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Data-Driven Decision Making about Single-Sex Instructional Grouping at an Elementary School

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Abstract

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MS, Troy State University, 2008

BS, Valdosta State University, 2006

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Administrators at a Southeastern elementary school eliminated single-sex instructional grouping in 5th-grade classes without a proper analysis of all available data and later reflected upon whether this instructional model should be revived. Because data-based decisions may positively improve teaching and learning for all stakeholders, the purpose of this qualitative case study was to explore all available data leading to this decision, inform stakeholders about the decision-making processes in the local school, and provide data to inform future decisions. Conceptually framed with Mandinach's data-driven decision making (DDDM) model, the guiding question for the study focused on perceptions of teacher, administrator, and leadership team member about the DDDM process related to single-sex instructional grouping in the local venue. The data were collected using 8 interviews with administrators, teachers, and school leadership team members involved in the instructional decision. Data from interview were transcribed, analyzed, and coded for emergent themes, types of data and decisions, decision making processes, and stakeholder perceptions. The findings showed a gap in DDDM practice and affirmed the value of data for informed decision making. The findings guided recommendations for a professional development series created to increase data literacy and DDDM best practices. Improving DDDM for teaching and learning may promote positive social change by developing educational stakeholder skill sets for all decision-making as well as providing targeted, data-driven instruction for learners whether in multi- or single-sex instructional grouping.

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Dedication

This study is dedicated to my family and friends who have endured the journey with me and supported me along the way.

Acknowledgments

I want to thank my committee Dr. Anissa Harris, Dr. Kathy Hayes-Fondation, and Dr. Amy White for the tireless hours of work that have contributed to my completion of this study. I also want to acknowledge the participants who gave their time to the study. I would also like to acknowledge the many colleagues I have met along the way. I could not have done this without the support of Jessica who read over 20 drafts of this study. I appreciate every person who has contributed to my success.

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Introduction

Educational organizations are supported by data use when stakeholders strive to understand phenomena. Using data-driven (or *data-based*) decision-making (DDDM) may potentially alter teaching and learning (Datnow & Park, 2014). Models for DDDM include the use of all types of data, from all stakeholder populations, and from all hierarchal levels of the organization (Datnow & Park, 2014), ideally including ongoing feedback among the stakeholders in the educational community (O'Neal, 2012). These data are then used to inform all organizational decisions, administrative or instructional, including but not limited to accountability or specific reform initiatives (Datnow & Park, 2014; Mandinach, 2012). Using data to inform educational practices and decisions is essential to continued school improvement, regardless of the reform or initiative in implementation (Mandinach, 2012).

Although many educators were inattentive to data use for educational decisions or improvements before the No Child Left Behind Act of 2001 (No Child Left Behind [NCLB], 2002), it is challenging to imagine a school improvement process without data as a key pillar (Datnow & Park, 2014). Authentic DDDM is an established mindset in the educational culture that produces knowledge through questioning (Bernhardt, 2016; O'Neal, 2012). Using DDDM processes potentially encourages educators to create targeted professional development and instructional plans designed to support learners, much like a physician uses health records to provide individualized treatment plans for patients. Appropriately using data is an essential piece of the school improvement puzzle

(Datnow & Park, 2014). As all school improvement and instructional initiatives are designed to ultimately enhance student learning outcomes (Datnow & Park, 2014), DDDM must be the guiding framework for successful educational changes (Bernhardt, 2016).

Definition of the Problem

The problem at a Southeastern elementary school was that a decision to eliminate single-sex instructional grouping in the fifth-grade classes was made without analysis of all types of data, and it is unknown if this instructional model was effective and should be revived. For success, all efforts to close the achievement gap through curriculum or instruction reform must be appropriately supported by DDDM (Mandinach, 2012). Reform efforts are best when justified by existing data to produce the desired outcomes. However, educational decisions are *not* always based on appropriate data. Understanding the existing decision-making processes and determining the degree of disconnect to a DDDM framework may provide valuable insight for better integrating DDDM into local school processes, thereby creating more successful reform.

In this study, I focused on the stakeholders' experiences in one local school that implemented single-sex instructional grouping for 9 years but then suddenly eliminated it in 2015 without a thorough analysis of the quantitative and qualitative data. To make informed decisions to improve achievement and reduce the gender gap, many educators have explored *single-gender* or *single-sex* classroom grouping. (The latter term, preferred for academic writing as indicated by the American Psychology Association [2015], is used in this study unless quoted literature uses the alternate term.)

