*(2017), 75–83. https://doi.org/10.1016/j.ijer.2017.02.013

Vanlommel, K., Van Gasse, R., Vanhoof, J., & Van Petegem, P. (2021). Sorting pupils into their next educational track: How strongly do teachers rely on data-based or intuitive processes when they make the transition decision? *Studies in Educational Evaluation*, *69*, 1–10. https://doi.org/10.1016/j.stueduc.2020.100865

Voelkel, R. H., & Chrispeels, J. H. (2017). Understanding the link between professional

learning communities and teacher collective efficacy. *School Effectiveness and School Improvement, 28*(4), 505–526. https://doi.org/10.1080/09243453.2017.1299015

Voet, M., & De Wever, B. (2020). How do teachers prioritize instructional goals? Using the theory of planned behavior to explain goal coverage. *Teaching and Teacher Education*, *89*, 1–9. https://doi.org/10.1016/j.tate.2019.103005

Wachen, J., Harrison, C., & Cohen-Vogel, L. (2018). Data use as instructional reform: Exploring educators' reports of classroom practice. *Leadership and Policy in Schools*, *17*(2), 296–325. https://doi.org/10.1080/15700763.2016.1278244

Walker, D. A., Reeves, T. D., & Smith, T. J. (2018). Confirmation of the data-driven decision-making efficacy and anxiety inventory's score factor structure among teachers. *Journal of Psychoeducational Assessment*, *36*(5), 477–491. https://doi.org/10.1177/0734282916682905

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, *16*(4), 409–421. https://doi.org/10.1287/orsc.1050.0133

Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of Educational Psychology*, *71*(1), 3–25. https://doi.org/10.1037/0022-0663.71.1.3

Will, K. K., McConnell, S. R., Elmquist, M., Lease, E. M., & Wackerle-Hollman, A. (2019). Meeting in the middle: Future directions for researchers to support educators' assessment literacy and data-based decision making. *Frontiers in Education*, *4*(106), 1–8. https://doi.org/10.3389/feduc.2019.00106

Wood, L. M., Sebar, B., & Vecchio, N. (2020). Application of rigour and credibility in qualitative document analysis: Lessons learnt from a case study. *The Qualitative Report*, *25*(2), 456-470. https://doi.org/10.46743/2160-3715/2020.4240

Xu, Y., & Brown, G. T. L. (2016). Teacher assessment literacy in practice: A reconceptualization. *Teaching and Teacher Education*, *58*, 149–162. https://doi.org/10.1016/j.tate.2016.05.010

Yan, Z., & Cheng, E. C. K. (2015). Primary teachers' attitudes, intentions and practices regarding formative assessment. *Teaching and Teacher Education*, *45*, 128–136. https://doi.org/10.1016/j.tate.2014.10.002

