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Data-Driven Decision-Making in Urban Schools That Transitioned From Focus or Priority to Good Standing

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Project Study Completed in Partial Fulfillment

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Abstract

Despite the importance an urban school district places on data-driven decision-making (DDDM) to drive instruction, implementation continues to remain a challenge. The purpose of this study was to investigate how support systems affected the implementation of DDDM to drive instructional practices in three urban schools that recently transitioned from *priority* or *focus* to *good standing* on the State Accountability Report. The study aligned with the organizational supports conceptual framework with an emphasis on data accessibility, collection methods, reliability and validity, the use of coaches and data teams, professional development, and data-driven leaders. Through the collection of qualitative data from one-on-one interviews, the research questions asked about the perspectives on data culture and data driven instructional practices of three school leaders and nine teachers. The data were triangulated to generate a thematic illustration of content that was coded and analyzed to identify solid patterns and themes. Findings suggest that leaders create a data-driven school culture by establishing a school-wide vision, developing a DDDM cycle, creating a collaborative DDDM support system, communicating data as a school community, and changing the way technology is used in DDDM initiatives. Based on the findings, a project in the form of a white paper was developed, using research to support that when data is regularly used to hone student skills, a positive shift in overall teacher practices occurs. This shift provides the potential for positive social change when students have opportunities to attain academic goals, resulting in increased student achievement and higher graduation rates.

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Dedication

The continuous uplifting and inspirational motivation from certain people who God has placed in my life contributed significantly to the outcome of this journey. This study is dedicated to my mother, my husband Derrick, my sons Dominic, Jahmari, and Deion, and best friend Daisy who continued to support me throughout my studies.

First, my mother always believed in my dreams, goals, and aspirations. With her constant words of encouragement, psychological and spiritual insight, and knowledge of health I've been able to overcome great obstacles to persevere further and reach my achievements. My husband, my God-given spiritual partner, who likewise continued to have the utmost faith in my drive to become an educational leader, even at times when the road ahead appeared grim. Throughout this journey, he regularly reminded me of propose and had helped me to build upon my spiritual being in ways that have enlightened my outlooks on life. My children, my boys, who influenced the very reason I entered the field of educational leadership. I hope that this milestone served as an inspiration for them to aggressively with utmost determination work towards making the world a better place. Witnessing the completion of this journey will hopefully instill in them the idea that sometimes we have to make sacrifices for the greater good of society. Lastly, my best friend Daisy, who has on countless occasions served as the voice of reason when roadblocks seemed to come from every direction. When I struggled at times to see clarity, through an analogy from the scriptures and utmost intellect she helped me view life from angles that made more sense. Without the support of my mother, husband, children, and best friend, who God has placed in my life, I could not imagine achieving this milestone.

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I would also like to acknowledge my Doctoral Chairs Dr. White and Dr. Cale who provided me with meaningful and strategic feedback that helped me develop a scholarly mindset throughout the research and writing of my Capstone. I was confident that whatever question or concern I had, they would provide me with an appropriate response and solution. I also want to thank Dr. White for her encouraging words of wisdom as she understood the balance between life and academic studies.

Lastly, I would like to acknowledge all of the ethically-driven leaders and teachers across the globe that prioritize meeting the needs of students through rigorous planning and the implementation of strategic, engaging, and meaningful instruction. Teachers and educational leaders are doctors of the mind, who not only instruct academics, but also teach character development, problem-solving, communication, and critical thinking. Specifically, I would like to acknowledge Mrs. Cerre, a moral leader who influenced me to become an advocate for social change. Through her inspiration, I've begun to develop the backbone necessary to maneuver through challenging circumstances while never losing focus on my God-driven purpose.

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Section 1: The Problem

While most leaders and teachers recognize the need to build on their capacities of data-driven decision-making (DDDM) as well as understand the necessity to develop literacy around data usage, many do not use data in ways that lead to improved student outcomes (Marsh & Farrell, 2015). Even though DDDM has become a widely recognized practice in the field of education, many school districts continue to experience difficulties with implementing data practices with fidelity and efficacy (Dunn, Airola, Lo, & Garrison, 2013a). DDDM has become highly significant in the field of education due to the accountability pressure that districts face in their attempts to bring forth student achievement (Schildkamp & Poortman, 2015).

Leaders and teachers continue to face challenges to implementation of DDDM (Gill, Borden, & Hallgren, 2014). Despite the development of data-rich settings, data has limited uses if decision makers lack the understanding of the organizational supports needed to ensure that data can be appropriately used to drive the decision-making process (Gill et al., 2014). The challenges include lack of access to valid and reliable data, lack of training and internal building support systems, and lack of organizational cultures that emphasize ethics of data usage (Gill et al., 2014).

Even though school leaders commonly recognize DDDM as a way to raise student achievement levels, procedures are viewed by teachers as being negatively associated with systems of accountability (Dunn et al., 2013a). As a result, they begin to develop anxiety, tension, apprehension, and a lack of efficacy towards DDDM processes (Dunn et al., 2013a). The validity and reliability of data are significant to leaders' and teachers'

ability to ensure that the data collected is diagnostic and used in ways that are unbiased in the decision-making process (Gill et al., 2014). Despite access to qualitative and quantitative data, many educators and building leaders continue to place emphasis on the collection of quantitative accountability data such as State assessment results to drive decision-making (Dunn et al., 2013a).

Data coaches in schools have influenced teachers' ability to use data to drive instructional decision-making (Huguet, Marsh, & Farrell, 2014). Through collaborative methods, data coaches guide teachers in accessing and disaggregating data so that they eventually develop DDDM skills independently (Huguet et al., 2014). Schaffhauser (2012) highlighted the importance of having access to reliable data systems that serve to support leaders and teachers with DDDM implementation. School leaders have a significant role in systematically managing environments that promote, influence, and support successful DDDM (Marsh & Farrell, 2014). The practices include the development of data literacy in teachers, the use of data teams, and qualitative data analysis to build teachers' capacity of data usage (Marsh & Farrell, 2014). The analysis of how DDDM organizational supports influence the implementation of DDDM practices may serve to provide information on how to create an environment where data is effectively used to drive instructional decision-making (Gill et al., 2014).

The Local Problem

The New York State Education Department (NYSED), as well as leaders in XYX School District (pseudonym), emphasize DDDM as a component of improving instructional planning and curriculum implementation (New York State Education

Department [NYSED], 2015b). Despite attempts to close the student achievement gap by including DDDM on the District Comprehensive Improvement Plan (DCIP), the Diagnostic Tool for School and District Effectiveness (DTSDE) in 35 schools indicated that leaders and teachers had demonstrated inconsistent implementation of DDDM (NYSED, 2015a). The six Tenets of the Comprehensive School Rubric for the DTSDE are the foundation of school ratings as well as the development of each building's School Comprehensive Educational Plan (SCEP; NYSED, 2015b). The Tenets of the DTSDE include the following (a) district leadership and capacity, (b) school leader practices and decisions, (c) curriculum development and support, (d) teacher practices and decisions, (e) student social and emotional developmental health, and (f) family and community engagement (NYSED, 2015b). According to the School District DTSDE, Tenet three of the document emphasizes systems of curriculum development and support. Tenet four of the XYZ School District's DTSDE highlights methods of teacher practices and decision-making. Tenets three and four of the Comprehensive School Rubric for the DTSDE identifies DDDM protocols as indicators of achieving success (NYSED, 2015). Thirty-five district schools were rated either *developing* or *ineffective* under Tenets three and four of the 2016-2017 DTSDE. Teachers and leaders in these schools have not been able to demonstrate the implementation of DDDM practices to drive instruction.

For the 2016-2017, New York State (NYS) Accountability Status Report for the XYZ Schol District, was rated as *focus*. Twenty out of 55 schools in the district received *good standing* ratings, and the remaining 35 schools received *focus* or *priority*. All of the 35 schools in the XYZ School District labeled as either *focus* or *priority* have received

developing or *ineffective* ratings under Tenets three and four of the DTSDE, meaning that DDDM practices lacked consistency in 63% of the district's schools. In alignment with the procedures mandated by the NYSED, each school in the district labeled as either *focus* or *priority* must undergo an annual review using the DTSDE (NYSED, 2015b). During the reviews, teachers and leaders must demonstrate practices that highlight the implementation of DDDM under Tenets three and four (NYSED, 2015b).

Fifty percent of the 2015-2016 Annual Professional Performance Review for teachers in *focus* and *priority* schools in the XYZ School District consisted of student performance results on mandated comprehensive content area State assessments (NYSED, 2015a). Bell and Aldridge (2014) conducted a study highlighting the importance of using qualitative data along with quantitative data to drive instructional decision-making. Pella (2012) suggested that it is important to consider qualitative strategies that focus on creative and meaningful ways to gather and analyze data as opposed to concentrating only on quantitative test scores. Pella (2012) indicated a connection between instruction and the process of learning by highlighting the necessity to balance the use of data and avoid relying on test results that fail to acknowledge elements of student comprehension. In the XYZ School District, DDDM is formative where the test results of students are used to inform student progress in each school building (NYSED, 2015a). Further information is needed to develop an understanding of the gathering, interpreting, and use of data to drive instructional decision-making in the XYZ School District.

The 2015-2016 DTSDE on the XYZ School District's official website showed that the district received a rating of *ineffective* in Tenet one of the DTSDE, which highlights the inconsistency of their efforts to create a school culture that leads to district-wide achievement. Leaders have a vital role in establishing the type of learning environment conducive to the use of DDDM. Leaders are change agents who ultimately can facilitate the development of collaborative school cultures that are necessary for the implementation of programs or procedures (Herrington, 2013). Marsh and Farrell (2015) specified that when leaders develop an understanding of how they can positively influence teachers' capacity to use data in schools, they might gain additional insight on what needs to be in place to implement DDDM practices.

Even though teachers and leaders have access to vast amounts of student data, without internal building supports in place to guide them through the process of DDDM, they continue to struggle with utilizing data in ways that bring forth student achievement (Haguet et al., 2014). Instructional supports such as collaborative data teams and coaches facilitate the development of teachers' ability to analyze and use data (Marsh & Farrell, 2015). Professional learning such as job-embedded coaching provides teachers with regular assistance on strategies designed to increase student performance levels (Killion & Roy, 2009). Well-established school policies for monitoring practices and the establishment of incentives for data usage align with the development of a data-driven vision and have a significant role in the implementation of DDDM practices (Gill et al., 2014).

On the 2015-2016 DCIP, XYZ School District officials emphasized the need for teachers and building leaders to regularly use DDDM strategies to bring forth student achievement. They further indicated consistent teacher support throughout the implementation of DDDM to ensure that students are demonstrating progress to achieve curricular objectives. Noncompliance with DDDM practices was evident on the 2016-2017 DSTDE documents of 35 schools in the XYZ School District. More understanding of the use of DDDM to plan and implement instruction would benefit student achievement in the district.

Data literacy entails having the ability to transform data into useful knowledge through the process of collecting, organizing, analyzing, summarizing, synthesizing, and prioritizing (Mandinach, 2012). Many of the schools in the XYZ School District have not consistently demonstrated practices that aligned with DDDM on their 2015-2016 DTSDE report. As a result, the district included DDDM as a component of school improvement on the DCIP for the 2015-2016 school year. Under Tenet one of the 2015-2016 DCIP in the XYZ School District, DDDM was specified as a collaborative effort between leaders in the Office of Curriculum, Assessment, and Instruction and school level staff. The establishment of supports to guide the implementation of DDDM in each school building in the XYZ School District is also specified under Tenet one of the 2016-2017 DCIP. DDDM is a foundational component of curriculum implementation that assists schools in monitoring the progress of student achievement so that all measures are taken to meet student needs (Hamilton et al., 2009). As evidenced by the 2015-2016 DTSDE

documents both at district and school levels, DDDM implementation lacked district-wide consistency.

Rationale

In addition to the 35 schools that have been labeled *focus* or *priority* on the NYS 2016-2017 Accountability Report for the XYZ School District, the document also identified that five schools previously recognized as either *focus* or *priority* transitioned to schools of *good standing*. All five schools in the XYZ School District that made this shift also received either *effective* or *highly effective* rating under Tenets three and four of their school's DTSDE. In alignment with the NYS Comprehensive Rubric for the DTSDE, indicators under Tenets three and four indicate the use of data to drive instructional planning and delivery (NYSED, 2015b). Teachers and leaders may use the results of this study to gather information on how DDDM organizational supports such as data infrastructure, analytical capacity, and DDDM culture influenced the implementation of DDDM to drive instructional decision-making in schools that shifted from *focus* or *priority* to *good standing* in a *focus* district. In addition to gathering information on individual teachers' readiness to implement DDDM in their classrooms, the data collected during the study may assist teachers and leaders with understanding the role of data-driven leadership and the development of organizational building-wide DDDM procedures, including structured supports and expectations. Gill et al. (2014) suggested that DDDM in education includes the presence of data infrastructure, analytical capacity, and a positive DDDM culture. They also highlighted a strategic system of

organizational supports as well as an in-depth understanding of individual data needs, data validity, and data relevancy (Gill et al. 2014).

To develop an understanding of the role that DDDM had on schools that recently shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report, the analysis of organizational factors that contributed to implementation would provide useful information to district leaders. Dunn et al., (2013b) indicated that even though many school districts highlight DDDM practices as essential components of school improvement, many continue to struggle with implementation. Farrell (2015) suggested that the dynamics of data usage in education becomes stronger when aligned with the organizational factors that shape teachers' data efforts (Farrell, 2015).

According to Farrell (2014); Marsh and Farrell (2014); and Lange, Range, and Welsh (2012), DDDM is a foundational component to student success and is beneficial to school districts because it can serve as a sustainable method to establish informed instructional practices. As evidenced by local school data on the district's official website, including the 2015-2016 DCIP and the 2015-2016 district and individual school DTSDE documents, despite the 20 schools in good standing, the XYZ School District as a whole was not consistently implementing DDDM practices. The purpose of this study was to explore how organizational support systems affected the implementation of DDDM to drive instructional practices in three urban schools that recently transitioned from *priority* or *focus* to *good standing* on the State's 2016-2017 Accountability Report. I investigated this gap in practice by gathering data from building leaders and teachers on how data infrastructure, analytical capacity, and DDDM culture affects DDDM practices

in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report. The purpose of this study was to develop an understanding of how organizational supports affected DDDM implementation through assessing the perspectives of leaders and teachers in schools that transitioned from *focus* or *priority* to *good standing* in a *focus* district. This assessment provided information on the effects that organizational supports had on the use of data to drive instructional practices. The information may also assist district leaders in developing DDDM implementation protocols when collaborating with building leaders on the development of their school's SCEP.

Definition of Terms

Analytical capacity: The assurance that data is relevant and diagnostic so it can be used to make school-wide decisions (Gill et al., 2014).

Data-driven decision-making: The organized collection and analysis of various data sources to increase student achievement levels (Dunn et al., 2013a).

Data literacy: The transformation of data into useful information through the process of collecting, organizing, analyzing, summarizing, synthesizing, and prioritizing (Mandinach, 2012).

Diagnostic Tool for School and District Effectiveness (DTSDE): A diagnostic tool of quality indicators in five Tenets that focuses on the accountability performance criterion that the school district and its schools use to identify school ratings (NYSED, 2015b).

District Comprehensive Improvement Plan (DCIP): Comprehensive school improvement plans in *focus* and *priority* districts developed by using feedback generated from the district's DTSDE review (NYSED, 2015b).

School Comprehensive Educational Plan (SCEP): A comprehensive school improvement plan developed in *focus* and *priority* schools in the district aligned with feedback generated from their District Comprehensive Educational Plan review (NYSED, 2015b).

Significance of the Study

Given the emphasis on DDDM in the XYZ School District, district-level leaders may benefit in a variety of ways from the findings of this project. The investigation of the perspectives and practices of teachers and leaders on DDDM implementation in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report highlighted fundamental necessities to assist district leaders with SCEP development. The data gathered throughout this study examined the gap in practice in the district's schools by pointing out how DDDM infrastructures, analytical capacities, and data cultures in schools recently identified as good standing affected DDDM implementation as it pertained to using data to drive instructional decision-making. Supervising administrators at a district level can use this data during the process of collaborating with building leaders in the development of the school's SCEP. Each school's SCEP identifies individual school-wide goals and activities established under the Tenets of the DTSDE where Tenets one through four place emphasis on the presence of DDDM to drive instructional decision-making. As identified in the 2015-2016 DCIP in

theXYZ School District, district supervisors plan to regularly collaborate with building leaders in schools recognized as either *focus* or *priority* on the 2016-2017 Accountability Report to guide them with the development and implementation of their school's SCEP.

The information gathered from this study can be used to ensure that teachers and leaders throughout the district receive the necessary DDDM supports to implement practices in ways that directly influence instruction and student achievement. The data gathered from this study can be used to assist with identifying fundamental components of DDDM practices that can provide district leaders with useful information on how to prepare building leaders and teachers in *focus* and *priority* schools to develop sustainable building wide DDDM procedures.

All of the 35 *focus* and *priority* schools in the XYZ School District have received *ineffective* or *developing* ratings on the DTSDE Tenets that reference DDDM. Along with the 2016-2017 NYS Accountability Report's indication of 35 district schools labeled as either *focus* or *priority*, the *ineffective* and *developing* ratings under Tenets three and four of the DTSDE in the XYZ School District indicate that DDDM practices were not being implemented consistently. Tenet three of the DTSDE document in the XYZ School District emphasizes systems of curriculum development and support while Tenet four highlights methods of teacher practices and decision-making. The Comprehensive School Rubric for DTSDE Tenets three and four identifies DDDM protocols as indicators of achieving success in the categories of the Tenets (NYSED, 2015b). District leaders can use the results of this study to assist with SCEP development as well as support teachers and leaders with the implementation of DDDM to drive instruction by identifying how

DDDM infrastructure, analytical capacity, and data culture can influence the implementation process. Once teachers and leaders become proficient in implementing and sustaining DDDM practices, student-centered learning occurs because the needs identified by the data served to drive the instruction. The data gathered in this study can be used to support leaders and teachers in becoming facilitators of DDDM resulting in the creation of a positive shift in district-wide DDDM practices, the XYZ School District may then become a model district. The gathering of information on how schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report experienced DDDM may provide the district with useful information regarding school turnaround procedures that can be used to increase student achievement in *focus* and *priority* schools throughout the entire district.

Research Questions

The following research questions were designed to gather information on various components of DDDM implementation as they pertain to the presence of organizational support systems. With an aim towards using DDDM to drive instructional practices, participants of the study were prompted to share their experiences with implementation, data infrastructure, and individual and collaborative supports. The research questions are as follows:

RQ1: How and to what extent do teachers implement DDDM practices to drive instructional decision-making in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ2: What are educators and leaders' perspectives regarding data culture surrounding DDDM to drive instructional procedures in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ3: How does data infrastructure influence teachers' use of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ4: How are teachers individually and collaboratively supported during the implementation of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

Review of the Literature

Introduction

I used the data from this study to investigate the influence that organizational supports in school buildings have on the implementation of DDDM and instructional decision-making. While reviewing the available literature on organizational supports of DDDM, themes arose on how data infrastructure, analytical capacity, and DDDM culture are developed to facilitate practices that bring forth student achievement. Organization of the review of current literature is by recent research that defines structured data collection methods, validity and reliability of data, professional development (PD) and the

implementation of internal DDDM support systems, leadership influences on DDDM, and ethics and accountability related to DDDM. Peer-reviewed articles were the primary source of literature used in this review; they were located in Education Source, Educational Research Complete, and ERIC Education Databases of the Walden University Library. Google Scholar was also used to locate peer-reviewed articles presented in the literature review. In an attempt to achieve saturation in literature on the topics of DDDM and organizational supports, the following words and terms were searched: *data-driven decision-making, DDDM, Big data, data-driven instruction, data use in education, data and accountability, data coaches, data teams, data-driven decision-making organizational supports, data-informed instruction, data-based decision-making, data infrastructure,* and *professional development on data use*. The literature used in this review highlights and discusses foundational organizational components of DDDM that can ultimately lead to successful implementation and, moreover, influence instructional strategies that can serve to support student achievement. Through the examination of DDDM organizational supports, I used the data from this study to uncover how they have influenced the implementation of DDDM practices as it pertains to instructional decision-making in schools that recently transitioned from *focus* or *priority* to *good standing* on the State's 2016-2017 Accountability Report.

Conceptual Framework

This study is aligned with a conceptual framework for DDDM identified by Gill et al. (2014) as a system of structured organizational supports including those associated

with data infrastructure, analytical capacity, and data culture. This framework highlights a variety of organizational supports that are necessary to implement DDDM through the establishment of data infrastructure, analytical capacity, and data culture. This conceptual framework informs the research questions of this study in that they highlight how the presence of organizational supports in school buildings influence DDDM practices as they relate to using data to drive instruction.

Gill et al. (2014) refer to data infrastructure as the assembly of high-quality data that is fundamental to a school's ability to collect, transfer, and manipulate information. The linkage of numerous data sources, the establishment of low burden collection measures, the monitoring of collection, timely delivery, and the use of verification systems develops data infrastructure (Gill et al., 2014). Gill et al. (2014) argued that the linkage of multiple data sources serves to facilitate the capacity to make connections amongst data sources (Gill et al., 2014). The establishment of low burden data collection systems through the development of data infrastructure was shown to improve and support data quality by integrating data collection methods and procedures with the existing work of teachers (Gill et al., 2014). Data monitoring and the timely delivery of data can develop data infrastructure making the use of data relevant to current practices (Gill et al., 2014). The presence of data verification systems is a fundamental component of the development of data infrastructure (Gill et al., 2014). Data verification systems serve to ensure validity as well as connect teachers directly to their students' data (Gill et al., 2014).

Gill et al. (2014) refer to the analytical capacity of data use as the assurance that it is relevant and diagnostic so it can be used to make school-wide decisions. The creation of internal and external technical assistance procedures assists with the development of analytical capacity (Gill et al., 2014). The procedures serve to provide teachers with decision-making support and PD, and assist them with the output of DDDM practices. Ongoing staff development is a vital component of establishing analytical capacity in a school building because it increases access to and use of data to manage and modify practice (Gill et al., 2014). The improvement of data accessibility that enhances data relevancy and ensures that it is diagnostic can also serve to develop analytical capacity (Gill et al., 2014).

In addition to the development of data infrastructure and analytical capacity, (Gill et al., (2014) highlighted the establishment of a culture of DDDM as a necessary component of organizational supports. A strong DDDM culture where data is used to inform instructional and operational decisions develops through leadership, systems of accountability, collaborative data sharing, and allocation of time and data resources (Gill et al., 2014). Leadership that establishes a vision and develops a strategic plan for DDDM has a vital role in ensuring data is being used consistently to drive instruction (Gill et al., 2014). A strong culture for DDDM can also be established through the development of systems of accountability that monitor and reward the use of DDDM practices as well as track teacher participation in DDDM initiatives (Gill et al., 2014). Another component of a DDDM culture includes the implementation of procedures that support the sharing and discussions of data during instructional decision-making (Gill et al., 2014). This

framework emphasizes the creation of low burden data use procedures and the allocation of time and resources as another organizational component to bring forth a strong DDDM culture (Gill et al., 2014).

The DDDM organizational support framework highlights various components necessary for effective implementation. These components serve as a primary focus to drive the research of this study in that they aligned with the current practices of participants as a possible indicator of each school's transition into good standing in Tenets three and four of their DTSDE documents.

Current Literature

DDDM organizational supports. DDDM has gained the attention of educational policy makers, leaders, and teachers across the nation as a fundamental process to increase student achievement (Slavin, Nelson, & Deuel, 2013). Despite many district and State level guidelines that emphasize regular use of DDDM and the access to substantial amounts of data sources, many school districts continue to struggle with the establishment and sustainability of DDDM practices (Slavin et al., 2013). Thirty-five district schools had the label of either *focus* or *priority* on the 2016-2017 NYS Accountability Report in the XYZ School District. Additionally, each of these schools received *ineffective* and *developing* ratings under Tenets three and four of the DTSDE, indicating that DDDM practices were not being implemented consistently throughout the XYZ School District. Even though a direct connection between DDDM and the increase in student achievement is evident, there remains a lack of evidence as it pertains to individual DDDM strategies (Slavin et al., 2013). In a study that emphasized the

identification of interventions and conditions that promote data use, Roderick (2012) highlighted the importance of creating an environment that is conducive to the implementation of DDDM practices. The lack of collaboration, resources for assistance with DDDM, data-driven leadership, and PD, serve as barriers to implement DDDM practices (Mandinach & Gummer, 2015). Roderick (2012) also argued that the lack of critical supports necessary to understand how data transforms meaningful classroom practices could serve as a roadblock to implementing DDDM in ways that increase student achievement.

According to Schildkamp and Poortman (2015), the use of data to drive decision-making involves multiple interactive complex processes and conditions including the characteristics of school organizations, individuals, data, collaborative teams, and data use. While viewing data usage as an organizational problem, Goren (2012) emphasized that when teachers lack DDDM fluencies including those related to both context and environmental factors, their efforts will have minimal influence on instruction and student achievement.

Gill et al. (2014) suggested that some of the organizational supports required to establish an environment where data is used to drive instructional decision-making include: (a) access to data and comprehensible collection methods, (b) reliability and validity, (c) the use of coaches and data teams, (d) targeted training on DDDM, and (e) ongoing collaborative efforts with data-driven leaders. They emphasized the necessity of having the supports in place as foundational to the DDDM implementation process.

The development of structured data collection methods in school buildings through the use of technological programs has shown to increase teachers' capacity to incorporate data into instructional decision-making (Gill et al, 2014). DDDM support systems through the use of technology can broaden teachers' proficiencies in DDDM implementation to drive instructional decision-making (Faria et al., 2014; Mandinach & Gummer, 2015; Roderick, 2012; Schaffhauser, 2012; Schildkamp & Poortman, 2015).

The accessibility to and use of data that is relevant and diagnostic are vital to develop a DDDM system that brings forth student achievement because it assists with the development of decisions that directly influence instruction and student ability (Gill et al., 2014). Many authors of current literature indicated that the use of relevant and diagnostic data is necessary to directly align the data to instruction as well as to make decisions that have a positive influence on student achievement (Faria et al., 2014; Gullo, 2013; Mandinach, 2012; Simmons, 2012; Supovitz, 2012).

Sustained DDDM practices are supported through the use of internal support systems such as the use of data coaches to guide and assist teachers in building data literacy (Gill et al., 2014). The development of data literacy through collaborative engagement with building coaches serves to increase DDDM proficiencies in teachers (Datnow, Park, & Kennedy-Lewis, 2012; Huguet et al., 2014; Kellemeyn, 2014; Mandinach & Gummer, 2015; Marsh, 2012; Marsh, Bertrand, & Huguet, 2015; Slavin et al., 2013).

The ongoing implementation of PD on DDDM is a vital organizational component that is necessary to achieve proficiency and sustainability of DDDM practices

(Gill et al., 2014). Many authors of current literature identified PD on DDDM as a necessity to develop the skills to use data in ways that support student achievement (Dunn et al., 2013b; Farley-Ripple & Buttram, 2015; Gerzon, 2015; Lange et al., 2012; Marsh, 2012; Marsh et al., 2015; Mandinach, 2012; Mandinach & Gummer, 2015; Pella, 2012; Slavin et al., 2013; Schaffhauser, 2012).

Data-driven leaders are a vital component of organizational support systems that enhance the implementation of DDDM practices (Gill et al., 2014). Data-driven leaders are imperative to ensure practices are consistently used to drive instructional decision-making (Gerzon, 2015; Herrington, 2013; Mandinach & Gummer, 2015; Lange et al., 2012; Mackey & Hollie, 2015; Marsh & Farrell, 2014; Schildkamp & Poortman, 2015).

The creation of a data culture can serve to facilitate the successful use of data to drive instructional decision-making (Gill et al., 2014). Despite the emphasis that leaders place on accountability and data usage, they are often considered barriers towards implementation (Chappuis, 2014; Dunn et al., 2013a; Holter & Frabutt, 2012; Farrell, 2015; Roderick, 2012; Mackey & Hollie, 2015; Mandinach, 2012; Pella, 2012).

DDDM has grasped the attention of leaders and stakeholders across the nation as a way to support student achievement by utilizing data for instructional decision-making. The review of literature presented includes information on how DDDM organizational supports in school buildings have a significant role in the improvement in teacher practices and increased student achievement.

