Data-Based Decision-Making (DBDM) in Education

by

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Dedication

This report is sincerely dedicated to my beloved wife. I am endlessly grateful to share life's journey with such a remarkable person. Her remarkable ability to both anchor me and ignite inspiration within me is truly extraordinary. Words fall short of expressing the immense fortune I feel to have her by my side as both my constant ally and unwavering supporter.

Abstract

This action research study investigates the role of Data-Based Decision-Making (DBDM) in increasing academic outcomes within a charter school network. During Cycle 1, interviews and focus groups with teachers, interventionists, and school deans shed light on critical themes, including leadership, data collection, analytic capacity, and a culture of data use. Cycle 2 delved deeper into the practical application of DBDM, revealing its impact on academic success. The study resulted in five key findings related to DBDM in the educational context. First, DBDM enables personalized instruction and targeted interventions, leading to increased student engagement and academic performance. Second, the essentiality of high-quality data for effective DBDM was highlighted, thus necessitating strong data systems and integration strategies. Third, continuous staff training and development were underscored to empower teachers to use DBDM effectively. Fourth, time management and flexible scheduling emerged as crucial to mitigate the challenges associated with DBDM implementation. Finally, integrating Professional Learning Communities (PLCs) with DBDM was proposed, forming a focused, data-driven, cyclical, and collaborative framework for instructional improvement. The study emphasizes DBDM's potential to enhance student achievement and provides key recommendations for its implementation, including stringent data quality measures, ongoing staff training, stable staffing, efficient time management, and a sustained improvement plan for DBDM. Implementing these recommendations could optimize DBDM's benefits, enhance teaching efficacy, and improve student outcomes. Lastly, the study encourages the extension of DBDM practices to other grade levels and disciplines, promoting a more effective educational environment.

Keywords: data-based decision-making, leadership, instructional improvement, data collection, analytic capacity, culture of data use

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Section One: Introduction

The research titled "Data-based Decision-Making (DBDM) in Education" sets out to develop a model that utilizes data to boost student achievement in urban school settings. These districts have traditionally battled with lower proficiency rates in Mathematics and English Language Arts (ELA), an issue that continues to persist. As federal, state, and local accountability measures increasingly emphasize data utilization, schools have an opportunity to formulate a DBDM process. This model can assist schools in leveraging the collected accountability data to uplift student performance.

This paper initiates a comprehensive introduction to the research concerning data-based decision-making in education. This section serves to provide the contextual background and foundational understanding of the study. Within this introduction, we explore an overview of the problem of practice the research aims to address, the objectives behind the research, the research questions to be answered, an outline of the research context and involved participants, and a succinct summary of the research design.

Following this, the 'Results' chapter of the paper provides a detailed account of the research findings. Here, we explore how the participants interpret and describe their personal experiences regarding the issue.

Further, the 'Literature Review chapter delivers detailed descriptions and critical analyses of existing academic perspectives relevant to the topic.

Lastly, the 'Contextualization' chapter provides a comparative analysis of the differing viewpoints presented in the 'Results' section and the 'Literature Review.' The potential implications of this research study will also be detailed here, including real-world examples of how the research findings have been implemented in practice, as well as suggestions for potential areas of exploration in future research.

Problem of Practice

Urban school districts consistently show lower student achievement rates than those in suburban and rural schools across core subject areas, such as science, mathematics, and English language arts, as substantiated by standard-based assessments (McFarland et al., 2017). In my 15 years of experience working in urban schools, I have observed the same pattern of low academic performance. Despite the implementation of several strategies, including smaller classroom sizes, extended school hours, new curriculums, and Response to Intervention (RTI), the achievement gap between urban and suburban schools remains significant. This issue is widespread, according to a report by the Council of the Great City Schools (2015) and a 2011 baseline analysis of School Improvement Grants (SIG) applications and SIG-Eligible and SIG-Awarded schools, nearly 15,000 schools have been identified as low-achieving, with approximately 67.9% of these underperforming schools located in urban areas (Childs & Russell, 2016).

An approach gaining traction in educational settings is data-based decision-making (DBDM), aimed at enhancing student learning through improved instruction and targeted intervention (Marston, 1989). Multiple studies confirm that student achievement can indeed be augmented by utilizing data effectively (Lai et al., 2014; McNaughton et al., 2012; Poortman & Schildkamp, 2016; Van Geel et al., 2016). Driven by standard-based policies enforced by the federal government, schools have become more accountable for their academic performance over the past two decades. State assessments, designed to measure proficiency levels and track academic progress, have led schools to incorporate academic data into their improvement plans (Burke et al., 2012). As a result of these accountability measures, schools now generate large volumes of data, thereby making DBDM an essential practice (Wayman, 2005; Earl & Louis, 2013, p. 200; Mandinach et al., 2006, p. 12; Marsh et al., 2006; Spillane, 2012).

However, a significant issue arises in the effective utilization of this data. Current teacher education programs, unfortunately, do not typically include training on data use (Bocala & Boudett, 2015). Consequently, teachers often struggle to interpret and apply student data to improve their instructional methods and enhance student learning (Espin et al., 2017; Gelderblom et al., 2016). The lack of a well-defined and structured DBDM process in many schools exacerbates this issue. Therefore, it is crucial to address the training gap and foster a culture of effective data use to improve student performance, particularly in urban schools.

Purpose of Research

The aim of this Action Research study is to explore and establish a comprehensive Data-Based Decision-Making (DBDM) process with a view to enhancing the academic performance of elementary school students at a charter school. DBDM represents a persistent cycle where educators gather and scrutinize student data from various sources, intending to shape decisions that promote educational advancement. The insights garnered from this study are anticipated to guide stakeholders in employing the DBDM process, enabling the development of efficacious instructional strategies and interventions. These measures could boost student achievement and prevent the onset of achievement gaps from early grade levels.

Research Questions

Several elements contribute to student accomplishment within schools, encompassing factors such as consistent attendance, economic status, socioeconomic circumstances, the rigor of the curriculum, and the quality of instruction. The primary focus of this study is to formulate a DBDM process and explore how Data-Based Decision-Making (DBDM) can potentially elevate student achievement levels. This will involve a comprehensive assessment of the existing DBDM methods, followed by the development and execution of action steps to enhance DBDM in partnership with teachers and administrators.

This study revolves around key research questions that aim to investigate the prevalent tactics utilized by educators, the practical application of data, the available data points and technological resources in schools, the resistance faced towards data usage, and the hurdles experienced by educators. Therefore, the central research questions guiding this investigation include:

1. How can a school network develop and implement a DBDM process to assist their students in achieving academic success?
2. What factors support the successful implementation and utilization of the DBDM process?
3. What are the challenges and obstacles encountered in implementing an efficient DBDM process?
4. How do these factors influence academic outcomes?

The study will be conducted in the context of a Charter School network consisting of a mixture of three elementary schools, two middle schools, and two high schools situated in Central New York. The second phase of action steps will be carried out in one of the elementary schools within the Charter School network.

Data will be accumulated during regular school days through direct interactions with various stakeholders, which comprise students, teachers, co-teachers, intervention staff, curriculum coordinators, and administrators. As an Assistant Superintendent, I have comprehensive access to student data and school documentation, eliminating potential challenges in obtaining the necessary information.

This study will employ Action Research, a research methodology defined by Shani and Pasmore (1985, p.439) as a "collaborative problem-solving relationship between researchers and clients" aimed at both solving an issue and generating new knowledge. Lewin (1997, p.145) segregates questions related to social research into two categories: a) the exploration of general laws of group life, and b) the diagnosis of a specific situation. According to Schein (1989), action research should synergize

methodology with solid theoretical grounding to address a problem within a specific context, with transformation through action being the focal point of such research (Argyris, Putnam, and Smith, 1985).

This investigation into DBDM to uplift student achievement will span multiple cycles of data collection and analysis. The intent is to unearth the most effective DBDM process for the charter school network by identifying its components and implementing them in the school buildings, thereby improving academic achievement. The iterative nature of action research is fitting for this purpose as it allows researchers to identify the elements that work best and the challenges to be addressed in each cycle. Initially, the research questions were solely focused on the elements of DBDM. However, over the course of the study, it became clear that besides the individual elements of DBDM, the process is an essential factor as well. As a result, the research questions have evolved through the study's cycles.

Context

This study was undertaken within an urban charter school network encompassing several institutions. While the first cycle of the research involved three elementary schools, the second cycle focused on a single elementary school within the network. My dual role as Assistant Superintendent at the charter school district office and an insider researcher placed me in a privileged position with unhindered access to critical data, facilitating thorough analysis within the school network. Moreover, my relationships with diverse stakeholders, including teachers, intervention specialists, and administrators, allowed me to steer decision-making processes and institute changes informed by my research findings.

This research project is contextualized within the broader educational challenge: addressing the achievement gap's early onset. Both previous research by Reardon (2011) and observations within our charter school network suggest that the underpinnings of the achievement gap frequently begin to surface during the early schooling years. This realization underscores the need to prioritize academic

readiness from the earliest grade levels, leading to our charter school network's emphasis on building solid learning foundations for kindergarten through second-grade students.

In response to these insights, the charter school network has instituted an academic readiness objective aimed at K-2 levels, underlining the importance of priming students for subsequent grade levels. Studies reveal that strategic data usage can help reduce the achievement gap. Our initiative to integrate the Data-Based Decision-Making (DBDM) process into K-2 levels aligns directly with recommendations by Datnow and Hubbard (2016), advocating data-driven decision-making to inform instructional and intervention strategies. However, the first research cycle revealed that while the three involved charter schools effectively adopted 'Data Collection' practices, the initial DBDM stage, they encountered difficulties with 'Analytic Capacity,' the second stage. This issue stems from inconsistent data analysis training, despite teachers receiving initial training three years earlier. The absence of ongoing professional development opportunities during the school years led to uneven application across different grade-level teams. Furthermore, the study uncovered a gap in formal data analysis training during teachers' preparatory programs. Therefore, the immediate requirement of the network is to offer continuous professional development for teachers, primarily focusing on data analysis within their current preparation and grade-level meetings. The evaluation of Cycle 1 and a comprehensive literature review enabled the delineation of crucial steps for successfully initiating and implementing the DBDM process in our schools, thus paving the way for Cycle 2.

Cycle 2 of the research was aimed at enhancing student success in early literacy through the Data-Based Decision-Making (DBDM) process. The objective was to implement evidence-based strategies to alleviate the achievement gap, ensuring students possess the requisite skills and knowledge for a seamless transition to the next grade level. The DBDM process identifies specific student needs and designs personalized action plans for instruction and intervention based on continuous student assessment outcomes. The process initiates with goal setting, identifies relevant and diagnostic data

sources, focuses on improving the staff's data analysis proficiency, and culminates with the creation and cyclical evaluation of action plans to discern the most effective practices. Consequently, this action research project represents a significant intervention in the school network's ongoing endeavors to address and mitigate the early achievement gap while enhancing student outcomes.

Participants, Collaborators, and Stakeholders

Key participants, collaborators, and stakeholders in Cycle 1 of this research included students, teachers, co-teachers, intervention and support staff, and administrators from three elementary schools within the charter school network. Ten teachers participated in interviews, and three school deans joined a focus group. Additionally, forty-eight classroom teachers and administrators answered the survey.

For Cycle 2, the action step and data collection were implemented in a single elementary school within the network. This choice aimed to minimize potential resistance from staff, allowing a more streamlined assessment of the action steps' effectiveness.

The charter school has recently prioritized the academic readiness of students for subsequent grade levels, starting from the earliest grades. As part of this initiative, the Data-Based Decision-Making (DBDM) process was introduced in Cycle 2 to ensure the preparedness of kindergarten students for first grade, first graders for second grade, and second graders for third grade.

Based on factors such as minimizing resistance and the established K-2 achievement goal, Cycle 2 was carried out at the K-2 grade levels in the selected elementary school within the charter network. Participants in this phase of the action research included the school dean, K-2 curriculum coordinators, K-2 teachers and co-teachers, intervention specialists, and an external consultant.

As the Assistant Superintendent at the Charter School Network, my role has allowed me to develop significant relationships with the relevant stakeholders and participants in this research. Teachers, co-teachers, and intervention specialists serve as crucial components in my research, as they

are tasked with collecting and analyzing academic data, as well as preparing and delivering instruction and intervention to students. School administrators play a significant role due to their involvement in resource allocation decisions, which greatly influence data collection and analysis. The school dean, K-2 curriculum coordinators, and I collaborated on developing a data meeting protocol and delivering a professional development session on data meetings for the teachers. The implementation of data analysis protocols during data meetings and the development of action plans based on analysis results were supervised by the school dean, K-2 coordinators, and the consultant.

Positionality

The scholarly framework developed by Herr and Anderson (2015) places me, in my role as the Assistant Superintendent for Academics, firmly within the scope of insider researchers committed to investigating their own practice. This aligns with an endeavor I embarked on approximately five years ago when I conceived a series of data-centric dialogues with our schools' mathematics and ELA educators alongside their school deans. This progressive initiative has, over time, evolved into a detailed study of numerous data sources, offering a solid basis for making the best choices to enhance student learning outcomes.

Data-Based Decision Making (DBDM) is a collaborative process and calls for the active engagement of a multitude of school stakeholders. This spectrum includes instructional personnel such as teachers, coaches, and instructional leaders, as well as support staff like disciplinarians and counselors. Furthermore, students and parents also form an integral part of this ensemble since their inputs directly influence the trajectory of student achievement.

As cited in Briscoe (2005), Pennycook (2001) warned against a simplistic understanding of positionality. Therefore, in this complex environment, I seek to introspect and analyze my stance within each group.

The dynamics of power form a primary facet of my positionality. As the individual overseeing the supervisors of our district's teachers, my role could induce a certain level of unease among teachers when conversing about the initiative I spearhead.

My positionality is significantly influenced by aspects of my personal identity, including gender and age, as well as my professional background and education. As a middle-aged male educator with a degree in high school education and 15 years of experience in school leadership, I stand in marked contrast to the majority of our staff, who are predominantly female early-career and primary school educators.

A less tangible but influential component of my positionality stems from my cultural heritage. While my professional journey as a K-12 administrator in the United States spans 15 years, my educational roots are planted overseas, where I completed my education up to the undergraduate level.

Lastly, my socio-economic status (SES), a status that mirrors many of our teachers, plays an indispensable role, especially when compared to the socio-economic landscape of the student and family community we serve. As a first-generation middle-class individual, I work within an urban school district marked by a significant African American presence (60%) and where the majority (80%) qualify for free or reduced lunches. Our teaching staff primarily comprises women from white, middle-class backgrounds.

Consequently, the intersecting dimensions of my race, gender, immigrant status, and SES collectively shape the positionality of our staff in relation to the community we serve. This understanding and recognition of my positionality within this research is an intricate yet essential task. These factors will undoubtedly guide and influence my strategies for data collection, the conceptualization of my research design, and the analytical lens through which I interpret my results.

Synopsis of the Research Design

This section simplifies core concepts related to academic research methodologies and defends my selection of action research as the ideal method for this research. It explains qualitative research and action research, emphasizing why action research is the best fit for my study.

As defined by Guba (1990), a paradigm is a system of beliefs that inform an individual's actions. According to Fossey et al. (2002), qualitative research adopts three paradigms: empirical-analytical, interpretive, and critical. Each offers a unique perspective to study and interpret phenomena, with the empirical-analytical paradigm rooted in science-based methods and deductive reasoning. In contrast, interpretive methodologies explore human experiences and actions' meanings, while the critical paradigm assesses how social and historical forces shape our actions and challenges these constraints.

As further explained by Fossey et al. (2002), qualitative research focuses on examining human experiences, behaviors, interactions, and social contexts. Creswell (1998) notes that qualitative research's philosophical assumptions cover ontology, epistemology, axiology, rhetoric, and methodology. Several methods align with qualitative research, including ethnography and phenomenological research.

Gillis and Jackson (2002) state that action research involves systematic data collection and analysis to foster action and change. Action research falls within the critical paradigm and is known for its interaction between theory and practice, participatory importance, and capacity to solve practical problems (Street, 2003). This type of research is highly applicable across various fields, including education, health, and community development.

For my doctoral study, I have chosen action research to examine data-based decision-making and its impact on student performance in urban school districts. Utilizing action research allows the development of effective practices promoting equality in our educational system. This research will

involve standard practices like planning, acting, reviewing cycles, and different data collection methods such as focus groups, participant observations, interviews, etc.

In Cycle 1, I created a data-based decision-making (DBDM) framework with three stages. The framework was applied through interviews, focus groups, and a survey. In Cycle 2, the focus was on improving student success in early literacy through the DBDM process. This process identifies student needs and develops custom action plans based on student assessment outcomes, aiming to reduce the achievement gap and improve student outcomes.

The paper contains several sections, each contributing to the overall understanding of the study. Section Two explains the findings from Cycle 1 and their impact on Cycle 2, while Section Three provides a literature review on DBDM. Section Four gives a context for the research project and key findings. More details about the study design can be found in Appendix A.

Section Two: Results

The following section offers a detailed synopsis of the results obtained from Cycle 1 and Cycle 2 incorporated within this action research project. Cycle 1 concentrated on identifying crucial themes, namely, leadership, data collection, analytic capacity, and a culture of data use, which laid the groundwork for a robust Data-Based Decision Making (DBDM) process. Emphasis was laid on the importance of meticulous data collection and comprehensive analytics. Nonetheless, Cycle 1 also unearthed some challenges in the process, including a lack of designated time for data analysis, a pressing need for ongoing professional development, and inconsistencies in implementing data-driven strategies.

The insights from Cycle 1 catalyzed the groundwork for Cycle 2, driving a more profound exploration of DBDM's potential and devising strategies to surmount the identified challenges. Cycle 2 delved into the intricacies of implementing DBDM in an educational environment, identifying potential pitfalls and examining their impacts. It surfaced promising narratives of improved academic performance, heightened student engagement, and early detection of struggling students. Drawing from the insights of Cycle 2, a comprehensive understanding of DBDM's influence on academic outcomes is outlined, along with the necessary steps for optimally leveraging its potential.

Cycle 1 Results and Findings

In Cycle 1 part of my research, I came across many ways to make decisions based on data in educational settings, as described by experts such as Ikemoto and Marsh (2007), Mandinach et al. (2008), Abbott (2008), Easton (2009), Hamilton et al. (2009), Means et al. (2010), Gill et al. (2014), Keuning et al. (2016), and Washburn et al. (2021). Despite the commonalities in promoting iterative data utilization, certain models were found to adopt reductive definitions, exemplified by Washburn et al. (2021), who oversimplify the process as an equation of knowledge progressions plus diagnostic assessment data, equating to a teaching point.

Moreover, a prevalent issue among these models is the predominantly macroscopic view that they adopt, making their practical applicability in the grassroots K-12 educational context a demanding task. The macroscopic DBDM approach underscores the criticality of data-informed strategic planning, policy formulation, and resource distribution across larger education systems. However, a juxtaposing micro-level DBDM perspective is equally valuable, as it accentuates the necessity of tailoring data-driven decision-making to cater to the unique requirements of individual students and classrooms, thereby ensuring improved and targeted educational outcomes.

The reviewed literature demarcates numerous DBDM components ranging from leadership and assessment to data collection, selection, and analysis protocols, along with dedicated time, technology, subject expertise, content knowledge, and professional development. My exploratory journey in Cycle 1 involved formulating a DBDM process that combines both the macro- and micro-level perspectives. The following section will delve into the details of this DBDM process development, drawing on a comprehensive literature review as well as focus groups, interviews, and a survey conducted with educators across the charter school network during Cycle 1.

Synthesis of Literature and Development of a DBDM Process

Gill et al. (2014) published a report outlining a conceptual framework for data-based decision-making (DBDM). This framework draws on knowledge produced from Mathematica's evaluation of strategic data use initiatives, along with pre-existing literature on educational data usage. Mathematica, a research organization, offers data science, social science, and technological services geared toward social policy initiatives. The report, funded by The Bill and Melinda Gates Foundation, proposes a theory of action comprising three sequential steps:

1. Compilation of high-quality raw data.
2. Analysis that ensures the resulting data are relevant and diagnostic.
3. Utilization of relevant and diagnostic data to guide instructional and operational decisions.