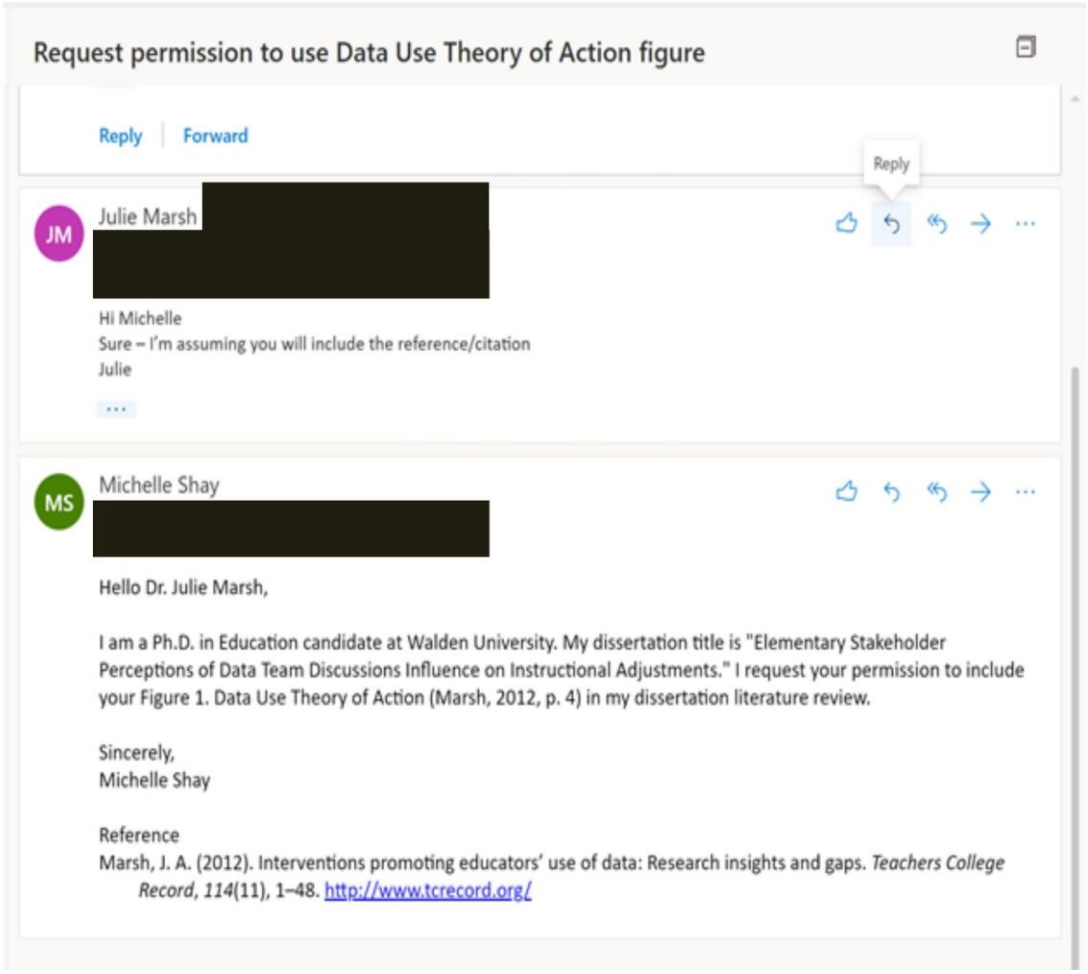
Yin, R. K. (2016). *Qualitative research from start to finish* (2nd ed.). The Guildford Press.

Yoon, S. Y. (2016). Principals' data-driven practice and its influences on teacher buy-in and student achievement in comprehensive school reform models. *Leadership and Policy in Schools*, *15*(4), 500–523. https://doi.org/10.1080/15700763.2016.1181187

Young, C., McNamara, G., Brown, M., & O'Hara, J. (2018). Adopting and adapting: School leaders in the age of data-informed decision making. *Educational Assessment, Evaluation and Accountability*, *30*(2), 133–158. https://doi.org/10.1007/s11092-018-9278-4

Zoom. (n.d.). *Video conferencing, web conferences, webinars, screen sharing*. https://www.zoom.us

Appendix A: Permission From Dr. Marsh



Request permission to use Data Use Theory of Action figure

Reply | Forward

Reply

JM Julie Marsh [redacted]

Hi Michelle
Sure – I'm assuming you will include the reference/citation
Julie

...

MS Michelle Shay [redacted]

Hello Dr. Julie Marsh,

I am a Ph.D. in Education candidate at Walden University. My dissertation title is "Elementary Stakeholder Perceptions of Data Team Discussions Influence on Instructional Adjustments." I request your permission to include your Figure 1. Data Use Theory of Action (Marsh, 2012, p. 4) in my dissertation literature review.