Structured data collection methods and resource accessibility. Through the use of technological advances, data can be stored and linked together with other data

sources to assist teachers and leaders with faster and more efficient analysis of results, especially for large-scale assessments (Serrer, 2015). Shaffhauser (2012) highlighted the need for teachers to have access to data management systems to assist them with accessing multiple sources of data, making sense of the data, and tracking student achievement. Henig (2012) pointed out that unequal access to data could be detrimental to DDDM and could increase misalignment of classroom instruction. As emphasized by Schildkamp and Poortman (2015) the availability of tools and information management systems, quality data, and accessibility of data are all foundational and highly influential to the DDDM process. Hamilton et al. (2009) indicated that a foundational component of developing a solid DDDM system entails the accessibility to data systems, through technological advances.

The use of data management systems such as Electronic Curriculum Assessment Resource Tool (ECart) have been proven to have a significant influence on educators' ability to triangulate, analyze, and make meaning of the data; furthermore, building on DDDM proficiencies (Shaffhauser, 2012). ECart became established as a component of a district's Shared Learning Collaborative Initiative to create a shared learning infrastructure (Shaffhauser, 2012). Through direct linkage to the State's Standards of Learning, ECart has assisted teachers with connecting and triangulating longitudinal data sources to current data sources (Shaffhauser, 2012). ECart has also proven beneficial by reporting problems that prevent teachers from accessing data (Shaffhauser, 2012). The program also identifies intervention techniques to assist teachers with modifying

instruction as per the results of the data, making the process of DDDM less burdening (Shaffhauser, 2012).

Even though the use of technology enhances teachers' ability to use data, Sellar (2015) emphasized the importance of avoiding the view of data infrastructure as material support for collecting, analyzing, and storing data. Technology that is designed to assist in DDDM develops and maintains materials as well as and enables or demands the existence of new related practices (Sellar, 2015). Technological infrastructures are vital to assist teachers with the timely collection and organization of data (Kallemeyn, 2014). While establishing data-based decision-making training conditions, Keuning, van Geel, Visscher, and Fox (2016) pointed out that certain preconditions are foundational to implement, including the accessibility of assessment and technological tools. In their quantitative study measuring the effects of a PD DDDM intervention on student growth in 40 elementary schools in the Netherlands, Keuning et al. (2016) found that a cycle of supportive data-driven interventions increased student performance, particularly in the content of mathematics.

The establishment of low burden data collection methods serves to decrease high levels of teachers' frustration with data use due to the time constraints involved in using data in the decision-making process (Marsh, 2012). While the development of technological resources has influenced teachers' ability to collect vast amounts of data, it is also important to consider that it could sometimes become overwhelming and contributes to incomprehensible analysis (Roderick, 2012). An overload of data interferes with teachers' ability to use data to influence student achievement (Henig, 2012). Data

and information overload could increase data use for the wrong reasons rather than using it directly aligned with instruction (Henig, 2012). While emphasizing the need for structured time allocated to analyzing student data Crone, Carlson, Haack, Kennedy, Baker, and Fien (2016) indicated that too much data to analyze could lead to an insufficient analysis of data per student, leading to insufficient analysis.

Schaffhauser (2012) pointed out that even though DDDM procedures could ultimately contribute to the increase in levels of student achievement, teachers disagree primarily because of sufficient time and available materials. According to Marsh (2012) tensions regarding the implementation of DDDM arise due to the lack of necessary resources and data capacity. Gurzon (2015) indicated that the access to DDDM implementation resources has a significant role in developing a culture where teachers regularly use data to drive instructional decision-making. Access to these resources is a component of DDDM that aligns cohesively with PD and leadership support (Gurzon, 2015). Along with insufficient resources to implement DDDM, the lack of flexibility that teachers have to adjust their curriculums in response to data analysis results also served as a barrier for teachers to actively participate in DDDM supportive interventions (Marsh, 2012).

Data validity and reliability. The establishment of data verification methods serves to assist educators and leaders in ensuring that data is reliable to use towards decision-making (Gill et al., 2014). Pella (2012) indicated that data becomes more valid and reliable when it is gathered and triangulated with a variety of sources including both quantitative and qualitative. Pella (2012) also pointed out that test score data alone such

as those administered sporadically throughout the school year does not reveal much about how to modify instruction (Pella, 2012). A lack of balance between the analysis of qualitative and quantitative data sources ultimately calls for an improvement in how data-driven decision-making is taking place in schools (Crone et al., 2016). Farrell (2015) argued that limited access to high-quality data has become a problem for school districts attempting to implement DDDM procedures.

Simmons (2012) indicated that the methods of data collection ultimately have a significant role in determining whether or not data is valid and comprehensive enough to influence student outcomes positively. The validity of assessment data is contingent on whether or not the assessments are designed to gather information on the process of students' thinking and not just on what students are unable to do (Supovitz, 2012). The three most common assessment data include classroom teacher assessment data, school-wide assessment data, and external assessment data required by policymakers (Supovitz, 2102). Goren (2012) suggested that most test-generated data has no actual influence on classroom instruction, yet it has a substantial role in educational policies.

Park, Daly, and Wishward Guerra (2012) suggested that positive outcomes to student learning would occur when teachers shifted away from the primary reliance on test results and began to examine various sources of data that gives them access to learning strategies. Policymakers frequently reject qualitative data due to fear of change and criticism that it often indicates (Mackey & Hollie, 2015). They also suggested that many leaders become hesitant to use data other than test results in fear of adding more complication to the preexisting complicated system of data use (Mackey & Hollie, 2015).

Many districts continue to use primarily quantitative data sources such as those gathered from test results as the primary sources to inform educational programs (Pella, 2012). When this type of data alone is used to drive classroom decisions, it provides a narrow focus that encourages a one-size-fits-all approach to data use that is not conducive to meeting the needs of students (Pella, 2012). When formal assessments are the only data used to drive instructional decision-making, it alludes to the idea that a one-size-fits-all approach is sufficient to drive decisions (Gullo, 2013). The analysis of test scores by alone fails to provide teachers with valuable information regarding the cognitive knowledge that students bring with them outside of the classroom (Pella, 2012). When teachers are encouraged to analyze data that is derived only student test results, it creates a narrow pedagogy that disconnects them from the actual learning of students (Pella, 2012).

The use of standardized assessment as a means of collecting data places accountability before meaning, creating an unsafe environment for data usage (Chappuis, 2014). The relationship between test score data and accountability creates frustration in teachers (Pella, 2012). In a study that highlighted the effects that DDDM and perceptions had on student achievement, Faria et al. (2013) found a connection between teachers who viewed DDDM as problematic and lower student achievement levels.

The gathering of quantitative and qualitative data in the classroom can be valuable to teachers' reflection of instruction (Bell & Aldridge, 2014). The use of qualitative assessment data can serve as a valuable data source that can be shared with students to foster self-directed learning (Bell & Aldridge, 2014). Gullo (2013) suggested

that when collecting data from a wide range of sources, valuable information on student progress could be used to provide leaders with information on modifying academic curriculums.

Reflective practices of educators through verbal conversations enhance the identification of strengths and weaknesses in instruction (Smolarek & Hora, 2016). Structural critical reflections assist educators with identifying structural issues that influence teaching such as lack of time to provide additional student support while socio-critical reflection can help educators recognize embedded assumption regarding student failure and weaknesses (Smolarek & Hora, 2016).

Mandinach (2012) suggested that when analyzing assessment data, it is essential to consider the actual assessment itself. This type of analysis is vital to ensure that the data is relevant to use in the decision-making process (Mandinach, 2012). The designing of student assessments plays a huge role in whether or not data is relevant and valid enough to inform instruction (Mandinach, 2012). Test quality influences the validly of information about student development, their thought processes, and misconceptions of data (Supovitz, 2012). According to Supovitz (2012), the implementation of DDDM increases when teachers gain knowledge of how to design sophisticated assessments. Assessment designing can help teachers collect data that enhances information on the process of students' developmental learning, thinking patterns, and misunderstandings of information in a particular content area (Supovitz, 2012). With emphasizes on assessment and curriculum alignment Roderick (2012) pointed out that assessment designing determines whether or not curriculums such as those associated with Common Core

undergo implementation in a punitive manner or a toolkit for intervention. While emphasizing the monitoring of student performance throughout the entire school rather than simply relying on the end of the year assessments Park et al. (2012) highlighted the importance of collaboration to create meaningful assessments aligned with the unique needs of each school building.

When assessments are carried out without a focus on accountability, educators can use assessment data to develop an understanding of student learning (Chappuis, 2014). Data quality depends greatly on how it was gathered (Gullo, 2013). Conducting analysis that verifies data sources are relevant and diagnostic is a vital component of DDDM (Gill et al., 2014).

Professional development and internal DDDM support systems. Gill et al. (2014) identified analytical capacity as a foundational component of DDDM developed through PD and the use of internal support systems. PD in educational reform has become an extreme challenge, and many variables that broaden understanding of DDDM implementation remain unexplored (Dunn et al., 2013b). According to Simmons (2012), some of the challenges when attempting to implement DDDM include the development of staff analytical capabilities and the accessibility of toolkits to support teachers with addressing students' needs that are revealed by data. Mandinach and Gummer (2015) indicated that even though teachers may be familiar with how to use data, additional supports are often needed to facilitate the development of data literacy skills. When implementing DDDM teachers require PD to build on their capacities of data usage (Mandinach & Gummer, 2015).

While the process of data analysis can be complex, teachers' capacity to use data can be built through ongoing PD where they are given the supports needed to understand the patterns of data and to make valuable meaning of it (Lange et al., 2012). Simmons (2012) argued that the expectations of teachers and leaders to continually use data to drive instructional decision-making can occur with appropriate time allocation, PD, and the use of toolkits and strategies to support unique building needs.

While emphasizing the importance of creating a balance between accountability and DDDM supports, Simmons (2012) referred to PD on DDDM as a nonnegotiable contractual agreement resource provided by districts. With an emphasis on instructing Common Core State Standards through DDDM, Green, Schmitt-Wilson, Versland, Gibson, and Nollmeyer (2016) highlighted the necessity to implement PD to guide teachers through the analysis and interpretation of data to during instructional planning. They also suggested the importance of utilizing DDDM PD to assist teachers with understanding performance data that aligns with content area assessments to inform and improve instructional practices (Green et al., 2016).

According to Staman, Visscher, and Luyten (2014), PD on enhancing the knowledge, skills, and attitudes of teachers and leaders has a positive influence on DDDM implementation. Teachers develop the skills necessary to use data for instructional decision-making when PD is administrated in a collaborative environment that is intellectually appealing, aligned with prior knowledge, and content related (Wayman, 2015). In a study assessing the outcomes of Data Chat, a collaborative initiative to analyze student assessment results, Piro, Dunlap, and Shutt (2014) indicated

that when collaborating around data use, teachers developed an increase in confidence and self-efficacy. Pelle (2012) emphasized the benefits of PD models for the use of classroom DDDM when they are collaborative, investigative, and directly about the process of teaching and learning (Pella, 2012). Datnow and Hubbard (2015) pointed out that if teachers are going to make meaning of data, they should develop the skills of how to analyze results, questions, and the purpose of different assessments.

Given the expectations teachers are given regarding DDDM in their schools, the lack of skills sets required to understand, assess, and apply data results to instruction gives them anxiety (Dunn et al., 2013a). Anxiety leads to low levels of efficacy and decreases the likelihood that teachers will participate in DDDM related procedures (Dunn et al., 2013a). Dunn et al. (2013a) pointed out the lack of confidence that teachers have regarding their ability to successfully access data technology resources ultimately interferes with their efficacy towards engaging in DDDM. DDDM implementation struggles and complexities are key indicators of self-efficacy and anxiety (Walker, Reeves, & Smith, 2016). In an attempt to build efforts to address concerns associated with DDDM implementation Walker et al. (2016) emphasized the importance of measuring teachers' levels of self- efficacy, and anxiety towards DDDM.

In addition to ongoing PD to support DDDM, the presence of internal support systems arose in numerous works of current research through the use of data-coaches and data teams, as well as the development of collaborative data communities. Marsh (2012) suggested that the along with PD, the use of data coaches is an intervention to guide teachers in their attempts to use data in the decision-making process. Data coaches also

have a significant role in creating professional learning communities that value the use of data as an ongoing method of school improvement (Huguet et al., 2014). Data coaches are often given the responsibility of assisting teachers who are struggling with DDDM implementation and the collecting of data (Huguet et al., 2014). Coaches also provide teachers with data analysis resources, and they model lessons aligning results to instruction (Huguet et al., 2014). Schaffhauser (2012) indicated that when educators are provided with toolkits to drill down on data and assisted with creating data analysis reports, the overwhelming feeling of data overload becomes decreased.

As a result of teachers struggling to develop proficiency in utilizing data to drive instructional decision-making, schools have been utilizing data coaches to guide them in becoming data literate and in assisting leaders with the development of a collaborative data culture (Marsh et al., 2015). Marsh et al. (2015) also indicated that data coaches have a significant role in guiding DDDM endeavors by focusing on teachers' skills as well as their knowledge established through the interactions with people from different expertize. Teachers who work directly with data coaches are more likely to appropriately demonstrate newly acquired DDDM skills and abilities rather than teachers learning these strategies independently without guided assistance (Marsh et al., 2015).

Despite the use of data coaches as a successful DDDM intervention, Marsh (2012) indicated that sustained PD including the ability for data coaches to address the needs of all teachers remains a challenge, and as a result often hinders the implementation of school-wide DDDM. While the use of data coaches increases DDDM in school buildings, coaches are only as useful as their levels of DDDM expertize (Marsh

et al., 2015). Teachers are more apt to collaborate with coaches who they believe to possess high levels of DDDM proficiencies (Marsh et al., 2015). Data coaches guide teachers by using a wide variety of practices, toolkits, and norms while developing data coaches provide teachers with data charts but do not assist them with making meaning of them (Huguet et al., 2014). Huguet et al. (2014) indicated that the presence of interpersonal skills of coaches in a school building could serve to bring forth confidence in their ability to collaborate with teachers throughout the implementation of DDDM. The use of data coaches in school buildings has a central role in building the capacity of teachers' ability to use data for classroom decision-making (Huguet et al., 2014).

Farley-Ripple and Buttram (2015) pointed out the need for teachers and leaders to collaborate surrounding data use to create high levels of data capacity that are required to drive instructional decision-making. PD, technology access, and the development of data-driven norms are not sufficient enough to ensure successful DDDM implementation (Farley-Ripple & Buttram, 2015). The development of internal building networks where teachers and leaders collaborate to improve teaching and learning creates high levels of data capacity that are needed to drive instructional decision-making (Farley-Ripple & Buttram, 2015). While a lack of teachers' capacity of data usage has contributed to insufficient DDDM, Farley-Ripple and Buttram, (2015) suggested addressing this problem through the establishment of collaborative DDDM networks.

Abbott and Wren (2016) found that teacher engagement in collaborative professional learning communities contributed to the successful analysis of data on locally developed performance tasks that eventually became part of planning for

continuous school improvement. According to Lange et al. (2012), the establishment of an environment that is conducive for DDDM and the presence of a collaborative vision driven culture is imperative. Roderick (2012) suggested that the development of collaborative relations where teachers openly discuss data use without feeling judged on their performance increases the likelihood of identifying intervention strategies through the analysis of data (Roderick, 2012). Lange et al. (2012) indicated that the comprehension and value of DDDM by all staff in a school environment is necessary to empower one another and build upon one another's strengths throughout the implementation process.

Collaborative conversations that include building off of one another's ideas rather than sharing stories about teaching experiences serves to create an atmosphere that is conducive to exam data (Slavin et al., 2013). Salvin,et al (2013) also indicated that the time spent on collecting and analyzing data is far less impactful than assessing the implications of the data analysis process. Teamwork and modeling of data strategies build and strengthen the capacity for teachers to develop data literacy (Mandinach & Gummer, 2015). Conversations around data usage can bring forth strategic decision-making when the focus is placed on data examination, breaking down the results, creating action plans, and observing student growth (Kekahio & Baker, 2013). Wayman (2015) suggested that information sharing or communicating data across numerous levels of an organization stimulates innovations and ideas on DDDM.

Even though collaborative communities and their positive influence on implementing DDDM shows up in numerous research studies, Datwon et al. (2013)

argued that the complexities of organizing teacher collaboration can lead to possible constraints in bringing forth improvement. In this argument, Datwon et al., (2013) emphasized that the leader's role in organizing the conditions for collaboration around DDDM bring forth positive outcomes. In a study analyzing school level organizational routines surrounding data use, Kallemeyn (2014) found that teachers' often viewed collaborative routines that failed to yield knowledge for interpreting data as mindless processes that were demotivating.

As a component of collaborative inquiry, the development of data teams enhances the development of DDDM in schools (Mandinach & Gummer, 2015). The establishment of data teams in school buildings contributes to the assessment of high-quality data, school leadership, access to DDDM training and supports, organizational knowledge, and individual attitudes (Schildkamp & Poortman, 2015). While examining how school data teams function in the absence of PD Crone et al. (2016) found that they are most successful following the establishment of timelines for meeting frequency, time frames for student discussions, follow-ups on action items, and the use of a self-assessment tool to assess objectives.

Collaborative efforts amongst members of data teams in school buildings enhance data analysis efforts that lead to bringing forth student achievement (Kekahio & Baker, 2013). The development of a collaborative environment has been a concern when establishing collaborative data analysis practices amongst teachers (Michaud, 2016). With a focus on proximity and transience as a reflection of how and why teachers collaborate around data use, Michaud (2016) emphasized that teachers who feel

connected to their data teams become more likely to frequently and independently seek collaborative data analysis efforts with team members. Michaud (2016) also suggested that while technological advances have been beneficial to DDDM, the face-to-face collaboration amongst teachers has the greatest impact on changing the pedagogy of teachers surrounding collaboration and data use.

Leadership roles in DDDM. Gill et al. (2014) highlighted the role of data-driven leadership as an essential component of establishing a culture of DDDM in a school building. Gerzon (2015) suggested that data cultures include ongoing communication of data expectations by the presence of data-driven leadership that cultivates an environment for data use. School leaders have a vital role in coordinating DDDM practices and collection systems directed towards the needs of teachers (Gurzon, 2015). Gurzon (2015) identified leadership as fundamental to the development of establishing a data-driven culture by clarifying DDDM expectations, allocating time, coordinating DDDM procedures, creating a safe environment for DDDM, and providing PD on data literacy. Gerzon (2015) also indicated that in a strong data-driven culture the vision on data use is clear, data is accessible, and data analysis is occurring consistently (Gerzon, 2015).

According to Farley-Ripple and Buttram (2015), the establishment of building-wide data cultures increases the presence of positive interactions and quality collaborative relations between colleagues throughout DDDM endeavors. Mackey (2015) emphasized that data-driven leadership has a significant role in the establishment of school-wide data cultures where teachers are supported with strategies to use data in the decision-making process. Marsh (2012) emphasized the importance of the role of the

leader as one who creates vision and direction for DDDM in school buildings. Before implementing a two-year training course on the use of data in the decision-making process. Environmental factors such as shared values that develop through leadership influence the development of DDDM capacity interventions (Marsh & Farrell, 2014).

School leaders who engage in ongoing interaction with their school staff have a significant role in communicating the importance of data use (Roberts, Bastian, Ekwaru, Veugelers, Gleddie, and Storey, 2016). School leadership can bring forth school-wide change, as it pertains to DDDM and the sharing of evaluation data to drive decisions (Roberts et al., 2016). Inspirational leaders who inspire visions amongst their staff have the power to shape the culture of the building to a focused and collaborative environment that leads to productivity (Herrington, 2013).

Leaders establish DDDM cultures through distributed leadership by assigning roles and collaborative opportunities to facilitate DDDM procedures (Gurzon, 2015). Gerzon (2015) also argued that when leaders fail to guide teachers and offer them support throughout the implementation of DDDM, it sends an uncertain message about building expectations. The lack of communication of goals about data usage can create confusion about instructional practices and misalignment between curriculum and instruction (Datnow & Hubbard (2015). This lack of communication often contributes to the gathering of data that lacks validity towards decision-making (Datnow & Hubbard (2015). While avoiding the top-down approach where leaders use data as a punitive initiative aimed towards penalization, data-driven leaders create a mission-driven collaborative environment where it valued as a part of everyday improvement (Lange et

al., 2012). Spillane (2012) highlighted organizational benefits of leader and teacher collaboration in the process of collecting, analyzing, and implementation DDDM practices.

Mandinach (2012) highlighted the significance of leadership and their role in the development of school-wide data plans to support the DDDM process. School leaders have a vital role in designing organizational routines that place DDDM as a central role in school-wide practices that lead to data collection that is diagnostic and prognosis to inform instructional content, instructional strategies, and PD (Spillane, 2012). Data capacity is an organizational component of DDDM associated with how leaders coordinate DDDM procedures and allocate resources (Farley-Ripple & Buttram, 2015).

With an emphasis on the development of targeted PD, Gullo (2013) placed importance on the role of leaders and their analysis of school-wide data to recognize areas in need of support. According to Gerzon (2015), the establishment of a data-driven culture in a school building is contingent on educators' participation in PD and access to tools and resources that guide DDDM. The Center for Data-Driven Reform in Education assisted school districts with DDDM challenges by conducting data reviews, creating benchmark assessments, directing school walkthroughs, and emphasizing data-based solutions (Salvin et al., 2012). This intervention served to motivate school leaders to adopt an evidence-based intervention program (Salvin et al., 2012). Leaders have a significant influence on designing the environment for data usage scheduling, data access, and establishing norms surrounding data usage (Kallemeyn, 2014).

In addition to the importance of leaders preparing teachers to implement DDDM, Abbott and Wren (2016) indicated that shortcomings in administration preparation regarding their ability to cultivate a clear vision and a strategic DDDM system. The shortcomings contributed to a lack of universal success in utilizing data to increase levels of student achievement Abbott and Wren (2016). While leadership practices are fundamental to guiding implementation of DDDM, despite the attempts of many leaders to implement such interventions through workshops and access to technology, there is a lack of understanding of how capacity building techniques contribute to teachers' ability to turn data into meaningful information (Marsh & Farrell, 2014). While data use can become a tremendous responsibility for school leaders, it is imperative for them to acquire the dispositions to implement school-wide DDDM (Mackey & Hollie, 2015). The on-the-job DDDM training that leaders experience once they complete their educational programs are insufficient, and DDDM preparation before graduation enhances skill levels before entering their professions (Mackey & Hollie, 2015). Holter and Frabutt (2012) indicated that even though educational leaders have become familiar with utilizing data to meet accountability guidelines as defined by the No Child Left Behind Act, it is beneficial for them to receive the proper training on how to set up an atmosphere conducive to the implementation of DDDM.

Mandinach and Gummer (2015) suggested that schools of education could serve as resources to provide proper training to leaders on how to become data literate. Data usage that turns statistics into meaning requires individuals to develop data literacy that can be used to turn data into actions that inform instruction (Mandinach, 2012). PD

enhances skills sets and can be fully developed and supported in collaboration with schools of education (Mandinach, 2012).

Ethics and accountability in DDDM. It is beneficial for school systems to be designed in ways that support DDDM by strategically aligning multiple levels of organizational supports including those associated with accountability pressures, processes, and practices (Farrell, 2015). Gill et al., (2014) highlighted the importance of developing systems of accountability surrounding data usage. Henig (2012) argued that the political components related to using data to measuring teachers' performance have become a weapon that creates barriers that stand in the way of teachers' motivation and willingness to engage in DDDM. The anxiety that many teachers experience related to DDDM and fear of whether or not they will perform well in the classroom often interferes with their engagement in DDDM (Dunn et al., 2013b). When attempting to implement practices associated with DDDM in schools, Dunn et al. (2013b) also suggested addressing the role of the teacher and their levels of efficacy and anxiety towards these processes. When teachers have efficacy towards their practices, they may engage in learner-centered teaching strategies associated with DDDM (Dunn et al., 2013b).

In a qualitative study that investigated patterns of data use and organizational supports in public school districts and charter schools, Farrell (2015) indicated that the pressures associated with accountability ultimately had a negative influence on DDDM initiatives. While many teachers understand that data could be used as a powerful tool to inform instruction, many also believe that data is used primarily for accountability

purposes, creating a view of DDDM as a less valuable method to inform practice (Datnow & Hubbard, 2015). According to Marsh (2012), one of the interventions geared towards the development of DDDM includes the implementation of strategies that use accountability incentives to promote ongoing DDDM.

Data use and accountability remain common topics of focus in educational research; nevertheless, some policymakers have begun to place attention to shifting DDDM procedures for compliance related conditions to a system that emphasizes using data to align instructional strategies with the needs of students (Mandinach, 2012). Despite a shift in thinking, many accountability policies have caused teachers to develop concern regarding the assessment of their performance based on things that are out of their control such as health, parental support, nutrition, and welfare (Mandinach, 2012). The concerns often contribute to teachers becoming hesitant to participate in DDDM procedures (Mandinach, 2012). While emphasizing the process of understanding the findings of data analysis Kekahio and Baker (2013) suggested to focus on prioritizing actionable challenges that educators can have a direct influence on rather than situations that are difficult to address directly such as those associated with socioeconomics.

Henig (2012) suggested that equally important to understanding the data itself, teachers and leaders might benefit from developing an understanding towards the political use of data as it pertains to systems of accountability (Henig, 2012). Existing research on DDDM gears towards the effects of data at a school level and rarely emphasizes the effects of data use on policies, creating an imbalance between accountability and DDDM supports (Simmons, 2012). Educational guidelines have a

significant role in DDDM, where the data collected can be used in ways to distribute power while holding groups of individuals such as teachers accountable (Simmons, 2012). School leaders who are data-driven articulate meaningful and purposeful DDDM initiatives that encourage staff to come together and trust in the significance of data for decision-making (Park et al., 2012). By promoting a culture where teachers share tasks surrounding DDDM usage, leaders can place more focus on decision-making that avoids placing blame on teachers, students, or families (Park et al., 2012). With a focus on district leadership and their role in promoting data-driven cultures Park et al., (2012) highlighted the importance of utilizing data to motivate and assist with creating objective assessments aligned directly to classroom instruction. The use of data in a nonthreatening and nonevaluative way increases the likelihood that teachers will apply DDDM regularly in their daily practices (Marsh, 2012).

Conclusion

Common interventions geared towards the development of DDDM strategies include teacher support systems, technological supports, data production, accountability incentives, and buildings norms on data use (Marsh, 2012). While the promotion of DDDM in schools continues, it is important to consider the preconditions for implementations (Geel et al., 2016). Kallemeyn (2014) highlighted organizational and political factors in a school building all have a significant role in the implementation of DDDM including data availability, norms, leadership, routines, technological infrastructure, and allocated time. According to Gerzon, (2015), the establishment of a data-driven culture in a school building requires PD support with constructs and

resources to use data in decision-making practices. Collaboration surrounding the use of DDDM through coaching and collaborative learning increases the fidelity of DDDM implementation (Huguet et al., 2014; Marsh, Bertrans, & Huguet, 2015).

When referring to data infrastructure as a necessary component to DDDM, Sellar (2015) emphasized the need to refrain from viewing it as a physical support system, but rather as an element of practice that serves to build upon other intertwining practices. Low burden data collection methods that align with teachers' preexisting responsibilities contribute to the development of a data infrastructure (Marsh, 2012). The overwhelming responsibilities associated with the gathering of data and the analysis process can become burdensome for teachers (Henig, 2012; Roderick, 2012). The ongoing implementation of DDDM is contingent upon the available materials and the time allocated to facilitate them, surrounding the use of technology to collect and analyze the data (Gurzon, 2015; Schaffhauser, 2012).

The validity and reliability of data often become established through the triangulation of data sources including both qualitative and quantitative Gullo, 2013; Pella, 2012). This establishment provides teachers with a solid foundation for modifying instruction and address student needs (Gullo, 2013; Pella, 2012). The use of accountability data alone provides teachers with a narrow focus that disconnects the data to the actual process of students learning (Pella, 2012).

PD is a necessary component to implement DDDM and serves to strengthen the data literacy of teachers as well as build on their capacities of data usage in school buildings (Lange et al., 2012; Mandinach & Gummer, 2015). DDDM PD that is

engaging, content specific, and aligned with prior knowledge may serve to provide teachers with foundational DDDM skill sets aimed to both teaching and learning (Wayman, 2015; Pella, 2012). When teachers lack DDDM literacy in regards to understanding, assessing, and applying data results, they often develop sense anxiety and a lack of confidence towards the implementation process (Dunn et al., 2013b). The use of data coaches to establish a collaborative data community has a significant role in building the data capacities of teachers and their ability to use data to drive instructional decision-making (Huguet et al., 2014). The establishment of data networks surrounding data usage where teachers openly and confidently discuss data also creates high levels of data capacity among teachers and sustained implementation of DDDM (Farley-Ripple & Buttram, 2015; Roderick, 2012).