Furthermore, the authors emphasize that a DBDM process cannot succeed without a robust supporting system that includes appropriate infrastructure, policies, and practices.

Gill et al. (2014) primarily focused on gathering high-quality raw data and identifying relevant and diagnostic data in their conceptual framework. Nonetheless, literature reveals that data alone do not suffice to assist teachers in enhancing instruction (Shepard et al., 2018). Teachers today grapple not with data scarcity but with a deficit of skills necessary to interpret information and extract meaning from the available data (McCombes-Tolis & Spear-Swerling, 2011; Vujnovic et al., 2014).

Thus, after reviewing the current literature, I devised a DBDM process that involves three main stages (Data Collection, Analytic Capacity, and Culture of Data Use). It also includes a vital leadership component to facilitate the faithful implementation of DBDM stages (Figure 1). The DBDM process commences with collecting raw data and identifying relevant and diagnostic data under "data collection." Subsequent to this is "analytic capacity," where data analysis takes place. To develop this capacity, schools should ensure that data meetings, data analysis protocols, dedicated time for data analysis, access to data tools, and professional development in data literacy are effectively instituted (Marsh et al., 2006). The final step in the DBDM process involves formulating improvement plans to address identified issues. After implementing these plans, new data should be collected, and the DBDM process should be reiterated as part of the school's "culture of data use" (Schildkamp, 2019). As time progresses, data becomes outdated, and using such data in the DBDM process could mislead teachers and administrators. Consequently, once new data has been collected following the implementation of improvement plans, schools should initiate a new DBDM process.

Analysis of Interviews, Focus Group, and Survey Data

The Data-Based Decision-Making (DBDM) process, represented in Figure 1, unfolds in three stages: Data Collection, Analytic Capacity, and Culture of Data Use. During the "Data Collection" stage, data is acquired from various sources. However, one of the interviewees pointed out that not all data is

reliable or diagnostic. He noted, "I am assuming that the program is giving me good data," indicating that some student assessment data might be inaccurate due to factors such as students' lack of motivation and frustration. This emphasizes the need for schools to sift through the data to determine what is most relevant and diagnostic for the issue at hand. According to the survey results from three elementary schools shown in Table 1, around 88% of respondents believe their schools effectively gather data from multiple sources.

Figure 1

Data-Based Decision-Making Process

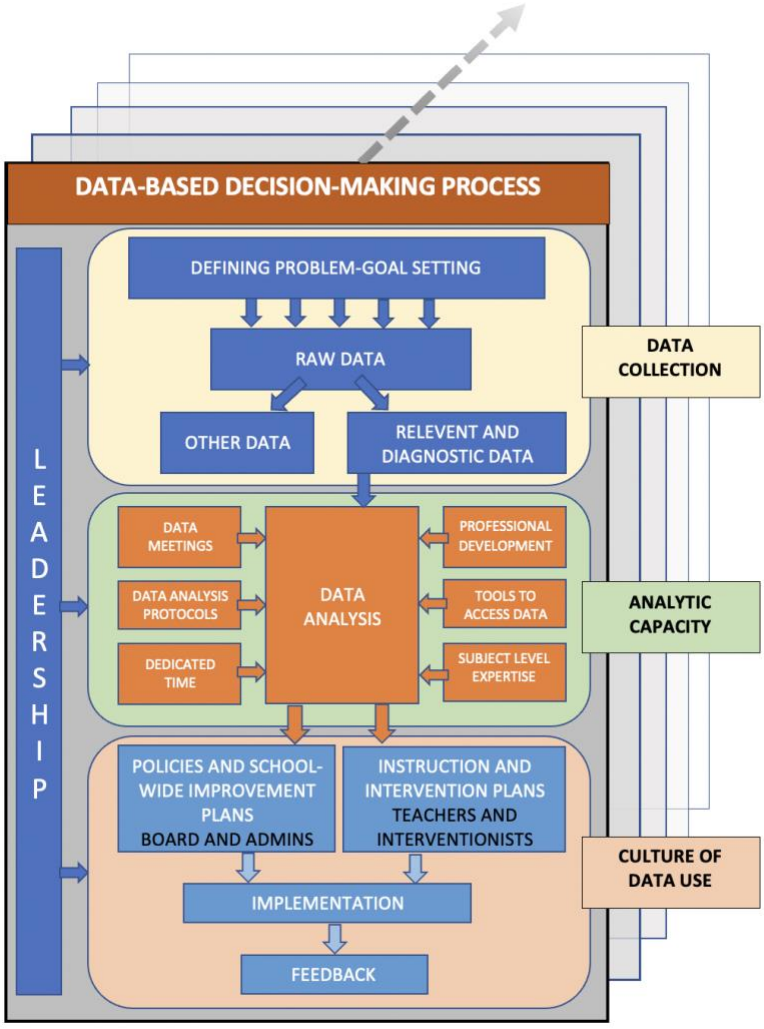

Table 1

Teacher and Administrator Data Use Survey Results

Survey Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1- I am adequately prepared for the effective use of data	21%	63%	13%	0%	4%
2- I set end of year student achievement goals for my students	38%	50%	13%	0%	0%
3- My school collects adequate data on student achievement to take corrective action	44%	44%	10%	2%	0%
4- My school provides technology to access student data easily	58%	33%	6%	0%	2%
5- My school encourages data use as a tool to support effective teaching	46%	48%	6%	0%	0%
6- My school provides time to analyze data in my schedule	19%	40%	27%	13%	2%
7- My school provides professional development related to data analysis	19%	29%	29%	17%	6%
8- I use student data to change my instruction regularly	31%	54%	15%	0%	0%
9- I feel comfortable using student data to guide my intervention plan	38%	44%	17%	2%	0%
10- I discuss data with my students	17%	38%	38%	6%	2%
11- I discuss data with parents and guardians	21%	40%	33%	6%	0%
12- Multiple forms of data are collected and evaluated in my school	42%	52%	2%	4%	0%
13- I routinely meet with my colleagues to analyze student achievement data	29%	38%	21%	10%	2%
14- There is a trusting environment among teachers in data meetings	29%	46%	25%	0%	0%
15- There is enough support staff to provide intervention in my school	17%	50%	17%	13%	4%

The second stage, "Analytic Capacity," necessitates that schools build the ability to scrutinize data. Various elements are required for educators to draw valid conclusions from the data collected in the first stage and execute a successful DBDM process.

The first element, "Data Meetings," involves scheduling sessions for educators to collaborate with colleagues to examine data. One interviewee praised the district's effective execution of data meetings. She said,

> We have both team meetings and PLC meetings. And a lot of these meetings are data-driven. In those meetings, districtwide, I think we do that well. Where we pull the data, we look at it, we group students, and then we go from there in relation to making changes to our instruction. So as a collective, I think the district does a great job of viewing and analyzing data because districtwide, we do that as a team multiple times a week.

However, only 67 percent of survey respondents indicated that they regularly meet with their colleagues for data analysis.

The second element pertains to a school-wide "Data Analysis Protocol" utilized by all educators. An interviewee claimed her school had a uniform data analysis protocol, while another was unaware of any such protocol. This suggests variability in practices among staff members across schools and even within the same school.

The third element is the allocation of "Dedicated Time" in teachers' schedules for data analysis. While the majority of participants reported a lack of dedicated time, some teachers suggested that existing planning and meeting times could be repurposed for data analysis. Nevertheless, only 59 percent of survey respondents reported that their school provided specific times for data analysis.

The fourth element is "Professional Development" and training in data analysis. A teacher highlighted that while there is extensive training at the beginning of the school year, there is a lack of ongoing support. Furthermore, teachers gave conflicting statements regarding the presence of a

uniform data analysis protocol, which is reflected in the survey results, where only 48 percent confirmed that their school provides professional development related to data analysis.

The final element involves providing "Tools to Access" the data collected in the first stage. An intervention coordinator mentioned the usefulness of certain third-party student assessment tools and school network software, TEDSolutions, that generate and update data frequently. TEDsolutions is software developed by the charter school network to collect various data on one platform. The survey results supported this, with 91 percent of respondents affirming that schools provide technology to access student data easily.

The third stage, "Culture of Data Use," encompasses the application of data analysis results to devise and implement improvement plans. The school board, administrators, and teachers create strategies to enhance school policies, practices, and classroom instructions based on the data. This stage transforms data use into a fundamental aspect of school culture. The survey results showed that 85 percent of teachers regularly change their instruction based on data, and 82 percent feel comfortable using student data to guide their intervention plans.

Summary

This action research aims to improve student achievement by introducing and refining Data-Based Decision-Making (DBDM) practices within urban school districts. It establishes a DBDM framework founded on three core stages: a) Data Collection, b) Analytic Capacity, and c) Culture of Data Use. The study employs both interviews and surveys to evaluate the implementation and effectiveness of these stages across three charter schools.

Our results indicate that the first stage, "Data Collection," is effectively employed within the schools. Teachers and administrators affirmed that adequate data is collected from numerous sources, aided by easily accessible technology. This demonstrates the efficiency of the district's current data collection methods and recommends their continuation.

However, the "Analytic Capacity" stage needs further enhancement. Identified critical elements, including allocated time for data analysis, data meetings, analysis protocols, and professional development, require improvement. A prominent challenge arises in dedicating time for data analysis due to the demanding schedules of teachers. Interviews reveal that after the initial training for PLC data analysis three years ago, some teams maintained the protocols while others disregarded them. The study suggests that continuous professional development throughout the academic year is more beneficial than the existing practice of conducting it solely at the beginning of the year.

Allocating time for data analysis poses a significant challenge due to teachers' packed schedules. Initial training was provided by the district for PLC meetings three years ago, but no district-wide follow-up was conducted. It was presumed that building leaders would perpetuate PLCs in their respective buildings. However, the interviews indicate varying levels of adherence to these protocols across schools and grade levels. In some schools, teachers transformed their grade-level meetings into PLC meetings, where they collectively analyzed data and formed action plans. As Green et al. (2016) elucidate, professional development and training in data literacy are essential for a successful DBDM implementation. Teachers should receive training to incorporate data analysis into their preparation and meeting times.

The final stage, "Culture of Data Use," demands the formulation and execution of improvement plans based on data analysis. While most teachers assert that they modify their instruction based on data analysis, the authenticity of this claim warrants further scrutiny. For a successful DBDM process, continuous reassessment and adjustments informed by data-driven insights are required at every level - from day-to-day instruction by teachers to school-wide improvement plans by administrators.

The study concludes that the successful enactment of these stages necessitates consistent leadership, a robust support structure, and a continuous, iterative approach to improvement. It also underscores the importance of audience-specific data analysis, with boards and administrators

concentrating on school-wide improvement plans while teachers and interventionists focus on daily instruction and interventions.

In summary, while efficient Data Collection practices are established, there is a substantial need for improvement in Analytic Capacity, particularly concerning continuous professional development and time dedicated to data analysis. Additionally, the assertion of data-driven instruction within the Culture of Data Use stage calls for further exploration. Consistent engagement from leadership, a robust support system, and an effective feedback mechanism are essential for successful DBDM implementation and continuous refinement. These findings, along with the ensuing action steps, will be incorporated into the next phase of this study, potentially leading to substantial implications for data-driven decision-making in K-12 education.

Cycle 2 Action Step

The Cycle 2 action steps were inspired and shaped by the findings of the Cycle 1 action research and the literature review. The understanding of the research questions has improved significantly, growing from the initial "What" questions to more comprehensive "How" inquiries.

The research questions for Cycle 1 were as follows:

1. What strategies do the educators use to increase student achievement in the charter school network?
2. How could educators effectively use data to improve student achievement in the charter school network?

Based on data collected from the Cycle 1 Action Step, the following Cycle 2 research questions were developed:

1. How can a school network develop and implement a DBDM process to assist and support their students to be academically successful?

2. What factors facilitated and supported the successful implementation and use of the DBDM process?
3. What are some challenges and obstacles in implementing an efficient DBDM process?
4. How did those factors influence the academic results?

Cycle 2 action step goals, objectives, action step activities, participants, collaborators, and stakeholders are presented in the following sections.

Action Step Goals and Objectives

The main objective of this action research is to construct a Data-Based Decision-Making (DBDM) process that enables educators to use data effectively in order to bolster academic success among students. Following the development of this DBDM process, the research aims to discern factors that may either facilitate or obstruct the successful implementation of this process within school environments. The impact of these factors on the desired outcomes will be scrutinized thoroughly. Additionally, the research endeavors to create dedicated training sessions for educators to ensure the DBDM process is faithfully implemented.

Following the provision of this training, the newly devised DBDM process will be put into practice for an existing school goal that has been determined in response to a problem identified within one of the elementary schools in the charter school network.

Two primary outcomes are intended for this action research based on its purpose:

1. To create a DBDM process that can effectively address diverse challenges in the educational domain.
2. To design professional development (PD) sessions and provide coaching to ensure that educators fully understand and are able to implement the DBDM process.

The range of challenges in education can be wide and varied. However, with the comprehensive implementation of the DBDM process, schools should be able to achieve their goals, leading to an

enhanced educational environment with higher levels of student achievement. The consistent and successful use of the DBDM process by educators can help it become an integral part of school culture. Ultimately, more urban schools may adopt this model to promote academic success among students and bridge the achievement gap.

Action Step Activities

Insights gleaned from Cycle 1 enabled the formation of a Data-Based Decision-Making (DBDM) process tailored to the educational context. Through interviewing educators within the charter school network, I identified the existing practices that comprise the DBDM process, as well as aspects that are currently absent. Given that the DBDM process necessitates robust leadership support, the school dean will play a vital role.

The DBDM process comprises three primary components: data collection, the enhancement of analytic capacity, and the establishment of a data use culture. I plan to implement Cycle 2 with grades K-2 in one of the charter school's elementary schools. The participants will thus include K-2 teachers, co-teachers, the school dean, K-2 curriculum coordinators, and an external consultant. The identified problem of practice at the school pertains to ensuring students are prepared for the next grade level when they advance.

The action step activities are outlined as follows:

1. Presenting the DBDM process to the school dean, K-2 curriculum coordinators, and an external consultant.
2. Designing and conducting professional development programs on data collection, DBDM meetings, and the creation of action plans.
3. Setting up weekly DBDM meetings.

Presenting the DBDM Process to the School Dean, K-2 Curriculum Coordinators, and an External Consultant

The first step in the action plan involves introducing the Data-Based Decision-Making (DBDM) process to the school dean, K-2 curriculum coordinators, and an external consultant. The critical role of leadership support for the successful implementation of the DBDM process will be underscored during this meeting. The importance of cultivating analytical capacity among teachers will also be emphasized, setting the stage for the second action step: the development of professional development sessions for teachers and co-teachers.

The inaugural professional development session will address the first aspect of the DBDM process: "Data Collection." This session will cover "identifying challenges, setting goals, and collecting pertinent and diagnostic data to achieve these goals." I will be responsible for preparing and conducting this "Data Collection" professional development session.

The first segment of this session will concentrate on the initial aspect of the DBDM process, while the second segment will delve into detailing the problem we will tackle during the Cycle 2 research. This includes defining our goals, pinpointing existing data sources to inform these goals, and monitoring progress.

Designing and Conducting Professional Development Programs on Data Collection, DBDM Meetings, and the Creation of Action Plans

The second professional development session will focus on the second strand of the DBDM process, "Analytic Capacity," covering the analysis of data within the context of DBDM meetings. The charter school network collaborates with external consultants to provide comprehensive training across various topics for our educators. One such consultant, a former superintendent, has collaborated with the school principals to develop Professional Learning Communities in our schools. In tandem with the

school dean, K-2 coordinators, and the consultant, I will develop a data analysis protocol to guide DBDM meetings.

Setting up Weekly DBDM Meetings

The second professional development session will also address the third component of the DBDM process, "Culture of Data Use." This session will provide insight into the development of action plans following data analysis. The design of the DBDM meetings will encourage teachers to analyze data initially, then develop action plans based on the outcomes of this analysis. The creation of an action plan necessitates subject matter expertise. Given the school's resources, which include a school dean as an instructional leader, K-2 curriculum coordinators, and external consultants, there is ample content-level expertise available for developing effective action plans.

Following the delivery of these professional development sessions, the school dean and K-2 coordinators will organize weekly DBDM meetings within the grade levels. They will aid teachers in implementing data analysis and action plans. This procedure will be maintained for a period of two months, with overarching progress checks scheduled for the midpoint and end of this period.

Participants/Collaborators/Stakeholders

The Cycle 2 action steps and data collection will be enacted in one of the elementary schools within the charter school network. I selected one out of four elementary schools with the aim of minimizing resistance from the staff. This will allow for a fair assessment of the success of the action steps without the complicating factor of opposition. Recently, the charter school has placed a strong emphasis on ensuring students are academically prepared for successive grade levels from early on. The aim is that kindergarten students should be ready for first grade, first graders should be ready for second grade, and second graders should be ready for third grade. The DBDM process will be implemented to achieve this objective during the Cycle 2 action research.

Given the considerations of minimizing resistance and the existing K-2 achievement goal, I have chosen to implement Cycle 2 within the K-2 grade levels of one elementary school in the charter school network. The participants of the Cycle 2 action research will include the school dean, K-2 teachers and co-teachers, K-2 curriculum coordinators, and an external consultant.

The school dean and K-2 curriculum coordinators work closely with teachers and co-teachers to assist them in implementing district-wide practices in their classrooms. I will collaborate with the school dean and K-2 coordinators through weekly meetings, while the school dean will liaise with the teachers on a daily basis. The district's K-2 coordinators visit the school once a week, spending time with classroom teachers and participating in grade-level meetings. Their direct work with teachers and co-teachers, including coaching on instruction and intervention delivery, means that the school dean and K-2 coordinators are well-positioned to respond to the Cycle 2 research questions.

The external consultant will aid in developing a data meeting protocol and deliver the second professional development session on data meetings to the teachers. The consultant will actively participate in the DBDM meetings alongside the school dean and K-2 coordinators. Their collective responsibility will be to guarantee that data analysis protocols are adhered to during DBDM meetings, and that subsequent action plans are formulated based on the outcomes of this data analysis.

Summary

The Cycle 2 action steps are designed to facilitate the implementation of the DBDM process within the K-2 grades of one elementary school in the charter school network. The school administration will organize professional development sessions centered around the three main strands of the DBDM process: Data Collection, Data Analysis, and the Culture of Data Use.

Following the delivery of these professional development sessions to teachers and co-teachers, the school dean, K-2 curriculum coordinators, and the external consultant will provide ongoing coaching during the implementation of the Cycle 2 process. The impact of these action steps is intended to equip

teachers and co-teachers with a comprehensive understanding of the DBDM process, facilitated through its application to address an existing challenge in the school with the support of the administration.

As the effectiveness of the DBDM process is demonstrated through improvements in student academic achievement, teachers and administrators will be encouraged to utilize it to tackle other problems across varying levels - from individual classrooms to the whole school. In the long term, training on the DBDM process will be extended to other grade levels and schools within the district for a network-wide implementation.

Cycle 2 Evaluation Plan

The effectiveness of the Cycle 2 action steps will be gauged using qualitative data gathered from interviews and focus groups with teachers, co-teachers, the school dean, K-2 curriculum coordinators, and the external consultant. Following each professional development session, participants will partake in brief reflection sessions to provide their feedback. These sessions will be recorded for further analysis.

Additionally, weekly meetings between the school dean, K-2 curriculum coordinators, the external consultant, and the researcher will be conducted. These meetings will also be recorded and subsequently transcribed. The subsequent section will elucidate the means by which the action steps will be measured, analyzed, and evaluated.

Data Collection

The data collection process will span a duration of two months. Meetings will take place in the school building, district office, and via Zoom. The opportunities for data collection are outlined as follows:

1. Reflections held at the conclusion of each professional development session.
2. Focus groups conducted with K-2 teachers and co-teachers.
3. Interviews with the school dean, K-2 curriculum coordinators, and the external consultant.