This case study provided insight into the decision-making processes at the local venue, specifically those related to the grouping practices for students in Grade 5. According to the principal at the study site, providing these data addressed the gap in best practices for DDDM as the school radically changed grouping without consideration for perceptual data from a variety of stakeholders. Results of the study provided a better understanding of (a) the value of and processes of gathering and analyzing data for informed decision-making and (b) the benefits or disadvantages of single-sex instructional grouping for the local school community. The study provided the local venue with qualitative data contributing to improved resources to potentially allow the school to make decisions that are more informed during DDDM processes relevant to grouping in the site school and serve as an example for others with similar concerns or issues.

Rationale

Growing as a reform initiative globally, DDDM is at the center of education. Data use is essential in improving schools and meeting educational outcomes (Datnow & Hubbard, 2015b). The use of DDDM spans local and professional settings and best functions when integrated into the local educational culture (Bernhardt, 2016).

Evidence of the Problem at the Local Level

In the local school, the practice of single-sex instructional grouping was initiated in 2006 for all fifth-grade students. For almost a decade, this instructional grouping model was implemented. The administrator during implementation reported this instructional grouping method had a positive impact on classroom climate, student self-

efficacy, and achievement scores (Administrator A, personal communication, July 7, 2014). For example, the school performance scores from 2012–2013 when compared to 2013–2014 indicated an overall improvement in fifth grade female literacy ($x < 6.5\%$) and mathematics ($x < 1\%$) proficiency; additionally, fifth grade male literacy proficiency declined almost 12%, but their mathematics proficiency improved more than 5% (Southeastern State's Department of Education, 2016).

Although the local school hired new administrators in 2014, the distributed fifth-grade rosters from the pre-session conference indicated that the single-sex instructional grouping model would remain in place (Local School, 2014). However, at semester, the new principal decided to integrate the Grade 5 students into mixed-sex instructional groups (Administrator B, personal communication, March 1, 2015). Teachers had to learn about new students and family members while guiding students through the mid-year transition into a new school (Grade 5 Teacher A, personal communication, May 10, 2015). One teacher shared that there was an increase in student misbehavior (Grade 5 Teacher B, personal communication, January 5, 2015). When questioned, the administration acknowledged that instructional grouping was a curricular/instructional decision under the supervision of this administrative team; and eliminating single-sex instructional grouping was a judgment-based, personal choice without the benefit of collecting or considering data sets or stakeholder perceptions (Administrator B, email communication, December 29, 2015). Since the elimination of single-sex instructional grouping, the school's 2016 state report card indicated a 31.25% decline in fifth-grade female student literacy proficiency rates and a 16.63% decline in mathematics

proficiency. Moreover, the fifth-grade male literacy achievement proficiency rates declined almost 25%, and the mathematics proficiency was reduced by 16.63% (Southeastern State's Department of Education, 2016).

Because DDDM at its core involves the triangulating of data and multiple perspectives (Datnow & Park, 2014; Gullo, 2013), this sudden shift in student instructional grouping demonstrates a gap in best practices for DDDM at the site school. To provide data for future instructional grouping decisions, a better understanding of this case and the factors surrounding it is valuable to the local venue and to stakeholders interested in exploring student instructional grouping as a strategy for school improvement. While the administrator admittedly did not use perceptual or other types of stakeholder data to inform her decision, interviews to provide qualitative data from administrators, teachers, and leadership team members regarding their perceptions about single-sex instructional grouping in fifth grade for students at the site school are welcomed (Administrator B, personal communication, March 1, 2015). Providing a model for best practices in difficult decision-making will assist the local and other schools in making data-based decisions for any school concern.

Evidence of the Problem from the Professional Literature

Standards-based accountability, and the subsequent need for using data to inform decisions, is a driving force for educational policy (Gullo, 2013; Hamilton, Stecher, & Yuan, 2012). Data, however, do not benefit stakeholders until they are applied in context (Mandinach, 2012). Decisions, such as reallocation of resources and programming changes, are actionable decisions and should be made using school and district data

(Gullo, 2013). Successful school improvement is born of capable educators informed by data (Mandinach, 2012; O'Neal, 2012).

Achievement scores are an often-utilized data source, but DDDM encourages the use of multiple types of data (Datnow & Park, 2014; Gill, Borden, & Hallgren, 2014; Gullo, 2013; Mandinach, 2012). Gullo (2013) suggested the use of perception, attitudinal, and classroom or school process data as valuable in the processes of decision-making, planning, and evaluation. Effective DDDM requires assorted types of data from a variety of resources (Gullo, 2013). The leader of a school plays a critical role in using data (Schildkamp & Poortman, 2015). Decisions about grouping practices that are not informed by qualitative data related to the potential impact of grouping fall short of best practice for making the most informed decision in a local school.