Sincerely,
Michelle Shay

Reference
Marsh, J. A. (2012). Interventions promoting educators' use of data: Research insights and gaps. *Teachers College Record*, *114*(11), 1–48. http://www.tcrecord.org/

Appendix B: Teacher Interview Protocol

Participant Number: _____

Date:_____

Time started:_____ Time ended:_____

Interview conducted via:_____

Introductory Statement

Hello _____, thank you for volunteering to participate in my research study. I want to ensure your privacy, are you in a location that you are comfortable to conduct this interview? (If yes, continue. If no, ask to reschedule the interview). As a reminder, I will be recording the interview to ensure I capture your exact words. With your permission, may I start the recording? Thank you. **START RECORDING**

I have confirmed that you met the participant requirements based on your responses to the online questionnaire. I am interviewing elementary teachers for my study. I understand that each data team collaboration is different; teacher expectations are different; student data analyzed to make instructional adjustments vary by grade-level and content area; thus, elementary teacher perceptions are different. What I am trying to understand are elementary teacher perceptions of how data team discussions influence teacher instructional adjustments. I hope you feel comfortable to provide your candid perceptions concerning your data team experiences and data-driven decision-making instructional adjustments to support student academic achievement. Please remember that there is no "correct" response, but I request your honest thoughts. As a reminder, your identity will remain confidential by using a pseudonym. Also, your participation is

voluntary, and you may stop your participation at any time and refuse to respond to any questions that you do not wish to answer.

Since this is a research study to gain your perceptions, I will not express opinions concerning what you provided. I provided you the research questions, but I may ask follow-up or clarification questions.

Before beginning, I would like to understand more about your educational experience, data team meetings, and the data used to make instructional adjustments.

1) Tell me about your data team meetings

How frequently do you meet?

How long are the meetings?

Who are the data team members?

What meeting context/platform do you use (e.g., face-to-face, virtual, mixed)?

2) Tell me about the types of data used during data meetings to make instructional adjustments.

Research Question

RQ 1: How do U.S. public elementary teachers perceive that data team discussions influence their own data-based instructional adjustments?

Interview Questions

Theoretical Element	Question	Probes
Attitude toward behavior: affective (feelings)	Tell me how you feel about data team discussions about using data to make instructional adjustments?	Please describe your feelings with an example.
Attitude toward behavior: cognitive (student outcomes)	When data teams discuss data to inform instructional	Please describe an example of student outcomes.

	adjustments, tell me about the student outcomes?	
Subjective Norm (social pressures)	Tell me about the influence your data team discussions have had on your instructional adjustments? Tell me about the influence the school leaders have on your instructional adjustments?	Please describe an example of how another teacher influenced your instructional adjustments. Please describe an example of how a school leader influenced your instructional adjustments.
Perceived behavioral control: self-efficacy (skills and knowledge)	Describe the skills and knowledge that you use during data team discussions that (hopefully) lead instructional adjustments?	Please describe an example. What professional learning have your received to use data to make instructional adjustments?
Perceived behavioral control: controllability (control over instructional adjustments or data used)	Please describe the level of control you have concerning what data you use to make instructional adjustments? Tell me how much control you have in using data to make instructional adjustments?	If you have little control, who has more control? Who chooses the data used to make instructional adjustments? Who decides what instructional adjustments are implemented in the classroom? Please tell me the district's role in this as compared to the data team.
	Is there anything else you would like to add concerning data team discussions?	

Concluding Statement

Thank you so much for participating in this interview. Your perceptions have provided me in-sight into data team influence on instructional adjustments. I will email with preliminary finding for your review.

I would greatly appreciate some demographic data to provide additional data for my study.

Tell me about your position and experience

How many years have you participated in a data team?

What grade do you teach? Subjects?

How many years have you taught elementary school?

Where in the U.S. is your school located (e.g., Northeast, Midwest, West coast)?

What type of area do you work (e.g., urban, rural, suburban)?

If you have any questions about the process or results, you may reach out to me by email or phone. Do you have any additional questions for me? I appreciate the time you have taken to assist me. I will be in touch soon.

STOP RECORDING

Since Amazon will be sending you the gift card, what email address would you like me to use to send you the gift card?