4. Weekly meetings with the school dean, K-2 curriculum coordinators, and the external consultant.
5. Field notes taken after each session.

Reflections Held at the Conclusion of Each Professional Development Session

Following each of the professional development sessions, participants will be invited to share their reflections. These sessions will be recorded and subsequently transcribed. The professional development sessions are pivotal in training teachers on the DBDM process and fostering a shared understanding of the action steps. The data collated from teacher reflections on these sessions will ascertain that all participants have congruent goals and a shared understanding of the DBDM process. If, after these sessions, teachers require additional clarification on the goals and the DBDM process, supplementary training will be arranged to ensure the faithful implementation of the Cycle 2 action steps.

Focus Groups Conducted with K-2 Teachers and Co-teachers

Each of the three K-2 grade levels is assigned a curriculum coordinator who works continuously with the teachers at that level. Consequently, I will conduct separate focus groups for each grade level to ensure that teachers provide feedback on the support they received from their respective curriculum coordinators during the implementation of the action steps.

I will conduct two focus groups with each grade level during the data collection process - one in the middle and one at the end. Each grade level is divided into three sections, each including one teacher and one co-teacher. Therefore, each focus group will comprise a minimum of six participants. Support staff such as English as a New Language (ENL), Special Education (Sped), and literacy teachers will select which focus group they wish to participate in based on their caseloads.

During the focus groups, I will invite teachers to discuss what is working and what isn't, and how they know. I will prompt them to support their responses with data evidence. These focus group discussions will be recorded and transcribed for further analysis.

Interviews with the School Dean, K-2 Curriculum Coordinators, and the External Consultant

The school dean, K-2 coordinators, and the external consultant will collaborate with teachers to execute the Cycle 2 action steps. I will conduct separate interviews with them twice during Cycle 2 – once at the midpoint and again at the conclusion.

The K-2 curriculum coordinators will be interviewed individually as they work with the grade level specifically assigned to them. Each coordinator will have distinct experiences with the group they are working with. By capturing these unique experiences through individual interviews, I aim to compare this data with the data collected from the same group during the focus group discussions.

In addition, I will conduct a separate interview with the school dean, who collaborates with all K-2 teachers and co-teachers. The external consultant, who will participate in the DBDM meetings and assist teachers in developing action plans, will also be individually interviewed.

Weekly Meetings with the School Dean, K-2 Curriculum Coordinators, and the External Consultant

Starting from the first week of Cycle 2, I will hold weekly meetings with the school dean, K-2 coordinators, and the external coordinator. As a result, there will be three separate meetings each week to monitor progress. These meetings will be recorded and transcribed for subsequent analysis.

Field Notes Taken After Each Session

Following each session, I will record my observations and insights in field notes. These notes will serve as a dependable record of my thoughts and actions throughout the professional development sessions, focus groups, interviews, and meetings. I will particularly note the level of participant engagement and their responses during these sessions.

Data Analysis

During the Cycle 2 data collection process, I plan to conduct six focus groups with K-2 teachers and co-teachers, ten interviews with the school dean, K-2 curriculum coordinators, and the external consultant, 24 weekly meetings, and three professional development reflection sessions. All sessions will be recorded with the participant's consent. I will use the Otter.ai software to transcribe the recordings. Following the software's automatic transcription, I will manually review and correct any errors.

All transcripts will then be uploaded to the NVivo 12 software for coding. This software allows for creating codes, annotations, and highlights in various colors and offers a comprehensive text search option, which I found extremely helpful during my literature review.

I will read the transcripts twice, reviewing my notes to code words and gerunds (-ing words), and then transfer these codes to an Excel sheet. Saldana (2016, p.77) proposes using in vivo and process coding techniques over descriptive coding. He suggests that in descriptive coding, researchers often require assistance to uncover the crux of the narrative fully or to identify the actual concerns. In contrast, in vivo coding directly captures the participants' voices using their own words as codes. Furthermore, Saldana (2016, p.78) elaborates that process coding employs verbs in "-ing" form to encapsulate actions and the unfolding dynamics within the narrative.

After that I will list the categories that emerge during my transcript reviews, assigning colors to each category. Codes on the Excel sheet will be color-coded according to their categories. I will ensure all words are affiliated with a category, then group these categories into themes. Additionally, I will record analytical memos when ideas surface during the coding process. Memoing allows researchers to explain, explore, examine, and challenge data interpretations (Birks, Chapman & Francis, 2008).

Although complete privacy is unattainable for focus groups, I will employ pseudonyms instead of participants’ real names in all transcripts. I will share my findings with the participants via email and seek their feedback to validate my interpretations of the meetings, interviews, and focus groups.

Evaluation Audience

The evaluation report will be disseminated to a variety of audiences. Administrators at the district office of the charter school network will be provided with a copy, as will internal and external stakeholders associated with the Cycle 2 site. School administrators within the charter school network will also receive the evaluation report.

Additionally, the DBDM process model will be presented to school deans during a summer institute to encourage its adoption across other schools in the network. The principal investigator at Northeastern University will be given a copy of the evaluation report to plan the forthcoming steps of the dissertation process with me, the researcher.

Verify and Draw Conclusions

The Cycle 2 research process is expected to provide the charter school network with the necessary tools to deploy the Data-Based Decision-Making (DBDM) process to enhance student performance. The success of this implementation will be evident in the rise of scores on local and state-level assessments. Furthermore, the schoolwide engagement of teachers and administrators in the DBDM process will lead to a cultural shift toward more effective utilization of data. This, in turn, will instigate discussions and celebrations around academic goals and achievements among teachers and students.

Enhanced academic performance will instill greater confidence among teachers and students, elevating overall satisfaction within the school community. This process is also likely to support increased teacher retention within schools. Empowered by data insights, teachers will be able to make informed decisions about their instructional strategies, tailoring them to address individual student needs in their classrooms. As teachers and students operate under limited time constraints, data-driven attention to specific student needs ensures that time is leveraged effectively.

Through interviews and focus group discussions conducted during Cycle 2 action research, the needs of the school will be identified. The feedback from these stakeholder conversations will help refine the DBDM process implementation.

The entire action research process aligns seamlessly with the research questions, with the overarching goal being the development and implementation of a DBDM process that can elevate student achievement within urban school districts. As indicated in the literature review and Cycle 1 analysis of this action research, data use has played a critical role in education in recent decades and has a proven positive impact on student achievement.

The DBDM process, though a universally applicable tool to achieve a wide range of school goals, will be specifically used in Cycle 2 research to improve early literacy skills. The process will involve utilizing ongoing student assessment results to identify specific student needs and crafting differentiated action plans for instruction and intervention accordingly.

The DBDM process comprises several steps: identifying goals and data sources that are both relevant and diagnostic, boosting the staff's capacity to analyze the data effectively, and developing action plans. The continuous application of these practices, under the support of leadership, will integrate them into the school culture.

Importantly, the research process is cyclical and necessitates ongoing monitoring, evaluation, and adjustments as required. Regular assessments will ensure that the school stays on track towards its goal of using the DBDM process to bolster academic achievement among teachers and students. The school remains committed to making necessary adjustments based on these assessments, consistently building on areas already showing progress.

Ultimately, this research process aims to develop and implement a Data-Based Decision-Making process that aids in improving student achievement by providing teachers with effective data utilization

skills. The school remains committed to continuously honing and adapting the DBDM process to cater to the evolving needs of its students and teachers.

Cycle 2 Results and Findings

In Cycle 1, I established the Data-Based Decision-Making (DBDM) process by synthesizing insights from focus groups, interviews, a survey, and a comprehensive review of existing literature. Cycle 2 validated the efficacy of our DBDM process, particularly when applied within a school network context. Fundamentally, the DBDM process is developed to enhance students' academic achievement, thus addressing our first research question.

Additionally, Cycle 2 offered insights into our second research question, elucidating the factors that contribute to the successful implementation of the DBDM process. It also illuminated various challenges and obstacles encountered during its deployment, responding to our third research question. Furthermore, Cycle 2 pertains to our fourth research question by examining how these identified factors influence academic outcomes. The subsequent sections present Cycle 2 results and findings in relation to the research questions.

Research Question 1: How can a School Network Develop and Implement a DBDM Process to Assist Their Students in Achieving Academic Success?

During Cycle 2, an in-depth analysis of the collected data was conducted, which included focus groups with K-2 teachers, interviews with the school dean, K-2 curriculum coordinators, and the external consultant, observations, and weekly meetings. The primary objective of this data analysis was to provide insights and answers to the fundamental question: "How can a school network develop and implement a DBDM process to assist and support their students to be academically successful?" Through detailed examination, three key themes emerged, offering valuable guidance for addressing this question. These themes include:

- Establishing a robust data infrastructure to ensure consistent and timely data collection, efficient management, and informed decision-making.
- Utilizing Data Analytics to enable educators to identify patterns, trends, and areas for improvement and personalize instructions and interventions based on student needs.
- Fostering Collaborative Culture and Stakeholder Engagement, where teachers, curriculum coordinators, administrators, parents, and students work together, share ideas, and collaboratively make informed decisions to support student success and enhance instructional practices.

In the subsequent sections, each of these themes will be thoroughly explored, emphasizing their significance in promoting academic success and facilitating data-based decision-making processes within the school network.

Establishing a Robust Data Infrastructure to Ensure Consistent and Timely Data Collection, Efficient Management, and Informed Decision-Making

A strong data infrastructure pertains to the systems, processes, and tools in place to ensure consistent and timely data collection and analysis. Teachers' feedback from focus group discussions underscores the crucial role of establishing a solid data infrastructure in the Data-Based Decision-Making (DBDM) process. They emphasize that this involves efficient data collection, management, and accessibility. One teacher shared their experiences with collecting baseline data. They noted that while the school has been historically proficient at data collection, this project helped them identify considerable gaps. She reflected, "Within those gaps, I personally wish we would have started this sooner. It's truly eye-opening to track where students are currently and realize that I could have addressed certain skills earlier." This feedback underscores the vital role of identifying relevant and diagnostic data sources and organizing and managing data effectively.

Participants also stressed the importance of capable data storage and management systems that ease retrieval, analysis, and reporting. Another teacher noted the influx of assessments and the benefits of a comprehensive tracker. "Having a tracker that outlines all of the units, all of the skills they need, really helps you focus," they observed. They also discussed the benefits of digital platforms in offering quick access to relevant information. Thus, an efficient data infrastructure allows educators to utilize data for decision-making and planning interventions effectively.

The necessity to identify relevant and diagnostic data sources was a recurrent theme. One teacher stated,

> Before we collaborated with the K-2 coordinators and adopted a more thorough reading tracker, we relied on broad data sources... These were useful for obtaining a general idea of a student's progress. Now, our tracker is supplemented with more detailed information about specific skills and abilities that students have or lack.

This teacher also underscored the need to continually update assessments to provide the most accurate information about a student's knowledge.

A well-structured data infrastructure guarantees consistent data collection, efficient data management, and easy data sharing. By employing standardized protocols, effective data storage systems, and promoting collaboration among stakeholders, educators can make informed decisions, tailor interventions, and improve student outcomes. A robust data infrastructure is fundamental to a successful DBDM process, equipping educators with the necessary tools to use data for student success effectively.

Utilizing Data Analytics to Enable Educators to Identify Patterns, Trends, and Areas for Improvement and Personalize Instructions and Interventions based on Student Needs

Data analytics, essentially, is the systematic analysis of educational data to identify patterns, trends, and potential areas for improvement. The participants elaborated on using various data sources,

such as running records, assessments, and progress trackers, for collecting information about student performance. Through analyzing such data, a comprehensive understanding of students' strengths, weaknesses, and progress can be achieved. This practice allows educators to identify trends, focus on specific areas of need, and make informed intervention decisions. As a second-grade teacher remarked,

> Just by having a tracker that we can see the general arc of how they're supposed to go…we're thinking about kindergarten skills and first-grade skills more explicitly than I think we have in the past. So it spurs conversations about it. And I think we have a lot of conversations outside of the formal meetings that are productive.

The significance of leveraging data analytics to personalize interventions and foster individual student growth was also highlighted during the conversations. The participants conversed about how data analysis enables teachers to design interventions tailored to specific learning gaps and modify instructional strategies to address students' unique needs. One first-grade teacher elucidated,

> Even those kids who need that extra help, we were able to go through the tracker and say, okay, they need these letter sounds, instead of like, let's just start there…let's just hone in the ones they really, really need.

Another teacher shared,

> A lot of my students are lower in reading, I like that I can take a second grader and see, okay, they're missing this kindergarten skill, this first-grade skill. So instead of focusing on the grade level skill that is too high for them, I can go back and say, well, they're having trouble with grade level, because they don't know, the kindergarten skills, the first-grade skill, so I can go back and target those, and then incorporate grade level within too.

The usage of data-driven insights empowers educators to effectively target their interventions, ensuring timely and relevant support that can enhance student learning outcomes.

Moreover, the participants emphasized the role of data analytics in tracking student progress and gauging the effectiveness of interventions. They recognized the value of monitoring student growth over time and using data to assess the influence of interventions on student outcomes. Regular analysis of data allows educators to evaluate the effectiveness of their instructional approaches and make data-informed adjustments to enhance student achievement. An external consultant stated,

> Identifying exactly where the weaknesses are, by looking at the data gives us a more targeted, focused approach to what we should be working with specific groups of kids. I think the school has done a tremendous job of grouping the students according to, you know, where are the holes and who else has those same holes and making a group.

The conversation also underscored the importance of adopting a holistic perspective of student progress beyond mere measurements, considering factors like fluency, comprehension, and individual growth. This comprehensive methodology in data analytics ensures that interventions are meaningful, targeted, and synchronized with students' specific needs. By harnessing data-driven insights, educators are equipped to make informed decisions, improve instructional practices, and ultimately uplift student outcomes in the DBDM process.

Fostering Collaborative Culture and Stakeholder Engagement, where Teachers, Coordinators, Administrators, Parents, and Students Work Together, Share Ideas, and Collaboratively Make Informed Decisions to Support Student Success and Enhance Instructional Practices.

The educators highlight the significance of fostering a collaborative culture and engaging stakeholders in the DBDM process. Collaborative culture refers to an environment where teachers, curriculum coordinators, and administrators work together, share ideas, and collaborate on decision-making. Stakeholder engagement involves actively involving parents and students in the educational journey. Throughout the conversations, the participants emphasize the value of collaboration among teachers. The external consultant expressed,

> I think another thing is the collaboration that has happened between teachers, in most cases, they are having deep conversations about the data…I think that's a thing of beauty…I think you'll see strength arise out of this building because of these experiences.

The participants discuss the benefits of sharing ideas, experiences, and strategies to enhance instructional practices. By collaborating and pooling their knowledge, teachers can collectively develop action plans, create interventions, and refine instructional approaches. One teacher explains,

> The regrouping has been great. And constant revisitation with each other, too. I know a lot of times this goes beyond just like those Monday data meetings for us. So, we're chatting…I'm noticing this kiddo, like in my data notes I have, like targeting short i CVCC or whatever. And if she's targeting that, I'm going to switch them over there. And then take one of her friends that needs more CVCC. Maybe they need a, e and o, you know, okay, let me give you the one. So then she can move on to CVCC words like it's constant collaboration.

This collaborative effort ensures a more comprehensive and effective approach to addressing student needs. Another teacher mentions,

> I think it's really helpful to have anybody be on the same page to know exactly…to be able to pull up the data has been really helpful to me to know exactly what skill to work on when I'm working with my students….the communication has increased because we all know exactly where our students are, and to also have the communication with the dean as well…it's really helpful having everyone on the same page. And I think it's increased communication and collaboration with everybody.

The conversation also highlights the importance of stakeholder engagement, particularly involving parents in their child's education. Participants discuss how effective communication with parents through platforms like Class Dojo helps share information about interventions, skills to practice at home, and progress updates. One teacher explains that "I've had several parents contact me and be

like, my kiddo says they're working on … their sounds. What can I do at home… do you recommend anything?" Engaging parents not only enhances their understanding of their child's educational journey but also empowers them to support their child's learning actively.

By focusing on collaborative culture and stakeholder engagement, the conversations underscore the power of collective effort and shared responsibility in supporting student success. It acknowledges that effective decision-making and intervention strategies require the input, expertise, and involvement of all stakeholders. When teachers, parents, and students actively collaborate and engage in the DBDM process, it strengthens the educational ecosystem and enhances the outcomes for all learners.

Summary

The research question "How can a school network develop and implement a DBDM process to assist and support their students to be academically successful?" was thoroughly examined in Cycle 2 via an in-depth analysis of collected data from focus groups, interviews, observations, and weekly meetings. The analysis yielded three crucial themes contributing to the successful implementation of the DBDM process.

First, the establishment of a robust data infrastructure is critical. This involves consistent and timely data collection, efficient data management, and easy data access, which all enhance decision-making and intervention planning.

Secondly, the utilization of data analytics plays a significant role. By analyzing collected data, educators can identify patterns, trends, and areas for improvement. This allows them to design personalized interventions and instructional strategies, ultimately improving student outcomes.

Lastly, fostering a culture of collaboration and stakeholder engagement is key. This means teachers, coordinators, administrators, parents, and students actively working together, sharing ideas, and making decisions collectively. Such collaboration and engagement enhance instructional practices and support student success.

Overall, the analysis suggests that a robust data infrastructure, effective use of data analytics, and fostering a culture of collaboration and stakeholder engagement are essential in developing and implementing a successful DBDM process in a school network.

Research Question 2: What Factors Support the Successful Implementation and Utilization of the DBDM Process?

The successful implementation of the Data-Based Decision Making (DBDM) process is influenced by several key factors contributing to its effectiveness. This section explores four essential factors that have been identified through conversations, interviews, and focus groups:

- Setting clear goals and aligning them with educational objectives plays a vital role in successful student outcomes by fostering direction, accountability, motivation, and positive attitudes towards learning, ultimately leading to improved overall educational results.
- Ensuring data quality and accuracy is pivotal in data-based decision-making, enabling reliable assessments and targeted interventions to address learning gaps for improved student outcomes.
- Implementing data-driven action plans and an iterative process in DBDM is vital for targeted instruction, continuous improvement, and effective student outcomes, emphasizing consistency and collaboration.
- Fostering strong leadership and support in the DBDM process is driving comprehensive planning, advancing teacher engagement, setting high expectations, and encouraging collaboration for improved student outcomes.

Each of these factors plays a significant role in supporting the DBDM process and promoting positive student outcomes.

Setting Clear Goals and Aligning them with Educational Objectives Plays a Vital Role in Successful Student Outcomes by Fostering Direction, Accountability, Motivation, and Positive Attitudes towards Learning, Ultimately Leading to Improved Overall Educational Results

Clear goals and alignment with educational objectives play a vital role in successful student outcomes. The conversations and interviews demonstrate how teachers are beginning to implement a system of setting weekly, specific, and measurable goals for their students during DBDM process. One teacher mentioned, "I've started writing down like on a little index card at the beginning every week for goals for my specific group that I want them to have, before the Thursday of that week that they're reassessed." This not only keeps the teachers focused on the desired outcomes but also imparts a sense of direction to the students, making them aware of what they should know and where they need to be by the end of the week. These goals typically extend beyond the week, aiming to prepare students for the next step in their academic journey, reinforcing a continuous cycle of learning and improvement.

The process of setting goals not only enhances teacher accountability but also instills a sense of accomplishment and pride in students. One teacher explained,

> And then it was I can blend my letter sounds to read words. And they were just so proud of themselves that they could read the sentence... they've got to have pride in that too. And I think that's important.

By clearly stating their objectives, like identifying a specific number of letter sounds or blending letter sounds to read words, teachers ensure students understand what they are working towards. Once these objectives are achieved, students feel proud, which boosts their confidence and motivates them to strive for more complex goals. This sense of accomplishment is crucial for developing a positive attitude toward learning.