The purpose of this study was to understand better the decision-making process used to eliminate single-sex instructional grouping. Gathering and analyzing data from administrators, teachers, and leadership team members with a role in the site school during the time single-sex instructional grouping practices were in place may create a better understanding of this educational reform and provide insight into DDDM processes that can be assimilated into the school culture. Providing these data may address the gap in best practices for DDDM related to fifth-grade student grouping at the classroom level in the school. The study may provide the local stakeholders with qualitative data contributing to improved resources to allow the school to make decisions that are more informed during DDDM processes relevant to decisions such as grouping in the site school and serve as an example for others with similar concerns or issues. These data

may inform future grouping decisions within the local school, district, and state or provide information for others who face similar decisions.

Definitions

Achievement gap: Disparities in the achievement data when compared with peer groups (Pahlke, Hyde, & Allison, 2014).

Co-educational: An educational setting that includes both girls and boys in the same group (Pahlke et al., 2014). In this study, a local school grouped fifth-grade students from single-gender to co-educational classrooms during the semester break.

Data-driven decision-making (DDDM): A cyclical process of actions based on the transformation of data into knowledge including ongoing reflection and gathering of additional and multiple sources of data (Datnow & Park, 2014; Mandinach, 2012; O'Neal, 2012). In this study, DDDM processes were explored as a model for all educational reform but will specifically be applied to the decision of single-sex or co-educational grouping at the local school.

Gender: Attitudes, feelings, and behaviors associated with biological sex by a culture (APA, 2010). Before the turn of the century, psychologists realized a need to define *sex* and *gender* but recognized both are essential to the vocabulary of psychologists (Unger, 1979). Per APA (2010), *gender* refers to the role a person assumes in society, not biological anatomy. The term *sex* refers to the biological anatomy a person has at birth (APA, 2010). For example, a person could be anatomically masculine but assume a social role in the female gender. Although these terms are often used interchangeably in casual or educational conversation (Chadwell, 2010), APA (2010)

requires that a distinction is made. Since this study must comply with APA standards and definitions, the term *single-gender instructional grouping* is inappropriate to refer to the fifth-grade class grouping in the local school. Therefore, the term *single-sex instructional grouping* is used throughout this study to refer to the grouping of fifth graders in the local setting. However, where the educational literature refers to this grouping practice as *single-gender instructional grouping*, the original text was used. Therefore, in this study, *single-gender* or *single-sex instructional grouping* is used synonymously to indicate grouping based on biology rather than social processes. Where the narrative directly refers to the grouping process, the term *single-sex instructional grouping* is used to comply with APA standards. Citations from the literature were made in the original writer's words.

Gender gap: Unequal performance of students grouped into homogenous male and female groups (Schwartz & Han, 2014).

Mixed-sex instructional group: An instructional group that includes both anatomical males and females (Garcia-Gracia & Vazquez, 2016).

Sex: The biological status of a person, typically male, female, or intersex (APA, 2010).

Single-gender instructional group: A group including all-boy students or all-girl students (Garcia-Gracia & Vazquez, 2016). Per APA, *single-gender grouping* would refer to grouping individuals by their preferred social role, not biological differences. In this study, *single-gender* and *single-sex instructional grouping* are used synonymously. See definition of *gender*.

Single-sex instructional group: A group including all-boy students or all-girl students (Garcia-Gracia & Vazquez, 2016). Per APA, *single-sex instructional grouping* would refer to grouping individuals by biological sex, not preferred social roles. The educational literature, however, often uses the term *single-gender instructional grouping* to refer to this same process. In this study, *single-gender* and *single-sex instructional grouping* are used synonymously. See definition of *gender*.

Significance

This study will contribute to the gap in best practices for DDDM related to the students in Grade 5 at the local school. The purpose of this research was to provide insight into the DDDM behind the practice of single-sex instructional grouping and administrator, teacher, and leadership team member perceptions regarding its impact or non-impact for fifth-grade students in the site school. Providing these data will address the need for qualitative data to inform future grouping decisions and fill the gap in the lack of best practices for decision-making related to the change from single-sex to mixed-sex grouping in Grade 5 at the local school. Administrators may use these data as a reference for future decisions or to decision-making processes in other instructional or operational arenas. Teachers may gain a better capacity for data use and may use data to inform future decisions or to reflect and change current practice. Leadership team members may use the data to reflect upon prior decisions, aid in advocating for best practices in DDDM in future decisions, and to support school reform efforts.