Data-driven leaders who communicate data expectations, coordinate DDDM practices, and cultivate a positive environment for data usage are imperative to establish a DDDM culture (Gerzon, 2015). When building leaders fail to communicate a clear collaborative vision surrounding regular data use, it sends an unclear message about the implementation of DDDM (Datnow & Hubbard, 2015; Gerzon, 2015). A top-down leadership style where leaders aim to use data in a punitive manner serves as a disadvantage that can prevent teachers from engaging in ongoing DDDM (Lange et al., 2012). While DDDM can become overwhelming for school leaders, it is essential for them to receive the proper training on becoming data-driven (Holter & Frabutt, 2012). Schools of education provide valuable resources to leaders to enhance DDDM skill sets that facilitate a data-driven school culture (Mandinach & Gummer, 2015).

Ethics and accountability surrounding DDDM in education have become a widely debated topic and the political components related to utilizing data to measure teacher performance has served to create barriers that stand in the way of teachers' engagement in regular DDDM (Henig, 2012). Anxiety related to DDDM and teacher performance creates a sense of fear associated with utilizing DDDM; therefore, a focus on developing efficacy towards DDDM may increase the likelihood that teachers will associate themselves with these strategies (Dunn et al., 2013b; Farrell, 2015). Even though policymakers have begun to shift their focus to emphasize the use of data in alignment with the instructional needs of students, teachers across the globe remain hesitant to participate in DDDM with concerns regarding student performance based on circumstances that are out of their control (Mandinach, 2012). The establishment of a positive data-driven culture in a school building includes the implementation of practices and the use of data in a non-threatening manner (Marsh, 2012).

Implications

The content of the review of the literature on DDDM in education supports the necessity for districts to develop structured organizational systems to aid implementation. Organizational DDDM support systems include those associated with infrastructure, validity and reliability, PD, leadership support, and the development of a positive DDDM culture. As referenced in Tenets one through four of the XYZ School District's 2016-2017 DTSDE, the classification of good standing schools is heavily reliant on the use of data to drive instructional decision-making.

While veering away from a one-size-fits-all curriculum, DDDM can assist teachers with gathering information on how to meet the unique needs of students by building off of their existing strengths or improving their identified weaknesses.

Given the complexity of DDDM, the XYZ School District continues to struggle with implementation. Tenet One of the district's 2015-2016 DCIP indicates the district's role in ensuring DDDM practices in all schools, as well as the implementation of DDDM PD for all teachers and leaders throughout the district. As indicated in the XYZ School District's DTSDE, these efforts are inconsistent, and they have been insufficient in the use of DDDM practices throughout the district to drive instructional decision-making and support student achievement.

In alignment with the context of current research findings on DDDM in schools, the research questions of this study were used to bring forth data that identifies how DDDM support systems as they relate to the use of data to drive instructional decision-making have affected the shift of schools from *focus* or *priority* to *good standing* in the XYZ School District. During the 2015-2016 school year, internal DDDM support systems may have influenced teachers' use of data to drive instruction in the schools that transitioned from either *focus* or *priority* to *good standing*. This study highlights the implications of those practices and may suggest that action is taken to develop supports in alignment with DDDM procedures in other schools throughout the district.

While emphasizing the significance of DDDM to create instruction that aligns with student needs, classroom teachers and leaders can use this information to bring forth social change in a variety of ways. Supervising administrators and program directors at a

district level can use the results of this study to modify or change current district policies related to DDDM by developing a structured system of support protocols. DDDM in education remains a central point of student achievement where districts are shaping guidelines to ensure that data serves as evidence to inform instructional practices (Mandinach, 2012). The results can guide the development a project that identifies methods to address gaps in current DDDM policies in the district by outlining recommendations to modify or redevelop DDDM protocols. Data infrastructure, validity and reliability, PD, leadership support, and the development of a positive DDDM culture serve as topics of focus when organizing district-wide DDDM protocols.

Supervising administrators at a district level can also use the data from this study to assist building leaders with the development of their SCEP. Each school's SCEP identifies individual school-wide goals and activities under the documents 6 Tenets of the DTSDE. Tenets three and four identify the presence of DDDM to drive instructional decision-making tailored to student needs. As identified in the DCIP, District supervisors regularly collaborate with building leaders to guide them through the development and implementation of their school's SCEP. Data from this study can be used to identify ways to align each school's current DDDM initiatives and goals to the district's protocols. District level supervisors could use the findings and recommendations from this study to develop a plan where they collaborate with their assigned school's School-Based Management Team (SBMT) to assist the team with aligning appropriate DDDM protocols to their school SCEP. As per State guidelines, each school in the district is required to have an SBMT meeting that meets monthly to review their school's SCEP

and DTSDE documents. While each school's SCEP is uniquely designed to tailor to the needs of their population of students and staff, supervising administrators can guide administrators, and administration teams such as the SBMT on how to access and organize DDDM supports to aide with SCEP implementation and development.

The process of learning is complex, emphasizing the need to individualize instructional approaches for students. When implemented effectively, DDDM identifies the individual needs of students and provides teachers with information to create instruction that is engaging and student-centered; furthermore, increasing the chances that students will graduate with college or career readiness skills. Many researchers on DDDM fail to emphasize the isolated factors that contribute to implementation, resulting in a lack of substantial evidence as to what factors need to be in place to adequately carry out DDDM procedures (Hamilton et al., 2009). In the XYZ School District's emphasis on DDDM linkage to increased student achievement, the analysis of DDDM in the schools that transitioned to good standing can be fundamental to identifying how other schools in the district or even other similar urban districts can develop and implement similar procedures. The State Department of Education's 2016-2017 Accountability Report re-identified the XYZ School District as *focus* and identified 35 of 55 schools as either *focus* or *priority*. With DDDM organizational support protocols in place, the likelihood increases for additional schools across the district to transition into good standing accountability status. When teachers and leaders implement instruction to promote student engagement and achievement, the likelihood increases that they will develop the

skills necessary to obtain a high school diploma as well as gain proficiencies to guide them in becoming contributing members of society.

Summary

DDDM has become a focal point of interest for policymakers, leaders, and teachers across the nation as a significant component used to increase student achievement. Despite the emphasis on the use of DDDM and the access to considerable amounts of data sources, many school districts continue to experience difficulties establishing DDDM practices (Slavin et al., 2013). DDDM encompasses multiple interactive processes and conditions including school features, individuals, data sources, collaborative teams, and data use (Schildkamp & Poortman, 2015). Gill, Borden, and Hallgren (2014) suggested that some of the organizational supports necessary to establish school-wide DDDM practices include: access to data, data collection methods, reliability and validity of data, internal support networks such as data teams, data coaches, ongoing teacher training, and regular collaboration with data-driven leaders.

With an emphasis on how organizational supports influence the implementation of DDDM, the literature in this study supported various themes. The topics presented throughout the study include the importance of structured data collection methods, validity and reliability of data, PD on DDDM, the implementation of internal DDDM support systems, data-driven leadership, and addressing accountability related to DDDM. As identified in the literature, the lack of DDDM supports to assist teachers with understanding how data can be used to transform classroom practices serves as an implementation barrier that impedes teachers' and leaders' ability to use data to increase

student achievement (Roderick, 2012). Factors that influence the implementation of DDDM include data capacity, data properties, leadership, organizational structures, and values of data use (Marsh, 2012).

I used the data gathered form this study to investigate how organizational supports are implemented to facilitate DDDM in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a Focus District. Theory of Action for DDDM surrounding the presence of organizational supports serves as the conceptual guide to understanding DDDM implementation efforts. Examining how DDDM organizational supports influence the implementation of DDDM may enable us to develop an understanding of how to develop DDDM programs and procedures effectively. The following section of this project highlights the methodology of the study including the research design, setting and sample, measures for ethical protection, data collection methods, and data analysis procedures.

Section 2: The Methodology

Introduction

Educational research continues to indicate the use of DDDM as a powerful method to increase student achievement (Marsh and Farrell, 2015). Despite this indication, there remains a lack of evidence on individual DDDM improvement strategies and what is needed to ensure DDDM practices are rolled out in ways that facilitate positive change (Slavin et al., 2013). The purpose of this study was to explore how building level organizational supports influences the implementation of DDDM to drive instruction in urban schools that recently transitioned from *priority* or *focus* to *good standing* on the State's 2016-2017 Accountability Report. Given the emphasis that the district places on the importance of DDDM in school turnaround, in order to assess how organizational supports influenced the implementation of DDDM, the data gathered from this study expressed the perspectives and experiences of school leaders and teachers in schools that recently transitioned from *priority* or *focus* to *good standing*.

Research Design

This project study identifies how internal organizational supports influenced the implementation of DDDM in three schools in an urban district that recently transitioned from *priority* or *focus* to *good standing*. I used a case study approach to collect data from leaders and teachers in three schools to provide an understanding of internal organizational supports as they pertained to the implementation of DDDM. Although qualitative case studies fall under the category of ethnographic research, these particular designs differ due to their emphasis on activities per individual rather than focusing on

shared patterns that develop in a group over time (Creswell, 2012). Case studies are predominantly beneficial for researching educational innovations as they emphasize processes rather outcomes (Merriam, 2009). According to Yin (2009), case studies are used in research when the researcher is trying to analyze how something is occurring or happening. A qualitative case study was the most appropriate design because the gathering of interview data in schools that experienced a similar accountability transition could provide insight on how the organizational support related to DDDM influenced their transitions. In qualitative research, the outcome of data analysis is not discovered but rather constructed, as the analysis of data is conducted based on the interpretation of experiences and how individuals make sense of them (Merriam, 2009). Because of my interest in insight, discovery, and interpretation, qualitative research was most appropriate for this particular study (Merriam, 2009). Given the descriptions, I used the data gathered from this study to seek an understanding of leaders' and teachers' interpretations and experiences with DDDM to drive instruction as it pertains to the presence of internal support systems.

Originally, a mixed methods case study was considered for this project due to the process of triangulation of qualitative and quantitative data sources and bringing forth data from different angles of research to create a broader analysis. Being that this is a single study using isolated procedures, bringing in mixed methods would result in a noncomplementary study not fully representing mixed methods research (Yin, 2006). The desire to capture the life experiences of each participant as they interacted with DDDM leads to the possible consideration of narrative research. A case study was most

appropriate for this research however because of the emphasis on developing an understanding of participants' experience with DDDM while focusing on process and not the outcome. The units of analysis for this study were the organizational supports implemented in building-wide DDDM to drive instructional practices. This study was guided by the following research questions:

RQ1: How and to what extent do teachers implement DDDM practices to drive instructional decision-making in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ2: What are educators and leaders' perspectives regarding data culture surrounding DDDM to drive instructional procedures in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ3: How does data infrastructure influence teachers' use of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ4: How are teachers individually and collaboratively supported during the implementation of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

Setting and Sample

I conducted this study in a diverse urban public school district that serves 34,000 students in nearly 60 facilities. Initially, I selected five schools in the district to study because of their transition from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Status Report. Only three of the five schools participated. The Accountability Status Report reflected the processes and practices in each of the buildings that occurred during the 2015-2016 academic school year. Two of the studied schools were elementary schools serving students from Grades 3-8. The remaining school studied was a high school serving students from Grades 9-12.

I identified participants of the study through concept sampling, a form of purposeful sampling where I choose them from sites that supported the concepts of study (Creswell, 2012). Purposeful sampling is used in research studies to select participants when the purpose of the study serves to inform the identification of those best aligned with the study's goals (Merriam, 2009). I selected the leader and teacher participants of this study purposefully based their experiences in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Status Report. This report reflects data from the 2015-2016 school year. While district leaders in the XYZ School District emphasize the process of DDDM and school success, the gathering of data, especially from leaders and teachers in schools that recently shifted from *focus* or *priority* to *good standing*, may broaden understanding of DDDM and how organizational supports influence implementation. Given the capacity that building leaders have to design their school's SCEP, their role in implementation as it pertains to the presence of

organizational support systems is significant to understanding the process of DDDM practices.

In the three district schools that recently shifted from *focus* or *priority* to *good standing*, I selected one leader and three teachers from each school to participate in the study, equating to a total number of 12 participants. In alignment with the 2016-2017 Accountability Status Report, each participant fulfilled the requirement of have been employed full time in their buildings throughout the entire duration of the 2015-2016 school year. The collection of data from one leader and three teachers allowed cross-analysis to occur, further increasing validity and reliability. The analysis of multiple data sources in qualitative research increases the creditability of findings (Merriam, 2009). The variation of participants in this study provided a broad outlook on the perspectives and practices of DDDM to drive instruction in their buildings as it pertains to organizational support systems.

Procedures for Gaining Access to Participants

Before obtaining district cooperation, I received approval through Walden University's Institutional Review Board (IRB). Walden University's approval number for this study is 09-18-17-0297125, and it expires on September 17, 2018. I then sent a written request to research in the XYZ School District via e-mail to research in XYZ District the district's Office of Shared Accountability with the attempt to seek superintendent approval. The request included a detailed description of the study. Once I received district cooperation, I submitted the document to Walden University's IRB for final approval. Once I received final approval, I located a staff list of each school on the

district's website and organized staff names in alphabetical order. In contingency with the district's approval letter, I contacted each building principal to seek their approval to move forward with research in their building. Then, I sent an invitation to participate in the study via e-mail to the head administrator of each building as well as the first three teachers whose names came first in the alphabet. When I did not receive a response and agreement to participate from teachers after a 2-week duration, I sent another set of invitations to the next names on the alphabetized staff list for each building. The process continued until a response and agreement had been received from three teachers in each building. If did not receive a response from the head administrators after a 2-week duration, I sent them a follow-up e-mail and invitation. If an agreement to participate had not been received 1 week following the second invitation to the head administrator, I sent an invitation to the first assistant administrator on the alphabetized list, and I repeated the process until one administrator from each selected building had responded and agreed to participate.

The invitation to participate articulated the study's purpose, participant expectations, data collection procedures, and confidentiality methods. The invitation also included a note that the study was seeking participants who were employed in the building during the 2015-2016 academic school year, as reflected on the 2016-2017 Status Accountability Report. If the teacher did not meet this criterion, I asked them to articulate this information in an e-mail response, and I contacted the next teacher on the building's alphabetized list. The invitation also included a clear indication with a benevolent tone that their participation in the study was strictly on a volunteer basis and

that their identity would remain confidential through encoding during the entire data collection and reporting process. They then sent the invitation back via e-mail with consent. Participants also received a follow-up e-mail with a list of timeslots to schedule a date for the interviews as well as for them to select the desired location. If they were unable to meet during the time slots listed, we made arrangements to accommodate their schedules appropriately. I received consent from IRB to include the option of phone interviews in the event that a participant was unable to meet in person. The invitation and consent e-mail indicted this option.

Measures for Ethical Protection

To ensure that the district of study remained confidential, I used a pseudonym when making district reference. I assigned codes to the names of participants to avoid identity exposure and to keep all names of participants confidential (Creswell, 2012). In compliance with Walden University's ethical standards, I obtained a written consent from all participants on a document that includes a thorough explanation of the study, confidentiality methods, data collection methods, time requirements for interviews, member checking procedures, and participant expectations. Upon completion of the interviews, I used their nondistrict e-mail address for further communication of results to protect their identity in the event of a district e-mail breach.

All of the data from this study was collected on a digital voice recorder and then transferred to a file on my laptop. Once the data was transferred to my laptop, it was deleted from the voice recorder. I also transferred the hardcopy data to a personal USB drive for backup purposes, and I will store it in a locked file cabinet in my house.

Throughout the study, I stored the hard copy data in a locked file cabinet in my home. I stored any computer coding or written analysis in a secured computer file on my personal computer located in my home where only I had access to the data. Upon completion of the study, I removed the data from my computer, stored it in a locked file cabinet in my home, and I will destroy it after five years.

Role of the Researcher

Before and during the data collection process, I followed proper protocols including obtaining proper participant consent, ensuring participant confidentiality, informing participants of purpose and procedures, and building a working relationship with participants. To develop a working relationship with each participant, I explained my role in detail on the consent form before their participation in the study. Along with a detailed explanation on the invitation letter sent to participants seeking their participation, I resent this information via e-mail several days before the scheduled interview during which they had time to review it before signing. On the day of the interview, I also verbally articulated the above information to each participant before beginning the data collection process.

While the study took place in my current district of employment, data collection did not occur in my currently assigned building, and I did not have any supervisory relationship with the participants. I also took further measures to prevent bias due to having experience with DDDM in the district and having knowledge of the district's DDDM initiatives. One method that I used to control bias in this study was the recording of my personal feelings about DDDM (Bogdan & Biklen. 2007). Merriam (2009) referred

to this process as the researcher engaging in critical self-reflection and allowing readers to develop an understanding of any bias and assumptions. I highlighted key points in the personal reflection, and during the organization and analysis of data, I noted similarities to further review for reliability and validity. I noted all similarities and reassessed them through review of the member checking data collected during and after the interview.

Data Collection

I conducted this qualitative case study through the gathering and analysis of data gathered from semistructured interview questions. Qualitative research was the most appropriate for this study because I analyzed and interpreted the words collected from participants to generate various themes to understand a central phenomenon (Creswell, 2012). I conducted this study through a qualitative case study where I interviewed 12 participants to generate data to provide an understanding of DDDM organizational support systems and their role in utilizing data to drive instructional decision-making in three schools in a large urban district.

I gathered data from this study from three leaders and nine teachers in the three schools in the XYZ School District that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Status Report. I gathered data in the form of interviews in an attempt to identify leaders' and teachers' perspectives of and experiences with DDDM in their buildings, as it pertains to the implementation of organizational support systems.

While quantitative data is collected with predesigned instruments that gathers close-ended information, qualitative data collection entails the researcher's designing of

open-ended questions (Creswell, 2012). Similarly, unlike quantitative predesigned recording instruments, I recorded the data on self-designed protocols (Creswell, 2012). I collected the data in this study from 12 one-on-one interviews. Yin (2013) stressed the significance of collecting data from multiple sources and the process of triangulation to bring validity and reliability to the data during the analysis procedures. This type of data is identified in the category of unstructured text data gathered from the process of transcribing (Creswell, 2012). The interview questions aligned with the study's research questions, to explore the influence that organizational supports had on DDDM to drive instructional decision-making. The alignment of research questions to the data collection methods is available in Appendix E. I scheduled each interview for approximately 35 minutes. While aligning each interview question to the research questions and the concepts in the theory of action and organizational supports conceptual framework, I interviewed each participant through semistructured interview questions. Semistructured interview questions provide researchers with the flexibility to respond as needed to emerging ideas and even to possible new topics, should they arise (Merriam, 2009). I used probes or subquestions to clarify points and prompt more information out of the interviewee (Creswell, 2012). The questions were used to prompt elaboration on topic that needed clarification (Appendixes B and C).

During each interview, I audiotaped the entire session on a digital voice recorder to provide an accurate record of the conversations that took place (Creswell, 2012). I informed participants of the processes on the participation consent form before conducting the interviews. Each interview question aligned with the research questions. I

prompted participants to respond to five interview questions. An interview protocol was designed for teachers and administrators to ensure that structure was in place for careful note taking and that a system was set up for beginning and ending the interview most appropriately (Appendixes B and C). A system of member checking took place during each interview where I restated and summarized the information to check for accuracy from each participant. I shared data analysis outcomes with participants, and I collected feedback on the results to rule out any misinterpretations of perspectives (Merriam, 2009). Once the data analysis process was complete, I sent participants a written overview of the findings via e-mail to allow for comments to determine accuracy and credibility. The articulation also served to ensure that personal bias was absent from the research and that the results of the study were driven solely by the collected data.

Data Analysis

Through a qualitative case study design, I collected the data from 12 one-on-one interviews with leaders and teachers in three schools in the XYZ School District to provide an understanding of internal organizational supports as they pertained to the implementation of DDDM to drive instruction. I triangulated the data from each interview to generate a broader thematic illustration of content and to add depth to the study on how DDDM organizational supports influenced implementation of DDDM to drive instruction in schools recently identified as good standing in a Focus District. I organized, coded, and analyzed the data in an attempt to identify patterns or themes. I implemented a system of member checking to ensure that the analysis reflected an

accurate perception of participants. The research questions served as a foundation for coding each data source, as they guided the development of themes.

Given the amounts of information gathered in qualitative research, once the data was collected, I organized it in a color-coded matrix using the research questions as an organizational guide (Merriam, 2009). Before assigning codes to the interview transcripts, I read over and analyze each data source three times to assist with the development of deep understanding of the subject material, allowing the proper coding system to occur (Creswell, 2012). During the coding process, I divided the data into segments of information, and then into codes subsequently collapsed into themes (Creswell, 2012). Before the identification of themes, the generated codes were first condensed into overlapping categories in alignment with the research questions to create a clear focus. To assist with the development of themes from the coded data I develop a written description of each school setting and the interviewee. This description served to allow a proper analysis of the exact situation and individual, which assisted with coding, theme development, and transferability. I linked the generated themes to each research question through the use of a T-Chart graphic organizer with the research questions on one side, and the related themes on the other. The organizer created a visual representation of the themes about the research questions, and it served as a template for writing up the results of the analysis. On account of a discrepant case, or analysis resulting in a conflicting outcome, the data was reevaluated using the original coding procedures to check for errors. If the second analysis resulted in additional discrepancy, I described the case, and the inconsistencies in the final write up of results. The post data

analysis member check process assisted with the development of creditability of the results to assure correct interrelatedness. It also added to the validity of the results because participants had the opportunity to assess that the data accurately represented what they said; furthermore, assisting with guarding against researcher bias.

Summary

The Methodology section of the study explained the research design, selection of participants, ethical protection of participants, processes used to ensure creditability and trustworthiness, validity and reliability of the results, instrumentation, data collection methods, and data analysis procedures. It emphasized the rationale for the selection of qualitative case study research and the use of interview data to answer the identified research questions of the study. This section described the selection of participants through purposeful sampling and the process for obtaining consent. This section also described measures for ethical protection and my role as the researcher with an emphasis on confidentiality to avoid personal bias in the research. The Methodology section also included the instrumentation that I used as well as the data gathering procedures and analysis methods including coding and theme development strategies. The following section discusses the research findings as per the analysis of data, a full description of the project, and implications for future research.

Data Analysis Results

In alignment with the study's research questions, I used the data gathered from twelve semistructured interviews to develop six common themes surrounding the organizational support systems of DDDM that were present in three urban schools. The

sites selected in this study included both elementary and high school that transitioned from *focus* or *priority* to *good standing* on the state's 2016-2017 Accountability Report. Initially, I sought 20 participants from five schools, four from each school, to complete the study; however, after numerous attempts to invite and gain participant consent, I was unable to obtain participation from administrators and teachers in two of the five schools. As a result, 12 participants from three schools, four from each, participated in the study. During each interview, I recorder participant responses on a voice recorder and later transcribed onto a Word document. Prior to identifying themes, I generated codes that were condensed into overlapping categories in alignment with the research questions. I then linked the generated themes to each research question through the use of a graphic organizer.

Common Themes of Data-Driven Decision-Making

While focusing on the organizational support systems of DDDM including those associated with collaboration, technology, the frequency of data use, and data culture, six themes arose through the analysis of the interview data. I collected the interview data from a diverse group of teachers and administrators from three schools including both elementary and high school in the selected urban New York school district. All of the schools transitioned from either *focus* or *priority* to *good standing* on the state's 2016-2017 Accountability Report and were rated either *effective* or *highly effective* in their implementation of DDDM. The six identified themes that arose during the interview data analysis were: (a) Ongoing collaboration and support systems, (b) Supportive building leadership, (c) Consistent use of computerized data systems, (d) Data-based planning and

item analysis to monitor student achievement, (e) Involving students in the data process, and (f) Establishing high levels of trust. An understanding of the organizational support systems that were in place in each of the participating buildings may assist leaders with developing effective DDDM implementation protocols and practices throughout the district.

Ongoing collaboration and support systems. Throughout the analysis of the interview data, participants emphasized the importance of ongoing collaboration and the presence of colleague support during the implementation of DDDM practices. This theme aligns to RQ 2, RQ 3, and RQ 4 as participants identified the importance of collaboration as a part of their schools' culture and organizational systems about the implementation of DDDM.

The analysis of interview data showed that participants received continuous collaborative support and learning opportunities throughout their DDDM initiatives. Participants identified various levels of collaborative efforts surrounding data use that were regularly present during both grade level and common planning meetings. School leaders organized and ranged from a daily occurrence to multiple times per an A-F letter day cycle. During these times teachers and administrators collaborated in depth to brainstorm ideas on re-teaching and differentiation methods while reviewing data from student samples, state assessments, and common formative assessments. While having a piece of data in front of them, conversations between teachers would also occur about how to align data to standards. They also used meeting times to discuss the importance of sharing best practices surrounding data use to drive instruction. Participant 2 articulated:

> Teachers are very motivated, they're really you know very conscientious, they want to learn different practices, so the kids can succeed, so it really benefits them to bring data from their room to common planning, so they can you know learn good ideas from other teachers.

Throughout these meetings, teachers noted the process of ongoing collaboration using student samples to color code and developed reteach methods that they would later revisit to discuss outcomes. Participant 10 expressed, "[M]ost of our decisions in grade-level are often based on looking at data, making sure that our differentiation and groups change frequently based on whatever the most current assessment is." During common planning and grade level meetings teachers would also arrange days to demonstrate mock lessons on how to use DDDM strategies in the classroom.

Participant 11 stated:

> We look at actual work samples as a grade level team with administration present, so there's still cohesiveness from the bottom up . . . we work together as a grade level to produce work that is going to build whatever skills are lacking . . . it's nice because you kind of get a better idea of what works and what doesn't across the entire population.

The analysis of interview data highlighted the importance that participants placed on regular support from building level coaches, coordinators, and teacher leaders in their schools. Teacher leaders, coaches, and data coordinators generated data reports with item analyses to review with teachers as a team and one-on-one. Participant 11 also expressed, "These reports were analyzed thoroughly and collaboratively and served as a foundation

for discussions of best practices and the use of data to drive instruction." Teachers noted that coaches would create spreadsheets where they input data to create a gap analysis for them. The interview data also indicated that coaches, teacher leaders, and members of school leadership teams would turnkey training on DDDM that they attended at a district level. They also collaborated with teachers during grade level and common planning meetings to assist them with building their DDDM capacities. Participant 12 articulated, "We also have data-driven training here at grade level, we're always talking about data and what to look for, what to do."

Teachers referred to coaches and coordinators as being extremely helpful when it came to DDDM where they openly offered assistance with hesitation. In a statement, participant 9 noted, "[T]hey really helped at grade levels immensely . . . they went back into the classrooms and helped." When coaches work directly with teachers, it builds teacher capacity to practice newly developed DDDM skills and abilities as opposed to learning data related strategies independently (Marsh et al., 2015). Participant 2 expressed, "Our data coordinator you know she's great, she's very knowledgeable, and all of the teachers use her, they're not afraid to ask her any questions, she very approachable, she's a great asset for us." The interview data also indicated that coaches met with staff during their prep times or after school to support them with DDDM. They were known as the go-to people when teachers had questions about data use and data technology. Coaches also were noted to work directly with students to review data and discuss their strengths and weakness on assessments. Participant 8 expressed, "Collaborative culture was visible in the building that year, it was unbelievable, they

were driven, the coaches were working with kids, the coaches were working with teachers."

The interview data also reflected that collaborative data analysis occurred during monthly staff meetings where staff would meet to review long-term goals about various pieces of student data. Half days and superintendent conferences days served as opportunities to collaborate and discuss student data, particularity data generated from state assessments and common formative assessments. Administrators also provided teachers with collaborative data opportunities during the summer and optional Saturdays where groups would meet and review student achievement data to set goals and modify instructional practices. Participants further indicated that collaborative practices surrounding DDDM helped change practices and develop a strong collaborative culture where everyone wanted to succeed. Participants reported collaborative group meetings over the summer where teachers used student data to develop common formative assessments that were further used to monitor student progress throughout the school year. Participant 5 noted, "We created our own common formative assessments, which drives our data, the data was meaningful to us." Participant 8 expressed:

> We worked very hard with our teachers to design building level CFAs to drive instruction . . . they were the guiding force of how we guided our instruction . . . we looked at data from those, and then we used that data to reteach.

The topic of PD arose serval times during the analysis of interview data and responses indicted successful outcomes about attending structured DDDM specific PD sessions offered at a district level. Participants noted that members of their buildings'

school leadership teams, as well as teacher leaders, would regularly attend district-level PD on DDDM and then turnkey the information to staff with their buildings. They attended intense DDDM training on half days as well as superintendent conference days. Participant 6 stated, "We had differentiation training . . . that delved into the data that we were looking at to really sort of pull it apart and to find out what you're getting out of this data." Participant 3 noted:

> All of us received the training; we pushed it out to the rest of the school . . . we actually showed staff what we did; I don't want to say a presentation, it was more like a demonstration, like a mock lesson.