Moreover, aligning teaching methods and goals with the school's overall vision of providing the best education to each student is paramount. This is particularly important when dealing with gaps in a

student's knowledge which may have occurred for a variety of reasons. By setting clear goals and aligning them with educational objectives, teachers can effectively bridge these gaps, facilitating the student's transition to higher grades. One of the curriculum coordinators expressed,

> There are a lot of gaps in second grade... So I think this process is a great first step in trying to bridge those gaps within our second graders. And hopefully, it will be more narrow, you know, as they move along. So I think the process in itself is the right start for us to ultimately have our kids graduate, go to college, and be successful in their careers.

This, in turn, significantly improves student performance in crucial examinations and assessments, ensuring overall academic success. As these practices are scaled up through the various grade levels, the overall educational outcomes are likely to improve significantly, leading to well-rounded and successful individuals.

Ensuring Data Quality and Accuracy is Pivotal in Data-based Decision-making, Enabling Reliable Assessments and Targeted Interventions to Address Learning Gaps for Improved Student Outcomes

Data quality and accuracy play a crucial role in the data-based decision-making process, as highlighted in the conversations. One teacher notes, "Some of the students don't necessarily truly master the skills. They were able to successfully do that assessment. But then when applying what that skill is, they couldn't do it." This raises concerns about the discrepancy between assessment performance and practical application, emphasizing the need for additional assessments to ensure genuine understanding. Another participant adds, "The assessment itself sometimes indicates a child will know the skill, but they really don't know the skill." This underscores the importance of accurate assessments in capturing students' knowledge and skills.

The conversations also emphasize the significance of fine-tuning assessments to measure specific skills accurately. One participant points out, "If they just circle a word, a lot of kids have this happen. They can circle the right word or check the right word." This suggests that some assessments

may inadvertently allow students to guess or pass without demonstrating true proficiency. It becomes essential to design assessments that effectively measure the desired learning outcomes. Another participant mentions, "The assessments just have to be fine-tuned to validly measure the thing we want to measure." This highlights the need for assessments aligned with specific learning objectives to obtain reliable data.

Moreover, data quality and accuracy enable educators to identify gaps in student learning and provide targeted interventions. One participant highlights the significance of accurate data in identifying students who might need additional support, stating, "We're not leaving gaps unmet, not letting any students fall through the cracks." Accurate data helps prevent students from being overlooked and ensures that individual learning needs are addressed. By prioritizing data quality and accuracy, educators can enhance learning outcomes and ensure that all students receive the necessary support to reach their full potential.

Implementing Data-driven Action Plans and an Iterative Process in DBDM is Vital for Targeted Instruction, Continuous Improvement, and Effective Student Outcomes, Emphasizing Consistency and Collaboration

The importance of action plans and an iterative process in the DBDM process is evident in the conversations. One participant notes the need for intervention curriculums tailored to meet the needs of students, stating, "We need some [intervention] curriculums for those students." This highlights the significance of developing action plans to address specific student needs and ensure targeted instruction. Another participant emphasizes the value of assessing data to uncover discrepancies between students' presentation and their actual understanding. They note how data helps to demonstrate when students are not grasping concepts, despite appearing proficient. This highlights the role of data in guiding action plans that target specific areas of improvement.

The conversations also underscore the importance of an iterative process in DBDM. Participants discuss the benefits of tracking students' progress and making adjustments to individual action plans based on data. One participant mentioned how they moved students between groups as they observed progress and identified areas of mastery or gaps. They note, "We noticed, okay, this kid actually has mastered these skills, and maybe they're ready to move to a different room and work on different skills." This demonstrates the iterative nature of the process, where ongoing assessment and analysis inform decision-making and the refinement of instructional approaches.

Additionally, the conversations highlight the need for consistency and collaboration in developing action plans and implementing interventions. Participants stress the importance of shared resources and support from coordinators. They note the value of having a set intervention curriculum and materials that teachers can access and use consistently. Collaborative support helps alleviate the overwhelm of planning for interventions and ensures teachers can focus on delivering targeted instruction. One participant emphasizes the significance of collaboration and resource-sharing, stating, "Coordinators were a great resource and really worked to help prepare materials." This highlights the role of collaboration in facilitating effective action plans and supporting teachers in implementing interventions.

Fostering Strong Leadership and Support in the DBDM Process is Driving Comprehensive Planning, Advancing Teacher Engagement, Setting High Expectations, and Encouraging Collaboration for Improved Student Outcomes

The importance of strong leadership and support in the DBDM process is evident in the conversations. Participants discuss the need for comprehensive planning and preparation, emphasizing the role of leadership in driving the process. One participant suggests creating a system over the summer to build upon the knowledge gained from the project and start the new school year with a clear plan, stating, "Take everything you learn...and make a plan over the summer to start planning right

away." This highlights the significance of proactive leadership and a strategic approach to ensure no time is lost in addressing student deficits.

The conversations also highlight the impact of supportive leadership on teacher engagement and commitment to the DBDM process. Participants recognize the dedication and drive of teachers who genuinely care about student success. They note that teachers were motivated by their internal drive and the opportunity to make a difference for students. One participant reflects on the teachers' commitment, stating, "Most teachers are in this profession because they care about the success of kids. So it was an inner drive that played out here, with most of the teachers." This internal drive, combined with effective leadership, creates a powerful synergy that fuels teachers' motivation to implement data-driven interventions.

Additionally, participants attribute the success of the project to effective leadership in the form of a literacy-focused school dean who set high expectations and held teachers accountable for their tracking and progress monitoring. One participant highlights the impact of leadership, stating, "It was very evident in the meetings that she [the school dean] was expecting nothing less than the best from those teachers." This exemplifies the importance of strong leadership in fostering a culture of continuous improvement and promoting accountability in the DBDM process. When leaders prioritize data-driven decision-making and set high expectations, teachers are empowered to deliver their best for the benefit of their students.

Furthermore, the conversations emphasize the importance of collaboration and support in implementing DBDM effectively. Participants highlight the role of K-2 curriculum coordinators and resource-sharing in facilitating instructional planning and intervention implementation. They mention the support provided by K-2 curriculum coordinators in preparing materials and offering assistance, which alleviates the overwhelming task of planning for interventions. One participant acknowledges the value of collaborative support, stating, "Knowing that they had people as support that they could

bounce ideas off of...really helps the success of the project." This underscores the significance of a collaborative environment and access to necessary resources to support teachers in delivering quality instruction aligned with student needs. By prioritizing strong leadership and support, schools can foster a culture of data-based decision-making that enhances student learning outcomes and promotes continuous growth and improvement.

Summary

The success of the Data-Based Decision Making (DBDM) process is governed by several significant factors that surfaced through various conversations, interviews, and focus groups during Cycle 2.

The first significant factor is the establishment of clear goals that align with the broader educational objectives. This approach directs teaching efforts, fosters accountability, motivates teachers and students, and generates a positive attitude towards learning, leading to improved academic outcomes.

The second factor is the assurance of data quality and accuracy. Reliable and precise data forms the bedrock of an effective DBDM process, enabling targeted interventions to address learning gaps and boost student performance.

The third factor is the implementation of data-driven action plans and an iterative process. Constant adjustments in the light of data findings allow for the refinement of instruction and continuous improvement, thus enhancing student outcomes.

The last key factor is the presence of strong leadership and support. A supportive leadership drives comprehensive planning, fosters teacher engagement, sets high expectations, and encourages collaboration, all of which collectively contribute to improved student outcomes.

In summary, the combination of setting clear goals, ensuring data quality, implementing data-driven action plans, and fostering strong leadership and support plays a crucial role in driving the success of the DBDM process and promoting positive student outcomes.

Research Question 3: What are the Challenges and Obstacles Encountered in Implementing an Efficient DBDM Process?

Implementing the Data-Based Decision Making (DBDM) process in education comes with various challenges that need to be addressed for its successful implementation. This section identifies the following key hurdles as identified through focus group discussions and interviews with educators:

- Addressing challenges in data quality, assessment tool alignment, and integration is crucial for the effective implementation of DBDM to personalize and enhance the learning process in education and meet students' needs.
- Implementing DBDM in an educational setting requires staff training and change management to address challenges in clarity, collaboration, teacher attitudes, and the shift to a dynamic, data-driven approach, ensuring successful application and consistency in meeting students' needs.
- Managing staffing issues, such as adequate numbers and availability of teachers, is a critical challenge in implementing the DBDM process in educational settings, impacting effective intervention delivery and hindering targeted skill progress.
- Addressing the challenge of expertise requires providing clearer instructions, robust guidance, and proactive feedback from educational leaders and coordinators to support teachers effectively in implementing the DBDM process.
- Addressing the challenge of time constraints and scheduling is crucial in the DBDM process, requiring a structured approach with flexible time allocation and prioritization of data analysis and decision-making activities to improve student outcomes.

Understanding and mitigating these challenges is crucial for schools to harness the full potential of the DBDM process, enhance data-driven decision-making capabilities, and ultimately improve student outcomes.

Addressing Challenges in Data Quality, Assessment Tool Alignment, and Integration is Crucial for the Effective Implementation of DBDM to Personalize and Enhance the Learning Process in Education and Meet Students' Needs

Data-Based Decision Making (DBDM) is a promising method to personalize and enhance the learning process in education. However, implementing this strategy is not without challenges, particularly in terms of data quality and integration. As one participant in the provided conversations noted, there are situations where "some of the students don't necessarily didn't truly master, they were able to successfully do that assessment." Yet, when asked to apply those skills, "they couldn't do it." This discrepancy suggests a significant flaw in the assessment system and questions the quality of data collected, which can hinder decision-making processes in the classroom.

Further exacerbating this issue is the mismatch between assessment tools and the level of skills being evaluated. It was highlighted that "the assessment is assessing some higher-level stuff at the same time," leading to situations where "they probably do have the skill," but the assessment fails to capture this accurately. Moreover, there are cases where "they can circle the right word or check the right word," indicating that the simplicity or design of some assessments might enable students to guess the right answers rather than truly understand the content. Therefore, a comprehensive re-evaluation of assessment tools is necessary to ensure they validly measure what is intended.

Data integration is another challenge that complicates the implementation of DBDM. One participant noted that "we don't know how to assess that. Or we don't know what assessment tool," which can lead to inconsistencies in data recording and tracking. Furthermore, without a systematic plan for how and when to assess specific skills, there can be significant "holes in those trackers," causing

valuable data to be missed and consequently impacting the accuracy of decision-making. It's imperative to revise assessment methods, clarify how to measure and record progress and commit to ongoing data updates. By doing so, we can ensure the data accurately reflects students' learning levels and progress, leading to effective decision-making that can better meet the needs of all students.

Implementing DBDM in an Educational Setting Requires Staff Training and Change Management to Address Challenges in Clarity, Collaboration, Teacher Attitudes, and The Shift to a Dynamic, Data-Driven Approach, Ensuring Successful Application and Consistency in Meeting Students' Needs

Implementing the DBDM in an educational setting requires significant shifts in processes and practices, making staff training and change management critical components of its successful application. An essential challenge highlighted in the conversations is the absence of a clear plan on how to approach and assess new learning material each week. One participant observed that there seems to be some confusion among educators regarding the methodology of assessment, noting that "I've heard from a few, not everybody, but a few, that we don't know how to assess that. Or we don't know what assessment tool." This underscores the need for ongoing staff training to ensure clarity and consistency in the implementation of DBDM.

In addition, the diversity of teaching strategies and approaches among educators can lead to non-uniformity across grade levels. The discussions revealed a perceived lack of collaboration and shared strategies among teachers: "They really weren't using the same approach." Therefore, promoting collaborative planning and sharing of effective teaching strategies among educators can be beneficial in harmonizing approaches and ensuring the DBDM process is consistent across the board.

However, teacher attitudes toward the DBDM process can vary, presenting another challenge. While some teachers have shown enthusiasm and thoroughness in their data recording and planning, others have expressed feeling overwhelmed, as one participant mentioned: "I'm so overwhelmed. I don't know what to do with this." Such reactions suggest the need for change management strategies

that accommodate different learning curves among educators, creating an environment that fosters gradual adjustment and mastery of DBDM.

Lastly, the implementation of DBDM necessitates a shift from traditional teaching routines to a more dynamic, data-driven approach. This shift can be daunting for teachers accustomed to a more prescriptive curriculum. As a result, providing support and flexibility for educators to experiment and find what works best for their classrooms is crucial. As one educator noted, "You need to adjust your action plan...you need to constantly update it," emphasizing the importance of ongoing adaptation in the DBDM process. To effectively navigate these challenges, training and change management strategies must be thoughtfully designed, implemented, and continuously reviewed for improvement.

Managing Staffing Issues, such as Adequate Numbers and Availability of Teachers, is a Critical Challenge in Implementing the DBDM Process in Educational Settings, Impacting Effective Intervention Delivery and Hindering Targeted Skill Progress

A critical challenge in the implementation of the DBDM process in educational settings is managing staffing issues. These concerns range from adequate staffing numbers to the availability of teachers to participate fully in the DBDM process. As one educator explained, the absence of a staff member due to other responsibilities within the school made managing a large group of students challenging: “He [co-teacher] wasn't there at all. So I'm like, what am I doing with all of these 20 kids by myself?" This sentiment is echoed in another conversation, where the educator complained about the constant absence of a reading specialist due to other responsibilities, which greatly interferes with the successful execution of the DBDM process.

Further, an unpredictable staffing situation can lead to the disruption of planned teaching groups, hindering the progress of targeted skills. The need for teachers to cover other classes can result in larger group sizes, thus compromising the effectiveness of interventions. One interviewee pointed out,

> When some of the teachers who are actually responsible for direct instruction have a group and to cover other classes, that leaves a hole...so on days when [two teachers] were each having a group of 13. And [one] got called to cover classes, then [the other] ended up with 26.

In another conversation, an educator stated, "Staff attendance and staff pulling...we'd have no choice, you know, so it's nobody's fault. But you've got to cover responsibilities." Clearly, ensuring stable, consistent staffing levels is crucial to the successful implementation of DBDM, but it remains a significant challenge that needs to be addressed.

Addressing the Challenge of Expertise Requires Providing Clearer Instructions, Robust Guidance, and Proactive Feedback from Educational Leaders and Coordinators to Support Teachers Effectively in Implementing the DBDM Process

A significant hurdle that emerges in the DBDM process pertains to expertise. Teachers often grapple with how to accurately implement the DBDM process, illustrating a critical need for clearer instructions and more robust guidance from educational leaders. One teacher demands, "It shouldn't just be up to you guys. There should be more guidance on that. Like, if you're going to implement a program, it shouldn't just be like, oh, we'll figure it out" underscores this point. The DBDM process can appear overwhelming, especially when teachers feel they lack the necessary direction and support to manage the complex aspects of the process effectively.

The role of curriculum coordinators in providing this needed expertise and guidance becomes paramount. One teacher share, "I think [dean]'s got us as far as like, she's getting us off the runway...But [curriculum coordinator] is like, our flying is the one that's the pilot in this...she is really our go-to and our biggest fan." However, the demand for more proactive feedback from curriculum coordinators also surfaces, highlighting a gap in communication: "I would love more feedback from the curriculum coordinators. I feel like we have to ask for it in order to receive it." These conversations illuminate the challenge of ensuring the necessary expertise is in place, not only in understanding the mechanics of

DBDM but also in the effective communication of insights and feedback to foster the successful implementation of the process.

Addressing the Challenge of Time Constraints and Scheduling is Crucial in the DBDM Process, Requiring a Structured Approach with Flexible Time Allocation and Prioritization of Data Analysis and Decision-Making Activities to Improve Student Outcomes

A recurring challenge within the DBDM process is the struggle with time constraints and scheduling. The implementation of this project was limited to eight weeks. Therefore, teachers needed to prepare weekly intervention plans. One of the educators emphasizes the impact of this, "I think the challenge that I found, again, was just that it was every week...It was just a little disheartening at first." This clearly outlines the complexities arising from the need to restructure groups, coordinate during assessments, and navigate interruptions. The consensus among the teachers and the administrators is to start the DBDM process from the beginning of the school year and provide more flexible scheduling for the groups moving forward.

Both first and second-grade educators consistently express the struggle with the existing timeframes allocated for implementing DBDM. For instance, one participant pointed out the limited growth that could happen in a week, stating, "Realistically, we were limited in the amount of growth that could happen in a week...It was just not enough time in the four days to get quality learning done." Furthermore, the lack of flexibility and scalability in intervention periods leaves educators feeling overwhelmed and rushed in assessing their students' understanding of new skills and planning for the subsequent lessons.

Further, the conversations underscore the importance of adopting effective time management strategies and prioritizing data analysis and decision-making activities. One teacher proposes a solution saying, "I think it needs to be like, okay, my door is closed on Mondays. This is my planning time," which emphasizes the need for more structured schedules and dedicated planning periods as key to

addressing these challenges. By promoting dedicated time, flexibility in scheduling, and efficient time management strategies, schools can ensure more informed decision-making and improved student outcomes.

Summary

The implementation of the Data-Based Decision Making (DBDM) process in education poses various challenges. Some of these hurdles include issues related to data quality and integration, requiring improved assessment tool alignment and data tracking practices. Staff training and change management are also critical, with the need to improve clarity, encourage collaboration, address teacher attitudes, and support the transition to a dynamic, data-driven approach.

Staffing issues, such as teacher availability and number, also pose a challenge to DBDM implementation, potentially impacting intervention delivery and student skill progress. A lack of expertise in DBDM implementation necessitates the provision of clearer instructions, robust guidance, and proactive feedback from educational leaders and coordinators.

Lastly, the challenge of time constraints and scheduling can be addressed through a structured, flexible approach that prioritizes data analysis and decision-making activities. Such mitigation strategies are crucial for harnessing DBDM's potential to improve student outcomes through data-driven decision-making.

Research Question 4: How do These Factors Influence Academic Outcomes?

This section explores the multifaceted influence of the DBDM process on academic outcomes based on extensive discussions and evidence from various meetings. The DBDM process yields multiple positive outcomes in educational settings, which include:

- The DBDM process enhances academic performance for students, leveraging detailed progress assessments, targeted instruction, and individualized support to fill learning gaps effectively and consistently.

- The DBDM process significantly increases student engagement and motivation.
- The DBDM process plays a pivotal role in early identifying struggling students, allowing for proactive interventions, immediate modifications to learning plans, and ensuring no students are overlooked or left behind.
- The DBDM has led to fewer discipline and attendance issues in the classroom, resulting in a more positive and engaging learning environment for students, particularly those struggling academically.

The DBDM process emerges as a vital tool, impacting academic results by enhancing academic performance through individualized instruction, progress monitoring, goal alignment, and parental engagement, stimulating student engagement and motivation by offering personalized learning experiences, identifying struggling students early becomes feasible through continuous data collection and analysis, enabling timely interventions, and potentially reducing disciplinary issues by fostering a more focused and engaged student body. Overall, this section underscores the transformative role of the DBDM process in shaping academic results.

The DBDM Processes Enhance Academic Performance for Students, Leveraging Detailed Progress Assessments, Targeted Instruction, and Individualized Support to Fill Learning Gaps Effectively and Consistently

DBDM process, as revealed by the discussed conversations, undeniably results in enhanced academic performance for students. This process, as one participant states, leverages "detailed notes and the progress on the assessments" to inform instructional strategies, highlighting the need to address the needs of students who are not initially successful. The participant advises taking into account factors like "absenteeism," "behavior," and the potential need for further interventions such as "RTI and maybe a referral." This holistic approach allows for a nuanced understanding of each student's individual progress.

These educational dialogues also bring forth the remarkable success stories of students who have notably improved due to DBDM. As one teacher shared, "We just did end of year assessments in my room. And I only have two non-readers. So, the majority of my students have become at least at Level A F&P reader." The first-grade group echoes similar sentiments, with teachers noticing substantial improvement in their students' reading skills. As one teacher affirms, "I've seen improvement with the kids... I've seen improvement with the kids I've done. I think I'm through five of them."