Appendix C: School Leader Interview Protocol

Participant Number: _____

Date:_____

Time started:_____ Time ended:_____

Interview conducted via:_____

Introductory Statement

Hello _____, thank you for volunteering to participate in my research study. I want to ensure your privacy, are you in a location that you are comfortable to conduct this interview? (If yes, continue. If no, ask to reschedule the interview). As a reminder, I will be recording the interview to ensure I capture your exact words. With your permission, may I start the recording? Thank you. **START RECORDING**

I have confirmed that you met the participant requirements based on your responses to the online questionnaire. I am interviewing elementary school leaders for my study. I understand that each data team collaboration is different; teacher expectations are different; student data analyzed to make instructional adjustments vary by grade-level and content area; thus, elementary school leader perceptions are different. What I am trying to understand are elementary school leader perceptions of how data team influence teacher instructional adjustments. I hope you feel comfortable to provide your candid perceptions concerning your data team experiences and data-driven decision making instructional adjustments to support student academic achievement. Please remember that there is no "correct" response, but I request your honest thoughts. As a reminder, your identity will remain confidential by using a pseudonym. Also, your participation is

voluntary, and you may stop your participation at any time and refuse to respond to any questions that you do not wish to answer.

Since this is a research study to gain your perceptions, I will not express opinions concerning what you provided. I provided you the research questions, but I may ask follow-up or clarification questions.

Before beginning, I would like to understand more about your educational experience, data team meetings, and the data used to make instructional adjustments.

1) Tell me about your data team meetings

How frequently do you meet?

How long are the meetings?

Who are the data team members?

What meeting platform do you use (e.g., face-to-face, virtual, mixed)?

2) Tell me about the types of data used during data meetings to make instructional adjustments.

Research Question

RQ 2: How do U.S. public elementary school leaders perceive that data team discussions influence teachers' data-based instructional adjustments

Interview Questions

Theoretical Element	Question	Probes
Attitude toward behavior: affective (feelings)	Tell me how you feel about data team discussions about using data to make instructional adjustments?	Please describe your feelings with an example.
Attitude toward behavior: cognitive (student outcomes)	When data teams discuss data to inform instructional	Please describe an example of student outcomes.

	adjustments, tell me about the student outcomes?	
Subjective Norm (social pressures)	Tell me about the influence your data team discussions have had on teacher instructional adjustments? Tell me about your influence has had on teacher instructional adjustments?	Please describe an example of how teachers influenced other teacher instructional adjustments. Please describe an example of how you influenced teacher instructional adjustments.
Perceived behavioral control: self-efficacy (skills and knowledge)	Describe the skills and knowledge that you use during data team discussions that (hopefully) lead to teacher instructional adjustments?	Please describe an example. What professional learning have your received to use data to support teacher instructional adjustments?
Perceived behavioral control: controllability (control over instructional adjustments or data used)	Please describe the level of control you have concerning what data the data team discusses to make instructional adjustments?	If you have little control, who has more control? Who chooses the data used to make instructional adjustments? Who decides what instructional adjustments are implemented in the classroom? Please tell me the district's role in this as compared to the data team.
	Is there anything else you would like to add concerning data team discussions?	

Concluding Statement

Thank you so much for participating in this interview. Your perceptions have provided me in-sight into data team influence on instructional adjustments. I will email you with preliminary finding for your review.

I would greatly appreciate some demographic data to provide additional data for my study.

Tell me about your position and experience

What is your job title?

How many years have you participated in a data team?

Where in the U.S. is your school located (e.g., Northeast, Midwest, West coast)?

What type of area do you work (e.g., urban, rural, suburban)?

If you have any questions about the process or results, you may reach out to me by email or phone. Do you have any additional questions for me? I appreciate the time you have taken to assist me. I will be in touch soon.

Stop Recording

Since Amazon will be sending you the gift card, what email address would you like me to use to send you the gift card?