Participants also expressed that collaborative, and organized PD workshops on DDDM were offered in their buildings to support teachers with implementation and school planning. Participant 5 stated, "One of our big initiatives was DDI, the DDI process, and we did a lot of summer academy work spending our SIG academy money within the building doing PDs right here at school." Participants also stated that a great deal of DDDM training took place during common planning or grade level meetings where coaches would facilitate sessions to demonstrate data analysis and instructional planning procedures. Participant 2 articulated, "We all attended the DDI initiative training… and at that point on we used the protocols that were taught during that training during our common planning." Participant 12 expressed, "[W]e also have data-driven training here at grade level; we're always talking about data and what to look for."

Other responses on the topic of PD offered somewhat of a contradiction to previous literature, where participants became proficient in DDDM through colleague

collaboration, coach support, and self-taught strategies rather than through the attendance of DDDM specific training. Coaches and other teachers worked directly with one another to develop their DDDM proficiencies. Participant 1 expressed, “I don’t think I can learn anything more on the DDI process than I’m already doing, you know I’ve been doing it for so long basically I’m the one who’s teaching everyone else how to do things.” Four participants expressed that they attended very little PD on DDDM and that their knowledge on implementation came solely from colleague support and self-taught strategies. Participant 10 articulated, “The ELA teacher on my team, she’s kind of the go-to person for the technology piece on Data Dashboard . . . and Infinite Campus completely self-taught.”

Supportive building leadership. The second theme that emerged from the analysis of interview data indicated that the presence of strong data-driven leaders greatly influenced the capacity of DDDM in each school. This theme aligns with RQ 4 as building leaders were noted to collaborate with teachers throughout their DDDM initiatives. The theme also aligns with RQ 2 as building leaders had a fundamental role in establishing school-wide cultures that value the DDDM process.

Throughout the data analysis, participants expressed that their building leaders offered continuous support with their DDDM endeavors and as a result became key to the development of a strong DDDM culture. Building leaders were noted to support teachers with using data towards building-wide decisions as well as decisions made in each classroom. They were regularly present at grade level and staff meetings to present teachers with various data sources in alignment with standards including through the use

of visuals as well as hard copies that were relevant to teachers in specific content areas. Participant 6 stated, "[A]dministrative support was everywhere; it gave teachers ownership . . . conversations took place collaboratively at grade level . . . during prep time, and administration was on board as well." Administrators regularly provided teachers with data both during common planning and grade level meetings as well as in individual teacher mailboxes. Participant 12 noted, "Administrators were good because they got the data, they found it and put it in our boxes." Participants also expressed strong collaborative support where they would sit down on-one-one and in group settings with administrators to discuss new DDDM initiatives and brainstorm new ideas. Administrators were also always available to openly answer any questions or address any concerns that struggling teachers may encounter with DDDM practices. Participant 10 expressed:

> I feel that through any conversation with an administrator, or if I needed, or if I was looking for an idea, or if I wanted to just ask a question about how would you approach this, I feel like any of my administration would have been more than happy to sit down with me.

Similarly, the interview data presented the idea that administrators in these building did not operate from a top-down approach but rather through collaboration and meaningful conversations. Participants noted that administration support was significant and while collaboratively gathering and analyzing data, they gave teachers ownership and valued the decisions they made. Participant 5 articulated, "[H]e was a great leader because he really involved us in the decision-making . . . he supported our decisions

without a doubt; he was a great leader because we trusted him." In these buildings, teacher-leaders often facilitated DDDM as well as administrators who empowered teachers to navigate education through the use of data. Participant 7 noted, "[H]e was highly respected, and he was fair, and people were invested. He empowered his teachers, and he gave teachers a voice . . . he had very high expectations for his teachers, and he was very professional." Overall, building leaders were noted to have high levels of expertize with interpreting data, bringing numbers to light, and they were highly respected and trusted by staff.

Consistent use of computerized data systems. The analysis of interview data indicated that most participants took advantage of both independently discovered data based technological programs and those offered through the district to collect and analyze student data. This analysis aligns with RQ 3 as the use of technology was a major organizational structure available for teachers and administrators to use as they implemented DDDM.

Throughout the analysis of interview data, all twelve participants indicated the regular use of computerized data programs such as Star Math, Dibbles, EDocternia, Illuminate, Data Dashboard, Infinite Campus, IReady, and Exam View. Participants used these programs to regularly assess students' skills, identify deficiencies, and to align appropriate lessons and standards to their instructional planning to meet students' needs. The programs provided participants with a large outlook on student progress from beginning to end and assisted them with the monitoring of students' skill levels. Participant 1 noted, "I use item analysis sheets that I use with a computer system that I

plug in all of the test questions and all the kid's answers. It basically gives me a visual of how I can observe the data . . . I look at what might have caused the kids to miss those questions, and then I reteach." While referencing the computer program Illuminate participant 9 expressed, "[T]eachers were able to go in pull reports; they did some on-the-fly assessment things . . . that's how they could do some quick checks." Participant 5 stated, "I utilized the reteach through I-Ready where I could actually go back and reassign objectives and standards to each student." Participant 11 articulated, "Star Math which I really love is a computer program . . . it will tell you where they're lacking, where they should be, it teaches you the whole picture."

Participants expressed certain district level computerized systems as being more favorable than others about user-friendliness and access to question banks. Participant 2 stated, "We have another program, EDocternia and I don't think it's as popular as Illuminate, everyone just learned Illuminate, and they really liked it, and then the district switched." Participants also noted being trained on Illuminate, a computer-based data program offered through the district, and were further discouraged when the district switched the program to a different one that wasn't as easy to manage. Participant 3 participant expressed, "[M]ost teachers were using Illuminate once a month and if not more to gather data . . . Illuminate was definitely a quicker system to get something up and upload data right away, EDocternia people find to be a little more labor-intensive, so they're a little more hesitant to use it." Additionally, participant 12 stated, "Illuminate we used all of the time, I liked it because you pulled up tests, it was easier for the normal teacher who didn't have much experience."

Participants also discussed the importance of colleague support as major component to utilize technological data programs to guide the gathering and analysis of data. Administrators, teachers, and coaches who were tech-savvy collaborated with their colleagues to assist them with utilizing computer-based data programs. Some teachers noted having difficulty with navigation of computer-based data systems but other teachers in the building supported them. Participant 9 articulated, "[P]retty much at every grade level there was at least one person that was pretty tech savvy and was able to support others as well as the coach we had." Participant 3 also noted, "As a whole definitely I encourage people to use the systems we have available to us, so I definitely like to encourage people to use EDocternia or before it was Illuminate."

Through the analysis of data, participants noted the huge role that administrators had in supporting teachers with the utilization of data based technology. Participant 6 expressed, "[W]e always tried to pull them in and have them lead discussions, and lead examples, and lead what's happening so that other teachers who weren't so comfortable with it became more comfortable with it". Concerning their administrator, participant 7 stated, ". . . he was extremely knowledgeable about technology and data programs… there really isn't anybody as tech-savvy as him . . . he could have three computers in front of him."

Data based planning and item analysis to monitor student achievement. Throughout the analysis of data, participants discussed the importance of conducting an item analysis on state and district assessments to monitor student progress and to develop school-based plans. The interview data analysis aligns with RQ1 where it produced

information on the types of data utilized in the decision-making processes in each building. The analysis also coincided with RQ3 where it highlighted how certain organizational structures and protocols for data analysis were in place to promote the use of data to support each building's various levels of decision-making.

Teachers and administrators reported that they would focus on certain skills such as writing standards through the process of item analysis where they would pick apart actual work samples and student assessments to further guide their planning. Participant 2 stated, "Teachers would bring in an item analysis, either it was something that was written, something that was given by the district, an end of term assessment, a ticket out the door any type of assessment the teacher did." Teachers would target certain skills to reteach using item and standard analysis procedures. Participant 5 expressed, "we really analyzed standards, how often these particular questions were being asked over and over on the NYS tests, so really the data-driven classroom was constant." Participant 4 stated, "They're always looking at data, looking at assessments . . . it's an eye-opener for the individual teachers who said I tough they got that… I have to go back and redo that." Teachers began to feel that DDDM was playing a major role in the instructional planning process through the process of item analysis. Participant 7 stated, "it would show you what areas of weaknesses we needed to make changes with our instruction, it really really helped our scores go up."

Coaches and coordinators also facilitated the item analysis process with teachers to guide them through data aligned decision-making. Participant 3 noted, "I give an item analysis, typically the day after the exam is given . . . they typically know the day after

the exam once they have either exam corrected how students performed on certain standards." Participant 11 expressed:

> They pull the scores, and they present it to us, they have it up and then we kind of go through it . . . this is the standard they missed, or these are the questions that relate to that standard, how can we break them apart, how can we reteach them.

The interview data also reflected the use of item analysis as a major component of developing the DTSDE where data were constantly being checked to see if goals were met. Participant 12 stated, "We align what we do with the state plan, we look for weaknesses and the development areas, you know where we're low, and we key in on those very low areas." Teachers and administrators were also gathering various sources of data including qualitative data such as those related to behavior to develop instructional as well as school-wide plans. Participant 9 stated, "[T]here's a lot of different factors that were considering when we look at data, and so that's why we try to get multiple forms of data just to get a well-rounded picture." While looking at student progress through more than just quantitative data, participant 6 expressed, "They're not just looking at academic data, they're looking at behavioral. Participant 6 also stated, "teaching it in a different way not just based on numbers but also on the way that they are, the style that they learn." Considering the collecting qualitative data, participant 12 stated, "I keep a log and a journal . . . it's a piece of data . . . I've been doing logs for a long time". Participant 9 stated, "Data isn't just the numbers on the page, it's the child behind the data."

In addition to assessment item analysis, participants noted the use of exit tickets or tickets out the door to assess student progress and drive classroom planning. Participant 9 expressed, "[T]hey did exit tickets; many teachers had little charts to determine who got it and who didn't." Teachers viewed exit tickets or tickets out the door as a great way to get a quick and relevant idea as to whether or not students have achieved the desired skill set in the classroom. Participant 5 articulated, "I collected data almost every single day with the use of exit tickets . . . I really got the big picture of what kids needed." Participant 6 also noted, "exit tickets are done daily, after every class." To emphasize this point, participant 2 stated:

> I have to say that more teachers now use tickets in and out the door than ever before, there's always some type of measurement of what percentage of the kids, how many of these students really got what I was teaching today.

Involving students in the data process. Throughout the interviews, six participants presented the idea that it is not only important for teachers to collect and analyze data but that it's equally significant to involve students in the analysis of data. Involving students in the data process coincides with RQ 2 as it relates to the development of a data culture where everyone in the building including students are involved in school-wide initiatives such as DDDM. Teachers and administrators believed that a major component of DDDM is that students become part of monitoring their progress to set goals and identify areas in need of improvement. Participant 8 articulated, "[S]tudents were starting to collect their own data; students were starting to look at how they were working and wanting to be academically successful". Concerning the use of a

data board in the classroom to visually show students their progress, participant 10 stated "[T]hey always want to see the data, and that's when I watch them talk to each other, what happened to your data, where's your test, how can we change that?".

Teachers expressed their desire to have their students understand the importance that data had on decision-making and had them develop comfort in the DDDM process. Participant 3 expressed, "I'm not only comfortable with it myself, but I also want my students to be comfortable looking at it." While teachers were developing the skills on how to align DDDM to content standards, some participants noted the importance of student proficiency in aligning goals to standards. Participant 9 articulated "we had these "I can" statements that was based on the standards, that was the intention that all kids were kind of tracking their own understanding of standards." Participant 4 noted:

> Kids take an exam, and they see a grade, and you know you got a 48% on an assessment, but you never know what you got right or what you got wrong, and we started engaging the kids in those conversations.

The analysis of interview data also presented the importance of sharing student data with parents. With an emphasis on using data as positive reinforcement to show progress, participant 11 stated, "[N]ot only does it help us drive our instruction and what we do in our class behaviorally and academically, but it also helps when you're dealing with parents to actually say look this is the data we have". Teachers were also attempting to encourage parents to review data with their children to assist them with goal setting and progress monitoring. Participant 10 noted, "I encourage Parent Portal usage, and I actually give extra credit to the parents, for the kids of the parents who log in."

Establishing high levels of trust. When analyzing the interview data, ten participants discussed the significance of developing a strong level of trust between colleagues throughout the implementation of DDDM. Participants also placed importance on the development an environment that is conducive to DDDM in ways that promote the use of data as a habitual practice rather than something forced upon them. The development of a trustworthy DDDM school environment aligns with RQ 2, emphasizing the development of a data-driven culture as a significant component of DDDM implementation. This analysis also aligns with RQ 4 where the elements of strong and supportive collaboration served as a foundational piece to the development of a positive data-driven culture.

Participants articulated that the more teachers used data to drive instruction and the more they were encouraged to build upon their DDDM skill sets, they overall became more comfortable with implementation. Participant 8 noted, "[U]nderstanding the data was important, they were finally using it as a teaching tool . . . they were finally using it a reference point instead of just keep teaching". Teachers began to see that DDDM influenced student achievement. Participant 4 stated, "the culture in our building is that we do everything we can to get those kids through and data is the key." Participant 6 also noted, "We've come a long way in getting teachers to feel like I have to take ownership of this data and if I do I'll be a better teacher." Participant 12 expressed:

> I've been in schools where you don't use it, and you have no idea, to schools like this where you do use it, it's tough to get it set up, but once you start and you get in the routine, it's like a normal routine.

Collaborative efforts between administrators and teachers were also noted to have a great impact on the development of a data-driven culture. Teachers built trust with their administration by being open to allowing them to collect observational data to drive building-wide decisions. Participant 8 stated, "The culture of our building was very open to having administrators in the classroom . . . they knew we were there to support their instruction and wanting them to be academically successful." In two buildings teachers discussed being open to having other teachers enter their classrooms to collect observation data about the development of school plans and to provide necessary supports to guide instructional practices. Participant 5 articulated, "The building as a whole was more comfortable with us doing them rather than having City Hall come in and do it; it was more meaningful . . . less confrontational." Participant 4 noted:

> Instead of saying no your wrong on that, you didn't get that yet, let's try it this way, let's try it that way . . . the culture is changing towards that . . . teachers are doing the instructional rounds, the teachers drive it, so we don't want the teachers to feel that it's evaluative at all.

Throughout the analysis of data, participants expressed that it took time to develop a sense of comfort to utilize DDDM practices, specifically related to the possibility of data used in a punitive manner. Participant 3 stated, "I was handing out the DBAs to one of the teachers, and again their response was, who's going to see these results, so um I still think in general people can be little skeptical of getting it out there" Participant 3 also stated "[P]eople are just kind of afraid of what happens when it's out there . . . when you're looking at data you're not looking at it as a punitive way towards

the teacher, you're looking at it as a way to drive your instruction." Participant 2 noted, "[T]hey saw the benefits of using data to help their kids; they weren't so afraid of it . . . it forced them to take a look at their own practices in terms of re-teaching materials to students who were not getting it." Participant 1 expressed feelings towards the possibility of teachers looking at data-driven instruction as a way for administrators to control the classroom "DDI isn't telling you how to run your classroom, it's telling you how to run it better." Participant 12 articulated:

> It was an eye-opener for me, I thought that was a turnaround point, where I knew where the district was going then, and then they kept saying it's going to get better, you'll understand it better, you'll feel more comfortable.

Conclusion

The data analysis answered research question number one of the study by bringing forth information on the type of data that participants collected during the year of the transition, as well as pointing out how much and how often teachers and administrators collected data. The findings confirmed that the frequent collection of data, as well as the collection of various types of data sources, have a positive impact on the use of data to drive instructional decision-making. Various types of data were collected through multiple methods of collection to monitor student progress, teaching strategies, and to set both long and short-term goals. During the process of data-driven decision-making in schools, it is necessary to balance the analysis of qualitative and quantitative data (Crone et al., 2016). The findings also confirmed that structured organizational routines served as key factors to the implementation of DDDM. Participants shared their

experiences on how data collection strategies and routines helped to facilitate their ability to implement DDDM to drive instruction.

The analysis of interview data answered the second research question of the study by pointing out the development of a collaborative and trust-filled data culture. The development of a collaborative trust-filled culture where teachers share the same norms surrounding data use is imperative to the implementation of DDDM (van Geel, Keuning, Visscher, & Fox, 2016). These findings confirmed that teachers are more likely to use data to drive instructional decision-making when presented in a collaborative, trust-filled environment where data is not used to penalize teachers but rather as a system of support. Teachers may experience anxiety about the implementation of DDDM due to fear of whether or not they will perform well in the classroom (Dunn et al., 2013a). Participants articulated the importance of coming together meaningfully to achieve the common goal of utilizing data to increase levels of student achievement. The data cultures described in the interview data consisted of ongoing positive communication, support, and collaboration to guide the implementation of DDDM practices.

The analysis of the interview data answered the third research question of the study by highlighting the support systems that were in place to guide the facilitation of DDDM including the use of technology, coaching, team meetings, and PD. The findings confirmed the importance of coaching, collaborative team efforts, and the use of computerized data systems to facilitate as well as support DDDM efforts. Participants expressed their experiences with the use of computer-based data programs as foundational to their collection and analysis of student data. Computerized data systems

can connect other data sources to guide teachers and leaders with more efficient analysis of student results (Serrer, 2015). Technological infrastructures such as computer -data programs are a significant component to guide teachers through the collection and organization of data (Kallemeyn, 2014). Teachers also shared their practices on how the support from coaches during planned meetings and available PD opportunities guided the implementation of DDDM to increase student achievement. PD on DDDM is vital to guide teachers with understanding student data that coincides with content area assessments to improve instructional practices (Green et al., 2016). Teachers benefit greatly from PD on DDDM implementation to guide them in strengthening their abilities of data usage (Mandinach & Gummer, 2015). Coaches have a major role in creating a school environment that values the use of data as a continuous process of school improvement (Huguet et al., 2014).

The analysis of interview data answered the fourth research question by providing information on how various efforts of collaboration were in place to support the implementation of DDDM. These findings confirmed the significance the collaboration and the development of a professional learning community (PLC) throughout DDDM endeavors. Collaborative conversations where educators building off of one another's ideas lead to the development of an atmosphere that is conducive to data analysis (Slavin et al., 2013). Teachers also collaborated with their colleagues to share strategies and offer guidance on DDDM.

Administration played a key role in the facilitation collaborative efforts as well as the use of coaches who would turnkey PD on DDDM and would often even work one-on-

one with struggling teachers. Data-driven leaders are significant to the implementation of DDDM by guiding teachers to develop practices that are consistently used to drive instruction (Gerzon, 2015; Herrington, 2013; Mandinach & Gummer, 2015; Lange et al., 2012; Mackey & Hollie, 2015; Marsh & Farrell, 2014; Schildkamp & Poortman, 2015). Leaders' roles in organizing the conditions for collaboration around DDDM is essential to bring forth positive school-wide outcomes (Datwon et al., 2013).

Summary

The above section provided the data analysis of this case study driven by interview data collected from twelve participants. The selected participants came from three urban schools that transited from *focus* or *priority* to *good standing* on their state's 2016-2017 Accountability Report. With a focus on the study's four research questions related to the implementation of DDDM, the interview data analysis produced six common themes. Through the triangulation of interview data, the above themes highlighted essential components of DDDM implementation in each building including ongoing collaboration and support systems supportive building leadership, the use of computerized data systems, data-based planning and item analysis, involving students in the data process, and the establishment of high levels of trust. Data to drive decision-making involves various interactive processes including the features of school organizations, individuals, collaborative efforts, and data usage (Schildkamp & Poortman, 2015).

The following section will include an introduction to the project, a rationale, and a review of literature based on the findings presented in the Data Analysis Results of

section two. The next section will also include a description of the project's overview, evaluation plan, and implications.

Section 3: The Project

Introduction

In alignment with the results of the interview data analysis, the project of this study was developed in the form of a policy recommendation through the production of a white paper (Appendix A). This genre was selected based on the findings of the data analysis that indicated the importance of school leaders' roles in the development of a data-driven culture. The project is *White Paper: School Leaders and Their Role in the Development of a Data-Driven Culture*. The recommendations presented in this document highlight how school leaders can bring forth a data-driven environment through the following processes: (a) getting teachers to buy-in to DDDM through a school-wide vision, (b) establishing a trust-filled PLC, (c) developing a DDDM school-wide cycle, (d) creating a collaborative DDDM support system, (e) communicating data as a school community, and (f) changing the way technology is used in DDDM initiatives. The research presented in the literature review of Section 3 substantiates the findings outlined in the white paper, and I used it to support the listed recommendations throughout the document.

The purpose of the study's white paper is to present the district with well-defined support system strategies to guide building leaders to understand their role in the development of data-driven cultures in their building. District leaders can use the recommendations in this document to assist building-level leaders with SCEP development, specifically as it aligns with the Tenets of the DTSDE. The recommendations may also assist building leaders with scheduling about the development

of data-aligned collaborative planning time and coaching arrangements. They may also assist with the process of budgeting related to the possibility of data coordinators or coaches and the development of organizational charts in each building. Once building level leaders become proficient in implementing and sustaining practices and procedures that facilitate a data-driven culture, student-centered learning occurs because the strengths and weakness identified by the data begin to guide school-wide instructional planning. When this happens, more schools will likely begin to transition into good standing because a data-driven environment where data is regularly used to hone student skills creates a positive shift in overall teacher practices, resulting in increased student achievement.

Rationale

The development of a white paper was most appropriate for this study in that it addresses the DDDM inconsistencies in the district by presenting research and current literature to leaders to bring forth recommendations on how to create a data-driven school culture. The research data from this study produced several key themes that pertain to the establishment of a data-driven school atmosphere. In an attempt to develop a data-driven culture, the recommendations include the need to: (a) establish a school-wide data-driven vision, (b) create a DDDM school-wide cycle, (c) organize a collaborative DDDM support system, (d) communicate data as a school community, and (e) change the use of technology in DDDM initiatives. The 2016-2017 DTSDE in 35 district schools and the 2017-2018 DTSDE in 33 district schools indicated a gap in the use of data to drive decision-making. Leaders through the district can use the information and

recommendations presented in the white paper to build upon their proficiencies in developing a data-driven culture, specifically as it relates to school-wide visions, data-driven cycles, collaborative support systems, professional learning communities, communicating data, and data technology.

The research conducted in this study highlighted various key factors in the development of a data-driven culture while pointing out how leaders in three district schools of good standing created the circumstances that led to this type of environment. The genre selected for this project was most appropriate because the recommendations presented in the white paper can provide district and building level leaders with solid information on how to best align their school plans with data-driven practices and procedures.

Review of the Literature

The purpose of this case study was to investigate how and to what extent organizational support systems in school buildings influenced the implementation of DDDM. In alignment with the results of the interview data analysis, the review of current literature is organized by recent research that highlights an overarching theme surrounding the importance of school leaders and their role in the development of data-driven school culture. In order to support the overarching theme and the results of the interview data analysis, literature was also gathered on the following subthemes: (a) gaining trust from teachers through a school-wide vision, (b) creating a collaborative DDDM support system and a PLC, (c) the development of a DDDM school-wide cycle,

(d) communicating data as a school community, and (e) changing the way technology is used in DDDM initiatives.

Peer-reviewed articles were the main source of literature used in this review; they were located in Education Source, Educational Research Complete, and ERIC Education Databases of the Walden University Library. In an attempt to achieve saturation in literature on the topics of school leaders and their role in the development of a data-driven culture, I searched the following words and terms: *educational leaders and data-driven decision-making, educational leaders and DDI, data and school culture, data-driven decision-making and support systems, technology change in education, school leaders and collaboration, school leaders and professional learning communities, communicating data in schools, communicating data with students,* and *educational leaders and school change.* The literature presented in this review highlights how school leaders develop a data-driven culture that facilitates the improvement of instructional strategies to support student achievement. While the findings of this study were supported by the original literature review in Section 1, through the examination of school leaders and their role in the development of a data-driven culture, the following literature review highlights specific strategies that leaders can use to develop and build upon DDDM to enhance student achievement.

School Leaders and the Development of a Data-Driven Culture

School leaders ultimately establish the climate for school turn-around and the development of professional learning atmospheres where teachers collaborate to achieve a common purpose through cohesive teamwork (Cherkowski, 2016; James-Ward &

Abuyen, 2015; Reeves, Summers, & Grove, 2016; Sun, Johnson & Przybylski, 2016a; Sun, Johnson, & Przybylski, 2016b; Voelkel & Chrispeels, 2017). School turnaround is linked to the leader's ability to build a collaborative school culture surrounding data usage and is contingent upon their DDDM skill sets to improve student achievement (James-Ward & Abuyen, 2015).

In a study assessing how school principals used data for a 14-year span, data-informed school leadership stood out as necessary to create the organizational structures as well as the climate and cultures that are conducive to sustainable DDDM practices (Sun et al., 2016a). The study presented 18 school leadership practices conducive to DDDM and identified inconsistencies of these practices that typically relate to a lack of the following: (a) clarity for data use, (b) analytical capacities, (c) data proficiencies, and (d) supportive structural and organizational infrastructures (Sun et al., 2016a). Leadership practices that facilitate a data-driven school culture include proficiency in understanding how to use data to inform instruction and their ability to collaboratively support teachers in their DDDM endeavors (Sun et al., 2016a). Similar to how teachers create learning environments for students to achieve success, in their study on leadership styles in high capacity learning environments, Mitchell and Sackney (2016) indicated that administrators have a similar responsibility in establishing the conditions for teachers to grow as professionals. In a study highlighting the effects that a living-systems ontology approach had on school leaders' roles in coordinating, collaborating, and protecting professional practices, Mitchel and Sackney (2016) identified that leaders who focused on this perspective demonstrated a value for human diversity and dignity. School leaders

are key to developing organizational structures in their buildings to bring their staff together cohesively through the establishment of common goals and expectations while providing needs-based supports systems to assure proficiency and sustainability of practices (Sun et al., 2016a).

School-Wide Vision

In a quantitative study assessing the data practices of teachers and administrators in an Illinois public school district, Reeves et al. (2016) pointed out that the articulation of a strong vision for data use by leaders promotes buy-in and valuable beliefs towards willingness to participate in DDDM practices. When leaders work collaboratively with teachers throughout DDDM endeavors such as by modeling, demonstrating passion, knowing practices, and providing ongoing support, teachers develop a sense of ownership of learning and begin to buy into these practices (Sun et al., 2016a). A shared school-wide vision develops when teachers have the opportunity to collaboratively and reflectively build off of one another's ideas and experiences and creating an environment of shared passion and school pride (Sjoer & Meirink, 2016).

In another qualitative case study through the collection of narrative data from conversations with a high school principal, Cherkowski (2016) identified the development of a shared social contract where teachers collaborated and contributed their skill sets to the creation of a school community. The shared social contract served to motivate and bring together school staff to collaboratively achieve common goals (Cherkowski, 2016). While emphasizing the importance of communication in a school leader's role towards developing a shared vision for learning amongst teachers,

Cherkowski (2016) highlighted the importance of encouraging creative thinking through conversations that are open, personal, and receptive of feedback. Cherkowski (2016) also highlighted that through meaningful conversations teachers and leaders brainstormed ideas related to school planning and future turnaround developments, bringing forth a school culture of shared vision and driven passion.

Organized team meetings where teachers articulate and ask questions about specific elements of their teaching styles and strategies serve to facilitate the collaborative process and build upon a shared vision to achieve similar goals in the classroom (Sjoer & Meirink, 2016). Through the analysis of data collected from interviews, surveys, and document analysis, Jones and Thessin (2017) found that administrators who develop a shared purpose for learning further established collaborative structural supports that fostered positive trust-based relationships. In their study teachers and administrators indicated that collaborative structural supports serve as the foundation for engaging teachers in a community of decision-making (Jones & Thessin, 2017).

Through emphasizing the positive effects that a living-systems ontology approach had on administrators' roles in coordinating, collaborating, and protecting professional practices, Mitchel and Sackney (2016) found that leaders with these mindsets demonstrated honor for human diversity and dignity. While veering away from a managed systems position with very little room for personal creativity, leaders whose actions reflected the ontology of a living system created a climate of respect where teachers felt safe and were motivated to creatively extend their professional capabilities

(Mitchell & Sackney, 2016). Teachers in these buildings worked with administrators who valued collaboration, engaged in professional conversations that focus on the processes of teaching and learning, and produced a sense of purpose by emphasizing the importance of core values, respect, and meaningful discourse (Mitchell & Sackney, 2016). The accountability components of data used in performance evaluation create a sense of resistance and skepticism with teachers that impedes their willingness to engage in DDDM practices (Mandinach, Parton, Gummer, & Anderson, 2015). The development of data literacy in teachers, builds trust in the DDDM process because it decreases accountability-related anxiety and shows teachers how to use student data ethically (Mandinach et al., 2015). Becoming data literate also aligns with the development of teachers' identity and values regarding the use of data as a part of daily practices (Mandinach et al., 2015). In Mitchell & Sackney's (2016) study, leaders of high capacity schools rejected the command and control features of managed systems and emphasized empowerment and the significance of establishing a culture of commitment while providing the resources and supports necessary to carry out their visions into reality (.