The potential of DBDM becomes more evident with narratives of teachers leveraging targeted instruction based on the individual needs of their students. As one educator states, "I was teaching just the letters my group needs." Such specialized attention leads to a significant increase in diverse skill sets among the students. "I've seen a huge increase in different skill sets within my classroom," observes a kindergarten teacher, expressing optimism about how the DBDM process will reflect positively in year-end assessments. The targeted and intentional nature of the DBDM process helps fill gaps in learning more effectively and consistently.

Although DBDM's full impact may not be immediately evident, the educators believe its effects will become more pronounced over time. As one curriculum coordinator notes, "I don't think you're going to see it this year pay off. But I think when you get those kids in the first grade...you're gonna see the result." These conversations provide strong evidence that DBDM, by providing targeted and individualized instruction based on data analysis, can significantly enhance students' academic performance.

The DBDM Process Significantly Increases Student Engagement and Motivation

The DBDM process has been observed to significantly boost student engagement and motivation within the educational setting, as noted by a host of educators. One teacher elaborated on the benefits, stating, "One thing too was really helpful...And even though it's like most of us have like the same expectations for like the grandbaby, like being able to come in and know different procedures

and expectations of teachers...you know, they had to learn they had to adapt." This testament indicates the skill of "code-switching" that the DBDM approach encourages, fostering adaptability and resilience in students.

Moreover, the DBDM process allows for an element of independence that appears to contribute to student engagement. As expressed by an educator, "And it's great to give them that little bit of like...independence...to walk from the next class or to...they felt kind of like a little independent..." This degree of autonomy can help students learn to make decisions, fostering engagement and boosting their self-confidence. The DBDM approach also introduces a consistent reward system, with one teacher observing, "I think to have consistent reward...base system among all of us...you're gonna get what you're gonna get as long as you follow your expectations no matter what room you're in."

In addition, the DBDM process employs an effective grouping strategy based on skill levels, which has proven beneficial to students. As one teacher noted, "And I noticed that because I know that you have some of my friends also. And I'm noticing...the friends who are in your groups are asking, like, I guess more targeted questions, they're more engaged with the reading...". Moreover, anticipation for intervention times became a positive motivator, with an educator sharing, "They get out of the room, or you got to sit down and pay attention a lot...So when they get to go to intervention, it's their favorite time. They're excited."

Lastly, grouping students with similar skills encourages friendly competition and fosters empathy, as indicated by one teacher, "Having them with friends who also struggle allows them to see other friends struggle too like you have that commonality." In fact, the success stories generated from DBDM implementation, such as improvements among struggling readers, prove its potential to inspire learning and boost self-confidence among students. An education official vividly depicted one such instance, stating, "And I even...feel like the confidence...it was interesting to see, this teacher has created a structure...they knew what to expect, they were excited about it..." Overall, the DBDM

approach creates a nurturing and inclusive learning environment that nurtures diverse learners, thereby enhancing student engagement and motivation.

The DBDM Process Plays a Pivotal Role in Early Identifying Struggling Students, Allowing for Proactive Interventions, Immediate Modifications to Learning Plans, and Ensuring No Students are Overlooked or Left Behind

The DBDM process has played a pivotal role in the early identification of students who are struggling academically. Through this approach, educators have been able to quickly identify students who are not making satisfactory progress, even with the targeted instruction DBDM offers. As one teacher pointed out, "You see those some of those red boxes turn red with a white. Okay. And you see some of them just stay red... that will really help inform if they need to be like...placed in RTI..."

Furthermore, the DBDM process allows for proactive interventions and more immediate modifications to the student's learning plan. This is particularly important for students who continue to struggle despite regular attendance and a stable learning environment. An educator highlighted this saying, "Okay, this kid's been here every day. Maybe we need to do tier two or tier three RTI for the students because they've been here every day and they're still not making the gains we need them to make in order to be on grade level."

Moreover, the DBDM process ensures that students who are struggling are not overlooked or left behind. As another teacher put it, "This tracker, like, if something's not working, it's also clear as day with them...Okay, what does this kid need to get there?" This helps teachers focus not just on the success stories but also on those students who need extra assistance and interventions.

Lastly, the DBDM approach allows for earlier intervention and a potentially expedited testing process for those students who are not making the desired progress. The process helps educators catch these students earlier and begin conversations about potential testing and further intervention. As one teacher expressed,

> It's the conversation where let's go, let's go sit down [with the dean], bring the data up and say what's the next step here? What do they need to be tested to they need to go here, here here, but what's what we've, we've done 10 weeks, we've done 20 weeks? It's just not it's not for lack of instruction that are here. So what's the next step? I think that will start catching kids earlier.

Overall, the DBDM process ensures that struggling students are identified early and that their needs are addressed proactively, leading to more targeted and effective educational interventions.

The DBDM has Led to Fewer Discipline and Attendance Issues in the Classroom, Resulting in a More Positive and Engaging Learning Environment for Students, Particularly those Struggling Academically

Data-Based Decision Making has shown numerous benefits in addressing behavior and attendance issues in the classroom. One of the key advantages is a noticeable decrease in disruptive behaviors among students. Teachers have observed a reduction in behavioral incidents both within their literacy groups and among the entire class. Students who participated in the DBDM process were more engaged and motivated to attend the intervention sessions, eagerly returning and showcasing what they had learned. One teacher noted fewer issues in her classroom, stating,

> When they transitioned out, they were looking forward to going. And I had one of my students say, because we had a group discussion about this so you can get what you need to be ready for first grade, we had a very candid discussion about it. And they were like, so excited to come back and show me what they learned…

This enthusiasm contributed to a positive classroom environment, fostering a sense of accomplishment and excitement for academic progress.

Furthermore, DBDM has proven to be particularly effective for students who are below grade level or struggling academically. By tailoring interventions to meet their specific needs, teachers have seen a significant improvement in engagement and behavior. Students who previously experienced challenges in completing work or exhibited disruptive behavior found success when provided with

targeted support. One teacher articulated, “I think they're receiving exactly what they need on their level. A lot of success and then I have no behavior issues at all in terms of being overwhelmed by academic work there.” The data collected during the process helped teachers identify the appropriate level of challenge for each student, ensuring they were neither overwhelmed nor bored. Another teacher elucidated, “So they'll I have some kids that just get frustrated because it's too challenging of a task. And I have other kids that they're just bored because something is too easy.” By addressing the individual needs of students, DBDM facilitated a more inclusive and supportive learning environment, resulting in improved behavior and increased academic achievement.

Moreover, the use of data tracking and analysis in DBDM has allowed educators to identify additional underlying issues affecting student behavior and attendance. Through careful examination of attendance records, teachers discovered patterns that shed light on students' inconsistent presence in intervention groups. This information prompted further investigation and collaboration with other teachers, leading to a better understanding of potential external factors influencing attendance and academic progress. One teacher remarked, “It allows for the parent to see like visually, behaviors, attendance, all these other variables link in with your child's ability to learn.” She added “You'll be able to tell the parent like… they're not here, three days out of the week. We do an intensive intervention, literacy groups, every single day. They're only getting it two times.” By including attendance data in the decision-making process, teachers were able to address multiple problems simultaneously, fostering a more comprehensive approach to supporting students' needs.

Summary

The section discusses the multifaceted impact of the Data-Based Decision Making (DBDM) process on academic results. It finds that the DBDM process significantly boosts academic performance by using detailed progress assessments, targeted instruction, and individualized support to fill learning gaps effectively. The process fosters a deeper understanding of each student's progress, leading to

customized instruction, thereby enhancing student engagement and motivation. This engagement is further encouraged through skill adaptability, student autonomy, an effective reward system, and skill-level grouping, fostering a nurturing and inclusive learning environment.

The DBDM process also plays a crucial role in the early identification of struggling students, enabling timely interventions and immediate modifications to their learning plans. It ensures that students requiring additional assistance are not overlooked, leading to more targeted and effective educational interventions. This method allows for earlier interventions and potentially faster testing procedures for students who are not making the desired progress, ensuring no student is left behind.

Furthermore, DBDM has led to a noticeable decrease in discipline and attendance issues in the classroom, thus promoting a positive and engaging learning environment. By tailoring interventions to meet struggling students' needs, significant improvement in engagement and behavior has been observed. The use of data tracking and analysis in the DBDM process has also been instrumental in identifying additional underlying factors affecting student behavior and attendance. Through this, teachers can better understand and address the external factors influencing academic progress, fostering a more comprehensive approach to supporting students' needs. In essence, the DBDM process plays a transformative role in shaping academic results.

Conclusion

In conclusion, the research on the implementation of the Data-Based Decision Making (DBDM) process in a school network has unveiled numerous essential elements, challenges, and significant impacts on academic performance. Key factors for successful implementation include the establishment of a robust data infrastructure, effective use of data analytics, setting clear goals, ensuring data quality, implementing data-driven action plans, and fostering a culture of collaboration. These elements, under the guidance of strong leadership, work in unison to create a dynamic and effective DBDM process.

The challenges posed by DBDM implementation, such as data quality issues, the necessity for staff training and change management, staffing issues, and time constraints, are not insurmountable. These hurdles require thoughtful mitigation strategies, including improved data practices, better guidance, and a more flexible approach to scheduling. By overcoming these obstacles, the DBDM process can be more smoothly implemented, thereby allowing schools to benefit from its potential fully.

The impact of DBDM on academic results is profound, leading to improved student outcomes and creating a more inclusive and engaging learning environment. The process not only boosts academic performance but also contributes to a decrease in discipline and attendance issues, highlighting the multifaceted benefits of data-based decision-making in education.

The importance of early identification of struggling students and personalized intervention is emphasized in the DBDM process. Through regular assessments and data analysis, teachers can provide the necessary support and modifications to learning plans, ensuring that no student is left behind.

Therefore, despite the challenges, the DBDM process, when implemented effectively, can drastically improve a school network's ability to support student academic success. With its potential to enhance individualized instruction, foster a collaborative culture, and drive continuous improvement, DBDM holds immense promise for revolutionizing education and empowering students to reach their full academic potential.

Section Three: Literature Review

The objective of this study is to devise and execute a Data-Based Decision-Making (DBDM) process with the primary goal of aiding students in achieving academic success in a charter school network situated in Central New York. The literature review presented in this section critically examines existing literature on DBDM, segmented into three main strands.

The first strand examines DBDM in the educational context, focusing specifically on leadership's role in setting objectives, collecting data, allocating time, developing human resources, team building, coaching, and fostering a trustful atmosphere. Leadership's strategic role and their commitment to these tasks is crucial in establishing a successful DBDM process in an educational setting.

The second strand delves into problem definition, goal setting, data collection, and the identification of relevant and diagnostic data. This segment of literature underscores the importance of accurately defining the problems at hand, setting realistic and measurable goals, collecting relevant data, and understanding the importance of diagnostic data in a DBDM process.

The third strand explores the development of analytic capacity within schools. This involves allocating dedicated time for data analysis, conducting structured data meetings, implementing data analysis protocols, providing professional development, offering tools for data access, and ensuring subject-level expertise. Building analytic capacity is essential for creating a culture of data use and ensuring the effective execution of DBDM processes in a school setting.

Once a robust analytic capacity is established and a culture of data use is ingrained, educators can develop comprehensive improvement plans at all levels and iterate DBDM processes to guarantee continuous growth and development.

This literature review concludes by presenting the rationale behind the research topic and questions. It will also discuss how this study may contribute to the development of a data-based decision-making framework for schools to leverage in improving student achievement.

To compile this review, articles were sourced from databases such as Scholar OneSearch, Education Research Complete, JSTOR, Google Scholar, ProQuest Dissertations and Theses, and ERIC. Keywords such as data-based decision-making, data use, leadership role in DBDM, goal setting, data collection, data literacy, data teams, and data protocol were used to retrieve the most relevant studies in the field.

Data-Based Decision-Making

Data is universally recognized as an integral component in decision-making across various disciplines (Busse, 2012). For instance, businesses utilize data to foster improved relationships with customers by tailoring their products and services in line with consumer feedback and preferences. The usage of data also empowers companies to track market trends, minimize errors, and maintain a competitive edge.

In a similar vein, within the realm of education, data can guide the formulation of teaching strategies and direct interventions, thereby exerting a positive impact on students' academic performance (Gotch & French, 2013; Paleczek et al., 2017; Wayman & Jimerson, 2014). The pervasive influence of data in facilitating informed, research-based decisions underscores its pivotal role across a broad array of sectors.

Data-Based Decision-Making in Education

Evidence indicates that the utilization of data within educational institutions can significantly augment student achievement (Lai et al., 2014; McNaughton et al., 2012; Poortman & Schildkamp, 2016; Van Geel et al., 2016). Over the past two decades, the federal government has promoted standards-based policies to hold schools accountable for academic performance. State assessments have been structured to allow schools to evaluate proficiency levels and monitor academic progress over time. Consequently, academic data has become a pivotal part of school improvement plans, with stakeholders prioritizing academic enhancements (Burke et al., 2012). Accountability measures

implemented by federal, state, and local agencies have led schools to amass large volumes of data, making data-based decision-making a requisite practice in educational settings (Wayman, 2005; Earl & Louis, 2013, p. 200; Mandinach et al., 2006, p. 12; Marsh et al., 2006; Spillane, 2012).

Data-based decision-making involves gathering and analyzing various data types from multiple sources, with district administrators, principals, and teachers making decisions grounded in these data analyses to enhance student success (Marsh et al., 2006). Analysis can range from simple tasks like reviewing state test results to more complex activities like involving all stakeholders in developing new practices and shaping a new school culture responsive to recent data (Halverson et al. 2007). These data may be qualitative (teacher observation data), quantitative (demographic and assessment data), or perceptual (student survey data) (LaPointe et al., 2009). Data utilization is critical during the decision-making process to advance schools and bolster student achievement (Gottfried et al., 2011). DBDM strategies can include new instructional or intervention structures, professional development opportunities, and data team formation (Love et al. 2008).

Researchers have proposed models to assist educators in the data-based decision-making process (Mandinach et al., 2008; Marsh, 2012; Marsh et al., 2006; Schildkamp & Poortman, 2015). For instance, Boudett, City, and Murnane (2006) introduced a specific "Data Wise" process, similar to Wellman and Lipton's (2003) collaborative learning cycle. This 8-step structured process guides teachers through data-based decision-making, starting with teacher collaboration and continuing with cycles of data introduction and examination, instructional change action steps, and implemented change assessments.

Data-Based Decision-Making also involves using collected information about student performance to determine the level of support students need to succeed systematically. Thus, DBDM is integral to the Response to Intervention (RTI) model, widely adopted by many school districts to offer systematic interventions aimed at improving student achievement. Several researchers endorse RTI,

suggesting that it enables schools to identify struggling learners early and offer targeted, appropriate support (Bradley et al., 2011; Regan et al., 2015). However, some research suggests otherwise, with the Institute of Educational Sciences (IES) finding that first-grade students in the RTI process performed worse than their peers (Balu et al., 2015). Still, the quality and accuracy of RTI implementation are considered key determinants of intervention success (Fuchs & Fuchs, 2017).

Leadership Impact

The instrumental role of leadership in setting objectives, standards, resources, training, and follow-up mechanisms for data usage is established by local and district administrators (Anderson et al., 2010). Leaders are pivotal in shaping the vision and facilitating effective data-based decision-making (DBDM) by fostering a conducive environment for learning and growth, strengthening their teams, and decentralizing decision-making authority to subject-matter experts (Park & Datnow, 2009). Schools must strike a balance between offering decision-making independence and ensuring comprehensive systemic support (Wohlstetter et al., 2008).

Yoon (2016) argues that when leaders incorporate data in their practices, teacher acceptance of data-driven initiatives becomes more likely. This acceptance, which is improved with seasoned leadership, tends to increase over time and aligns with enhanced student reading outcomes. According to Grissom et al. (2017), leaders can limit resistance to data usage by providing support in areas like professional development, building connections with knowledge hubs, initiating new structures, and nurturing a culture of data utilization.

School leaders become more focused on DBDM as they implement leadership-centric intervention practices (van Geel et al., 2017). The process of data-informed leadership is dynamic, occurring within the framework of collaborative inquiry and continually evolving (Edwards & Ogle, 2021).

Leaders invest in developing human and social capabilities through staff coaching and training (Park & Datnow, 2009). However, it's important to note that cultivating expertise and capacity within schools for DBDM, while necessary, isn't the sole determinant of success (Wohlstetter et al., 2008). Leaders should also adopt other key practices to ensure successful DBDM implementation, such as setting specific goals tailored to the school and community needs, allocating time for data discussion, offering curriculum and resource flexibility, and fostering a culture of trust, collaboration, and data usage (Levin & Datnow, 2012).

Leaders have a crucial part in identifying and removing obstacles to data usage. Vanhoof et al. (2013) suggest that leaders need to pay close attention to teacher attitudes towards data usage, as a positive disposition toward data is essential for successful DBDM (Kerr et al., 2006).

Teachers are more likely to embrace new data initiatives if they perceive them as worthwhile and not as a tool for punitive measures based on outcomes (Wayman et al., 2013). Given the skepticism around data usage due to high-stakes testing results used to categorize schools, leaders need to reassure teachers about the lack of personal repercussions (Skalski & Romero, 2011; Wayman et al., 2013). Teachers are more likely to engage when they believe data-based decision-making offers professional benefits and when they are allowed to develop their inquiries for data analysis (Earl & Louis, 2013).

Leaders should explore why teachers might be hesitant to use school data, as the reasons may vary (Hoogland et al., 2016; Stecker et al., 2005). Once these factors are identified, leaders can start devising suitable solutions. Some resistance may stem from concerns about the time-consuming nature of data collection and progress monitoring or disbelief in the value of quantitative information (Espin et al., 2017; Dunn et al., 2013). However, these issues can be addressed with appropriate training and clarification of the role of data in educational processes (Wagner et al., 2017).

Data usage to guide educational practices is not a new concept, yet many teachers still lean towards qualitative observational data. Research suggests that combining observational and quantitative data leads to a more accurate assessment of student achievement (Südkamp et al., 2012). Yet some teachers remain wary of using data due to the challenges of critiquing their teaching methods or fear of misinterpreting data and making incorrect educational decisions (van den Bosch et al., 2017; Jimerson & Wayman, 2015).

Research indicates that the demographics of school leaders can influence data usage practices. Female, younger, and less experienced leaders, and those in smaller schools, are often more oriented toward DBDM (van Geel et al., 2016; Yoon, 2016). However, success in DBDM development and implementation is dependent on factors such as leadership support, school culture, professional networks, classroom backing, and coaching, irrespective of the leader's demographic profile (van Geel et al., 2016).

Summary

The importance of data-based decision-making (DBDM) in education is multi-faceted, having profound implications for student achievement, school improvement, and leadership practices. Harnessing data for decision-making can significantly enhance educational outcomes and foster continuous improvement. This is contingent on effective data collection, analysis, interpretation, and use. This process involves multiple stakeholders, including district administrators, school leaders, and teachers, each playing vital roles.

The integration of DBDM into practices such as the Response to Intervention (RTI) model also underscores the potential of data to tailor support and interventions for students systematically. However, the full potential of these practices can only be realized with meticulous implementation and regular evaluations.

The leadership's role in facilitating DBDM is particularly vital. School leaders not only set the tone for data usage within schools but also devise strategies to overcome resistance and foster a conducive data culture. Leaders' ability to provide the necessary support, foster collaboration, and build trust can significantly impact teachers' data usage, thereby influencing the quality of educational decisions and, ultimately, student outcomes.

Research indicates the possibility of demographic factors influencing leaders' orientation towards DBDM. However, successful DBDM is mainly dependent on the structural and cultural conditions fostered within schools, irrespective of leadership demographics. Thus, while data usage in education is gaining momentum, there remains a necessity for continuing research, targeted professional development, and the creation of supportive environments to ensure the efficient and effective utilization of data in education.

Setting High Expectations

School leaders bear the responsibility of pinpointing their school community's core values and identifying obstacles that hinder these values' propagation. It has been established through research that the actions of school leaders significantly influence educational outcomes (Hallinger, 2011). Thus, it's incumbent upon these leaders to institute ambitious objectives that reflect the mission and vision of the schools. Setting these high aspirations necessitates increased commitment from the leaders, which can lead to achieving the desired student learning results. As Favero et al. (2016) suggest, the combination of ambitious goal-setting and effective leadership practices results in enhanced school performance.