Guiding Question

My goal for this study was to understand better the decision-making process used to eliminate single-sex instructional grouping in the local school. Gathering and analyzing data from administrators, teachers, and leadership team members with a role in the site school during the time single-sex instructional grouping practices were in place may create a better understanding of this educational reform and provide insight into DDDM processes that may be assimilated into the school culture. The guiding question for this study was:

> What are administrator, teacher, and leadership team member perceptions regarding how data were used in the DDDM for single-sex instructional grouping for fifth-grade students?

Exploring this question provided insight about the DDDM processes related to single-sex instructional grouping in the local venue so the school administrators may make more informed decisions about student instructional grouping. The intent was to explore stakeholder perceptions of the DDDM process related to single-sex instructional grouping on fifth-grade students in the local population and perceptions about the benefits or disadvantages for single-sex instructional grouping in the local setting. These data may be used in addition to locally archived, quantitative data sets to better inform future decisions about grouping in the local school, district, or surrounding areas.

Review of the Literature

I conducted a review of the literature related to the problem under study using the internet, EBSCOhost, ProQuest, Educational Resources Information Center (ERIC)

library databases, Google Scholar, articles, peer-reviewed journals, and books. I used numerous keywords and phrases during the search, including but not limited to *data-driven decision making, data-based decision making, data use, standardized testing accountability, leadership roles in decision making, closing achievement gap, gender differences, sex, single gender, single-sex education, single-sex classroom, single-sex or single-gender or mixed-sex instructional grouping, single-sex achievement, gender, gender education, gender achievement gap,* and *sex differences.*

DDDM Framework

The practice of measurement-driven instruction was debated as early as the 1980s (Popham, 1987). Historically, using data to inform decisions in education surfaced late in the 20th century (Marsh, Pane, & Hamilton, 2006). Data may inform decisions about student placement, instruction, and policy. In the modern era, persons who work in educational arenas are expected to use data to drive actions (Coburn & Turner, 2011, 2012; Datnow & Park, 2014; Mandinach, 2012; O'Neal, 2012). Improving instruction and learner achievement may be generalized as the goal in education, and DDDM is a framework for making decisions utilized to move toward continuous improvement (Mandinach, 2012). The ideals of the DDDM framework are long-standing in industry and business but integration of these ideals in education continues to grow.

In recent years, several researchers have described theoretical frameworks for DDDM (Hamilton et al., 2012; Mandinach, 2012; Means, Padilla, & Gallagher, 2010). Each framework is similar in nature and includes hierarchal levels of data including classroom, building, and district level data (Mandinach, 2012). In keeping with the

definition of DDDM as the ongoing cycle of actions determined from information and knowledge gleaned from discussions about data (O'Neal, 2012), this study is built upon concepts of the DDDM framework presented by Mandinach (2012). Figure 1 is a visual representation of these concepts.