While bringing forth student success is essential for those in the field of education including school counselors, when DDDM practices directly align with student achievement, participants are more likely to develop the self-efficacy to engage in such practices (Viera & Freer, 2015). Through the administration of open-ended surveys to 25 high school counselors and 25 high college advisors Viera & Freer (2015) identified the need for leaders to provide supportive training and structured schedules to carry out DDDM throughout the school day. They concluded that supportive leaders who create

safe an environment with clear DDDM expectations and feedback on these processes are key to assuring proficient and regular implementation (Viera & Freer, 2015).

Leadership styles vary, but when leaders operate from a bottom-up approach such as that of a transformational leader, they motivate teachers by supporting them to develop their preexisting capacities (Vanblaere & Devos, 2016). While instructional leaders are extremely beneficial to school improvement in that their focus on coordinating and aligning instruction and assessment is vital to the turnaround process, the transformational leader's emphasis on relationships, motivation, and collective responsibility builds a strong school-wide vision (Vanblaere & Devos, 2016). Data-driven leaders also communicate a vision of change surrounding data use where they foster data-based collaborative relationships to assess student needs and set goals (Sun et al., 2016b). Transformational leaders have a positive impact on the development of a PLC by stimulating the intellect, establishing a vision, goal setting, modeling, and setting high expectations (Volekel & Chrispeels, 2017).

In connection with the development and organization of curriculum and professional support systems, the skill sets of an instructional leader could have a great influence on the improvement of student achievement and the development of vision (Pacchiano, Whalen, Horsley, & Parkinson 2016). Unlike transformational leaders who focus on the building of relationships, Pacchiano et al. (2016) pointed out that the instructional leadership approach brings forth a managerial method and their strong organizational skills create an effective response to interventions. While instructional and transformational leadership styles differ significantly in their approaches to running a

school building Vanblaere and Devos (2017) discussed the possibility of combining the two styles in ways that make them compatible.

Data-Driven Decision-Making School-Wide Cycle

A school leader's role in setting the conditions necessary for a DDDM culture such through the process of modeling how data is analyzed, interpreted, and used in the planning process is essential for teachers to develop strengths in how to use data to drive instruction (Sun et al., 2016b). DDDM interventions become meaningful when they are developed coherently, consistently, cycle-based, goal aligned, and systematic (Keuning, van Geel, Visscher, & Fox, 2016). In their qualitative multi-site case study Park, St John, Datnow, and Choi (2017) found that the understanding of DDDM routines and organizational context highlights the social constructions and actions of how data is used to assess student needs. Through the analysis of interview and observation data gathered from various staff members in multiple school sites, they found that routines surrounding DDDM were common resources used for action, influence, and elaboration in the process of student placement (Park et al., 2017). Sustainable school improvement is contingent upon the determination of teachers to build upon their professional grown, specifically as it pertains to the development of data-driven school cultures (Abbott & Wren, 2016).

Along with infrastructure, competency, and data-based procedures, fidelity in a school building is strongly contingent upon the role of the school leader and their ability to implement organizational, managerial procedures specifically through needs-based PD intervention (Pacchiano et al., 2016). Lack of expertize amongst teachers regarding analysis, interpretation, and use of data is a roadblock to implementing DDDM;

furthermore, indicating a need to provide teachers with learning opportunities that promote these practices and make them part a daily cycle (Reeves et al., 2016).

In their study on standardized assessment data use in intervention for preservice teachers, Reeves and Chiang (2017) found that for teachers to fully engage in DDDM practices, specifically about the use of assessment data, it is necessary for them to develop data literacy. The use of student assessment to drive decision-making is only possible with the development of a school-wide data-driven process that includes structured data analysis procedures such as documenting trends and creating comprehensive data reports (Abbott & Wren, 2016). Through the analysis of school documents from a locally developed performance task, for middle school students in a large school district, Abbott and Wren (2016) found that DDDM was a necessary component of assuring the effective use of the performance tasks. Reeves and Chiang (2017) found that training and support on data use promote DDDM proficiencies specifically towards utilizing student assessments to drive decisions without barriers such as the lack of self-efficacy. In their study, when teachers participated in training that develops levels of self-efficacy towards DDDM, they began to build their DDDM skill sets such as in the way they use data, frame questions around data and transform data into useful evidence (Reeves & Chiang, 2017). In their quantitative case study, Lynch, Smith, Provest, and Madden (2016) provided insight on a school leaders' attempt to implement strategies and support structures to facilitate DDDM, including through the use of standardized assessments and teachers generated assessments. Within the duration of a two-year span in a school known for having a strong capacity for the change, the data

collected from teachers'running assessment records indicated DDDM as a significant component of the school's strategic plan (Lynch et al., 2016). When teachers develop proficiency in effective interpretation of the use of standardized assessment data and short-term data collection methods such as teacher-generated assessments, they create instructional strategies that raise student achievement (Lynch et al., 2016).

While focusing on a balance between qualitative and quantitative data for student placement Park et al. (2017) identified the importance of data in routines for actions, persuasion, and explanation of processes related to student placement. In their study, holistic analysis of student assessments drove the processes of student placement; however, to provide a full picture of the student they suggested that discussions move beyond assessments such as through conversations about habits, lifestyle, and social adjustments (Park et al., 2017). In their study on leadership responsibilities about transforming data into meaningful action, James-Ward and Abuyen (2015) emphasized the importance of analyzing and identifying trends across various data including hard point data such as statically analysis and soft data such as from a qualitative nature. Through the analysis of research and findings from the Mid-Continent Research for Education and Learning James-Ward and Abuyen (2015) found that leadership roles have a key role in creating a data-driven environment. In a study assessing the best practices of data-driven school leaders, Sun et al. (2016b) highlighted the importance of leadership and their ability to make decisions through the analysis of both hard and soft data to identify instructional and curriculum related needs.

In a DDDM environment where teachers habitually engage in data-driven practices, it is important to develop their data related knowledge and capacities (Odom & Bell (2017). In a study attempting to improve the critical thinking of preservice teachers by exposing them to experiences to help them understand statistical analysis of data, Odom and Bell (2017) found that the understanding of statistics enhanced the ability to use data to drive instruction because it took out the element of fear about working with numbers. Teachers begin to become autonomous with DDDM in their classrooms when they are trained to incorporate multiple data collection and analysis techniques into their daily routines (Niemeyer et al. 2016).

School leaders increase the capacities of teachers engaging in DDDM practices when they schedule routine times throughout the school day specifically designed for these endeavors such as collaborative meetings or even individual time for data collection (Sun et al., 2016a). When administrators create structured routines for collaborative team efforts the likelihood increases for teacher commitment and engagement in school-wide endeavors (Volekel & Chrispeels, 2017). The lack of time that leaders experience in establishing structured collaborative teams impacts the development of a culture that promotes high expectations (Volekel & Chrispeels, 2017). Barriers to implement DDDM in schools include the lack of time and resources which furthermore coincide with self-efficacy and willingness to engage in data related practices (Viera & Freer, 2015). In a case study consisting of 12 teachers and researchers in a participatory research team and the implementation of a nine-session DDDM PD workshop and a summer institute, Schifter, Natarajan, Ketelhut, and Kiechgessner (2014) found that assisting teachers with

DDDM implementation is key to disparate data to understand student misunderstandings and differentiate instruction. When data becomes accessible promptly, and teachers understand how to use it to drive instructional decision-making, the more likely they will make it part of their regular practices (Schifter et al., 2014).

In the establishment of a school-wide data cycle, it is vital that leaders provide structured planning time throughout the school day where teachers are given instructional supports to collaborate and build upon their data based proficiencies (Sun et al., 2016a). Many schools lack organizational structures necessary to promote ongoing learning partly due to lack of collaboration and infrequent and untimely availability of data to meaningfully drive instruction (Park et al., 2013). In their study assessing two-year training aimed to implement and sustain DDDM as a school-wide cycle, Keuning et al. (2016) found that through ongoing feedback and collaborative instructional planning, DDDM teams had a positive impact on student achievement. While studying the micro-conditions that affect school leaders' PD endeavors Lynch et al. (2016) found the implementation of teaching team meetings, coaching, mentoring, and structured teacher-led feedback sessions played a key role in DDDM initiatives. The development of organizational supports such as data teams has a positive impact on a school leader's ability to create a learning environment that is conducive to student achievement, specifically about the use of data to improve instruction (Park et al., 2013). DDDM practices that are incorporated strategically into daily practices through a routine daily decrease the overwhelming feeling of adding additional tasks to preexisting busy schedule (Niemeyer et al., 2016).

Professional Learning Communities

A PLC serves as a foundation for teachers to engage in DDDM practices; therefore, it is necessary for leaders to develop the strategies to build these types of school environments (Abbott & Wren, 2016). School leaders attempting to build a climate conducive to creating a PLC emphasize the importance of shared vision, capacity building, and the development school infrastructure that allows the sustainability of collaborative efforts surrounding school-wide decision-making (Jones & Thessin, 2017). High functioning collaborative teams in a PLC that demonstrate ongoing reflective practices aimed towards a commitment to student achievement are powerful units of intervention for school improvement (Volekel & Chrispeels, 2017).

Barriers to developing a collaborative based school culture include time constraints, conflicting viewpoints, and planning done in isolation; furthermore, impeding on the administrator's ability to create a PLC, including one that focuses on the analysis of data to drive decision-making (Jones & Thessin, 2017). In their study, Jones and Thessin, (2017), identified a sustained PLC in a school where leaders emphasized the use of DDDM not only to find strategies to meet the needs of students but to also assist with developing a collaborative community with enhanced teaching practices. Educators develop their professional capacities to use data to drive instructional decision-making when they build off of one another's proficiencies through collaborative dialogue that focuses on data trends, connections, or impacts (McWilliams & Patton, 2015). In a quantitative study that researched the effects of transformational and instructional leadership styles on the development of a PLC, Vanblaere and Devos (2016) found that

teachers identified the importance of leadership and their role in creating a collaborative professional atmosphere where everyone places great focus on improving classroom practices. Through the administration of questionnaires to teachers in 48 primary schools in Belgium, the results of the study indicated that school improvement does not solely lie on the leader but rather is a process where everyone shares an equal responsibility through shared decision-making (Vanblaere & Devos, 2016).

Collaborative Leadership

In their study, Sun et al. (2016a) highlighted the positive outcomes associated with the collaborative efforts between leaders and teachers who worked together to not only establishing building-wide DDDM goals but also to establish goals related to individual classroom instruction. In their qualitative study assessing teacher teams in two public schools in California, Volekel and Chrispeels (2017) found that administrative support led to collaborative efforts where staff committed to student learning through the analysis of data to reach desired goals. While assessing the levels of administrative support within high and low functioning school teams, Volekel and Chrispeels (2017) found that principals who operated with a sense of shared responsibility empowered their staff in high functioning teams. As opposed to low functioning teams that lacked ongoing administrative support, collaborative efforts in high functioning teams presented a sense of enthusiasm where members not only shared the results of data but they aligned them to standards, described the analysis, and used it to close learning gaps (Volekel & Chrispeels, 2017).

The skills of an effective leader serve to drive teachers towards a sense of empowerment and purpose by clearly communicating a vision, inspiring and motivating through self-confidence, and providing the supports necessary for change (Hassain Ch, Ahmad, Malik, & Batool, 2017). In a quantitative study assessing the impact of leadership styles on strong supportive communities, Hassain Ch et al. (2017) found a direct link between the job satisfaction of teachers and the characteristics of the democratic style school leader. By collecting questionnaire data from 200 teachers randomly selected from secondary schools, Hassain Ch et al. (2017) teachers who collaborate with democratic style leaders develop a sense of self-interest in their profession because they have comfort towards having a voice in decision-making processes (Hassain Ch et al., 2017).

Collaborative Professional Development

In the development of data-based school cultures, it is essential to emphasize the presence of collaborative supports including needs-based PD and ongoing data-based dialogue (James-Ward & Abuyen, 2015). In a study emphasizing how nonpublic school staff aimed to develop DDDM skills in an attempt to bring forth data related transparency Niemeyer, Williamson, B Casey, C Casey, Elswick, Black, and Winsor (2016) Williamson emphasized the importance of training staff to become proficient in the daily collection and analysis of data. In their study assessing data techniques that teachers used to drive decision-making in Catholic schools, Niemeyer et al. (2016) found that when training on DDDM focus on the concepts of data analysis in isolation a weak infrastructure develops for the implementation of daily formative and summative

assessments to guide instructional practices. PD is beneficial when implemented in ways that emphasize how to collect data in alignment with curriculum and how to incorporate DDDM into daily routines (Niemeyer et al., 2016).

In their exploratory qualitative study through the examination of collaborative data teams within a six-week duration, Michaud (2016) found that when teachers participate in on-the-job training in data-centric collaborative settings, they begin to influence one another, and the quality of their work has a direct impact on student achievement. In their study assessing the implementation of PD Intervention (PDI), Pacchiano et al. (2016) found that school leaders demonstrated a shift in mindset and practices on the facilitation of routine collaborative teams, structured data analysis procedures, and ongoing implementation of PDI protocols including collaborative reflection and team planning. Data collected through the observations of teachers and administrators' participation in PDI indicated that the intervention resulted in the development of structured routines for collaborative data use (Pacchiano et al., 2016).

When teachers build upon their levels of self-efficacy towards DDDM such as through data-based training, they begin to develop skill sets including the way they use data, frame questions around data and transform data into useful evidence (Reeves & Chiang, 2017). Reeves and Chiang, (2017) found that training and support on data use promote DDDM proficiencies specifically about the ability to use student assessments to drive decisions without the barriers such as the lack of self-efficacy (Reeves & Chiang, 2017). In an attempt to sustain DDDM initiatives through the use a data dashboard system, Schifter et al. (2014) emphasized the importance of ongoing collaborative PD

where through a summer institute teachers collaborated in small groups utilizing data to create needs based lessons. The collaborative summer institute enhanced teachers' ability to utilize student assessment data to identify misunderstandings in student achievement and create student-centered instruction (Schifter et al., 2014).

In a study assessing the impact of Descriptive Review, a PD initiative that emphasizes a holistic view of student progress, Meyers, Graybill, and Grogg (2017) found that this strategy enhanced teachers' ability to gather data, summarize data, inform practice and work confidently and collaboratively surrounding data use. Through the collection of qualitative data from 34 in-service teachers during multidisciplinary intervention team meetings, Meyers et al. (2017) found Descriptive Review to enhance the practices of educators in their ability to use DDDM to support the cognitive, emotional, and moral development of students. Descriptive Review, a PD initiative, created a framework for teachers to utilize data to set goals that focused on the strengths and individuality of the whole child including academic, cognitive, social, and emotional (Meyers et al., 2017).

While collaboration surrounding data use is a widely researched topic in the field of education Van Gasse, Vanlommel, Vanhoof, and Van Petegem (2016) conducted a study focusing on professional learning and specific strategies that teachers engaged in during these endeavors including how they discussed, interpreted, and diagnosed data. With an eye toward understanding the cognitive process of the teacher about professional learning outcomes, the strategies explored include storytelling, helping, and sharing (Van Gasse et al., 2016). Teachers indicated that collaborative storytelling or talking about

personal classroom experiences took place when teachers developed a strong sense of comfort with one another, especially when the conversations pertained to weaknesses in instruction or poor performance on tests (Van Gasse et al., 2016). Trusting relationships served as the bases for the collaborative process of helping one another throughout DDDM initiatives (Van Gasse et al., 2016). Little evidence linked the strategies of storytelling, helping, and sharing surrounding the use of data to teachers' professional learning; however, throughout these processes teachers began to develop an increased awareness of classroom practices (Van Gasse et al., 2016).

In a later study, Van Gasse, Vanlommel, Vanhoof, and Petegem (2017) assessed teachers' interactions surrounding DDDM with focus on interdependence and how it related to changes in behaviors during phases of data use. Similarly, they focused on conversation, seeking advice, joint work, to study and the sharing of materials to study the change in teachers' interactions as they emerged in collaborative DDDM learning activities (Van Gasse et al., 2017). Findings suggested that teacher network changes about structural interactions where teachers began to engage in less but more intensive interactions as learning phases progressed and they demonstrated less storytelling and more helping, sharing, and joint work (Van Gasse et al., 2017).

Collaborative Coaching and Data Teams

Teachers often find it challenging to implement or make meaning of newly acquired skills and initiatives; however, when given the time to collaborate and share ideas on strategies and experiences they develop an understanding for practices that go beyond a superficial level (Sjoer & Meirink, 2016). Through a qualitative study based on

observations of teachers engaging in collaborative planning, Sjoer and Meirink (2016) identified the importance of developing a collaborative shared vision from by abstracting from concrete experiences. Their study highlighted specific patterns of the collaborative process and the importance of having an academic coach present to guide and clarify (Sjoer & Meirink, 2016).

Leaders who provide DDDM supports such a through coaching, build upon their teachers' proficiencies in data usage; furthermore, increasing the likelihood that they will practice DDDM techniques independently (Sun et al., 2016a). Despite the collaborative nature that data coaches facilitate regarding the analysis and interpretation of data, given the high level of expertise required for effective data coaching, these supports are at times lacking in many schools (Reeves et al., 2016).

While creating a data-driven culture through the use of student performance assessments, Abbott and Wren (2016) identified collaboration as a key component to determine how the results of the data analysis were used in the classroom to drive decision-making and to identify target areas within the instruction. In an attempt to study the nature of learning in data teams and the contextual factors that influence these processes, Michuad (2016) found that proximity, transience, and elements of rhetoric have a great influence on collaborate efforts surrounding DDDM. The use of rhetoric during conversations amongst members of data teams such as through the use of logos and ethos provided members with a sense of logical interpretation and higher order persuasive methods that enhanced DDDM negotiation processes (Michaud, 2016). Michaud (2016) also found the element of proximity to influence the efficiency of data

teams by highlighting the importance of face-to-face collaboration and joint enterprise. The element of transience regarding attendance also had a key role in the proficiency of data teams about the development of social identities amongst members (Michaud, 2016).

Through a year-long analysis of data team discussions in an urban charter school, Wardrip and Herman (2017) identified the importance of structuring these teams to facilitate the holistic analysis of data through the use of both qualitative and quantitative data sources. In these meetings, teachers discussed how they made sense of student data through the analysis of various data sources including both qualitative and quantitative. The inferences that teachers generate from interacting with students in alignment with performance data increases their ability to identify students' strengths and weaknesses as well as guide them to develop a reasonable solution (Wardrip & Herman, 2017).

Communicating Data

The communication of clear expectations for DDDM including the type of data to use, when to use it, and how to use is an imperative role of a school leader working towards the development of a data-driven culture (Sun et al., 2016b). The development of communication strategies for school-wide endeavors is critical not only because it brings forth a transparent sense of shared accountability, but it also enhances the understanding of issues that are being addressed including causes and visions for improvement (Park et al., 2013). The element of communication creates a strong sense of transparency in a school building, one that is necessary to establish trust and commitment (Jones & Thessin, 2017). Through the collection of narrative data through ongoing conversations with a high school administrator Cherkowski (2016) found that a key component of

establishing a climate of shared vision pertains to leaders' efforts to create transparency through an ongoing commitment to publically share goals for professional learning.

While emphasizing multiple ways to utilize data in alignment with professional ethics Mandinach et al. (2015) highlighted the importance of ensuring the proper use of data by communicating with parents to inform them of their child's progress. It is important for parents to understand the value of data use in their child's education and that data is being used to inform instruction while maintaining strong ethical standards such as through methods of confidentiality (Mandinach et al., 2015). The ongoing communication between teachers and parent about student progress positively contributes to student performance (McWilliams & Patton, 2015). In a study emphasizing data-informed professional learning communities to bring forth higher order thinking skills and enhance student learning Abbott and Wren (2016) found that it is essential to even involve students in the process of data analysis as a form of reflection and progress monitoring. The communication of student progress data in an attempt to identify a student's strengths and needs builds on a collaborative relationship with families where they work with teachers to set goals in direct alignment with student needs (McWilliams & Patton, 2015). The use technological web-based systems that update parents and students on student progress as well curriculum nights where teachers and families have the opportunity to review student data are great ways to enhance the levels data-based communication (McWilliams & Patton, 2015). When leaders and teachers communicate data with parents, it creates a platform where parents can begin to become part of their

child's learning experience by continuing assisting them at home with the areas they are struggling with in school (Sun et al., 2016a).

In alignment with the McREL leadership responsibilities about DDDM, the ongoing communication of data as a school community is imperative including through the use of visual data displays or data based discussions (James-Ward & Abuyen, 2015). Conversations about data that focuses on goals, objectives, and data triangulation create a purposeful focus that is necessary for collaborative decision-making. School leaders who communicate data by continually providing feedback to teachers such through the analysis of formative assessments create a sense of purpose that further allows teachers to use data to celebrate their levels of progress (Sun et al. 2016a). Data-driven school leaders design their organizations surrounding ongoing communication about data including to foster relationships with teachers, involve parents in decision-making, and to build community support (Sun et al., 2016a).

Technology and Data-Driven Decision-Making Initiatives

In their quantitative study testing a structural model that assesses teachers technology integration through school culture, Gürfidan and Koç (2016) identified the importance of supportive leadership and school culture as necessary components for the integration technology. The results of the study indicated the significance of a positive school culture in the implementation of technology (Gürfidan & Koç, 2016). A school culture conducive to successful technology integration aligns with infrastructure, qualifications, time, and the attitudes and beliefs of teachers (Gürfidan & Koç, 2016). School leaders are key to establishing a comprehensive school-wide vision related to the

systematic integration of technology through the development of support systems that not only focus on the physical components of technology use but also bring forth collaborative relationships surrounding trust, openness, and commitment (Gürfidan & Koç, 2016). In their study researching technology integration, Schrum and Levin (2016) highlighted that it is essential for school leaders to develop fluency in the use of educational technologies for school improvement, not only about student use of technology but also how teachers utilize it in their curriculums to create goals that address student needs

In a study highlighting the barriers and enablers of DDDM for school counselors, Viera and Freer (2015) pointed out the significance of technology training to facilitate the use of data to drive decisions. While many studies highlight the strengths associated with accessing student data in abundance, data technology is inadequate when users lack time or resources to become proficient in utilizing these systems (Viera & Freer, 2015). Other barriers to technology integration in schools include lack of overall support including leadership, technical training, and technology availability (Gürfidan & Koç, 2016). One major challenge in educational organizations is the lack of systems that enhance teachers and leaders' ability to collect and analyze data in a timely and routinely manner to utilize it for real-time decision-making (Park et al., 2013). Technological data programs are costly, and they require intensive training; furthermore, contributing to why these systems are underdeveloped in many schools and districts (Park et al. 2013).

The likelihood increases for teachers to regularly engage in DDDM practices when school leaders provide them with timely data about students and efficient ways to

store and collect data such as through the use of data based technological systems (Sun et al., 2016a). Training on how to use data-based technological programs is also beneficial for parents and families to enhance their capacity on how to navigate, generate reports, and view their child's data in comparison with other data sources including district same age or grade level reports (McWilliams & Patton, 2015). Other high-quality technology related support services on behalf of school leaders include modeling, easy access to resources, and the encouragement of collaborative efforts surrounding instructional integration (Gürfidan & Koç, 2016). In a study emphasizing the use of a data dashboard to provide training on how to incorporate DDDM principles into instructional practices Schifter et al. (2014) point out that computer-based systems serve to assist teachers with organizing, summarizing, analyzing, and synthesizing data to drive decisions. In their study, they used a project database in alignment with a project dashboard to guide and assist the needs of administrators, teachers, researchers, and student while they worked through the DDDM process (Schifter et al., 2014).

When integrating technology into schools, Brown and Jacobsen (2016) identified several key areas for school leaders to consider including technology fluency and the development of professional learning networks. In their mixed methods case study through the collection of data from principals in three different school districts, Brown and Jacobsen (2016) found that leaders struggling with technological proficiencies not only struggle with the implementation of technology-enhanced learning atmospheres but also with the development of integrating technology as a component of a school-wide vision. During the implementation of school-wide innovations including those associated

with technology, it is essential for leaders to establish the conditions necessary for collaborative learning by building relationships based on trust and personalization (Brown & Jacobsen, 2016). Reports on leadership and technical data related strategies indicate that similar to many school reform procedures, DDDM is unable to penetrate into classroom instruction; furthermore, indicating a need to build a knowledge base on how teachers interact with data to drive decision-making (Wardrip & Herman, 2017).

The development of openness and transparency on behalf of a school leader is a major component of managing technology infrastructures where easy access and open resources to data increase communication and engagement in the learning environment (Schrum & Levin, 2016). In a study focusing on the development of DDDM skills through inquiry learning, Odom and Bell (2017) articulated that data analysis and statistic instruction through a technology-based training program could address the needs of teachers in their DDDM endeavors. For teachers to develop the mindset that technology benefits classroom instruction, it is vital that school leaders develop a school-wide vision through coordinated, collaborative, and support initiatives that the whole school community takes part in (Schrum & Levin, 2016).

Conclusion

The literature presented in this review discusses how school leaders establish a data-driven culture that facilitates the improvement of instructional strategies to increase student achievement. Through the examination school leaders and their part in the establishment of a data-driven culture, the literature in this review highlights multiple strategies for leaders to implement to develop a DDDM school culture that supports

student achievement. In alignment with the results of the case study interview data, the review of current literature was organized by recent research that produced forth themes surrounding the significance of school leaders and their part in the establishment of data-driven school culture.

The following subthemes emerged throughout the development of the literature review: gaining trust from teachers through a school-wide vision, creating a collaborative DDDM support system and a PLC, the development of a DDDM school-wide cycle, communicating data as a school community, and changing the way technology is used in DDDM initiatives. I presented the themes in depth by various researchers in the review, and in alignment with the interview data, will support the recommendations presented in the study's project, titled White Paper: *School Leaders and Their Role in the Development of a Data-Driven Culture.* The project highlights recommendations to guide the district with strategies to develop a data-driven school culture.

Project Description

Based on the findings of the study, the most appropriate project to address district needs is a white paper. The document provides a concise report of recommendations on how to address the inconsistencies of data-driven decision-making throughout the selected district (Appendix A). The inconsistent implementation of DDDM is evident as indicated on the district's school accountability reports for the past two consecutive years in alignment with the DTSDE reports for each *focus* or *priority* school on the list. The results of the interview data analysis and the research presented in the literature review in section three drove the development of the paper.

The project outlines research-based recommendations to develop a data-driven culture through leadership initiatives. The content of the white paper emphasizes how the presence of organizational supports can serve to guide DDDM implementation in a school building. The recommendations presented in this document highlight how school leaders can bring forth a data-driven environment through the following processes: establishing a trust-filled school-wide vision surrounding DDDM, developing a DDDM school-wide cycle, creating a collaborative DDDM support system, communicating data as a school community, and changing the way technology is used in DDDM initiatives. The research presented in the literature review of section three as well as the research collected from the above case study substantiates the findings outlined in the white paper, and I used it to support the listed recommendations throughout the document.

I plan to present the paper to the district's superintendent and supervising district administrators in the months following the closing of the 2017-2018 academic school year. This timeline allows the content of the paper to influence the development of the DCIP specifically about practices about building level leaders receiving support from district leaders on the implementation of DDDM protocols. I will contact the superintendent's secretary to schedule an appointment to present the project. Along with a hard copy of the entire paper, I will present the content of the project via PowerPoint with emphasis on critical points of the recommendations. In the event that that a face-to-face presentation does not receive approval, I will send a copy of the completed white paper directly to the district's superintendent for review.

Generally, by the closing of each school year, schools in the district completed their SCEP for the following year, serving as a possible barrier to present the project in a timeline where it's content influences plan development. Each's school's School-Based Management Team comes to consensus on the goals and activities on the SCEP; however, the plan is a living document regularly modified throughout the school year. The SBMT typically reviews the initiatives developed over the summer months at the beginning of the school year to collaboratively make adjustments. The budget and allocated funds in each building are also generally completed by the closing of each school year. The recommendations in the white paper suggest support systems that require specific fund allocations. Should the content of the paper influence the allocations of funds, in collaboration with district leaders and the Board of Education, building leaders have the option to modify their budget to align with newly developed initiatives.