Goal Setting

The path to school improvement is paved with the stones of goal setting (Mandinach et al., 2008; Marsh, 2012; Marsh et al., 2006; Schildkamp & Poortman, 2015). Data is merely an instrument to aid schools in reaching their goals. Schools ought to set goals that align with their core values, with

student learning outcomes often given priority in K-12 schools. Thus, these goals should be created to promote student learning and secure high academic outcomes. The goals need to be Specific, Measurable, Attainable, Relevant, and Time-based (SMART Goals) (O'Neill, 2000).

The stakeholder's involvement in the goal-setting process is essential (Penuel & Shepard, 2016), ensuring that the objectives resonate with the school community's values. Schools should continually evaluate and adjust their goals according to evolving needs.

A school leader's motivation to establish specific goals may differ but can be influenced by state and federal education policy requirements, accountability measures, stakeholder expectations, and the needs of particular students. While goal setting is crucial, focusing exclusively on the results, and not the process, could lead to failure. Analyzing the implementation process is key to making improvements (Lewis, 2015).

In goal setting, leadership plays a vital role, ensuring that the objectives are in sync with the school's mission and vision. Achieving these goals requires commitment from all stakeholders, with leadership dedication being especially crucial in this regard. Leaders must commit to resource allocation and ensure that each step aligns with the ultimate goals (Schildkamp, 2019).

Data Collection

Schools should utilize data to track progress and ascertain if goals are being met. Mandinach and Gummer (2016b) note the critical role of data in enhancing teaching and learning within schools, underlining that a robust data-driven decision-making (DDDM) approach enables informed instructional and administrative choices.

In decision-making, educators should avoid overdependence on a single type of data. Wayman et al. (2012) stress the importance of employing multiple data sources, arguing that such an approach increases the robustness of the decision-making process and mitigates the risk of bias or limited insight.

As an initial step, schools should review the data already available within their premises. Dunn et al. (2013) highlight the importance of using this existing data to inform decisions, suggesting that additional data collection should be pursued only if necessary to ensure efficient resource allocation.

Additionally, goals and problems of practices should dictate the type and scope of data collected. Datnow and Hubbard (2015) assert that data collection should be purposeful, being directly guided by specific goals and challenges within the school setting.

In situations where existing data does not suffice, schools should strategize and create new data sources. Schildkamp et al. (2016) affirm that when the available data is inadequate, schools should proactively design new data collection tools to clarify issues and measure progress toward their goals.

Schools can collect both formal and informal data for DBDM purposes (Brown et al., 2017; Kippers et al., 2016; Van der Kleij et al., 2015). Formal data pertains to systematic qualitative or quantitative data about the schools and the stakeholders (Lai & Schildkamp, 2016). Informal data can also be utilized by educators to make professional judgments (Vanlommel & Schildkamp, 2018). However, reliance solely on informal data may lead to biased decisions.

Schools should strive to collect accurate and timely data, especially for student academic data, to facilitate differentiation and intervention. A mechanism for quick access to data is crucial, with technology playing a significant role in DBDM.

Gill et al. (2014) stress the need for high-quality raw data and identifying relevant and diagnostic data for DBDM. The data should be relevant to the decision-maker's practice and diagnostic to the problem to guide practice improvement.

Schools can also use data from academic research to analyze their problems and develop action plans. Once the action plans are implemented, in-school data needs to be collected to assess the progress. Such research-informed practices help educators apply academic research findings to improve their schools (Flood & Brown, 2018, pp. 347–348).

Summary

Schools should strive to set ambitious goals to implement improvements successfully. Leaders play a crucial role in pinpointing issues that impede schools from attaining their objectives. Once the goals and problems have been identified, educators should gather data to analyze the current situation and develop action strategies. Continuous data collection is necessary for every action step to track progress toward achieving school goals. Leaders should prefer to use existing data, but if it's insufficient, new data sources should be designed purposefully. The timeliness of data collection and use is vital for the accuracy of the action plans. Leaders must allocate necessary resources to ensure that the data collected is relevant to the context and purpose of the data user and diagnostic for the problem at hand.

Analytic Capacity

Once relevant diagnostic data is gathered, the crucial next step involves educators interpreting this data in a manner that can be practically applied (Mandinach et al., 2008; Marsh, 2012). Research strongly recommends the inclusion of various components for nurturing this analytical ability, including committed meeting times, organized data-centric meetings, a clear protocol for data analysis, subject-specific expertise, accessible data tools, and continuous professional growth. These facets can be broadly segregated into three main pillars: collaboration, technology tools, and continuous professional development.

Collaboration

The essence of successful data-based decision-making lies in thorough data analysis, with collaboration as its foundation. A substantial chunk of teachers' schedules should be allocated for collective data analysis (Love et al., 2008). A facilitator trained in leading data discussions can guide these meetings, fostering a conducive environment for discourse and quelling any apprehensions about the process (Wellman & Lipton, 2003).

Young (2006) championed the importance of "agenda-setting" for such meetings, arguing that it helps overcome potential problems. This conclusion was derived after observing teacher teams from two districts. For an even more effective analysis process, schools can bring in dedicated data analysts, trained in data presentation and facilitating data meetings. The involvement of these professionals, alongside subject-matter experts, can significantly enhance the data-driven decision-making culture in schools (Killion & Bellamy, 2002). Such an approach can ease the burden on educators, who already juggle multiple responsibilities and might not have expert-level skills in data analysis (Herman & Gribbons, 2001).

Moreover, the significance of informal interactions among staff members in promoting a culture of data appreciation should not be discounted (Spillane, 2012; Wayman et al., 2013). Data discussions should not be limited to certain groups but instead should involve a wide array of staff, from school leaders and data experts to teachers and behavioral specialists (Schildkamp & Ehren, 2013).

The potency of grade-level teams focusing on data analysis should not be underestimated. Such teams can yield significant improvements in various educational areas, including curriculum updates, student groupings, learning targets, assessments, intervention, and enrichment activities, as suggested by Ediger (2010).

Technology Tools

The modern educational environment sees a surge in data quantity and complexity. To navigate this, schools require efficient data systems that allow educators easy access to the necessary information (Hamilton et al., 2009). The advent of instructional technology tools like student information systems, assessment software, data warehouses, and content management systems is a response to this need. These tools streamline the process of collecting, analyzing, and reporting data, thereby making the data-based decision-making process a part of daily operations (Hamilton et al., 2009; Mandinach & Jackson, 2010; Smith, 2009; Wayman & Stringfield, 2006).

Nevertheless, the burgeoning number of tools necessitates effective instructional technology management plans (Wayman et al., 2007). Importantly, data access should not pose a challenge for educators. Therefore, schools should ensure regular training on the appropriate use of these technological tools to alleviate any potential resistance among educators (Wayman & Cho, 2008; O'Neil, 2012; Dingle & Parr, 2010).

Continuous Professional Development

Effective data-based decision-making is intricately linked to ongoing professional development, particularly focusing on data literacy (Bocala & Boudett, 2015). The ability to interpret data effectively is not an innate skill but rather one that needs to be developed and nurtured. Despite the convenience of modern technology facilitating easy data access, utilizing this data effectively requires specific skills that unfortunately are not a part of traditional teacher education programs (McCombes-Tolis & Spear-Swerling, 2011; Vujnovic et al., 2014).

Teachers often encounter difficulties in leveraging data for instructional improvement, despite their openness to change (Gelderblom et al., 2016; Stecker et al., 2005). Therefore, structured professional development opportunities that emphasize data analysis and its implications on teaching practices are of utmost importance (Dunn et al., 2013).

Data teams can facilitate this process by encouraging teachers to discuss educational practices and data analysis collaboratively (Ebbeler et al., 2017; Poortman & Schildkamp, 2016; Schildkamp et al., 2017). In these teams, teachers can build collegiality, enhance their professional relationships, exchange ideas and strategies, and foster a conducive environment for professional growth.

Summary

Data in itself is not the answer; rather, it's educators' ability to identify patterns and make sense of this data that truly matters. For data-based decision-making initiatives to succeed, schools must build the capacity to analyze data and devise action plans. Research consistently points to the importance of

collaborative efforts, technology tool implementation, and continuous professional development in fostering analytical capacity. This requires dedicated meeting time, structured data meetings, data analysis protocols, and subject-specific expertise.

Organizational Routines

The culture, ambiance, and structure of a school are pivotal elements impacting the use of data for improving school outcomes (Goren, 2012). A school's organizational layout significantly influences its data usage (Spillane, 2012), underscoring the importance of exploring how such factors intertwine to shape data interpretation and application (Coburn & Turner, 2012).

Given the variety of contextual factors, a uniform policy may not yield desired outcomes (Wayman et al., 2013). Thus, recognizing the specific environments - classroom, school, and broader policy contexts - where data is harvested and analyzed is integral to understanding how educators interpret this data (Goren, 2012). The format in which data is presented also has a bearing on the elements educators focus on.

Organizational practices represent the standard procedures we follow in schools. Spillane (2012) illuminates how such practices can evolve in response to data use initiatives. The culture within a school stipulates who utilizes data, the method for its use, and the nature of interaction among various stakeholders (Mandinach et al., 2006). According to Little (2012), the roles, obligations, and routines of an educator define their practice. Educators find it simpler to work with data within well-structured systems (Wayman et al., 2013). Consequently, to encourage efficient data utilization, leaders must prioritize establishing efficient routines.

These routines direct our focus toward the interaction among staff members, enabling a move beyond the analysis of individual behaviors (Spillane, 2012). From these interactions, educators derive a platform for discussions concerning data selection and implications on existing practices. Spillane (2012)

aptly asserts, "For better and increased data utilization in schools, organizational practices are likely to be a crucial catalyst in realizing this objective."

School Culture

An environment that encourages collaboration and support is essential for consistent data usage in schools. School leaders can underscore the significance of data for student achievement, facilitating periods for teachers to reflect on their practices and analyze data collaboratively (Skalski & Romero, 2011; Wayman et al., 2013). Such leadership support can enhance the effective use of data by teachers (Schildkamp & Ehren, 2013). For instance, leaders can use data to establish school improvement objectives, visually representing progress towards these goals to motivate and celebrate teachers' accomplishments (Archbald, 2011).

Levin and Schrum (2013) observed that some schools allowed teachers to develop common assessments across different grades and subjects and involved students in tracking progress through the school's learning management system. Such practices can foster a positive school environment that promotes growth for both teachers and students.

Data-Based Decision Making (DBDM) should be incorporated into teachers' routines to ensure the ongoing use of data for enhancing student proficiency (Bocala & Boudett, 2015). This requires a continuous improvement process and a collective review of the results of interventions to embed data usage into the school culture (Schildkamp, 2019). Continuity of teachers and regular training of new staff on data literacy and school-specific routines are essential for the sustainable implementation of DBDM (van Geel et al., 2017). Regular data team meetings can provide this needed support and increase teacher retention. New teachers can receive guidance from experienced staff during these meetings (Lai & McNaughton, 2016).

Summary

The role of organizational practices and school culture is paramount in understanding data usage within schools. The established methods and routines can either inhibit or foster DBDM process. Practices such as selecting school-wide assessments, grading and reporting, establishing teams, and providing professional development can influence data usage. If data is solely used for teacher evaluation and punishment, it will inevitably breed a negative culture. However, if data is employed to inform decisions that enhance instruction and intervention, teachers will feel more supported. School leadership thus plays a significant role in data usage. Leaders can stimulate data use by initiating new routines and nurturing a positive school culture.

Conclusion

The value of data-based decision-making (DBDM) in educational settings is monumental, with wide-ranging influences on student progress, school improvement, and leadership methodologies. The beneficial outcomes that DBDM yields are dependent upon the efficient gathering and interpretation of data. Robust data collection, thoughtful analysis, accurate interpretation, and meaningful application form the heart of this process. This is a collective endeavor that requires the participation of all stakeholders, including district administrators, school leaders, and teachers, each contributing unique perspectives and insights.

The potential of data to shape educational practices becomes evident when DBDM is integrated into strategies such as the Response to Intervention (RTI) model. By using data, targeted support, and interventions can be tailored to the unique needs of students. However, realizing the full potential of these practices calls for meticulous implementation and ongoing evaluation. Herein lies the crucial role of school leadership. Leaders not only set the tone for data usage within schools, but they also have the ability to devise strategies to overcome resistance, foster a culture conducive to DBDM, and facilitate resource allocation.

While demographic factors can provide some insights into leaders' approach to DBDM, research consistently indicates that the structural and cultural conditions within schools fundamentally shape the success of DBDM. This suggests a pressing need for ongoing research, targeted professional development, and the cultivation of supportive environments to ensure the optimal use of data in education. Schools need to set ambitious goals and maintain a steadfast commitment to improvement. In this context, leaders are crucial in identifying and addressing the barriers that obstruct progress. Continuous and purposeful data collection and analysis form a vital part of this process, offering insights into the current state of affairs, informing the development of actionable strategies, and tracking progress toward institutional goals.

Finally, the importance of data lies not in its existence but in our ability to discern patterns and derive meaningful interpretations from it. Therefore, building the capacity for data analysis and strategic planning is a non-negotiable requirement for the success of DBDM initiatives. A positive organizational culture and robust institutional practices can significantly influence this process. By providing a solid foundation, they can nurture an environment where data informs decision-making, enhances instruction, and promotes student outcomes. Embracing these principles can help schools unlock the full potential of DBDM, setting the stage for a future where data-driven insights empower educators and elevate student achievement.

Section Four: Contextualization

The objective of this action research study was to understand how a school network could devise and execute a Data-Based Decision Making (DBDM) process to boost students' academic performance. The investigation aimed to unearth strategies currently in use by educators across different school buildings, inspect the practical application of data, assess available data points and technological resources in the schools, identify resistance to data use, and explore the challenges teachers encountered.

The following research questions guided the study:

1. How can a school network develop and implement a DBDM process to assist their students in achieving academic success?
2. What factors support the successful implementation and utilization of the DBDM process?
3. What are the challenges and obstacles encountered in implementing an efficient DBDM process?
4. How do these factors influence academic outcomes?

This section aimed to contextualize the research. It began with an analysis of the study's organizational context, proceeded with a delineation of the findings within the context of existing literature, and concluded with the implications of this study for the organization and the researcher's professional practice.

Context Analysis

The research was conducted within an urban charter school district network comprising three charter schools. Cycle 1 was conducted in three elementary schools, two middle schools, and two high school buildings. Subsequently, Cycle 2 predominantly concentrated on one of the elementary school buildings within the charter school network.

Primary Cycle 2 participants included K-2 classroom teachers and co-teachers, intervention specialists, special education teachers, ENL teachers, and K-2 curriculum coordinators. These educators were responsible for the collection and analysis of academic data, as well as the implementation of instruction and intervention plans. District and school administrators also had a pivotal role in this process, as they were responsible for resource allocation decisions.

As the Assistant Superintendent at the Charter School Network, I had pre-established relationships with potential stakeholders and participants in the study. Data collection transpired during school days with the key stakeholders. Data were gathered in person within the school premises, at the district office, or over Zoom. My role as Assistant Superintendent granted me unobstructed access to student data and school documents, thus eliminating any potential challenges related to information access. While the study benefitted all students, specific subsets - including special education students, English as a New Language (ENL) learners, and economically disadvantaged students - were likely to benefit the most. These groups often faced more substantial impacts due to inefficient data utilization in crafting individualized learning plans.

Key Findings

In this section, the outcomes of Cycle 1 and Cycle 2 of the research are synthesized into five key findings related to Data-Based Decision Making (DBDM) in education. The first key finding illustrates that DBDM augments student academic performance through personalized instruction. The second underscores that the effective implementation of DBDM necessitates significant investments in components such as data quality, staff development, and time management. The third finding emphasizes that the success of DBDM is contingent on clear goal setting, precise data, cyclic action planning, and robust backing from leadership. The fourth brings to light the challenges that accompany the implementation of DBDM, such as the data quality and integration, provision of staff training, need for expertise, and time limitations. The fifth and final key finding posits that the integration of

Professional Learning Communities (PLCs) and DBDM could create a synergy, addressing the limitations of each approach and thereby enhancing instructional improvement through the combination of collaborative dialogue, specific focus, and data-driven cyclic refinement. Each of these findings will be comprehensively discussed to present a holistic perspective of the potential benefits and challenges associated with DBDM.

Key Finding 1: DBDM can Lead to Enhanced Academic Performance among Students

Data-Based Decision Making (DBDM) is an influential strategy that has been observed to significantly boost academic performance among students, as revealed by the insights derived from Cycle 1 and Cycle 2 of this action research project. This process leverages detailed datasets to customize instruction and interventions, fostering an individualized approach to education and ensuring that each student's unique needs are addressed and their learning potential is maximized.

Firstly, the research findings in Cycle 2 of the project underscore that DBDM facilitates targeted, individualized instruction. Teachers involved in the study reported using data to personalize instruction to address each student's specific needs, leading to more effective learning outcomes and improved academic performance. This observation aligns with the findings of Steenbergen-Hu and Cooper (2013), who noted the positive impact of personalized instruction on academic outcomes.

Secondly, the action research project revealed that DBDM promotes continuous progress monitoring. The data collected under DBDM provided a comprehensive overview of each student's progress, assisting in identifying students who might be struggling with particular concepts or skills. Teachers involved in Cycle 1 and Cycle 2 reported that the process offered clear insights into students' learning needs, enabling swift interventions to address learning gaps and ensuring consistent academic growth. This is in line with the findings of Fuchs and Fuchs (2006), who observed the effectiveness of continuous progress monitoring in improving student outcomes.

Thirdly, the research participants in Cycle 2 reported that DBDM enhances student engagement and motivation, directly affecting their academic performance. Implementing DBDM resulted in heightened student excitement, motivation, and involvement in the learning process, with the inclusion of autonomy and a consistent reward system being particularly influential. This finding supports the research of Wayman et al. (2012), who found that data-driven approaches foster a growth mindset among students, leading to enhanced academic outcomes.

Lastly, participants in Cycle 2 noted that DBDM allows for the early identification of struggling students, leading to proactive interventions that significantly impact academic performance. This early identification ensures that no student is left behind, aiding in overall academic achievement. This observation aligns with Hamilton et al. (2009), who noted the benefits of early identification and interventions in improving academic outcomes.

DBDM contributes to enhanced academic performance by providing a framework for personalized instruction, continuous progress monitoring, improved student engagement, and early identification of students requiring additional support. This data-driven approach, as observed in this action research project and supported by relevant literature, ensures that each student's unique learning needs are recognized and met, fostering an environment that is conducive to academic success.

Key Finding 2: Establishing a Robust DBDM Process Necessitates Substantial Investment across Critical Domains such as Improving Data Quality and Integration, Facilitating Staff Training and Change Management, Ensuring Adequate Staffing, Bolstering Expertise, and Managing Scheduling and Time Constraints Effectively

Data-Based Decision Making (DBDM) is increasingly recognized as an integral tool in modern education, as observed in the findings from Cycle 1 and Cycle 2 of the action research project. These findings highlight the potential of a robust DBDM process to enhance academic performance

significantly. However, the successful implementation of an effective DBDM system requires addressing and investing in several key factors, each supported by relevant literature.

The first key factor, emphasized by the research findings, is the importance of data quality and integration. According to the participants' experiences in Cycle 1 and Cycle 2, rigorous assessment systems that accurately measure student skills and comprehension are critical. Schools should aim to invest in systems that ensure consistent data recording and tracking. This aligns with the findings of Ingram, Louis, and Schroeder (2004) and Datnow, Park, and Wohlstetter (2007), who stressed the importance of data quality and consistency in educational settings.

Secondly, the need for staff training and change management was a recurring theme in Cycle 1 and Cycle 2. Continuous staff training, according to the participants, is essential to ensure that educators are equipped with the necessary skills to interpret data and adjust their instruction accordingly. Moreover, change management strategies are necessary to accommodate the varied learning curves among educators. These observations are supported by the work of Lachat and Smith (2005) and Fullan (2007), who emphasized the role of continuous professional development and change management in educational transformations.