Appendix D: A Priori Code Book

Codes	Definitions	Sample Quotes
Affective attitude toward the behavior	Affective attitude toward the behavior are either "positive or negative feelings derived from the activity" an example is "pleasant-unpleasant" (Ajzen, 1991, p. 201).	"it's essential in order for us to start moving the needle" "Everybody does not take it seriously" "The data teams are awesome, and it's great for us to analyze the data and be able to pinpoint exactly what we need to reteach." "It's hard for me to change the minds of some of the other teachers that don't really care about their data. And it really frustrates me, because it's really the only way you can really make these students move is by using the data by using small groups." "I don't always have a positive feeling with how the with the MAP test and how much of a snapshot that actually captures." "I think I feel that data is extremely helpful when it is not using when it's not being used as a weapon."
Cognitive attitude toward the behavior	Cognitive attitude toward the behavior is "the perceived costs and benefits of performing" the behavior" an example is "harmful-beneficial" (Ajzen, 1991, p. 201).	"But like if we kind of, you know, perfect the plan and practice it prior to delivering it redelivering it in front of students we have a better chance of you know, getting better student outcomes." "Teachers that use it, we definitely see a difference in our kids outcomes" "Giving the kids the time to get that review that they needed, or, you know, get those skills that they needed, and then me being able to build on that. I think that that impacted student outcomes greatly." "We're collecting new data to see if those interventions and those strategies are effective or not effective" "I do see some progress in my students. Is it a big isn't a big difference? No"

Codes	Definitions	Sample Quotes
		"Outcomes have been kind of spotty, and sketchy"
		"We do definitely have some students that are excelling"
Subjective norms	Subjective norms "refers to the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188).	"They walk away from the meeting, having identified what's the highest leverage gap to go back and reteach"
		"We'll have them practice with their peers, as well, for the peers are able to give feedback on some of those strategies"
		"Team dynamics play a part"
		"Bounce ideas off each other"
		"Knowledge base to help each other teach"
Self-efficacy-perceived behavioral control	Self-efficacy is an individual's "perceived ability to perform a behavior" (Ajzen, 2002, p. 668).	"I feel very confident about it. I feel confident about it because I know how to read the data. I know the curriculum, I know the standards very, very well."
		"Can spend hours looking at data"
		"It's just not something that came to most of us that easily."
		"I don't know how to dig deeper"
		"I did feel very confident with looking at the data. The one thing for me that I've grown a lot with this year is I'm definitely a lot more intermediate brained."
Control-perceived behavioral control	Control is an individual's "perceived control over performance of a behavior" (Ajzen, 2002, p. 668).	"My school specifically was said, focus on ELA and math."
		"My principal gives me as much autonomy and flexibility"
		"Admin gives free rein to, you know, good instruction is good instruction."
		"We can determine which pieces of data we're looking at during those meetings."

Appendix E: Code Book for Emergent Codes

Codes	Definitions	Sample Quotes
COVID	Mention of the global pandemic, which impacted elementary stakeholders' data team and instructional environments to make instructional adjustments.	"Virtual learning spaces actually made it easier for her [principal] to participate in it because she's able to just, oh, you know, send me the link to your meeting today." "I'm not a part of all of them as I normally would be because they're not even required to actually meet." "There's so much you can do virtually." "I couldn't really do breakout rooms, at least at my school."
Data team meetings	Data team meetings "consist of teachers and school leaders who analyze and use data collaboratively to improve their educational practice" (Schildkamp et al., 2016, p. 229).	"Data team is really the entire school." "Formally once a marking period…informally once a month" "Vertical reading teams" "Math data committee team" "Different trends and things across the grade levels" "Big picture this year"
Technology	Technology includes how data teams met and how teachers implemented instructional adjustments.	"If the district will allow us, we would like to continue to do virtual meetings if we can." "It's very hard to do because of Zoom in breakout rooms." "More difficult this year, simply because of the virtual thing." "Virtual learning everything is more faster paced then in person."
Academic gaps	A gap in student learning or academic achievement.	"Conceptual gaps or procedural gaps" "Clarify any misconceptions" "Trends in the error patterns" "The nature of the learning loss from last year"