Project Evaluation Plan

The project will guide leaders to provide district level leaders with information to guide building level leaders to develop a data-driven culture in their schools by implementing specific support systems aligned with DDDM. One goal of this project is that the recommendations presented are included in the development of the district's DCIP as well as the SCEP in each *focus* or *priority* school by including specific DDDM supports in their goals and actions. In alignment with the district's New Education Bargain, specifically in the categories of Rigorous Early Elementary Education, New Innovative High Schools, and New Relationships with Teachers, the inclusion of the

project's DDDM recommendations in the district's DCIP will influence the protocols used to guide building leaders to develop their SCEPs to establish data-driven school cultures.

Another overall goal of the project is that the recommendations influence the development of practices and procedures on the SCEPs of each district *focus* or *priority* school to affect their ratings on the annual DTSDE review positively. *Effective* or *highly effective* ratings in multiple Tenets of a DTSDE annual review leads to the transition a school from *focus* or *priority* to *good standing* on the State Accountability Report. Schools of good standing reflect not only high levels of student achievement but also are well-structured buildings that implement and sustain practices conducive to student learning.

Schools in the district that are rated either *focus* or *priority* undergo a DTSDE annual review process each school year. In the review, leaders focus on the use of data to drive decision-making, precisely through the assessment of practices under Tenet three emphasizing curriculum development and support and Tenet four highlighting methods of teacher practices and decision-making. Tenets three and four of the Comprehensive School Rubric for the DTSDE both emphasize DDDM protocols as indicators of achieving effectiveness. If the recommendations from this project are reflected in the district's DCIP and are used by district leaders to guide building leaders with the development and implementation of each *focus* and *priority* school's SCEP, the ratings of the DTSDE under Tenets three and four for each school will likely reflect that of *effective* or *highly effective*.

The implementation of the project's DDDM protocol recommendations will also influence each building's DTSDE rating under Tenet two, emphasizing building leader practices and their responsibility to establish protocols necessary to carry out school initiatives effectively. Through collaborative mentoring sessions between district and building level leaders, the establishment of DDDM protocols and procedures will reflect strong leadership initiatives; furthermore, increasing the likelihood of receiving an *effective* or *highly effective* rating under Tenet two in the DTSDE review.

The DDDM recommendations of the project will also likely positively impact the DTSDE annual ratings of Tenet two, emphasizing parental involvement. Through collaborative leadership sessions, the development of protocols and practices in schools' SCEPs related to communicating data with parents will increase the probability of receiving an *effective* or *highly effective* rating under Tenet six of the DTSDE during the annual review.

Effective or *highly effective* ratings under multiple Tenets on the annual DTSDE review in each focus or priority school will lead to the transition of each school into *good standing* status on the state's Accountability Report. *Good standing* schools demonstrate their ability to meet the various needs of students through rigorous implementation of procedures and practices that serve to increase overall student achievement.

Project Implications

Through collaborative mentoring sessions, district leaders regularly assist school level leaders with the development of their SCEPs and DDDM protocols that they plan to implement for the upcoming school year. The use of recommendations for this project

during collaborative leadership sessions can influence the following: the development of a school schedule that includes structured collaborative DDDM sessions for teachers with a letter day cycle, the establishment of a school-wide vision and open door policies to build upon DDDM practices in a nonpunitive manner, the use of technology with DDDM practices, the development of DDDM collaborative training and support sessions, the inclusion of data coaches and or data coordinators in budget allocations, the development of data communication protocols and the development of structured data teams.

I designed the project to present it to the district with a concise report of recommendations and strategies for district-level leaders to use to guide building leaders to develop data-driven cultures. The recommendations in the white paper support district and building level leaders in their ability to implement DDDM procedures in school plans throughout the district. Supervising administrators at a district level can use the recommendations in the white paper to modify current district policies related to DDDM by developing a structured system of DDDM support protocols. District leaders can use the suggestions to assist building-level leaders with the development of their SCEPs, precisely as they align with Tenets of the DTSDE.

Each school's SCEP includes individual school-wide goals and activities designed to achieve those goals throughout the school year. This document aligns with the school's DTSDE where they receive ratings contingent on their ability to demonstrate achievement under each of the document's Tenets. When a school's SCEP is designed to establish a data-driven school culture, teachers will create instruction that aligns with student needs; furthermore, increasing student achievement. Once building level leaders

become proficient in establishing and sustaining practices and procedures that create a data-driven culture, teachers become student-centered and begin to use data to guide their instructional planning.

The organization of schedules that incorporate structured common planning times with standardized protocols for DDDM increase the likelihood that teachers will regularly engage in practices designed to meet the needs of students. The recommendations may also assist building leaders with scheduling and develop data-aligned collaborative planning time and coaching arrangements. These initiatives support teachers with their DDDM practices and increase the chances that teachers will implement strategies that address students' instructional strengths and weaknesses; furthermore, improving overall student achievement.

The recommendations in the project also provide information that aligns with school-wide budgeting and decisions about allocating funds for data coordinators or coaches. Data coaches and coordinators impact the implementation DDDM procedures in that they provide data-based PD support and facilitate DDDM initiatives in alignment with instructional practices. Teachers with proficient DDDM skills, provide instruction that is needs-based, engaging, and student-centered; furthermore, increasing the chances that students will graduate with college or career readiness skills.

The recommendations also suggest methods for establishing protocols to communicate data to a school community. The development of protocols that create transparency surrounding data use such as communicating data with parents, involving students in the data process, and articulating clear DDDM expectations to teachers,

establishes a sense of openness that puts data in the center of school-wide planning. When data use is transparent amongst the entire school community, understanding and ownership arise that further motivates individuals to focus on data as a key component of attaining student achievement. The white paper also provides suggestions on how to use technology in DDDM. The use of technology in DDDM assists teachers with collecting, organizing, and analyzing data; furthermore, motivating them and setting up a structured foundation to incorporate data into their daily instructional practices. When DDDM methods are in place, the monitoring of student achievement becomes a habitual practice.

Given the capacity that building leaders have to design their school's SCEP collaboratively, it is vital for them to understand how to create a data-driven culture through the implementation of specific DDDM practices procedures. Leaders who create a school-wide vision that emphasizes a data-driven culture through relationships built on open communication and trust, the likelihood increases for teachers to buy-in to the regular implementation of DDDM practices. Once building level leaders become knowledgeable on how to establish a data-driven school culture, they can collaborate with their school's School-Based Management Team (SBMT) to assist the team with including DDDM protocols in their school's SCEP.

When implemented effectively and consistently, DDDM practices identify the individual needs of students. When teachers and leaders implement DDDM practices in ways that contribute to an increase in student engagement and achievement, the likelihood increases students they will develop the skills required to succeed in their coursework, obtain a high school diploma, and gain proficiencies to guide them in

becoming contributing members of society. With the establishment of data-driven school culture, more schools will likely begin to transition into good standing because a when data is regularly used to hone in on student skills, it creates a positive shift in overall teacher practices; furthermore, resulting in increased student achievement. The recommendations in the white paper can be used to ensure that teachers throughout the district receive DDDM supports that facilitate the implementation of practices that directly influence instruction and student achievement.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

The project developed from this study identified multiple recommendations under five major topics on DDDM implementation strategies for leaders. The designing of the project built off of the analysis of interview data collected from the study as well as the information gathered from various peer-reviewed articles on the topics of DDDM and positive school cultures. While the recommendations of the project identify specific strategies to embed in the district and school-wide planning, the consideration of the project's strengths and weaknesses in delivery guide the direction of projected outcome.

The content of the project builds from the analysis of interview data collected in the study and highlights the validity of outcomes presented in various peer-reviewed articles, specifically on the importance of developing a data-driven culture through ongoing collaboration and communication. The literature presented in Section 3 identifies the linkage between school turnaround and a leader's capability of building a collaborative school culture surrounding data usage (James-Ward & Abuyen, 2015). The recommendations presented in the project provide leaders with the skills necessary to establish a data-driven culture by emphasizing collaborative supports and ongoing communication. When leaders work collaboratively with teachers throughout DDDM such as by modeling, demonstrating passion, knowing practices, and providing ongoing support, teachers develop a sense of ownership of learning and begin to buy into these practices (Sun et al., 2016b). The recommendations in the project also highlight the importance of vision development on behalf of a school leader and emphasize how a

data-driven vision brings together the school community with an aim to achieve a common goal. In a quantitative study assessing the data practices of teachers and administrators in an Illinois public school district, Reeves et al. (2016) identified that the development of a strong vision for data use by leaders promotes buy-in and valuable beliefs towards willingness to participate in DDDM practices. The project will guide leaders to develop an understanding of how the presence of a school vision built on collaborative efforts is foundational to the establishment of a data-driven culture. Data-driven leaders increase the likelihood that teachers will begin to shift their mindsets to a data-driven instructional approach. In alignment with the literature in Section 3, the project presents various positive outcomes associated with the development of a data-driven school vision and its link to a sustainable data-driven culture.

The data collected and analyzed in the study adds to the research by pointing out the necessities involved in creating a PLC. The literature presented in Section 3 of the study emphasizes the relevance of school-wide success and the establishment of professional learning communities. Jones and Thessin (2017) found that administrators who developed a common purpose for learning established collaborative structural supports that fostered positive trust-based relationships among teachers. The development of a collaborative school-wide community is a major component of creating a data-driven culture. Many districts build their initiatives off of ongoing collaboration, a topic greatly emphasized throughout the project. Michaud (2016) found that when teachers participate in data-centric collaborative settings, they begin to influence one another, and the quality of their work has a direct impact on student achievement. If leaders take into

consideration the recommendations presented in the project, they will understand the importance of setting a collaborative tone for the development of a data-driven school-wide culture.

While the content of the project addresses the topic of DDDM as a whole, it highlights additional subtopics that research scholars and educational policymakers emphasize in the development of initiatives to bring forth school-wide success. The project presents recommendations related to technology integration that can guide leaders to prioritize the use of technology in DDDM initiatives. In alignment with the literature presented in Section 3, the results of the study indicated the significance of a positive school culture with the implementation of instructional technology (Gürfidan & Koç, 2016). The study will guide leaders and teachers to develop an awareness of how technology positively impacts DDDM practices. A school culture conducive to successful technology integration aligns with infrastructure, qualifications, time, and the attitudes and beliefs of teachers (Gürfidan & Koç, 2016).

While the implementation of DDDM creates an environment that leads to an increase in student achievement, other variables equally add to this equation. The content of this project provides information that aligns with a variety of educational initiatives. The recommendations encourage the alignment of DDDM, parental involvement, and involving students in the decision-making process. Researchers of DDDM suggest that the communication of student progress data, in an attempt to identify a student's strengths and needs, builds on a collaborative relationship with families where they work with teachers to set goals in direct alignment with student needs (McWilliams & Patton,

2015). The project will motivate leaders and teachers to develop initiatives that encourage collaborative relationships with students and families about DDDM.

The language and jargon used throughout the project tailor to an audience of various backgrounds. Educational jargon is moderately used throughout the project, only when necessary to articulate certain points. The avoidance of overly technical terms creates a presentation that appeals to a diverse audience, including those who are not familiar with technical terms used in the field of education, such as community members and parents. Often when agreeing upon educational initiatives, especially with an aim to include them in the district and school plans, leaders present the information to a board or committee of individuals involved in decision-making processes. Members of these groups often include community members and parents. The use of infographics offers a visual aid to the project and highlights important points as they relate to one another and the implementation of DDDM organizational supports. The structure, organization, and language use in the project allows a diverse audience to comprehend specific concepts and major points with comfort.

Despite the strengths of the project, the presence of several limitations highlights a need to consider other variables when implementing the recommendations into the district's planning process. Budget and financial restraints limit the inclusion of the project's recommendations into the district or state-level plans. Teachers begin to become autonomous with DDDM in their classrooms when they are trained to incorporate multiple data collection and analysis techniques into their daily routines (Niemeyer et al. 2016). The inclusion of data-based PD initiatives and the purchase of data-related

technological programs require changes to state, district, and school budget allocations. While many studies highlight the strengths associated with accessing student data in abundance, data technology is inadequate when users lack time or resources to become proficient in using these systems (Viera & Freer, 2015). While budget cuts continue to remain a concern in the district, a delay may occur in the purchasing of data related to PD initiatives.

Despite the collaborative nature that data coaches facilitate in the analysis and interpretation of data, given the high level of expertise required for effective data coaching, these supports are at times lacking in many schools (Reeves et al., 2016). The inclusion of data coaches and their necessary training also requires financial alterations to current district budgets. In addition to budget cuts, time constraints related to budget allocations also bring forth limitations with the timely inclusion of the project's recommendations in the district or state-level plans. Before the closing of each school, decision-making teams allocate the funds in their budget to positions and initiatives for the upcoming school year in alignment with their current plans. New inclusions to plans often do not receive the necessary funding until the following school year; furthermore, delaying the adding of the project's recommendations to the state, district, or school plans.

Accountability about DDDM practices and procedures often remains a barrier to effective implementation, specifically about the analysis of high stakes assessment data to drive decision-making. While the recommendations presented in the project identify the importance of a school environment built from trust, collaboration, and nonpunitive use

of DDDM practices, the project does not identify strategies to overcome barriers related to accountability. The accountability components of data used in performance evaluation create a sense of resistance and skepticism with teachers that impedes their willingness to engage in DDDM practices (Mandinach et al., 2015). While the project enhances leaders' and teachers' awareness of the foundational steps to develop a data-driven school culture, politically driven accountability related to data use in schools continues to remain a challenge.

At the time of the study's completion, in the summer of 2018, leadership teams already identified and agreed upon the components of district and state level plans for the upcoming school year, therefore delaying the inclusion of recommendations presented in the project. Most district and state level plans are living documents, modified various times throughout the school year. The recommendations in the project may not align with the initiatives listed in existing district or state-level comprehensive plans, possibly requiring additional plan modifications. Plan modification entails various protocols on behalf of leaders and decision-makers, possibly delaying the inclusion of the project's recommendations.

Recommendations for Alternative Approaches

The implementation of DDDM practices require the presence of multiple support seems including establishing a trust-filled school-wide vision surrounding DDDM, developing a DDDM school-wide cycle, creating a collaborative DDDM support system, communicating data as a school community, and changing the way technology is used in DDDM initiatives. The implementation of the recommendations presented in the project

requires the development of specific plans unique to each step, including a system for follow-up and progress monitoring. The development of each plan necessary to carry out the steps of creating a data-driven environment will address the gaps in DDDM implementation throughout the district. The designing of specific PD initiatives to enhance DDDM understanding may address the current gaps implementation through an alternative approach. It is essential for teachers and leaders to enhance their understanding of how to collect data that is valid and reliable to use in instructional decision-making. Professional develop initiatives that emphasize these processes increases DDDM prophecies. The modifications of academic curriculums to include DDDM related technology and the designing of DDDM specific techniques may also address some of the DDDM inconsistencies throughout the district.

Another alternative approach to address the gaps in DDDM implementation throughout the district includes the process of gathering data from teachers and leaders in schools that identified as either *focus* or *priority*. Contrary to the collection of DDDM related data from schools identified as good standing, data associated with DDDM implementation gathered from schools of *focus* or *priority* may pinpoint specific areas in need of improvement. The collection of data from these building may also assist with identifying DDDM related strengths to build upon preexisting proficiencies; furthermore, setting a positive tone as opposed to signaling out the emphasis on existing problems.

Scholarship, Project Development and Evaluation, and Leadership and Change

As a result of this study, I have concluded that the content of information produced during research provides volumes of information on how to inform best

practices. There are a variety of variables in each topic in the field of education to consider before developing an action plan that addresses a problem or a gap in student achievement. While it is common to focus primarily on quantitative aspects of education such as test scores and behavioral records, I gained awareness of the importance of emphasizing the process of working with human beings. The qualitative components of education such as personalities and leadership styles that drive a major portion of the quantitative data bring forth an additional perspective for researchers to use to triangulate results. The analysis of qualitative data enhanced my understanding of human aspects related to the implementation of educational policy and practices; furthermore, highlighting the importance of considering personality and addressing human needs when navigating problems and solutions in this field of study.

The content explored in the articles presented in the second literature review, in alignment with the interview data, increased awareness on a variety of factors related to use of data to drive instruction. The content of the research articles reviewed enhanced the analysis of participant perspectives in the study by highlighting the importance of relationships and establishing collaborative trust between members of a school community. The exploration of DDDM often entails an emphasis on technical approaches such as the process of collecting and analyzing to drive instruction; however, these components only represent a portion of the implementation. The effective implementation of school-wide initiatives requires the consideration of multiple variables in a cycle to carry them out with proficiency. This analysis of human perspective enhanced the importance of relationships, not only as they relate to DDDM, but in

connection to all components of education. Human beings present themselves from different occupations and possess unique skill-sets, intelligence, and personalities that ultimately build upon one another when combined with positive collaborative efforts. Rather than addressing concerns through a one-size-fits-all approach, I gained great insight on the importance of valuing the unique personal attributes that each brings forth in an attempt to achieve a common goal.

The steps involved in the process of scholarly writing enhanced my voice and style as a writer. As an English teacher, academic writing always represented a strong skill-set; however, the development of skills as scholarly writing enhanced my ability to use a direct voice to get a message across while incorporating the elements of scholarly language and academic jargon. I developed awareness to avoid the use of passive language as much as possible and to incorporate language that represents straightforwardness. This approach created a thorough and concise method of getting a message across to readers, specifically an audience reviewing the work for the possibility of incorporating into policy change. This style of writing eventually became a habitual practice and transferred over to daily endeavors including e-mails and written student directives.

Throughout the study, I also developed an awareness and appreciation for educational research specifically about the alignment of various research studies and the intertwining of different topics used to emphasize a common message. The importance of professional learning communities, communication, leadership styles, collaboration, qualitative data analysis, technology, policy, and PD not only highlighted components of

a school culture conducive to DDDM implementation but equally emphasized the importance of increasing student achievement as a whole. These variables aided my understanding of how the field education encompasses a large degree of the variable, comparable to pieces of a puzzle, which interweave to create a whole. The content of the articles analyzed in the literature reviews presented in the study built off one another to emphasize the importance of taking into consideration various steps to a problem when developing an intervention; furthermore, enhancing my emphasis the importance of research in the field of education.

The processes of study beginning with the development of the prospectus until the end of the journey guided my understanding of the cycles entailed in scholarly research. These processes built my knowledge base of how each step correlates with the following to build upon ideas and the validity of the study as a whole. The project study checklist provided by the university served to enhance clarification on the proper approaches to take in completing each section. Reading the checklist before completing each section created focus and identified the exact alignment necessary to convey my point with accuracy. In section 2, the data analysis process and the write up of results in alignment with the study's research questions came together to heighten understanding of the study's purpose. The significance of overall presence of specific organizational supports also aligned with each literature review; furthermore, creating a structured flow throughout the paper. Ongoing feedback from various members of my doctoral committee further enhanced my knowledge base on how to arrange the study to align with the checklist properly. Likewise, regular communication with classmates, on

discussion posts provided significant information and considerations to take as I progressed throughout each step the journey. Discussions about writing tips, data collecting and analysis strategies, and organization of the paper as a whole assisted with the development of the study.

Reflection on Importance of the Work

Throughout the study, each completed step enhanced my development as a doctoral scholar and a moral leader. When selecting a topic to drive my research, I wanted to move forward with an approach that addressed practices related to the overall increase in student achievement while connecting it to one of the state's most emphasized initiatives. Data-driven decision-making fit that criteria, and as I developed the topic through reviewing the literature and conducting research, I gained great insight on why DDDM become a state-wide initiative and why there remained various gaps in implementation across the board. While wanting to place focus on the steps needed to assure effective implementation of DDDM strategies, the framework selected to guide the research questions of the study emphasized the organizational supports necessary implement these practices with fidelity. I've realized that too often, the content of DDDM training and interventions focused on how to analyze data and use it in the decision-making process; however, before the actual analysis step, certain organizational supports are necessary to assure effective implementation of DDDM practices. The results of the study, as predicted, highlighted how to address the inconsistencies related to the implementation of DDDM as they relate to how to the supports that teachers receive throughout these endeavors.

As I moved through the initial steps of the study, I began to grasp onto the importance of approaching intervention through a positive lens emphasizing the practices of schools of good standing as opposed to highlighting the practices present in low achieving schools. When creating an intervention, it is common and sometimes easy to develop a perspective that pinpoints ineffective practices. When placing focus on effective practices and how they can inform intervention development, the likelihood increases that individuals will buy-in to the presented plan because it identifies proven solutions as opposed to simply identifying areas of struggle without an effective resolution. Initially, I considered researching DDMM practices in schools that remained in *focus* or *priority* status. However, I decided to reverse my approach and focus on DDDM practices in good standing schools to use the information that I gathered through research to inform the best practices in schools struggling to achieve good standing status. The reverse of an approach inspired me to maintain a vision that highlights the importance of building off of best practices to inform those in need of improvement.

Implications, Applications, and Directions for Future Research

Veering away from a one-size-fits-all curriculum can guide teachers with developing DDDM practices on how to meet the unique needs of students by building off of their existing strengths or improving areas of struggle. Due to the complexity involved in the implementation of DDDM practices, many school districts continue to struggle with using data effectively to drive instructional decisions. In alignment with current research findings on DDDM, the research questions of this study guided the collection of data to identify how DDDM organizational support systems affected the shift of three

schools from *focus* or *priority* to *good standing* in a large urban school district. This study highlights implications associated with DDDM practices and identifies recommendations that leaders can use to develop supports in alignment with DDDM procedures in their schools. As a result of implementing the presented recommendation teachers and leaders will demonstrate practices designed to increase overall student achievement; furthermore, increasing student skill-sets and the likelihood that students will graduate with career and college readiness. The positive outcomes associated with the implementation of DDDM organizational supports may also inform educational policies across the state where state officials can use the information in this study to modify the DTSDE comprehensive rubric to reflect the development and implementation of the presented practices.

While emphasizing the significance of DDDM to create instruction that aligns with student needs, teachers and leaders can use the information in this study to bring forth social change in various ways. Supervising administrators at a district level can utilize the results of this study to modify or change current district policies related to DDDM by developing a structured system of support protocols. The results of this study can be used to identify gaps in current DDDM policies in the district by outlining recommendations to modify or redevelop DDDM protocols. The recommendations of presented in this study will guide the development of the following: the development of a school schedule that includes structured collaborative DDDM sessions for teachers with a letter day cycle, the establishment of a school-wide vision and open door policies to build upon DDDM practices in a nonpunitive manner, the use of technology with DDDM practices, the development of DDDM collaborative training and support sessions, the

inclusion of data coaches and or data coordinators in budget allocations, the development of data communication protocols and of structured data teams. The emphasis on relationships and collaboration in the study aligns with the district's Educational Bargain emphasizing the establishment of positive relationships with teachers to build professional learning communities and collaborative support systems.

Supervising administrators at a district level can use the data from this study to assist building leaders with the development of their school plans. Tenets three and four of each school's SCEP identify the presence of DDDM to drive instructional decision-making tailored to student needs. Tenet two identifies leadership initiatives implemented to achieve the goals identified in the other Tenets. During School-Based Management Team meetings, leaders can collaboratively use the recommendation presented in this study to assist the team with aligning appropriate DDDM protocols to their school SCEP. The district requires schools in the district to hold a monthly SBMT meetings where they develop and review their school's SCEP. Each school's SCEP is designed to meet the needs of their population of students and staff. When DDDM organizational supports are implemented into the plan and teachers are guided to participate in the plan's outlined activities, the likelihood increases that students will enhance in academic skill levels. Leaders who create a school-wide vision that emphasizes a data-driven culture through relationships through collaborative planning will increase buy-in of teachers to the regularly implement DDDM practices.

When building level leaders become proficient in establishing and sustaining practices that create a data-driven culture in their buildings, teachers become student-

centered and begin to use data to guide their instructional planning. The proficient implementation of DDDM identifies individual needs of students. The recommended support systems presented in this study include the following: the organization of schedules that incorporate structured common planning times and coaching arrangements with standardized protocols, school-wide budgeting and decisions about allocating funds for data coordinators, coaches, and data-based PD, the development of protocols that create transparency on data use with parents, students, and teachers, and how to effective use technology with DDDM practices. Leaders can use the recommendations identified in this study to develop and data-driven culture where teachers can develop practices to provide instruction that is engaging and student-centered. If the district's initiatives to implement DDDM organizational supports proves to bring forth increased levels of student achievement, additional districts across the state may begin to modify their DDDM initiatives similarly; furthermore, leading to a possible modification of state documents including the DTSDE comprehensive rubric under the Tenets that empathize DDDM practices.

Future research on DDDM and organizational supports will enhance the themes developed throughout this study. A similar study conducted in additional schools in the district that made a transition from *focus* or *priority* to *good standing* could substantiate the findings from this study. A mixed methods approach through the collection of data on the use of DDDM organizational support systems will generate in-depth information to triangulate with current findings. Through the administration of a school-wide survey as well as the collection of interview data from various teachers and leaders will height

awareness of how the presence of DDDM organizational supports are impacting school-wide success.

The information presented in this study does not limit research scholars to utilizing it for studies on DDDM support systems. The content of this study aligns with the topics of leadership styles, parental involvement professional learning communities, communication, collaboration, involving students in decision-making, and engaging instruction. When teachers implement instructional practices in ways that contribute to an increase in student engagement and achievement, the likelihood increases that students will develop the skills necessary to obtain a high school diploma as well as gain proficiencies to guide them in becoming contributing members of society.

Conclusion

DDDM in the field of education is an innovative and effective method use to enhancing the best practices of leaders and teachers in an attempt to increase overall student achievement. Despite the demands that school districts across the nation place on DDDM to drive instruction, implementation of these practices continues to remain a challenge. While complex, effective implementation of DDDM requires the presence of organizational supports including those associated with data infrastructure, analytical capacity, and data culture. DDDM requires the presence of various necessary to collect effectively, analysis, and use data to drive instructional decision-making.

The research presented in this study identified how building level organizational support systems affected the implementation of DDDM to drive instructional practices in three urban schools that recently transitioned from *priority* or *focus* to *good standing* on

their State's 2016-2017 Accountability Report. The study aligned with an organizational supports conceptual framework with an emphasis on data accessibility, collection methods, reliability and validity, the use of coaches and data teams, PD, and data-driven leaders. Through the collection of qualitative data from one-on-one interviews, this case study investigated the perspectives and practices of three school leaders and nine teachers in schools that recently transitioned from *priority* or *focus* to *good standing*.

The content of the study emphasized how the presence of organizational supports served to aide DDDM implementation in the three participating school buildings. The recommendations presented as a result of the research identify how school leaders can establish a data-driven environment through the following procedures: establishing a trust-filled school-wide vision surrounding DDDM, developing a DDDM school-wide cycle, creating a collaborative DDDM support system, communicating data as a school community, and changing the way technology is used in DDDM initiatives.

Administrators at a district level can use the information in this study during the process of collaborating with building leaders in the development of each school's SCEP, a plan that identifies individual school-wide goals and activities established under the Tenets of the DTSDE state review process. The effective implementation of DDDM requires the presence of necessary organizational supports to guides practices in ways that directly influence instruction and student achievement. Providing struggling schools with best practices on DDDM will bring forth social change because it increases teachers' ability to identify specific skill sets and abilities of students to use in intervention development and progress monitoring. When teachers recognize and address

students' needs, the begin to bring forth practices that result in increased levels of student achievement; furthermore, increasing their levels of college and career readiness.

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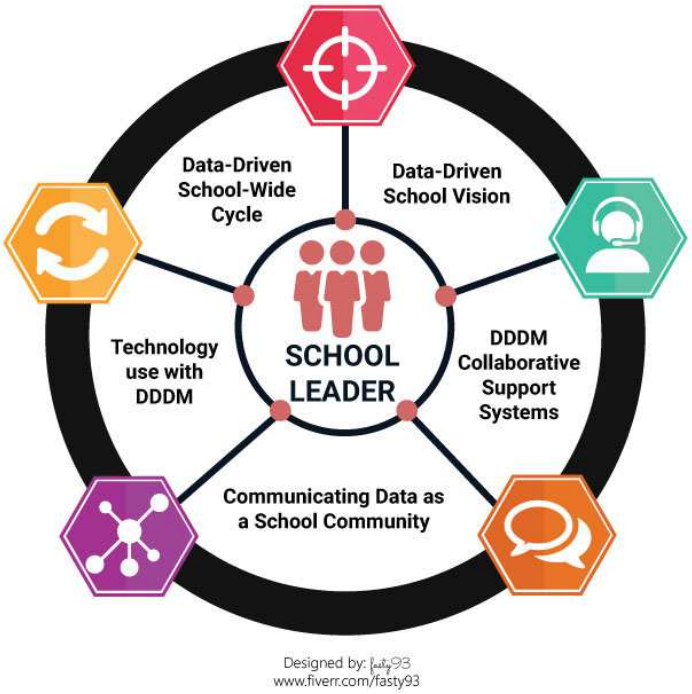
Appendix A: Project

WHITE PAPER

SCHOOL LEADERS AND THEIR ROLE IN THE DEVELOPMENT OF A DATA-DRIVEN CULTURE



May 2018

By: Danielle M. Ware

Introduction

Educational research continues to indicate the use of data to drive decision-making as a powerful method to increase student achievement (Marsh & Farrell, 2015). Despite this indication, there remains a lack of evidence about individual data-driven decision-making (DDDM) strategies and the supports needed to ensure they are rolled out in ways that facilitate positive change (Slavin et al., 2013). During the 2017-2018 school year, a doctoral capstone qualitative case study conducted in the XYZ School District examined the role that DDDM had in the transition of three district schools from *focus* or *priority* to *good standing* on the state's 2016-2017 Accountability Report. The data gathered throughout this study examined the role that DDDM infrastructures, analytical capacities, and data cultures had on each school's transition into good standing status. Although the state and district continue to place great emphasis on DDDM used in school turnaround practices in the XYZ School District, the 2016-2017 Accountability Report identified 35 schools as either *focus* or *priority* (NYSED, 2018). The 2017-2018 Accountability Report in 33 schools indicated similar ratings (NYSED, 2018).