Addressing staffing challenges emerged as the third key area of investment in the research findings. Participants in Cycle 2 underscored the impact of inadequate staffing levels and frequent staff absences on the DBDM process. This aligns with the findings of Grissom (2011), who identified staffing stability as a crucial factor in educational effectiveness.

Fourthly, Cycle 2 shed light on the expertise gap in implementing the DBDM model. The need for comprehensive capacity building among teachers and administrators to ensure successful DBDM implementation was stressed. This resonates with the insights of Wayman et al. (2012), who emphasized the crucial role of capacity building in DBDM implementation.

Lastly, Cycle 1 and Cycle 2 highlighted the necessity of addressing scheduling and time constraints for the efficient execution of the DBDM process. Investment in more flexible scheduling systems and effective time management strategies is thus paramount, a point also made by Horn and Staker (2015).

Implementing a robust DBDM process requires substantial investment in critical areas, including data quality and integration, staff training and change management, staffing, expertise, and time management. By recognizing and proactively addressing these challenges, schools can harness DBDM's full potential, fostering an environment conducive to personalized learning, informed decision-making, and, ultimately, enhanced academic performance, as also suggested by Mandinach and Gummer (2013).

Key Finding 3: Several Key Factors Contribute to the Success of DBDM, Including Clear Goal-Setting Aligned with Educational Objectives, Accurate Data Quality, Developing Action Plans and Following an Iterative Process, and having Strong Leadership and Support

Data-Based Decision Making (DBDM) implementation in educational settings relies on several key factors, as revealed by the research discussions. Foremost among these is the establishment of clear, targeted goals that are in line with broader educational objectives. Participants in Cycle 2 emphasized the significance of setting goals pertaining to future learning topics. This provides a framework to track student progress and strategically align instruction. Literature such as Locke and Latham's work (2002) supports these findings, stressing the importance of goal-setting in educational planning.

Data quality is another crucial factor in the successful application of DBDM. The participants' discussions, as observed in Cycle 1 and Cycle 2, underscored this. Instances were noted where students who had seemingly mastered assessment tasks struggled to apply the skills in practice, indicating potential weaknesses in the assessment systems. This crucial insight aligns with existing literature, such

as Mandinach and Gummer's work (2016b), which validates the pivotal role of data quality in data-driven decision-making.

The development and implementation of action plans emerged from the discussions as another essential component of successful DBDM implementation. Participants in Cycle 2 pointed out that having well-defined plans for weekly learning activities aids in task organization and systematically meeting learning objectives. These findings are supported by Dean et al. (2012), who also emphasize clear, well-defined instructional plans to guide teaching and learning processes.

A key finding from Cycle 1 and Cycle 2 is that DBDM is an iterative process that requires continuous revision and adjustment. As one educator in Cycle 2 noted, DBDM necessitates constant adaptation and updating of the action plan. This view of DBDM as a dynamic, ongoing process rather than a linear, one-time activity is echoed in the literature, for example, in Schildkamp and Poortman's work (2015).

Cycle 1 and Cycle 2 discussions also highlighted strong leadership as a critical component of DBDM implementation. The role of leadership in guiding the DBDM process, prioritizing it, and providing the necessary resources became clear. This is consistent with the literature, for instance, Leithwood et al. (2004), which identifies leadership as a crucial factor in implementing educational reforms and innovations.

Another vital aspect identified in the research was the need for support and collaboration within the educational community. Participants in Cycle 2 highlighted the importance of a collaborative and shared strategy among educators for a harmonized DBDM approach. This finding is supported by research, such as Lai et al. (2018), which emphasizes the significance of collaborative culture for successful data use in schools.

Finally, the importance of continuous training and support for educators was acknowledged in the research discussions. The need for ongoing training to ensure clarity and consistency in DBDM

implementation was brought to the fore in Cycle 1 and Cycle 2, particularly due to the observed confusion regarding assessment methodology. This aligns with the literature that underscores the need for professional development in facilitating effective data use in schools, such as the work of Van Geel et al. (2016).

Key Finding 4: Implementing Data-Based Decision Making (DBDM) in an Educational Setting Poses Various Challenges, such as Data Quality and Integration Issues, Staff Training and Change Management, Staffing, Expertise, Scheduling, and Time Constraints that Require Effective Strategies and Supportive Structures to Overcome.

Implementing Data-Based Decision Making (DBDM) in educational settings presents several challenges, as revealed by the research discussions. A significant issue is ensuring the quality and integration of data. The conversations with teachers in Cycle 1 and Cycle 2 highlighted the potential discrepancies between assessments and practical skill applications, affecting the accuracy and effectiveness of data-driven decisions. Subsequent to these findings, we can refer to literature such as Mandinach and Gummer (2016b) and Wayman (2005), which also underline the importance of data quality and integration for effective DBDM implementation.

Staff training and change management also emerged as key areas of concern from the conversations with educators Cycle 1 and Cycle 2. The research noted the potential for confusion and inconsistencies across classrooms and grade levels without clear instruction and ongoing support. These findings find resonance in the literature. For instance, Datnow et al. (2012) emphasize the importance of training, while Visscher and Spuck (2011) underscore the need for ongoing support for successful DBDM implementation.

Staffing issues also pose a unique challenge to DBDM implementation. The dialogues with participants in Cycle 2 highlighted that frequent staff absences due to other responsibilities could disrupt the DBDM process and impact the quality of instruction. Leithwood et al. (2004) support these

findings in the literature, asserting the need for a dedicated, stable teaching staff for successful DBDM implementation.

Furthermore, the research discussions with teachers in Cycle 2 revealed varying levels of expertise in the DBDM process across the staff, indicating the need for additional training and support from educational leaders. This was evidenced in the uneven quality of teaching group composition and instruction delivery. Literature, such as Marsh et al. (2006), substantiates these findings, highlighting the necessity for skill development in DBDM implementation.

Finally, scheduling and time constraints were identified as significant hurdles to the implementation of DBDM from the research. Teachers in Cycle 1 and Cycle 2 reported struggling with limited time to prepare intervention plans, assess student understanding, and balance DBDM with other teaching duties. Upon reviewing literature like Farrell and Marsh (2016), it is evident that these concerns align with the broader discourse, emphasizing efficient time management strategies and flexible scheduling for effective DBDM implementation. Overcoming these challenges, as indicated by the research and supported by literature such as Schildkamp and Poortman (2015), could maximize the potential of DBDM in enhancing teaching efficacy and improving student outcomes.

Key Finding 5: Both Professional Learning Communities (PLCs) and Data-Based Decision Making (DBDM) Possess Distinct Strengths. By Integrating These Two Approaches, We can Combine Their Individual Merits, Offering a More Robust Model That Enhances Instructional Improvement. This Integration Promotes Improved Outcomes Through Enhanced Collaborative Dialogue, Targeted Focus, and Iterative, Data-Driven Refinement.

While both Professional Learning Communities (PLCs) and Data-Based Decision Making (DBDM) have unique features, they are not mutually exclusive; in fact, their combined use could provide enhanced benefits in instructional improvement.

Professional Learning Communities (PLCs) provide a collaborative venue for educators to evaluate student work and reflect on how to enhance their instructional practices. One participant in Cycle 2 described this as a setting where educators could "Take a certain student work example... and talk about it, and ways that you can improve your practice."

However, some limitations were highlighted. Notably, the follow-up mechanism within PLCs seems less robust. Participants in Cycle 2 mentioned that they "Look at one set of data, come up with solutions to improve our instruction, and then don't necessarily revisit it." Furthermore, there appears to be a vagueness in the focus, possibly due to the variety of topics that might be addressed during a meeting. One curriculum consultant in Cycle 2 noted, "I feel like PLC isn't as targeted." This lack of focus may have evolved over time, leading to a shift from a dialogue-centric approach to one dominated by presentations. This is reflected in her comment, "PLCs just became their own thing... But that collaborative dialogue is not there."

Contrarily, the DBDM approach was described as a cyclical process, where data is continuously examined and instruction adjusted based on the findings. It's seen as more focused and flexible than PLCs. One participant in Cycle 2 mentioned, "I think this process is a little bit more specific. And using concrete data that we have established after a certain period of time, we've taught something specific." In DBDM, action plans are perpetually revised based on the effectiveness of the previous plan, capturing its essence, "This is a cyclical process...So you collect the data, you come back, you create an action plan, come back, and you know, create a new action plan, if that's working or not working."

Despite their individual attributes, the research finding suggests a potential convergence of PLCs and DBDM. As one consultant in Cycle 2 remarked, "And we talked about PLCs. Wouldn't this be perfect data for PLC work? So I think that this would be a jumping-off point for PLC." The specificity and data-driven approach of DBDM could enhance the efficacy of PLCs, particularly by strengthening the follow-up mechanism and providing a more targeted focus.

Therefore, in addition to their standalone merits, there's potential for synergistic interplay between PLCs and DBDM. This integrated approach could harness the collaborative, educative environment of PLCs and the concrete, cyclical, and targeted approach of DBDM, leading to more effective and efficient improvement in instructional practices.

Conclusion

The exploration of Data-Based Decision Making (DBDM) in education reveals the significant potential it holds for enhancing students' academic performance. The value of DBDM lies in its capacity to tailor instruction and interventions, engage students, monitor progress, and proactively address learning gaps. However, the realization of this potential hinges on addressing key challenges and investing effectively in data quality, staff training, time management, and building expertise.

The study clearly demonstrates that the successful implementation of DBDM is a complex process that requires clear goal-setting, high-quality data, iterative action planning, and strong leadership. It is a comprehensive, iterative approach that evolves to suit students' changing needs, underpinned by strong leadership, collaboration, and continuous training. Addressing the challenges inherent to DBDM, such as data integration, staff training, expertise requirements, and time constraints, is crucial to maximize its benefits.

As we move forward in this era of data-driven education, it is crucial to keep refining and optimizing our DBDM processes. In the face of emerging challenges, such as data quality and integration, staff training, expertise, and time constraints, it is essential to invest in robust systems and strategies. The potential benefits of DBDM, however, significantly outweigh these challenges, providing a potent tool for improving the quality of education and the academic performance of students.

Key findings of this study reaffirm that implementing DBDM is a worthwhile endeavor, despite its challenges. The strategic use of data in decision-making can lead to substantial improvements in academic performance. It fosters a more personalized, engaging, and efficient educational process,

addressing individual student needs, facilitating continuous progress, and promoting a positive learning environment.

Research findings also shine a light on the potential of integrating Professional Learning Communities (PLCs) and Data-Based Decision Making (DBDM), suggesting a promising future for instructional improvement. The suggested synergy between PLCs and DBDM could harness the benefits of both approaches - the collaborative, educative environment of PLCs and the concrete, cyclical, and targeted approach of DBDM - addressing their individual limitations and leading to more effective and efficient improvements in instructional practices.

While acknowledging the challenges, it is also essential to recognize the ongoing commitment needed to maintain the DBDM process. Continuous improvement, investment, and adaptation will help schools reap the full benefits of this powerful approach, ultimately enriching the educational experience for students and teachers alike. Through collective effort and commitment, we can transform the potential of DBDM into a reality, setting a new standard for excellence in education.

Implications for the Organization

The research report on Data-Based Decision Making (DBDM) in education has revealed both its potential to enhance students' academic performance and the challenges that arise during its implementation. DBDM offers a path to tailored instruction, continuous progress monitoring, and proactive addressing of learning gaps, thus boosting student outcomes. However, realizing its full potential depends on effectively managing some crucial aspects.

To ensure successful DBDM implementation, the following key recommendations are proposed:

- **Implement stringent data quality and validation measures:** This ensures the accuracy and reliability of the data used in decision-making processes.

- **Establish a comprehensive staff training program on DBDM:** A strong focus on continuous learning will ensure staff are well-equipped to integrate DBDM into their teaching strategies effectively.
- **Ensure Stable Staffing:** Regular absences or high staff turnover can disrupt the DBDM process and affect its effectiveness. Ensuring a dedicated, stable teaching staff will contribute to a successful DBDM implementation.
- **Prioritize tasks and implement efficient time management strategies:** Time allocation for DBDM tasks and use of time-saving technologies can help manage workload and ensure efficient implementation of DBDM.
- **Develop a continuous improvement plan for DBDM:** Incorporate regular evaluations, adjustments, and upgrades as necessary, using feedback from staff and students to refine the process continuously.

The subsequent sections of this document delve deeper into these implications and provide a more detailed exploration of these strategic recommendations.

Implement Stringent Data Quality and Validation Measures

Data quality and integration surfaced as pivotal factors influencing the effectiveness of DBDM. The study notably unearthed potential discrepancies between assessments and practical skill applications as narrated by educators during Cycle 1 and Cycle 2. Such inconsistencies have significant implications, affecting the accuracy of data and, consequently, the effectiveness of data-driven decisions. These findings substantiate the argument made by researchers such as Mandinach and Gummer (2016b) and Wayman (2005) regarding the central role of data quality and integration in DBDM.

Recommendation: Implement stringent data quality and validation measures to ensure that the data being utilized is accurate, reliable, and relevant. Moreover, the Charter School Network has

invested in TEDSolutions, a powerful data integration tool designed to merge data from diverse sources into a cohesive view. This ensures a smooth transfer and access to information, paving the way for precise and streamlined decision-making. Nonetheless, to guarantee district-wide adoption of this tool, further training sessions are required.

Establish a Comprehensive Staff Training Program on DBDM

It became evident from the research discussions in Cycle 1 and Cycle 2 that staff training and change management are significant challenges facing the DBDM process. Educators' dialogues pointed towards potential confusion and inconsistencies across classrooms and grade levels without clear instruction and ongoing support. These findings echo literature such as Datnow et al. (2012) and Visscher and Spuck (2011), which stress the necessity of ongoing support and training for successful DBDM implementation.

Recommendation: Establish a comprehensive staff training program on DBDM, focusing on its importance, how it works, and how to implement it effectively in the classroom. Moreover, create a culture of continuous learning and improvement, offering regular training and refresher courses.

Ensure Stable Staffing

Insights from conversations with school personnel across Cycle 1 and Cycle 2 underscored the unique challenge staffing issues posed to DBDM implementation. Frequent staff absences and turnover not only disrupt the DBDM process but also negatively impact the consistency and quality of instruction. These findings align with the literature such as Leithwood et al. (2004), which asserts the need for a dedicated and stable teaching staff for successful DBDM implementation.

Recommendation: Implement policies to maintain a stable teaching staff. This could involve flexible scheduling, allocating specific time for teachers to concentrate on DBDM, enhanced personal and sick leave policy, or even hiring additional staff to ensure consistent application of the DBDM process.

Prioritize Tasks and Implement Efficient Time Management Strategies

Through both Cycle 1 and Cycle 2, scheduling and time constraints emerged as substantial hurdles to the successful implementation of DBDM. Teachers reported struggling to balance the time required for the DBDM process with other teaching duties, such as lesson planning, instruction delivery, and student interaction. These insights align with broader discourse in literature such as Farrell and Marsh (2016), emphasizing the need for efficient time management strategies and flexible scheduling for effective DBDM implementation.

Recommendation: Prioritize tasks and implement efficient time management strategies. This could include allocating specific times for DBDM tasks, employing time-saving technologies, and streamlining administrative processes to allow teachers more time to focus on DBDM.

Develop a Continuous Improvement Plan for DBDM

The findings from Cycle 1 and Cycle 2 emphasized the ongoing commitment needed to maintain the DBDM process. As per our discussions with teachers and administration and corroborated by the literature, DBDM is not a one-time solution but a continually evolving tool. The effective implementation of DBDM requires constant monitoring, feedback collection, evaluation, and adjustment to adapt to changing student needs and the dynamic educational environment (Mandinach and Gummer, 2016b; Wayman, 2005).

Recommendation: Develop a continuous improvement plan for DBDM, incorporating regular evaluations, adjustments, and upgrades as necessary. Encourage feedback from teachers and students to identify areas of improvement and implement necessary changes.

In conclusion, the success of DBDM implementation depends on addressing these challenges through strategic planning, dedicated resources, ongoing training, and continuous improvement. By effectively managing these aspects, Charter School Network can unlock the full potential of DBDM, ultimately enhancing teaching efficacy and improving student outcomes.

Social Justice Lens

The research and its findings throughout this study have contributed to our organization's ongoing work related to the application of a social justice lens to Data-Based Decision Making (DBDM) in education. This perspective is fundamentally rooted in ensuring equitable, inclusive, and personalized instruction to cater to the diverse needs of students.

The implementation of DBDM in education presents opportunities to dismantle educational inequities by tailoring instruction, interventions, and support based on objective, data-driven insights about students' unique needs and potentials. Change agents in education must possess a deep understanding of the challenges and inequities they aim to address (Bell, 2016), and DBDM provides an avenue for fostering this understanding.

In the context of the current research, we invited teachers to view their practice and their students through the lens of data, to better understand and cater to their diverse learning needs. This journey involved challenging dominant paradigms and examining the balance of power in the education system. Through our iterative cycles of implementation, teachers began to understand how data could be used as a tool for equitable instruction. They started to appreciate how DBDM could disrupt traditional teaching methods, often rooted in the dominant culture, and offer more inclusive, tailored, and thus, equitable instructional practices.

This aligns with our vision of social justice in education, which resonates with Greene's (1998) perspective that views education as a transformative tool to empower the young. Through the implementation of DBDM, teachers can awaken to the joy of teaching equitably, thereby catalyzing transformation in classrooms that could extend to broader communities.

Although this research primarily focused on DBDM implementation by teachers, it is crucial to acknowledge the potential of this approach to empower students. With accurate, personalized data

informing their instruction, students can gain new awareness of their learning and take this knowledge into the world, thereby promoting a more inclusive and equitable society.

Change agents need to be deeply connected to the people they serve (Battilana & Kimsey, 2017), and our research aimed to foster this connection by placing students at the heart of DBDM practices. Through data-driven insights, we sought to celebrate the diversity of our student population and challenge the notion of a dominant culture in education (DiAngelo, 2018; McIntosh, 2010).

In conclusion, promoting data literacy and data-based decision-making (DBDM) allows teachers to provide inclusive, equitable instruction. This approach, rooted in a social justice lens, places students and their diverse needs at the heart of teaching. It offers a potent tool for effecting lasting transformation in our classrooms, schools, and society.

Continuation as a Scholar-Practitioner

Reflecting on the study and its report through the dual lens of a scholar and practitioner brings a sense of vitality and motivation. Teachers' willingness to further their professional learning and adjust their teaching strategies to embrace Data-Based Decision Making (DBDM) fully is an invigorating outcome (Wayman & Jimerson, 2014).

The capacity to plan and deliver professional development initiatives in the role as a researcher provides a unique position to influence teaching practices within the organization. Lessons drawn from data analysis, literature review, and practical implementation of DBDM provide valuable insights that can enhance future professional learning opportunities (Marsh, 2012).

Furthermore, the successful implementation of action steps during the study has facilitated meaningful dialogue at an organizational level, focusing on how DBDM can shape ongoing work around equitable teaching practices and overall academic achievement (Schildkamp & Kuiper, 2010). This engagement fuels the drive and commitment to work in collaboration with the wider educational community to expand the reach of DBDM and ensure its longevity.

Looking ahead as a scholar-practitioner, there's an exciting prospect of building on the work initiated through this study, continually refining it in line with emerging knowledge and the evolving landscape of education.

In the ever-evolving system of education, the intention is to leverage the robust foundation established through this study to continue meeting the needs of all stakeholders, especially those from marginalized backgrounds (Ikemoto & Marsh, 2007). The continuation as a scholar-practitioner is a pledge to uphold the creation of learning environments where all students feel valued, informed by the equitable, inclusive approach of DBDM.

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Appendix A: Research Design Overview

This appendix aims to explain the rationale behind choosing action research as the methodology for exploring Data-Based Decision-Making (DBDM) to enhance student achievement at a charter school network in Central New York. Subsequent sections will discuss the foundations of qualitative research and action research, action research methods, the participants in Cycles 1 and 2, data collection and analysis procedures, ethical considerations, research trustworthiness, and potential limitations.