Codes	Definitions	Sample Quotes
		"Let's all work together towards some of these bigger holes as opposed to drilling so far down."
		"Missing skills"
Instructional adjustments	Teacher instructional adjustments are strategies to meet students learning needs and include differentiated materials and instruction, small groups, and reteaching.	"Rubric"
		"Have the other kids be the teacher and teach the kids the strategy."
		"Reteach in a small group"
		"Formative assessment"
		"Graphic organizers"
		"Different teaching styles"
		"Group my students based on where their struggle areas"
		"Target their instruction"
		"Teachers write exemplar … that they're expecting students to do."
Student data	Student data consists of quantitative and qualitative academic and nonacademic data Quantitative data can include high-stakes assessments, formative assessments, benchmarks, behavior, and attendance, whereas qualitative data include observations, conversations, social and emotional data (Jimerson & Childs, 2017; Prenger & Schildkamp, 2018; Schildkamp, 2019; Schildkamp & Poortman, 2015).	"Benchmark data or progress monitoring data"
		"Student work samples"
		"Exit tickets"
		"Writing samples"
		"Anecdotal notes"
		"Discipline"
		"Interventions"
		"Attendance"
		"Common formative assessment"
		"Reading diagnostics"
		"District assessments"

Appendix F: School Leader Data Meetings

Participant	Group	Data meetings Members	Frequency	Student data
SL1	Whole school	Whole school	Monthly	Benchmarks DIBELS TRC Progress monitoring
	Grade-level/ Teacher	Individual teachers	Weekly/ biweekly	Work samples
SL2	RTI	Teachers, reading specialists	6-week cycles	intervention
	Grade-level teachers	Teachers, reading specialist	End of marking period	ReadyGEN DIBELS Writing samples Unit assessments Word Their Way Reading inventory Anecdotal notes
SL3	Primary Grades K-2 Intermediate Grades 3 - 5	Teachers Principal ILT Special education coordinator CRI program regional coordinator	Changed throughout year (Weekly, biweekly, monthly)	Bridging assessments Math and reading benchmarks checkpoints FASTtest MAP DBQ
SL4	Universal screening team	County ELA, supervisors, literacy coach	Quarterly	Struggling student data
	Grade-level	teachers, IRT Special education	Once per marking period Informally monthly	DIBELS Progress monitoring
SL5	Grade level	Teachers Reading specialists Special education ESOL Admin Counselor	monthly	Lexia Learning Intervention data MAP DIBELS

Note. ILT = instructional lead teacher; RTI = response to intervention; DIBELS = dynamic indicators of basic early literacy skills; ELA = English language arts; DBQ = document-based questions; ESOL = English to speakers of other languages; TRC = text reading and comprehension; MAP = measures of academic progress; IRT = instructional resource teacher.

Appendix G: Teacher Data Meetings

Participant	Group	Data meetings Members	Frequency	Student data
T1	3rd – 5th grade cohort autism and developmental needs	3-5 cohort teachers Adaptive curriculum director	8-10/year	ULS Starword Splashlearn Teachtown
T2	Data day with grade-level	teachers, data coach, ELL, special education, reading/math coaches, admin	3 times per year	Reading and Math Benchmarks
	Collaborative planning	teachers, counselor	Every two weeks	Common assessments Attendance
T3	Grade-level	Teachers, admin, reading/math coach, special education	Every other week Math and Reading once per month	Math/reading benchmarks i-Ready Cycle assessments Mini-quizzes
T4	Entire Grade	teachers Admin	Once per week	Data sheets
	Math	3rd Grade-level math teachers	Once per week	Benchmarks i-Ready Dreambox
T5	Vertical reading team	3rd – 6th grade reading teachers Special education Admin	Varied (weekly, biweekly, informally)	i-Ready Benchmarks Writing
T6	Whole school	Teachers, ILT, admin, district chairs	biweekly	benchmarks, writing samples, i-Ready
T7	Grade-level	Teachers, admin, special education, ELL	Math/science and reading once per month	ELA: MAP, DRA, PALS Math: MAP Science:
	Grade-level	All reading team, ELL, special education, counselors, admin	quarterly	PowersSchool test, common assessment