This study aligned with a conceptual framework for DDDM identified by Gill, Borden, and Hallgren (2014) as a system of structured organizational supports including those associated with data infrastructure, analytical capacity, and data culture. This framework highlights a variety of organizational supports that are necessary to implement DDDM through the establishment of data infrastructure, analytical capacity, and data culture. Through the analysis of data from twelve semistructured interviews with teachers and administrators, the results of the study indicated the presence of various

organizational supports in each school that facilitated DDDM practices. Data was collected from nine teachers from various content areas and three administrators in two elementary schools and one high school in the district. The recommendations presented in this document highlight how school leaders can facilitate a data-driven environment through the following processes: getting teachers to buy-in to DDDM through establishing a school-wide vision, creating a trust-filled professional learning community, developing a DDDM school-wide cycle, creating a collaborative DDDM support system and a professional learning community, communicating data as a school community, and changing the way technology is used in DDDM initiatives.

School leaders ultimately establish the climate for school turn-around and the development of professional learning atmospheres where teachers collaborate to achieve common purposes through cohesive teamwork (Cherkowski, 2016; Johnson, & Przybylski, 2016; Reeves, Summers, & Grove, 2016; Sun, Johnson, & Przybylski, 2016b; Voelkel & Chrispeels, 2017; James-Ward & Abuyen, 2015). School turnaround is linked to the leader's ability to build a collaborative school culture surrounding data usage and is contingent upon their DDDM skill sets to improve student achievement (James-Ward & Abuyen, 2015). Even though DDDM has become a widely recognized practice in the field of education, school districts continue to experience difficulties with implementing data related practices with fidelity and efficacy (Dunn, Airola, Lo, and Garrison, 2013a). When specific organizational supports are in place to guide teachers throughout the collection and analysis of data, the likelihood increases that they will use data in their daily decision-making practices. Despite the development of data-rich settings, data has

limited uses if decision makers lack the understanding of the organizational supports needed to ensure that data is appropriately used to drive the decision-making process (Gill, Borden, and Hallgren, 2014).

Most teachers agree that when used effectively DDDM plays a significant role in implementing student-centered needs-based instruction; furthermore, increasing student success. The challenges with implementing DDDM include lack of access to valid and reliable data, lack of training and internal building support systems, and lack of organizational cultures that emphasize ethics of data usage (Gill, Borden, and Hallgren, 2014). When the proper support systems are in place, teachers become more proficient and comfortable with utilizing DDDM as a component of their daily practices.

Through the analysis of interview data from a qualitative case study conducted in the district, triangulated with various research studies on DDDM, several recommendations arose. These include: promoting teacher buy-in to DDDM through establishing a school-wide vision, developing a DDDM school-wide cycle, creating a collaborative DDDM support system, communicating data as a school community, and changing the use of technology in DDDM initiatives. An understanding of how to develop DDDM organizational support systems may assist leaders with developing effective DDDM implementation protocols and practices throughout the district; furthermore, creating an environment conducive to raising levels of student achievement and preparing students for career and college readiness. Leaders have a vital role in establishing the type of learning environment conducive to the use of DDDM. Leaders are change agents who ultimately can facilitate the development of collaborative school

cultures that are necessary for the implementation of programs or procedures (Herrington, 2013). Marsh and Farrell (2015) specified when leaders develop an understanding of how they can positively influence teachers' capacity to use data in schools; they will gain additional insight on what needs to be in place to implement DDDM practices. The establishment of low burden data collection systems through the development of data infrastructure and analytical capacity improves and supports data quality by integrating data collection methods and procedures in the existing work of teachers (Gill, Borden, and Hallgren, 2014). The procedures associated with data infrastructure and analytical capacity serve to provide teachers with decision-making support, professional development, and assists them with the output of DDDM practices.

Supervising administrators and building leaders can collaboratively use the data from this study in the development of each school's School Comprehensive Educational Plan (SCEP). Leaders can use the information and recommendations in this paper to guide the process of planning school-wide DDDM endeavors throughout their planning processes. During each school year, building leaders continually collaborate with supervising district leaders as well as their school leadership teams to develop goals and practices to include on their SCEP. The Tenets of the SCEP align with the Tenets of the Diagnostic Tool for School and District Effectiveness (DTSDE). During the planning process, goals related to DDDM endeavors become embedded into each schools' plan, and strategies become identified as a means to achieve them. Collaboratively, leaders can use the information and recommendations with this document to facilitate the

development of school plans, specifically in alignment with Tenets two through four where effective implementation of DDDM practices are indicators of school success.

In the district, the Tenets of the Comprehensive School Rubric for the DTSDE are not only aligned with each buildings' SCEP but are also the foundation of annual school ratings (NYSED, 2017). The plans established on the SCEP essentially serve as the foundation for leaders and teachers to increase levels of students achieve and could bring schools in good standing status where students engage in an education that prepares them for college and career readiness. Tenet two of the DTSDE, School Leader Practices and Decisions, highlights the school leader's ability to create an organizational atmosphere conducive to school-wide success (NYSED, 2017). Tenet three of the DTSDE, Curriculum Development and Support, emphasizes the development of a curriculum that meets the individual and unique needs of a school's student population (NYSED, 2017). Tenet Four of the DTSDE, Teacher Practices and Decisions, highlights strategies and practices implemented to assure effective curriculum implementation (NYSED, 2018). Specific indicators of school-wide success under all three of these Tenets align with DDDM practices (NYSED, 2017). Leaders can use the information and recommendations in this paper to guide the alignment of goals and activates on school-wide plans to a variety of research-based DDDM practices.

In this paper, I argue in favor of implementing DDDM as a significant component of school turnaround and brings forth multiple strategies necessary to develop a school-wide data-driven culture. The purpose of the study presented in this paper was to explore how building level organizational supports influence the implementation of DDDM to

drive instruction in urban schools that recently transitioned from *priority* or *focus* to *good standing* on the State's 2016-2017 Accountability Report. After analyzing the data collected during the study in alignment with the data from various researchers on the topic of DDDM implementation, it is clear that the presence of certain organizational structures developed by school leadership has a positive impact on the successful implementation of DDDM strategies. Given the capacity that building leaders have to design their school's SCEP collaboratively, their role in establishing DDDM structured organizational support systems is significant in the development of data-driven school culture.

Project Case Study Methodology

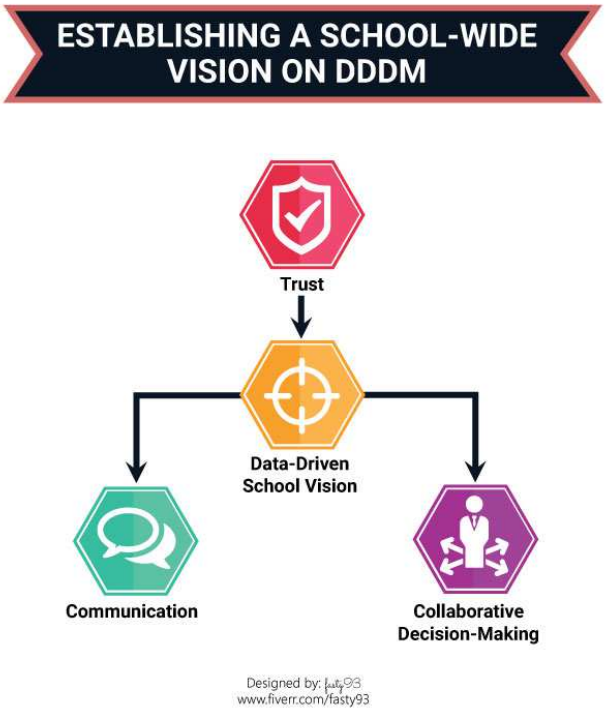
The data gathered to support the recommendations of this white paper was compiled from a case study consisting of data collection from 12 one-on-one semistructured interviews. One administrator and three teachers from three buildings participated in this study and were sampled purposefully based their experiences in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report. The collection of data from one leader and three teachers permitted cross-analysis of data to occur; furthermore, increasing validity and reliability. In qualitative research, the meaning is not discovered but rather constructed, as the analysis of data is conducted based on the interpretation of experiences and how individuals make sense of them (Merriam, 2009). This report reflected data based on information from the 2015-2016 school year guided by the following research questions:

RQ1: How and to what extent do teachers implement DDDM practices to drive instructional decision-making in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ2: What are educators and leaders' perspectives regarding data culture surrounding DDDM to drive instructional procedures in schools that shifted from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ3: How does data infrastructure influence teachers' use of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?

RQ4: How are teachers individually and collaboratively supported during the implementation of DDDM to drive instructional procedures in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Report in a public school system labeled by the State as a *focus* district?



Data-driven school leaders serve as the foundation for developing a culture where teachers value and trust the use of data to drive instructional decision-making. School leaders are responsible for organizing and managing both the physical and social environments of their buildings to achieve specific building-wide goals. The establishment of a school vision that highlights the use of data as a primary component of school turnaround creates a foundation for teachers to come together in unison and build upon their DDDM skill-sets a school community. The analysis of interview data throughout the study indicated that the presence of strong data-driven leaders greatly influenced the capacity of DDDM in each school and contributed to the development of school culture that valued the use of data to drive decision-making.

Teachers who are positively encouraged to view the use of data as an agent for constructive change begin to become part of a system that values data as a way to achieve

school-wide goals. Throughout the study, the analysis of interview data also indicated that administrators regularly empowered teachers to navigate education through the use of data and as a result a school-wide vision surrounding data use emerged. Data-driven leaders communicate a vision of change surrounding data use where they foster data-based collaborative relationships to assess student needs and set goals (Sun et al., 2016a). Throughout the analysis of data, participants of the study articulated that teachers continually used data to drive instruction when they were regularly encouraged to build upon their DDDM skill sets; furthermore, increasing their levels of comfort with implementation. Participants also emphasized the importance of developing an environment that is conducive to DDDM in ways that promote the use of data as a habitual practice rather than something forced upon them. When leaders introduce data usage as a practice that embedded into the daily schedule of teachers, it becomes common practice as opposed to busy work. Teachers who bring forth DDDM practices simply to suffice an administrator during observation or to solely meet a goal on a specific Tenet during a walkthrough, superficially used data; furthermore, making it an obligation rather than a habitual form of practice. The use of DDDM to drive instruction becomes meaningful through the establishment of a school-wide value towards data use, where data is regularly collected, disaggregated, analyzed, and discussed as a common school-wide practice.

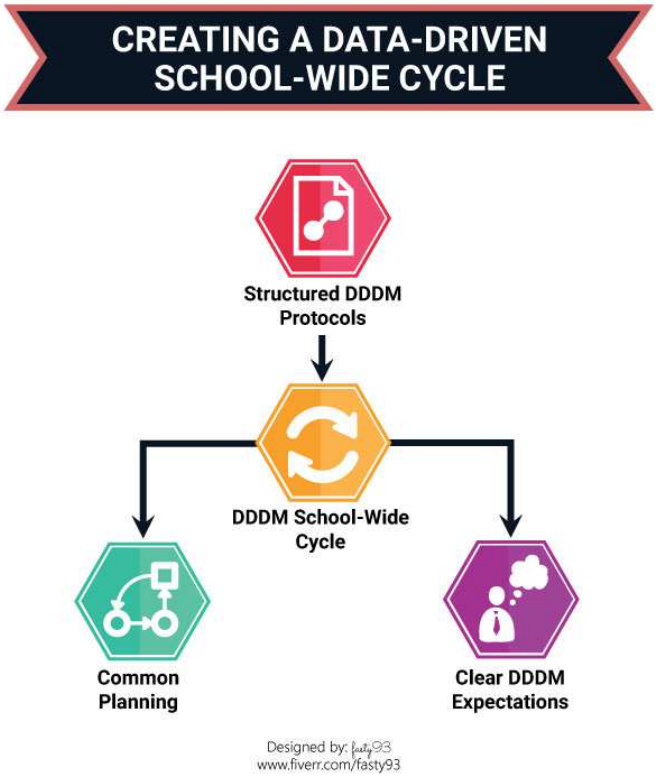
The presence of a shared school-wide vision provides teachers the opportunity to collaboratively and reflectively build off of one another's ideas and experiences; furthermore, creating an environment of shared passion and school pride (Sjoer &

Meirink, 2016). Participants throughout the study emphasized the importance of engaging in data related dialogue with administrators and other teachers to assist one another with the collection and analysis of data to drive decision-making. The collaborative dialogue between teachers and leaders surrounding DDDM aides in the development of a data-driven school-wide vision because it encourages communication that centers data around common and individual planning techniques. Leaders who offer continuous support to teachers' throughout DDDM endeavors become key to the development of a strong DDDM culture. Building leaders throughout the study were noted to support teachers with using data towards building-wide decision-making as well as decisions made in each classroom. Cherkowski (2016) highlighted that through meaningful conversations teachers and leaders who brainstormed ideas related to school planning and future turnaround developments brought forth a school culture of shared vision and driven passion.

While emphasizing the importance of communication within a school leader's role towards developing a shared vision for learning amongst teachers, Cherkowski (2016) also highlighted the importance of encouraging creative thinking through conversations that are open, personal, and receptive of feedback. Administration support is vital towards the development of a data-driven vision because it not only clarifies how to achieve building-wide goals, but it also assists in the development of trust and commitment towards joining together as a community to achieve those goals. While collaboratively gathering and analyzing data, administrators who give teachers ownership, and value the decisions they make, set the tone for a vision that leads to data-

driven school culture. The analysis of the interview data indicated the significance of developing a strong level of trust between colleagues throughout the implementation of DDDM. Administrators in the study avoided operating from a top-down approach but rather through collaboration and meaningful conversations. Leadership styles vary, but when leaders operate from a bottom-up approach such as that of a transformational leader, they motivate teachers by supporting them to develop their preexisting capacities (Vanblaere & Devos, 2016). Leaders valued the opinions and feedback of teachers and took them into account when developing school plans surrounding DDDM. Administrators were also regularly available to openly answer any questions or address any concerns that struggling teachers encountered with DDDM practices.

Overall, leaders with high levels of expertize in interpreting and communicating data and who bring numbers to light through ongoing support, are highly respected and trusted by staff. Administrators who value collaboration, engage in professional conversations that focus on the processes of teaching and learning, and who produce a sense of purpose by emphasizing the importance of meaningful discourse set the example for a strong school culture (Mitchell & Sackney, 2016). A data-driven school-wide vision also sets the tone for various members of the school community to become involved in the analysis of data for decision-making including students and parents. The establishment of a data-driven school vision sets a foundation for a culture of meaningful and collaborative DDDM practices where the entire school community comes together using data as the center of school turnaround.



School leaders are foundational in assuring the embedment of DDDM into the daily practices and routines of teachers by creating a school-wide cycle surrounding the use of data to drive instructional decision-making. Leaders who develop clear expectations for data use are more likely to schedule common planning for DDDM endeavors and establish structured DDDM protocols set the tone for school-wide data-driven initiatives. DDDM interventions become meaningful when they are developed coherently, consistently, cycle-based, goal aligned, and systematic (Keuning, van Geel, Visscher, & Fox, 2016).

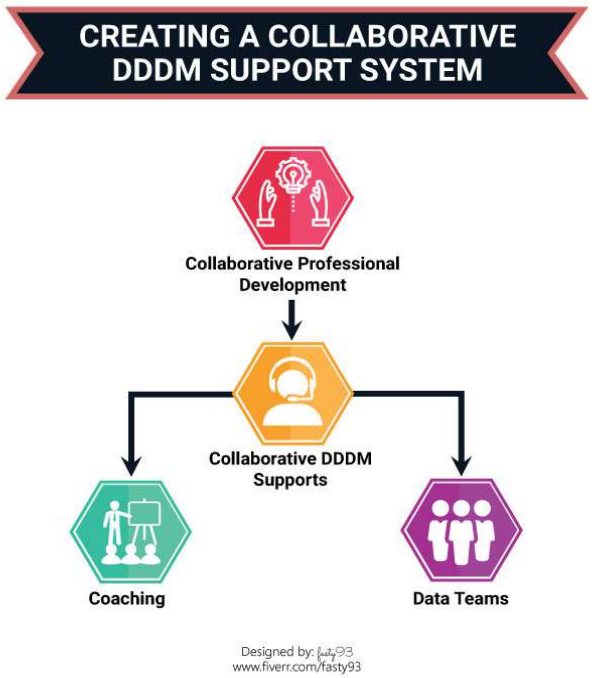
Throughout the study, the analysis of interview data indicated that teachers developed a strong sense of comfort implementing DDDM on a regular basis because leaders embed into their regular routines and practices. Leaders in all three of the

participating schools emphasized the use of data as a routine cycle-based practice and teachers often developed common norms surrounding the use of data as a major component of instructional decision-making. School leaders increase the capacities of teachers engaging in DDDM practices when they schedule routine times throughout the school day specifically designed for these endeavors such as collaborative meetings or even individual time for data collection (Sun et al., 2016b). Scheduled DDDM initiatives during common planning periods are a positive way to encourage DDDM as part of the regular practices of teachers. The allocation of specific days in a letter day cycle towards DDDM endeavors provides teachers with the necessary time and support needed to carry out this initiative proficiently. Barriers towards implementing DDDM in schools include the lack of time and resources which furthermore coincide with self-efficacy and willingness to engage in data related practices (Viera & Freer, 2015). Teachers throughout the study indicated their regular participation in DDDM initiatives during common planning were specific days were designated towards these practices. The regular use of data to drive instructional decision-making such as in schooled planning sessions increases teachers' levels of comfort and proficiencies in data usage.

The establishment of scheduled times for DDDM also allows leaders to set clear expectations on how to carry out these initiatives such as through methods of collection and analysis. Teachers in the participating schools identified the use of specific data sources and charts brought forth by their administrators to guide DDDM initiatives. Leaders often participated in planning sessions where they modeled data use and introduced specific methods of collection and analysis. In the establishment of a school-

wide data cycle, it is vital that leaders provide structured planning time throughout the school day where teachers are given instructional supports to collaborate and build upon their data based proficiencies (Sun et al., 2016b).

Teachers in participating buildings became familiar with utilizing data to drive decisions both at an independent level for classroom practices and collaboratively during common planning and at whole school meetings. Leaders continually brought forth hard copy student data charts and data visuals to use as a basis for decision-making. Leaders shared formative and summative data regularly to monitor progress and use in instructional planning. Administrators would leave data in teachers' mailboxes and even bring data to common planning meets where they would align data to school-wide goals and content curriculum standards; furthermore, setting high expectations for data use and making data a part of regular planning.



Leaders who develop collaborative supports systems to guide teachers throughout their DDDM initiatives create a culture that emphasizes a common purpose of achieving success. New initiatives, especially ones that require multiple layers of understanding, require ongoing training and support with implementation. Teachers often find it challenging to implement or make meaning of newly acquired skills and initiatives; however, when given the time to collaborate and share ideas on strategies and experiences they develop an understanding for practices that go beyond a superficial level (Sjoer & Meirink, 2016). The implementation of DDDM to drive instruction requires proficiency in the collecting, analyzing and organizing data. When educators receive the proper supports to guide the implementation of DDDM, the likelihood increases that they will see positive results with implementation; furthermore, making the process a meaningful method to increase student achievement. Lack of expertize amongst teachers regarding analysis, interpretation, and use of data is a roadblock towards implementing DDDM; furthermore, indicating a need to provide teachers with learning opportunities that promote these practices and make them part a daily cycle (Reeves et al., 2016). DDDM become a habitual practice as a result of ongoing implementation that brings forth positive outcome; therefore, educators require the proper supports to facilitate these practices in ways that build upon their proficiencies and create meaning towards improving instruction.

The professional capacities to use data to drive instructional decision-making becomes enhanced when educators build off of one another's proficiencies through collaborative dialogue that focuses on data trends, connections, or impacts (McWilliams

& Patton, 2015). The analysis of data from the three participating schools suggested that collaborative efforts surrounding DDDM assisted with the development of a data-driven culture because educators systematically developed data proficiencies as a team effort. Teachers frequently met during team meetings and one-on-one to guide one another with the implementation of DDDM. Along with administrative support, teachers engaged in collaborative efforts where they shared best practices, modeled implementation techniques, and planned curriculum implementation using data as the foundation. In their study, Sun et al. (2016a) highlighted the positive outcomes associated with the collaborative efforts between leaders and teachers who worked together to not only establishing building-wide DDDM goals but also to establish goals related to individual classroom instruction. Teachers began to use data on a regular basis to drive their classroom decision-making and monitor student progress by identifying gaps in skill levels and intervention techniques.

Administrators in the participating buildings used teacher leaders to provide support to teachers throughout DDDM endeavors. Teacher leaders received district-level training on DDDM and turnkeyed the information to teachers in their buildings during collaborative training sessions and weekly team meetings. When teachers participated in training that develops levels of self-efficacy towards DDDM, they began to build their DDDM skill sets such as in the way they use data, frame questions around data and transform data into useful evidence (Reeves & Chiang, 2017). Participating teachers in the study noted that colleague support served as a significant component towards their development of DDDM proficiencies. Multiple sessions of training gave teachers the

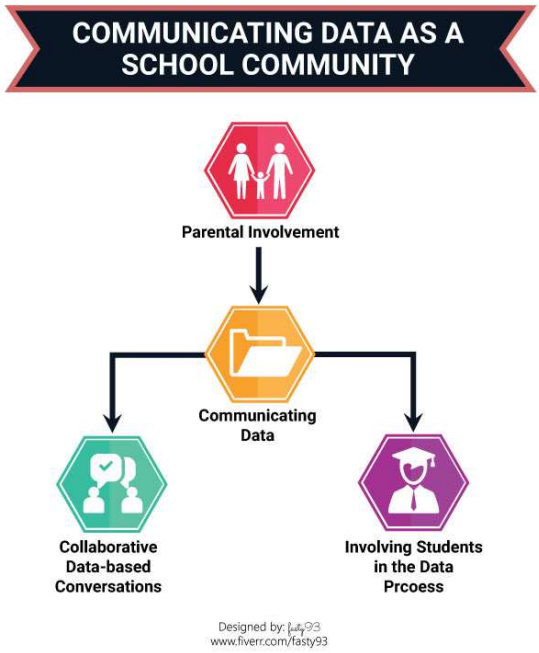
opportunity to practice the implementation of DDDM while having access to ongoing support if necessary. In the development of data-based school cultures, it is essential to emphasize the presence of collaborative supports including needs-based professional development and ongoing data-based dialogue (James-Ward & Abuyen, 2015). Leaders in these buildings provided a continuous opportunity for teachers to train and support one another with DDDM related initiatives and as a result, they began to develop comfort and proficiency with implementation.

Leaders also used data coaches and coordinators to provide collaborative support to teachers throughout DDDM endeavors. Leaders who provide DDDM supports such a through coaching, build upon their teachers' proficiencies in data usage; furthermore, increasing the likelihood that they will practice DDDM techniques independently (Sun et al., 2016b). Coaches and data coordinators regularly worked with teachers to assist them with the collection and analyzing of data. They also provided teachers with charts of student performance data after quarterly assessments to collaboratively assess and develop practices that addressed the gaps in student achievement.

Leadership teams that consisted of administrators and teachers regularly worked together using data to identify school-wide goals and assess student progress in each academic content area. Teams would analyze the results of state and district assessments to create goals and intervention plans. Collaborative dialogue guided the process of goal setting and planning as each member equally contributed to discussions regarding data used to drive instruction. Curriculum team leaders often served as members of these

teams and would assess content area data to bring back to common planning or grade level meetings where discussions on intervention plans continued.

In the buildings studied, supportive and collaborative efforts surrounding data use to drive instruction became a common practice where teachers and administrators regularly worked with one another to develop their DDDM proficiencies including the collection and analysis and student data. Data usage became embedded into the culture of these buildings and teachers commonly viewed it as a successful way to increase student achievement. Leaders provided an ongoing opportunity for teachers struggling with DDDM implementation to collaborate with members of their school community to assist them with the collecting and analyzing of student data to drive instructional decision-making.



Along with the collecting and analyzing of data to drive instructional decision-making, the communicating of data serves to create transparency as well as encourage

participation in the use of data in decision-making. Some believe that it is extremely beneficial to involve students DDDM such as through the analysis of assessment results because it brings forth a sense of motivation to succeed (Marsh, Farrell, and Bertand, 2016). In addition to written feedback on assignments, teachers throughout the study commonly expressed their efforts to involve students in the analysis of data through one-on-one conversations about student progress and goal setting. Teachers shared data with students and discussed intervention strategies to raise levels of achievement on class, district, and state assessments. These conversations motivated students to address areas in need of improvement as per indicated by their performance data as well as facilitated goal setting procedures where students began to monitor their ongoing progress. Teachers also created data walls with assessment results that encouraged students to increase their levels of achievement as they competed with their classmates and those from other classes. Teachers posted student numbers as opposed to names to protect confidentiality. Teachers communicate data with students and involve them in the analysis and goal setting process not only through the use of written feedback, a common practice amongst teachers but also through the organization of data charts (Marsh et al., 2016).

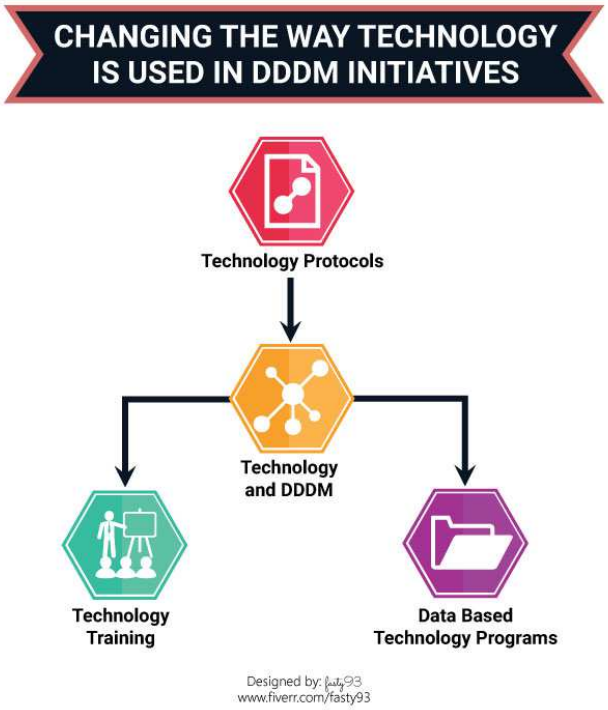
Teachers participating in the study also put great effort towards communicating data with parents and families in an attempt to involve them in decision-making. The communication of student progress data in an attempt to identify a student's strengths and needs facilitate a collaborative relationship with families where they work with teachers to set goals in direct alignment with student needs (McWilliams & Patton, 2015). Teachers who participated in the study contacted parents to arrange conferences while

using data as the center towards goal setting and developing intervention plans. Teachers also regularly sent home individualized student data charts to parents to create transparency and to inform parents of their child's progress using something more detailed than standard progress and report cards. When parents viewed data specifically related to the current skill sets of their child, they began to monitor and track progress using data while in constant communication with their teacher. Teachers also communicated qualitative data with both parents and students and triangulated it with the quantitative data to further make sense of student needs and interventions.

During scheduled common planning data days, teachers who regularly engaged in data based collaborative planning enhanced their DDDM proficiencies in ways that positivity impacted student achievement. Conversations about student data, where teachers and leaders came together to develop a greater understanding of the gaps in student achievement, led to the facilitation of data-driven school culture. In the participating buildings, data conversations took place not only to create transparency but also to identify struggles that teachers had with implementation. During these conversations, teachers would share practices and develop strategies to guide one another on how to collect, analyze, and use data to drive instructional decision-making.