Qualitative Research Approach

Guba (1990) elucidates a paradigm as an intrinsic cluster of beliefs that dictate actions. As per the assertion of Fossey et al. (2002), there are three research paradigms that mold qualitative research: The Emprico-analytical, interpretive, and critical research paradigms. Each paradigm proposes distinct methods for observing and interpreting phenomena under study. The Emprico-analytical paradigm backs up scientific methodologies that hinge on deductive logic, likelihood-based causal laws, observations, and experiments. Interpretive methodologies aspire to decipher the significance of human experiences and actions. The critical paradigm strives to comprehend how our social and historical cognitions sway our actions, and it questions these ingrained restrictions (Fossey et al., 2002).

Qualitative research leverages methodologies that examine human experiences, conduct, interrelations, and social circumstances (Fossey et al., 2002). The philosophical foundations of Qualitative Research cover the essence of reality (ontology), the process by which a researcher acquires knowledge (epistemology), the role of values in research (axiology), the language of research (rhetoric), and the techniques employed in the process (methodology) (Creswell, 1998).

Various research methodologies align with qualitative research, such as ethnography and phenomenological research. Ethnography investigates the societal and cultural contexts of a phenomenon that has evolved within a community over a period. In contrast, phenomenological research delves into individuals' everyday life and experiences (Fossey et al., 2002).

Action Research is acknowledged as a variant of qualitative research owing to its democratic, equitable, liberating, and life-enriching characteristics (MacDonald, 2012). It sets itself apart from other qualitative methodologies by zeroing in on the roles embodied by the researcher and participants (Gibson, 2002).

Action Research Methodology

Action research is defined as the " systematic collection and analysis of data to drive change," resulting in practical knowledge creation (Gillis & Jackson, 2002, p.264). Sometimes referred to as Participatory Action Research (PAR) or Community-Based Participatory Research, it is rooted within the critical paradigm.

The core features of action research, as identified by Street (2003), include the symbiosis between theory and practice, the importance of active participation, and the research's capacity to tackle practical problems in specific scenarios. Action research is broadly applied across various domains like education, healthcare, community development, and adult education (MacDonald, 2012).

Action research advocates a "collaborative problem-solving relationship between researchers and clients " aiming at problem-solving and new knowledge creation (Shani & Pasmore, 1985, p.439). Lewin (1997, p.145) outlines two types of questions addressed by social research: a) studying general laws of group life and b) diagnosing a particular situation. According to Lewin, researching general group life laws for new knowledge creation "produces nothing but books." Consequently, action research should integrate a robust methodology with theory to solve a problem in a specific scenario (Schein, 1989). The emphasis in action research is on transformation through action, as highlighted by Argyris, Putnam, and Smith (1985).

Action research involves an iterative process of collaboration and joint inquiry (Shani & Pasmore, 1985, p. 439). As per Herr and Anderson (2005, p.3), " Action research is an inquiry conducted by or with insiders of an organization or community, but never to or on them." Those facilitating action

research assess situations where data consistently change due to intervention procedures (Coghlan & Conhlan, 2011). The cooperation between practitioners and other organizational members aids in instigating change within the organization while contributing to scientific knowledge (Shani & Pasmore, 1985, p.439). Coghlan and Coghlan (2011) elaborate on how action research involves a cyclical process of problem identification, planning, action, and assessment. Evaluation and reflection are crucial to action research as they form "a basis for further planning, subsequent action, and so on, through a succession of cycles" (Kemmis & McTaggart, 1982, p.7). Bradbury (2015) clarifies that the significance of action research stems from stakeholder participation, culminating in a transformation in the situation they are engaged in.

Bradbury (2015) further posits that the enlargement of participant numbers in action research and empowering them will foster social change, thereby reshaping the world. Bradbury (2019) emphasizes that the importance of action research is derived from stakeholder participation, which subsequently transforms the situation in which they operate.

The study on DBDM aimed at enhancing student achievement incorporates several cycles of data gathering and analysis. The goal is to determine the optimal DBDM framework for the charter school network by identifying the components and process of DBDM and implementing them at the school buildings faithfully to elevate academic achievement. Action research is congruent with this study's objective, as it allows researchers to pinpoint the most effective elements and hurdles that need addressing during the cyclical process. These can be subsequently implemented in the next cycle to discover the most effective solution to the problem. Initially, the research questions were strictly centered on the components of DBDM. However, during the research, it was apparent that besides the individual elements of DBDM, the process also plays a crucial role. As a result, the research questions have evolved throughout the research cycles. The research poses four questions, including the development and implementation of a DBDM process to aid students and ensure academic success, the

factors that facilitated and supported the successful execution of the DBDM process, the obstacles encountered while pursuing an effective DBDM process, and the impact of these factors on the outcomes.

The following section will provide an in-depth analysis of the Cycle 1 process, comprising participants, procedures, and data analysis.

Data Collection and Analysis: Cycle 1

Participants

Data collection for Cycle 1 involved classroom teachers, intervention specialists, and school deans working in three elementary charter schools in Central New York. The participant group was made up of fifteen individuals, including four men and eleven women. These individuals brought a spectrum of experience to the table, with tenure varying from a handful of years to multiple years spent educating elementary students both within the United States and abroad. Within this participant group, there were three deans who took part in the focus group. The questions asked in this focus group is depicted in Figure 2. These individuals were once educators within the same school network and, over time, had ascended to roles within the administration.

The interviewees included a teacher from grades 1-4, a math specialist, a reading specialist, an English as a New Language (ENL) teacher, and a literacy intervention coordinator. Interviews were also held with two prospective school deans who were observing the operations of the current facilities in anticipation of inaugurating two new school buildings the subsequent September. The interview questions are presented in Figure 3.

Figure 2

Questions of the Focus Group Protocol for Deans

1. What data points are available on student achievement in your school? How do you use those data to inform instruction and intervention in your classroom?
2. What resources are available to make data accessible?
3. When do you analyze data? Is there any school-wide protocol to analyze data?
4. How decisions are made at your school?
5. Have you/your teachers ever received professional development regarding how to analyze data?
6. What is changing about data use in your school?
7. Was there any resistance to data use initiatives in the school? Explain?
8. What are some of the major challenges that you/your teachers face in attempting to analyze data?
9. Is the data use a major focus of attention and discussion among staff? why or why not?

Figure 3

Questions of the Interview Protocol for Teachers

1. What data points are available on student achievement in your school? How is data used to inform instruction and intervention in the classrooms?
2. What resources are available to make data accessible?
3. When do your teachers do data analysis?
4. What kind of professional development opportunities regarding data analysis are there for teachers?
5. What is changing about data use in your school?
6. Was there any resistance to data use initiatives in the school?
7. What are some of the major challenges that teachers face in attempting to analyze data?
8. Is the data use a major focus of attention and discussion among staff? why or why not?

The research employed a purposive sampling strategy, which involves the selection of individuals who possess insightful views on the research topic based on their previous interactions with

the participants (Robinson, 2015). As an insider researcher, I was privy to information and had access to key individuals within the school buildings. Consequently, I dispatched an email to eligible teachers and interventionists who held potential significance in the study. In order to maintain a manageable data collection framework, the intention was to organize around seven interviews and a focus group. Following the recruitment emails, nine teachers and five administrators expressed their interest. A kindergarten teacher, who had previously participated in Cycle 0 data collection, was excluded from the interview list. All the remaining teachers were incorporated into the study. Given the diverse roles, grade levels, and buildings represented by the respondents, the sampling outcome was deemed satisfactory.

Procedures

Prior to the initiation of Cycle 1 data collection, I submitted the problem of practice, research questions, research location, and participants to the Northeastern Institutional Review Board (IRB) for approval. I also obtained the necessary permission from the superintendent of the charter schools to conduct the study within the school district of my employment. Following approval from the Northeastern IRB, I leveraged the Northeastern email account to approach teachers and administrators, inviting them to participate in interviews and focus groups. The email outlined the research topic and highlighted that their participation was purely voluntary. Upon receiving confirmation, I arranged Zoom meetings for the interviews and focus groups, and consent forms were emailed to the participants. This process ran smoothly with only a few instances of cancellations or rescheduling due to COVID-19. During each Zoom meeting, I reviewed the interview protocol, discussed the research topic, and requested permission to record the proceedings.

In terms of developing a survey regarding teachers' data usage, I first identified the areas to be covered in the survey. Given the complexity of quantifying "data use," I operationalized this concept by singling out measurable empirical indicators (Mandinach & Gummer, 2016a), such as data training,

resources, accessibility, and collaboration among teachers on data analysis. I also incorporated five demographic questions regarding race/ethnicity, gender, age, teaching experience, and education level. A 5-point Likert scale was chosen for the survey. Following the formulation of 15 items based on these indicators, I conducted a face validity test. To ensure the questions adequately encapsulated information on the "data use" construct, a colleague who regularly holds data meetings with teachers reviewed the survey. The finalized anonymous survey was created using Google Forms. Figure 4 outlines the items included in the survey. After distribution to educators across three charter schools, I received a total of 48 responses.

Figure 4

Teacher and Administrator Data Use Survey Items

1- I am adequately prepared for the effective use of data
2- I set end of year student achievement goals for my students
3- My school collects adequate data on student achievement to take corrective action
4- My school provides technology to access student data easily
5- My school encourages data use as a tool to support effective teaching
6- My school provides time to analyze data in my schedule
7- My school provides professional development related to data analysis
8- I use student data to change my instruction regularly
9- I feel comfortable using student data to guide my intervention plan
10- I discuss data with my students
11- I discuss data with parents and guardians
12- Multiple forms of data are collected and evaluated in my school
13- I routinely meet with my colleagues to analyze student achievement data
14- There is a trusting environment among teachers in data meetings
15- There is enough support staff to provide intervention in my school

Data Analysis

Post receiving approval from IRB for Cycle 1, I initiated a focus group with the school deans, conducted ten interviews with a mix of teachers and administrators, and dispersed a survey among the teachers from the charter school network. The interviews, with consent from the participants, were

recorded. I then used the Otter.ai software to transcribe the focus group and interview recordings. Upon completion of the automated transcription, I went through them to rectify the inaccuracies in the software's transcription.

For data coding, Saldana (2016, p.29) suggested using hard copies for new researchers and smaller studies. Following his advice, I manually coded the transcript using Word and Excel rather than opting for an electronic coding procedure. As I was already well-acquainted with Word and Excel, this allowed me to concentrate solely on coding rather than learning how to navigate a new software. I printed the transcript and read it again, noting down and underlining words, phrases, and gerunds since I decided to use in vivo and process coding methods. These methods, as Saldana (2016, p.77) recommends, capture the essence of the narrative and identify real concerns over descriptive coding. Within vivo coding, the participants' voices are captured through the use of their own words as codes, while process coding uses verbs (-ing) to capture actions and story dynamics, as explained by Saldana (2016, p.78).

Upon my second read of the transcript and a review of my notes and the underlined words, I began noticing categories emerging. I highlighted these on a Word copy, then moved the codes to an Excel sheet where I assigned colors to categories and ensured every word was associated with a category. I then grouped the categories into themes.

During the coding process, I wrote analytical memos whenever an idea occurred to me. These memos, as Birks, Chapman and Francis (2008) point out, help researchers to clarify, inspect, analyze, and question their data interpretation. For instance, although the words 'leader' or 'leadership' did not appear in the interview, certain actions, such as creating new positions or offering professional development opportunities, were directly tied to leadership roles in schools.

After reviewing the literature on DBDM framework components and processes, I developed a DBDM framework, incorporating themes from Cycle 1 data and literature review, to guide the action

steps for Cycle 2. The framework encapsulates three main stages: Data Collection, Analytic Capacity, and Culture of Data Use, with a crucial additional leadership element to ensure proper implementation of the DBDM stages.

The forthcoming sections offer a deeper insight into Cycle 2's participants, procedures, and data analysis.

Data Collection and Analysis: Cycle 2

Participants

For Cycle 2, I've elected to focus on the K-2 grade levels at an elementary school within the charter school network. The participants enlisted for this phase of action research comprise the school dean, K-2 teachers and co-teachers, K-2 curriculum coordinators, and an external consultant. This decision is informed by the charter school network's growth across three cities in central New York and the corresponding creation of three K-2 curriculum coordinator positions for the 2022-23 academic year.

These curriculum coordinators, whose duties include school visits, classroom observations, and administering professional development to their assigned teachers, will be invited to participate in the research alongside an external consultant. We anticipate a two-month timeframe for data collection, with meetings being held at the school building, the district office, or virtually via Zoom.

Data collection opportunities will be varied and dynamic, beginning with reflective sessions following each professional development meeting. Additionally, focus groups will be organized, bringing together K-2 teachers and co-teachers for collective discussions and insights. Furthermore, one-on-one interviews with the school dean, K-2 curriculum coordinators, and the external consultant will provide deeper, personalized insights. Regular catch-up meetings will be scheduled weekly to ensure consistent engagement with the school dean, curriculum coordinators, and the external consultant. Finally, field notes will be diligently recorded post each session, capturing essential details, observations, and insights to contribute to the data pool.

Procedures

In light of the charter school network's expansion and the addition of K-2 curriculum coordinators to the participant pool, adjustments need to be made to the IRB protocol before embarking on Cycle 2. Consequently, I will ensure the appropriate modifications are submitted to the IRB for approval. Upon approval, I plan to conduct an introductory meeting with the K-2 curriculum coordinators to delve into the Cycle 2 action plans, given their instrumental role in the plans' enactment. After this initial session, weekly meetings will be scheduled to assess ongoing progress. The execution of the Cycle 2 action plans is slated to kick off in February 2023, running until the academic year concludes.

Concurrent with the action plan implementation, I will initiate focus groups with K-2 teachers and interviews with the school dean, K-2 curriculum coordinators, and the external consultant. The focus group and interview questions are delineated in Figures 5 and 6, respectively.

Figure 5

Questions of the Interview Protocol for Dean, Coordinators, and Consultant

1. What are the steps involved in developing and implementing a data-based decision-making (DBDM) process in your school?
2. In what ways does the DBDM process support and assist students in achieving academic success?
3. Could you share an example of how you successfully implemented the DBDM process in your classroom?
4. What factors do you think have contributed to the successful implementation of the DBDM process in your classroom?
5. Have you encountered any challenges or obstacles when implementing the DBDM process, and if so, how did you overcome them?
6. How has the use of the DBDM process impacted student outcomes in your classroom, and how do you measure its effectiveness?
7. What methods do you use to evaluate the effectiveness of the DBDM process?
8. How do you plan to continue improving and evolving the DBDM process in the future?
9. How do you involve parents and students in the DBDM process, and what strategies have been successful in doing so?
10. How does the DBDM process align with the school's overall academic goals, and how do you ensure that it stays aligned?

Figure 6

Questions of the Focus Group Protocol for Teachers

1. What procedures does your school follow to create and execute a data-based decision-making (DBDM) process?
2. In what ways does the DBDM process benefit and support students in achieving academic success?
3. Could you provide an example of a successful implementation of the DBDM process at your school?
4. What factors do you believe have contributed to the successful utilization of the DBDM process at your school?
5. Have there been any challenges or obstacles that your school has faced while implementing the DBDM process? If so, how were they resolved?
6. What impact has the DBDM process had on student outcomes at your school? How do you measure this impact?
7. What methods do you employ to evaluate the effectiveness of the DBDM process at your school?
8. How does your school intend to enhance and refine the DBDM process going forward?
9. How does your school involve parents, and students in the DBDM process?
10. How does the DBDM process align with your school's overall academic objectives?

Interviews can be conducted in-person or virtually via Zoom based on the participants' convenience. However, subject to any pandemic-induced restrictions, I intend to host focus groups in-person to gain a fuller understanding of participants' responses through comprehensive body language observation, as opposed to limiting it to facial expressions alone (Moore et al., 2015).

Data Analysis

Both in-person and online interviews and focus groups will be recorded with prior permission from the participants. Transcriptions of these recordings will be done using the Otter.ai software, and pseudonyms will be employed to ensure participant anonymity. To confirm the accuracy of my interpretations of the interviews and focus groups, I'll share my findings with the participants via email and solicit their feedback. In Cycle 1, I applied in vivo and process coding methods (Saldana, 2016, p.77), which I plan to continue utilizing in Cycle 2. Post data analysis of Cycle 1 and the subsequent literature review, I developed a visual representation of the DBDM framework. Depending on the new insights

garnered in Cycle 2, this graphical depiction may be updated as required. The coding process adopted in Cycle 1 will serve as a blueprint for my approach to coding in Cycle 2.

Ethical Considerations

I meticulously adhere to the ethical principles identified and outlined by Vanclay, Baines, and Taylor in 2013 throughout the study. These principles encompass respect for participants, obtaining requisite permission for audio or video recording, ensuring voluntary participation without coercion, safeguarding the participant's right to withdraw, committing to refrain from causing harm to participants, avoiding undue intrusion, forbidding deception, upholding the presumption and preservation of anonymity, ensuring the participant's right to check and modify transcripts, maintaining confidentiality of personal matters, and enforcing data protection.

Emphasizing the voluntary nature of teacher participation, teachers have the absolute freedom to either opt out or withdraw from participation at any time. I will address these facets both in the invitation to participate and prior to focus group and interview sessions. Given the possibility that teachers may feel obligated to participate to avoid seeming uncooperative, I'll ensure all potential participants understand there are no repercussions irrespective of their decision to partake.

During my research, I won't be conducting any student interviews. Once data from professional development sessions, interviews, focus groups, and weekly meetings are all identified markers will be erased, and pseudonyms will be assigned to the participants. I'll carefully review and revise the context if needed, to eradicate any reference that could potentially link back to individuals. However, I will inform the participants of the focus groups that I cannot completely guarantee confidentiality and anonymity within any focus group. Still, this research does not anticipate any harmful repercussions.

In a bid to prevent any misinterpretations, I will respect any request from participants to review the data derived from them as well as my interpretation of their interviews. I'll articulate the benefits of

the research, which not only aids me in earning my Doctor of Education degree but also offers them professional development opportunities and assists students in bridging the achievement gap.

Trustworthiness

Establishing trustworthiness in qualitative research involves four key criteria: credibility, dependability, confirmability, and transferability (Lincoln & Guba, 1985).

Credibility refers to confidence in the truthfulness and authenticity of the research findings. To establish credibility, I employed the process of member checking. After conducting the interviews and focus groups, I provided participants with the chance to review and solicited their feedback to validate the accuracy of the results or make any necessary corrections.

Dependability relates to the consistency of the research findings and whether they could be replicated in other contexts with similar participants. To address dependability, I provided comprehensive descriptions of the research process. This includes detailing the problem of practice, research questions, data collection methods, step-by-step data analysis procedures, participants, and power dynamics.

Confirmability is concerned with the objectivity of the research findings and whether the respondents shape them and not researcher bias or personal interests. To ensure confirmability, I kept reflective journals throughout the research process. I also clarified my positionality as the researcher and explained any modifications made to the research during the study period.

Lastly, transferability refers to the applicability of the research findings to other settings. To establish transferability, I detailed the characteristics of the participants and the sampling techniques used. I also outlined the limitations of the study, which may affect the extent to which the findings can be generalized.

Limitations

This research comes with two primary limitations: the size of the sample and the inability to observe longitudinal effects. The sample size, with 13 participants for Cycle 1 and 27 participants for Cycle 2, is not minimal when considering the number of teachers and administrators in the elementary schools within the charter school network. However, it appears significantly smaller when juxtaposed with the number of elementary schools at a national level. This smaller sample size, while manageable for an individual researcher working within a constrained timeline, could potentially limit the transferability of the findings. After the completion and analysis of Cycle 2, the research could be repeated on a more extensive scale to validate its effects across diverse schools.

Furthermore, the research timeline does not allow for a long-term examination of the problem at hand. Since the Cycle 2 action plans will be implemented over eight weeks, it's not feasible to observe any longitudinal impacts stemming from the study within this time frame.