Participant	Group	Data meetings Members	Frequency	Student data
T8	Math	3rd – 5th grade math teachers, instructional coach, special education, EIP	biweekly	Common formative assessment Mid-module End-of-module Checkpoints
T9	Grade level	Teachers, math coach, reading coach, admin	Twice a week	Fountas & Pinnell MAP Compass Common assessments Informal assessments Rubrics
T10	Grade level	teachers, admin, ILT, special education, ESOL	Weekly	Writing samples Assessments Student work iRead
	Primary Grades	K-2nd teachers, admin, special education, ESOL, intervention specialist, counselor	Monthly normally once this year	This year articulation, assessments, normally around issue e.g., writing
T11	Math	K-5 Math teachers	Every two weeks	Envision Math Unit assessments MATH inventory Vocabulary
	Instructional Leader Team	Admin, specialists, teacher representatives	3 times per year	PARCC MATH Inventory Reading Inventory
	CFIP	Grade-level teachers, principal for math, reading specialist for reading	monthly	Pre-assessment Final assessment Classwork Quizzes

Note. ILT = instructional lead teacher; ELA = English language arts; ESOL = English to speakers of other languages; MAP = measures of academic progress; ELL mean English language learner; admin = either principal or assistant principal; ULS = unique learning system, DRA = developmental reading assessment, PALs = peer-assisted learning strategies; EIP = early intervention program; CFIP = class focused improvement process; PARCC = Partnership for Assessment of Readiness for College and Careers.

Appendix H: Frequency of TPB A Priori and Emergent Codes for Teachers

The teacher participants' transcripts were analyzed and coded utilizing MAXQDA (n.d.) and Excel. During the first cycle, I used a priori codes developed from the conceptual framework and peer-reviewed literature to code the data (see Appendix D). During the second cycle coding (see Appendix E), I identified emergent codes (Saldaña, 2016). A visual representation of the teacher participants' a priori codes are shown in Table 6 and emergent codes are shown in Table 7.

Table 6

Frequency of TPB A Priori Codes for Teachers

ID	Affective attitude	Cognitive attitude	Subjective norms	Self-efficacy	Control
T1	16	7	20	8	17
T2	4	4	16	3	16
T3	15	0	12	8	0
T4	42	7	8	5	2
T5	34	5	7	6	5
T6	2	6	11	3	3
T7	12	2	14	4	9
T8	11	9	10	12	9
T9	55	4	12	7	7
T10	12	7	11	7	9
T11	46	3	8	11	7
Total	249	54	129	74	84

Table 7

Frequency of Emergent Codes for Teachers

ID	COVID	Data team meeting	Technology	Academic gaps	Instructional adjustments	Student data
T1	17	2	9	0	0	5
T2	16	12	7	1	24	19
T3	0	21	4	1	14	3
T4	2	16	2	5	19	11
T5	5	12	5	11	31	12
T6	3	3	0	2	21	14
T7	9	5	0	0	8	15
T8	9	4	4	2	24	21

ID	COVID	Data team meeting	Technology	Academic gaps	Instructional adjustments	Student data
T9	7	1	0	0	26	12
T10	9	5	12	0	12	18
T11	7	12	1	1	20	11
Total	84	93	44	23	199	141

Appendix I: Frequency of TPB A Priori and Emergent Codes for School Leaders

The school leader participants' transcripts were analyzed and coded utilizing MAXQDA (n.d.) and Excel. During the first cycle, I used a priori codes developed from the conceptual framework and peer-reviewed literature to code the data (see Appendix D). During the second cycle coding (see Appendix E), I identified emergent codes (Saldaña, 2016). A visual representation of the school leader participants' a priori codes are shown in Table 8 and emergent codes are shown in Table 9.

Table 8

Frequency of TPB A Priori Codes for School Leaders

ID	Affective attitude	Cognitive attitude	Subjective norms	Self-efficacy	Control
SL1	13	11	12	10	2
SL2	36	5	23	14	4
SL3	42	7	8	8	1
SL4	26	2	13	8	4
SL5	23	7	20	10	21
Total	140	32	76	50	32

Table 9

Frequency of Emergent Codes for School Leaders

ID	COVID	Data team meeting	Technology	Academic gaps	Instructional adjustments	Student data
SL1	5	19	4	13	15	15
SL2	3	10	7	1	6	27
SL3	0	11	1	0	11	14
SL4	7	26	2	3	12	21
SL5	11	6	4	1	9	10
Total	26	72	18	18	53	87