Data-driven school leaders design their organizations surrounding ongoing communication about data including to foster relationships with teachers and involve parents in decision-making (Sun et al., 2016b). Leaders in the participating buildings created an environment where the communication of data became a regular practice. Leaders continually communicated data and data expectations to their staff while

providing the proper support for implementation. Teachers regularly communicated data with students and parents to collaboratively identify individualized goals and to develop intervention plans with an aim to achieve them. Rather than communicating data on a superficial level, leaders and teachers in the participating buildings built their efforts to raise student achievement off of ongoing in-depth communication about using data to drive instructional decision-making and goal setting practices.



The use of technology is a significant component of DDDM and is extremely beneficial to utilize in the process of collecting and analyzing student performance data because it assists with organizing and interpreting data to more effectively drive decisions in the classroom. Leaders who set up a technology infrastructure to aid the collection and analysis of student data increase the chances that teachers will buy into DDDM endeavors. The likelihood increases for teachers to regularly engage in DDDM practices

when school leaders provide them with timely data about students and efficient ways to store and collect data such as through the use of data based technological systems (Sun et al., 2016b). Teachers throughout the study emphasized the positive impact that data related technology programs guided them to become proficient in DDDM.

Various technological data-based programs served as foundational components to the DDDM practices of teachers. Teachers regularly used programs such as I Ready, Data Dashboard, Illuminate, Exam View, Star Math, and Dibbles to collect and organize data. Teachers also used these programs to align student data to standards and to create individualized intervention lessons. Teachers also regularly used Infinite Campus to monitor student progress and generated reports for student and parent analysis of data.

Training on the use of technology in DDDM assisted teachers with becoming proficient in navigating and understanding how to use these programs to collect and analyze student data. Technology savvy teachers often facilitated training sessions in their buildings and demonstrated to their colleagues how to utilize data-based technological programs to drive decision-making in the classrooms. Administrators also sent teacher leaders to technology-related district level training on DDDM where they turn keyed the information to staff in their buildings during common planning sessions and staff meetings. In a study emphasizing the use of a data dashboard to provide training on how to incorporate DDDM principles into instructional practices Schifter et al. (2014) point out that computer-based systems serve to assist teachers with organizing, summarizing, analyzing, and synthesizing data to drive decisions. Before receiving

training on computer-based data programs, many technology savvy teachers implemented in-depth DDDM practices in pockets rather than as school-wide initiatives.

In alignment with leadership initiatives on building-wide DDDM procedures, teachers began to develop organized systems where they would utilize computer-based data programs to not only collect and analyze student performance data but also to align the data with content standards to create instructional interventions. Many computer-based data programs including I Ready and Illuminate assisted teachers with lesson plan development where they generated regular reports and individualized standard aligned intervention plans. These programs helped teachers dig deep into the ongoing analysis of student performance data while keeping records of progress through the generating of visuals and data charts. Computer-based data programs provided teachers a clear representation of student progress by giving them access to organized data that is current and relevant for on-the-spot decision-making. The accessibility and use of data that is relevant and diagnostic are vital towards developing a DDDM system that brings forth student achievement because it assists with the development of decisions that directly influences instruction and student ability (Gill, Borden, & Hallgren, 2014).

Technological infrastructures are significant towards assisting teaching with the timely collection and organization of data (Kallemeyn, 2014). The use of computer-based data programs created a low burden method for data collection and analysis for teachers throughout their DDDM endeavors. DDDM is complex and requires a significant amount of time on behalf of the teacher, especially if data is used systematically to drive on-going decision-making in the classroom.

Summary

The data gathered from this study can be used to assist with identifying fundamental components of DDDM practices that can provide district leaders with useful information on how to prepare building leaders and teachers in *focus* and *priority* schools to develop sustainable building wide DDDM procedures. The recommendations presented in this document emphasize how school leaders can facilitate a data-driven environment through the following processes: getting teachers to buy-in to DDDM through establishing a school-wide vision, creating a trust-filled professional learning community, developing a DDDM school-wide cycle, creating a collaborative DDDM support system and a professional learning community, communicating data as a school community, and changing the way technology is used in DDDM initiatives. The presented recommendations were brought forth through the analysis of data from a qualitative case study conducted in the district as well as various recent research studies on DDDM and organizational supports. DDDM increases student achievement by providing teachers with a needs-based overview of student progress that serves as the foundation for classroom planning and instructional-decision-making. The development of a data-driven school culture requires the presence of specific organizational support systems to guide the process of implementation. The presence of a DDDM school-wide culture creates a student-centered environment where teachers and leaders aim to prepare students for college and career readiness through individualized instructional planning and decision-making.

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Appendix B: Administration Interview Protocol

Project: Data-Driven Decision-Making in Urban Schools that Transitioned from Focus or Priority to Good Standing

Time of Interview:

Date:

Place:

Interviewer: Danielle Ware

Interviewee:

The Position of Interviewee:

This project is designed to identify how DDDM organizational supports influenced the implementation of DDDM to drive instructional decision-making in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Status Report in a public school system labeled by the State as a Focus District. Throughout the study I will focus on how the DDDM of teachers and leaders to drive instruction are influenced by data infrastructure, analytical capacity, and DDDM culture.

Through assessing the perspectives of leaders and teachers in schools that transitioned from *focus* or *priority* to *good standing*, the purpose of this study is to develop an understanding of how organizational supports as they relate to using data to drive instructional decision-making have influenced implementation. I will use the data gathered from this study to highlight the fundamental components of DDDM that can

provide district leaders with useful information on how to prepare building leaders and teachers in *focus* and *priority* schools to develop sustainable building wide DDDM procedures.

I will collect the data from this study from qualitative sources including one-on-one interviews with teachers and administrators. To ensure that the district of study remains confidential, I will use a pseudonym throughout the study when making district reference. During the study, I will store the hard copy data in a locked file cabinet in my house. I will store any coding or written analysis on the computer in a secured computer file on my personal computer located in my home where only I will have access to the data. Once the study is completed, I will remove the data from the computer, keep in a locked file cabinet, and destroy it after five years.

Questions:

1. How familiar are you with the district's DDDM initiatives?
    a. Probe: Explain the DDDM protocols within your building
    b. Probe: How familiar are you with your building's SCEP and DTSDE in alignment with DDDM procedures?
2. During the 2015-2016 school year, explain how DDDM was implemented in your building to improve student learning?
    a. Probe: What did the practices look like?
    b. Probe: How often was data collected?

   c. Probe: Explain the types of data that were collected (quantitative/qualitative) and how they were used to drive instructional decision-making in classrooms?

3. Describe any PD initiatives either at the building or district level that teachers in your school participated in during the 2015-2016 school year?
   a. Probe: How did the training/s improve teachers' skills in implementing DDDM?
   b. Probe: Describe any training follow-up sessions that were given to support teacher implementation?
4. Throughout the 2015-2016 school year, explain how teachers were supported in their DDDM practices within your building?
   a. Probe: Explain your role in supporting teachers throughout DDDM implementation?
   b. Probe: Explain any building-wide DDDM collaborative efforts that were present in your building.
   c. Probe: Were there coaches in your building that supported DDDM implementation and if so explain their role?
5. Describe any technological data systems that were available to assist teachers with data collection and analysis procedures?
   a. Probe: How often are the systems utilized?
   b. Probe: Explain whether or not teachers are skilled in utilizing available technological data systems

6. Describe the DDDM culture in your building?
    a. Probe: What are your feelings regarding DDDM and accountability?
    b. Probe: Are you are comfortable implementing DDDM procedures in your building, why or why not?

Appendix C: Teacher Interview Protocol

Project: Data-Driven Decision-Making in Urban Schools that Transitioned from Focus or Priority to Good Standing

Time of Interview:

Duration:

Date:

Place:

Interviewer: Danielle Ware

Interviewee:

The Position of Interviewee:

This project is designed to identify how DDDM organizational supports influenced the implementation of DDDM to drive instructional decision-making in schools that transitioned from *focus* or *priority* to *good standing* on the 2016-2017 Accountability Status Report in a public school system labeled by the State as a Focus District. Throughout the study I will focus on how the DDDM of teachers and leaders to drive instruction are influenced by data infrastructure, analytical capacity, and DDDM culture.

Through assessing the perspectives of leaders and teachers in schools that transitioned from *focus* or *priority* to *good standing*, the purpose of this study is to develop an understanding of how organizational supports as they relate to using data to drive instructional decision-making have influenced implementation. I will use the data

gathered from this study to highlight the fundamental components of DDDM that can provide district leaders with useful information on how to prepare building leaders and teachers in *focus* and *priority* schools to develop sustainable building wide DDDM procedures.

I will collect the data from this study from qualitative sources including one-on-one interviews with teachers and administrators. To ensure that the district of study remains confidential, I will use a pseudonym throughout the study when making district reference. During the study, I will store the hard copy data in a locked file cabinet in my house. I will store any coding or written analysis on the computer in a secured computer file on my personal computer located in my home where only I will have access to the data. Once the study is completed, I will remove the data from the computer, keep in a locked file cabinet, and destroy it after five years.

Questions:

1. How familiar are you with the district's DDDM initiatives?
    c. Probe: What are the DDDM protocols within your building?
    d. Probe: Explain how familiar are you with your building's SCEP and DTDSE in alignment with DDDM procedures?
2. During the 2015-2016 school year, explain how you implemented DDDM in your classroom to improve student learning?
    d. Probe: What did DDDM practices in your classroom look like?
    e. Probe: How often did you collect data in your classroom?

f. Probe: Explain the types of data you collected in your classroom and how it used to drive instructional decision-making (quantitative/qualitative)?

3. Describe any PD initiatives either at the building or district level that you participated in during the 2015-2016 school year?
    c. Probe: Explain whether or not the training/s improved your skills in implementing DDDM?
    d. Probe: Explain any training follow-up sessions that were given to support implementation?
4. Throughout the 2015-2016 school year, explain how were you supported with DDDM practices in your building?
    d. Probe: How did administration support you throughout DDDM implementation?
    e. Probe: Explain any building-wide DDDM collaborative efforts that were in place?
    f. Probe: Were there coaches in your building that supported DDDM implementation, and if so explain their role?
5. Describe any technological data systems that were available to assist you with data collection and analysis?
    c. Probe: How often did you utilize these systems?

d. Probe: Explain whether or not you are skilled in how to thoroughly utilize the systems?

6. Describe the DDDM culture in your building?

c. Probe: What are your feelings regarding DDDM and accountability?

d. Probe: Is DDDM a practice that you are comfortable implementing why or why not?

Appendix D: Sample Interview Data Codes

Common Categories/Topics

Category 1 –Strong Supportive Leadership (SSL)

School 1: Emphasized twice

School 2: Emphasized ten times

School 3: Emphasized seven times

TOTAL EMPHASIS: 19 times

Category 2 – Collaboration and Building Support (COL)

School 1: Emphasized nineteen times

School 2: Emphasized fourteen times

School 3: Emphasized twenty-two times

TOTAL EMPHASIS: 55 times

Category 3 – Computerized Data Systems and Training (CDS)

School 1: Emphasized nine times

School 2: Emphasized fourteen times

School 3: Emphasized eight times

TOTAL EMPHASIS: 32 times

School 2 Interview Breakdown per Participant (transcript analysis of essential concepts)

School 2 Green:

Interview 5

- Great understanding of students' state scores and that data was greatly used to drive teachers to get the school on to the good standing list **(SDDI)**
- Data driven instruction was closely followed, especially through the use of IReady a computerized data program that individualizes instruction for each student **(DBP)**
- DDI was a building initiative that was brought forth by the leadership team, along with the differentiation model that was turn keyed throughout the building **(COL)**
- Head administrator was a great leader who didn't operate from the "top down" model but rather through collaboration **(SSL**) and (**BT**)
- Teachers created their own common formative assessments which drove the data in the building. The district's assessments just didn't seem to align well with the curriculum; therefore, with the assessments being created in the building it allowed for more meaningful data to be collected that was relevant to the instruction taking place. Questions on the created assessments reflected the questions on state exams and higher order thinking which gave teachers good insight into student levels. **(SDDI), (IADI),** and **(COL)**
- High levels of trust are present in the building where teachers observe one another for the DTSDE process in their practices without confrontation. The DDI process

including data binders where part of the observation. This created more comfort rather than having outsiders from the district come in and complete the process. (**BT)** and (**COL**)

- Data was utilized in Saturday academies to write the school improvement plans (**DBP)**
- Data was collected every day with exit tickets and daily reteaching was broth forth through the use of IReady where individualized objective and standards were assigned to each student. (**DBP**), **(SDDI),** and **(CBP)**
- Mid-module assessments and common formative assessments were used to get the big picture of what kids needed. Certain things to reteach would be targeted through state assessments as well as an analysis of the standards tied to these questions and an analysis of how many times these types of questions were asked (**IADI**) and (**DBP**)
- DDDI in the classroom was constant (**SDDI)**
- The DDI process implemented in the school's summer academy was significant. The leadership team would also participate in the district's DDI PDs. (**SDDI**) and (**PD**)
- Collaborative efforts were huge in the building. Cycle A-F meetings took place as well as vertical meetings. Coaches would come in the meeting and a lot of data was reviewed as a team. Great support from the math coach was present. The building as a whole a hardworking and teachers jumped on board with these initiatives. **(COL)**

- Administrative support was significant. Café discussion between members of the leadership teams prior to faculty meetings. Members would compile data. Head administrator was extremely supported of the team's decisions. **(SSL)** and **(BT)**
- Administrator was highly trusted and a great person to work for. **(BT)**
- IReady is extremely beneficial and was a big part data collection and analysis. It individualized standard aligned student lessons based on their needs. Teachers can print out reports to show students' growth. These reports are great for families and student to use as well. **(CBP)** and **(IADI)**
- At first new initiative are kind of difficult to get on board with but once you see the benefits and student growth it becomes easier to be involved. Data is extremely important and drive instruction every day. **(SDDI)**

Interview 6:

- Decisions in the building and during meetings come through data. Grouping and differentiation come from what the data says, the data on sate assessments, formative assessments, and teacher assessments (**DBP)**
- DDI is based on the data that teachers have in front of them rather than just guessing what they're teaching or why they are reteaching certain students. Data is used to drive everything and teachers are getting more comfortable using it. This year the frustration was sort of higher because the building switched back to using the district assessments as where in previous years they were making their own. **(SDDI)** and **(DBP)**

- Making the building assessments was wonderful because you have control over what your questioning and teaching can be aligned directly to them (**SDDI)**
- Runs grade level meetings and assists teachers with DDI. Predictions came first then data from the formative assessments was checked. If predictions were corrected they talked about it regarding next steps and accuracy. **(IADI), (COL),** and **(PD)**
- Behavioral data (check in check out), attendance data, and student participation data was also collected and analyzed to drive decisions (**QUAL**)
- DBAs are quarterly but behavioral data is daily. Exit tickets are daily and teachers give end of unit assessments and end of lesson assessments to collect data. Data is constantly being checked to see if goals are being met. (**IADI) and (SDDI)**
- SUTW helps them with DDI because it assured teachers where using the same language in the classroom, where they are looking at the data everyone is on the same page (**PD)**
- Data also help with differentiation training. Data was really looked at rather than being tucked in a notebook to get something out of the data. Teachers were supported with additional training if necessary. (**SDDI**)
- The district rocks and goals drove the school's goals which were driven by data. Qualitative data was also collected through observation and collaborative conversations. (**QUAL**) and (**DBP**)
- Administrators were extremely supportive, especially with allowing the building development of DBAs, teachers were giving ownership and constant collaboration

was present. Conversation about data occurred during grade levels. (**SSL)** and **(COL)**

- Teachers collaborated with coaches (participant) during grade level and even during prep time to seek support. High effective teaching was happening at every level it was noticeable. (**PD**) and (**COL)**
- Illuminate was used during that year, collaborated with teachers to assist them using this system. Peers guided one another so those who were not comfortable then became comfortable. IReady was also utilized and was huge in the building. Teachers developed rubrics using IReady and it gave a data that Illuminate couldn't. Reports were printed out through IReady to create visuals. (**CDS)** and **(COL)**
- The leadership team worked with teachers to assist them with developing high levels of comfort with using data. Most folks had a sense of comfort using IReady and those who weren't coaches printed out sheets for them and helped them look at the hard copy through collaborative discussion. They were then able to go deeper and pull things out. **(COL)** and **(CDS)**
- Teachers have come a long way they now feel they have to take ownership of data because they know it will help them become more effective. Change in teachers was noticeable when how data can be used, specifically with student grouping and differentiation, it becomes a positive snowball effect. (**SDDI)**

- In the beginning it was more difficult to get teachers to share data but now they are more comfortable and not afraid to ask for help and talk about the data collaboratively about data. (**COL)** and **(BT**)

Interview 7:

- Educator in the schools for 16 years the last 6 years received info on DDI primarily due to the leadership in the building, they brought harmony and empowered teachers to navigate education in the building (**SSL**) and (**BT**)
- Data savvy administrator with focus on digging deep into the strengths and weaknesses of instruction. Utilized visuals of assessment standards to analyze in depth along with the data with PowerPoint presentations and graphs to show progress utilizing data. Many teachers were on board with his initiative. (**SSL)** and **(IADI**)
- Formative assessments were created within the building. Teachers knew what they needed to do to reach their goals and knew what they needed to teach based on these assessments. Chapter unit tests and quarterly assessments also generated a lot of data. **(IADI)**
- IReady computer program was used which also had assessment tools to collect data. **(CBS)**
- Behavioral data was also collected (**QUAL**)
- Administrator was an expert at using data to turn around schools using data. Was an expert in interpreting data, dissecting data, bringing numbers to light, and creating data visuals (**SSL**) and (**DBP)**

- Monthly faulty meetings and grade level meetings teachers would have hard pieces of data in their hands and he would discuss it intensely pointing out strengths and weaknesses. Scores went on and changes occurred in instruction because he used data (**SSL)** and **(IADI)**
- State exams are usually scored and then packed away, nothing was ever broken down to use, we would never see them but he knows his data, very savvy and took a hard look at each question and fined tuned everything. He taught staff how to do this. (**SSL**), **(COL),** and **(IADI)**
- PDs and workshops where data was used were very organized and were based on full blown collaboration, complete team effort to move kids from A to B. (**COL)** and **(PD)**
- Administrators valued our opinions and made the school a safe place. He also worked very closely with the IT people and was very knowledgeable on data programs. IReady was used often to print out graphs. He was highly respected. He honored people that were creative and wanted to hear the opinions of staff and had high expectations. (**SSL), (BT),** and **(CDS)**
- Students even learned how to share bubble sheets so they could get immediate feedback on their work. (**ISD)**
- Collaborative working helped the building change their teaching practices (**COL)**

Interview 8

- The school had their own initiatives and aligned the goals of the district rocks to the building (**DBP**)

- Knew exactly what was needed to get the school into good standing
- Mirrored many of the district initiatives and modified them to meet the needs within the building. DDI was a great focus in this process. (**DBP)**
- Administrators collaborated with teachers and work very hard to create Common Formative Assessments within the building to drive their instruction. Time was spent in the summer and after school to assure that these assessments aligned with instruction, they were the driving force of instruction and the data was constantly looked at to reteach. (**DBP**), **(SSL), (SDDI),** and **(COL**)
- Illuminate was used to design the schools plans that shows them how students scored. It was color coded and the data was disaggregated to determine which kids were almost there and which kids needed intense support. Questions were also looked at such as wording and how they were aligned with teaching **(CDS) (IADI),** and **(DBP)**
- One of the school's goals was spending a lot of time looking at data and the importance of collecting data and re-teaching **(SDDI)** and **(DBP)**
- Student level on assessments were looked at and lists were made of target students and focus was placed on moving each students to the next level (high two to a three) (**IADI**) and (**DBP**)
- The CFA data was analyzed often and coaches would regularly pull target students to work with them **(COL)** and **(IADI)**
- Teacher questioning was a focus when looking at data, to be sure open ended questions were present in instruction (**QUAL)**

- Teachers frequently engaged in conversations about students and shared best practices with one another **(COL)** and **(QUAL)**
- Data in the building was also looked at to support differentiated instruction as well as the increasing the class time of ELA. (**DBP)**
- The culture in the building is very open to having administrators in the classrooms where administrators are not viewed as authority "per say" but rather a viewed in a collaborative way to support instruction and bring forth academic success. (**BT)** and **(COL)**
- Everybody in the building wanted the transition, they believed that they deserved it and the kids deserved it
- Coaches also worked collaboratively in the building to work to teachers and students for support. **(COL)** and **(PD)**
- Data was constantly collected in the building, CFAs 4 times a year and biweekly teachers would bring data to analyze such as exit tickets collected on scan sheets. **(SDDI)** and **(IADI**)
- Students used the scan sheets to monitor their own progress, they wanted to see how they were doing, constant feedback, they began to collect their own data because they wanted to be academically successful. (**ISD)**
- More and more teachers are buying in to this type of instruction (**BT)**
- Curriculum mapping and IReady was also used to collect a lot of data. IReady is a computerized program which was piloted in the building. It had online ELA and math programs and crated individualized instruction for students based on data. It

gave a diagnostic test and kids were even able to use it at home to improve their skills. The program would divide students into groups, identify strengths and weaknesses, disaggregated the data, assign lessons, differentiate instruction. Training was received on this program and teachers collaborated in the building to give constant reinforcement. (**DBP**) **(CDS)** and **(IADI**)

- Illuminate was also used a lot in the building. Teachers used it for everything especially exit tickets, they became masters of it but the district got rid of it. Teachers had a ton of PD on Illuminate and really bought into it, technology had not been used so greatly in a while but that year the school was shining with Illuminate. (**CDS)** and **(PD)**
- Teachers were understanding the process of using data as a reference point rather than simply keep teaching, they reflected. **(SDDI)**
- Data was collected through teacher observations where teachers would observe other teachers. The leadership team created an observation rubric and presented to the school. Data was in the classroom collected on practice and all teachers participated in this process where they were open to the observation. (**COL**) (**QUAL)** and **(BT)**
- A strong collaborative culture was present in the build where everyone wanted to succeed. **(COL)**

Appendix E: Sample Transcripts

Sample 1:

Interviewer: Wonderful, so being part of the leadership team really helped you um get a grasp on the whole um DDI is what the district prefers, um protocol and within the building, being part of that team.

Participant 5: Absolutely, because I was right there in the trenches working and deciding what we're doing, and um Mr. Hills was a great leader because he really involved us in the decision-making parts of it, he didn't just simply sit down and say this is what we're doing, this is what we're doing, this is what we're doing and I'm sure that that takes place in most cases, and I think that's why a lot of schools aren't successful with the turnaround models because I mean really they're controlled from the top down and we-we did a lot of things with our own um we created our own common formative assessments, which drives our data, and what the district had put out at the time was really awful and uh- as a, as a math teacher, sixth grade math teacher, I looked at what they wanted me to test my students and it was completely irrelevant to what I know the students were going to be tested, so let's say in September I teach ratios and what the district wanted me to test to see if they knew it was something I would be giving them in January and it was completely irrelevant to what I was starting, so we as a building developed our own common formative assessments, and we would administer them as we saw fit, and the teachers would spend a great deal of time creating them and we um then you know the data was meaningful to us **[right]** that was the key, the data that I received from my test that I made, that I created using state released questions, and using you

know um really high order thinking questions, really deep questions about the content gave me some good insight into my students.

Sample 2

Interviewer: Okay, alright, wonderful, wonderful, now were going on to question # 4, now throughout the year of the transition 15-16 school year will you explain um how you were supported with your data-driven decision-making practices within the building and that could mean administration support, collaborative efforts among faculty, coaching, those sort of things okay,

Participant 3: I think administration gave us support in the fact that they gave us common planning time, so they're giving us time to actually meet with the other teachers to look at the data um I also think that they our administration has used me as a support so um they in our building I'm only a part time teacher at this point and the other part of my day I do data, whether it's helping teachers get it together so they might have given a chapter test and I can make a spread sheet from that test and I input all of the student answers, so that I can come, I put my formula in there so they can calculate, the same way that the um gap analysis does it and Winirck, I just do it in a spread sheet instead um so they have me to actually make, um to pull that data for them and help them interpret it, a lot of times when people look at it, it's just a bunch of numbers to them so they don't necessarily know that there are certain things that the kids might have been guessing on that question or that they just didn't know or things that um so say there were two choice, choice # 1 could have been the incorrect answer but 60% of the kids looked at it, so we need to you know look back and examine that question, what was it about that question

that so many kids picked it, you know, um so, just kind of helping to guide them so that it's easy to get something and then kind of push it to the side because you don't have time or you're not really sure how to look at it, so I think that's another way that she has helped support is to have me to be in the position to be able to help the teachers like that [**wonderful, so teachers would collaborate specifically with um coaches and so forth to identify reteach methods, is that correct**] right , right, and so sometimes that's kind of a struggle for me because I'm not always great at the hot time area but a lot of times if we go back and look at the question, through our conversation we can say you know like oh these words were very similar and that could have been why they, uh why there was the confusion or in math it could be like it was a positive answer and a negative answer and that's why the confusion came out so just to be able to help them look at that part of it and then help brainstorm, what can we do to make this better, what can we do to help them clear this up

Sample 3

Interviewer: Fantastic. So, um, will you explain some of the, um, data driven decision-making protocols in the building during the 15/16 school year?

Participant 7: Well, the 15/16 school year, um, I think- I'm pretty sure our principal, Mr. Hills this year **[right]** so, here's how it went, we were very fortunate to have him on board because he's very tech-savvy and data is his expertize so when he came on board um he was able to dig deep into the data of the New York state assessments and go back and figure out which areas were our strengths and weaknesses with our instruction. He was able to dissect those exams, and then what happens is that we would come into a

grade level meeting and he would say okay, I noticed this on this standard, this is where we had let's say if there were ten students taking the exam, eight of em did not master this skill. So by him putting this up visually, up on the whiteboard for all of us to see what standards we needed to address, improved out instruction for students.

Sample 4

Interviewer: Fantastic. So the very last question, question number six, will you describe, during the 15/16 school year, the data driven decision-making culture in the building? So that would be in relation to accountability um and teacher's, or your, level of comfort utilizing data to drive instruction, how did- how did that look?

Participant 7: Um, every time we went into a grade level meeting, um because he was so highly respected, and he was fair, and people were invested and he- and he empowered his teachers, and he gave teachers a voice that when we would go into grade level meetings and he would divulge the data, I could see teachers rolling up their sleeves and figuring out what we needed to do as a team. So that's the credit of leadership, okay, um **[So they presented it in a respectful way]** he presented it in a respectful way, he honored people that were creative, he liked to hear your voice, he liked to hear your opinions, he wouldn't automatically say no unless he was a firm believer it wasn't gonna work, um do you know, teachers, some of it comes intrinsic, where you, you wanna help, and you wanna do good, and you wanna be a rule abider, he never had problems with that. You sometimes run into people that don't have as much passion as to following the rules and collecting the data and doing what you need to do but he had a way of knowing

how um that everybody needed to kinda do their job, he had very high expectations of his teachers and he was very professional.

Sample 5

Interviewer: Wonderful, I heard you mention that you involve students in the analysis of data when you have the boards on the wall, can you elaborate on that?

Participant 10: Sure so I have a data board this year in my classroom and I have um four, uh it's divided into the three homerooms that I tech and I have 4 different levels, so the first one says um 90-100 percent and it says I got it , and then there's the 2nd level that says 80-89 I almost have it, something like that, or you know then it goes down into the tiers, there's 0 or there's I think I did 70-79, and then there's 0-69 and then I have it divided, each homeroom is divided into two sections so that anytime I could put two assignments up one for social studies and one for science so when they visually see their numbers, they're always waiting, as soon as the tests comes out or a quiz, is the board done? So they always want to see the data and then when I watch them talk to each other, what happened to your data where's your test, how could we change that so once in a while I'll do a retest as a surprise to them and then I'll change the data

Sample 6

Interviewer: Okay wonderful and um can you explain some of those um data driven decision-making protocols with in your classroom

Participant 1: Sure I have a um data sheet that I use basically so every test that I give them I uh pick out the four uh exam questions that the kids did poorly on them and then uh I predict what I'm going to see in the data, then I use item analysis sheets that I have

with a computer system that I plug in all the test questions and all the kids answers are basically done that way and it gives a visual um of how the uh the uh can observe the data, okay and I can find out what stands out and I look at that and then I go back and I look at the questions and say okay are the questions worded erroneously um did the kids not uh study um etc, so I look at what might have caused the kids to miss those questions and then I re-teach those four questions than go back re teach them to my class and then the following assessment that I give them has those four questions on it I try to predict that okay after the re teach this amount of percentage will increase so that's what I do for basically every unit test that I give the kids.