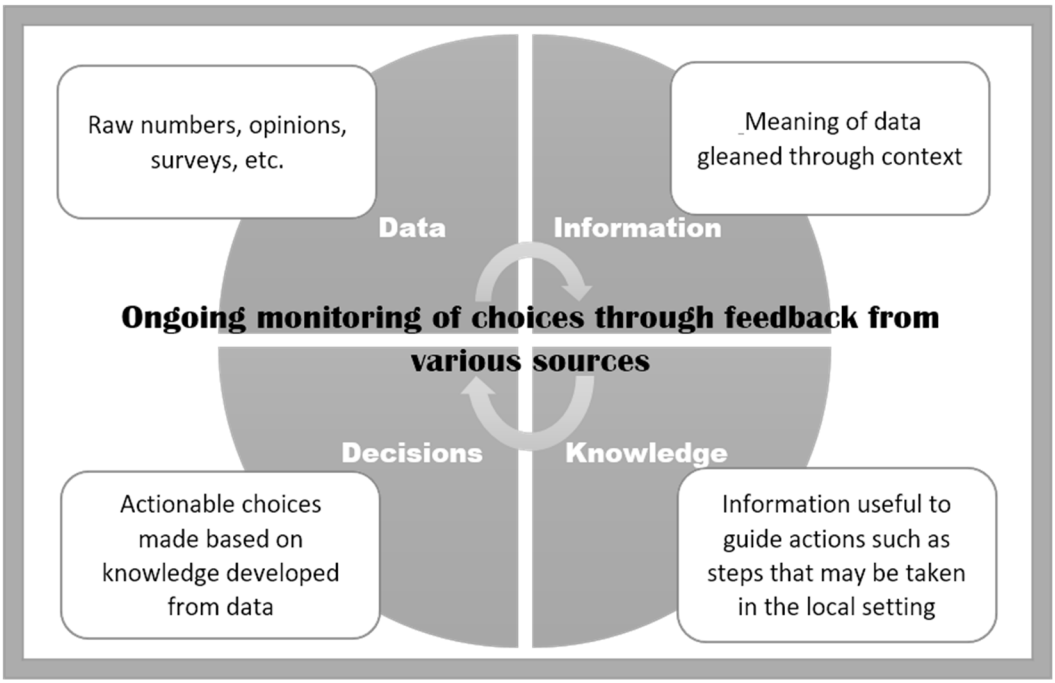

Figure 1. Visual representation of DDDM framework that guides this study (created from ideas in Mandinach, 2012).

Through this study, I traced the four pillars of Mandinach's (2012) model to reveal the theoretical and local school's actual processes for gathering and assimilating data, analyzing and contextualizing those data, creating meaningful information from the context and analysis results that would be useful to guide instructional actions, and revisiting the actionable choices made from the knowledge. The literature review includes an overview of research related to each pillar relative to the local problem.

Connection to the Local Problem

The administrator in the local venue altered the grouping of students in Grade 5 midyear. This stakeholder moved students into mixed-sex groups based on one teacher's request without gathering feedback from others or considering potential benefits of single-sex instructional grouping for students in Grade 5 at the local school (J.M., personal communication, March 1, 2015). The local administrator took responsibility for the decision to make this instructional change (A.S., personal communication, March 1, 2015). Although the administrator was empowered to make this decision, it was made based on only one piece of data: teacher request. Qualitative data, including important stakeholder perception data, were available about single-sex instructional grouping in this locale but were not collected or analyzed. The decision-making process to alter the instructional grouping practice mid-year demonstrates a gap in best practices for DDDM.

Gathering all the available data and assessing them through the local context into informed knowledge may provide insight to the local stakeholders about the curricular concern of single-sex instructional grouping. However, gathering and analyzing these data may also model best practices for the local stakeholders to make more informed decisions that may potentially improve the local data culture and decisional outcomes for all stakeholders.

Review of the Broader Problem

This literature review represents research and implications related to DDDM and the lack of best practices in the local venue regarding the independent decision of the administrator to alter the single-sex instructional grouping practice in place at the local

school in Grade 5. Hussein (2009) described the use of theoretical triangulation in social sciences. This practice is characterized using multiple frameworks in formulating a hypothesis or providing a more in-depth understanding of a research problem. My study is grounded in the concept that best practice is to use multiple types of data, including perceptual data, to inform decisions. Here, the district has quantitative data on student performance based on class grouping. While these were not available for this study because school and student identities could have been compromised, these quantitative data did not need to be recollected for the study to fill the gap in best practice at the site school. The literature in this review was organized according to relevance to instructional grouping, the instructional and curricular concern in the local case and DDDM best practices as represented by the four categories of Mandinach's (2012) model are noted throughout.

DDDM in Practice

According to Mandinach's (2012) model for DDDM, the fluid process of making decisions based on data begins with having raw numbers, opinions, or survey responses gathered from relevant individuals. As a stakeholder makes a decision, these data are analyzed in context and become useful information—more than just raw digits or comments bulked together. Sifting and sorting through data often reveals unseen facts or relationships that become valuable information. Once data are more informed, the most relevant data sets or facts become meaningful knowledge that may guide the stakeholder's decision-making process. Once the stakeholder acts upon a choice influenced or informed by the meaningful knowledge that originated in the raw data, the

stakeholder makes a databased decision. Better understanding of how the factors related to Mandinach's four pillars—data, information, knowledge, and decisions—connect with the literature will appropriately inform this study.

Data use. A wide variety of uses, benefits, and cautions about the DDDM process in education are explained in research. Gullo (2013) named reasons for and benefits of collecting data, specifically (a) revealing when change is needed, (b) questioning assumptions, (c) encouraging communication among stakeholders as reasons for data collection, and (d) informing reform processes. Data may also inform decisions about achievement gaps, instructional objectives, and student grouping for instruction (Gullo, 2013; Kaufman, Graham, Picciano, Popham, & Wiley, 2014; Mandinach, 2012). A focus on formal data such as that collected by required annual assessments has been promoted by NCLB (Marsh et al., 2006); however, researchers also encourage the use of multiple types of data including informal data such as perceptions to inform decisions in educational practice (Coburn & Turner, 2011, 2012; Gullo, 2013; Mandinach, 2012). Many modern-day educators espoused the regular use of data; however, they may infrequently use qualitative data due to their scarcity.

Multiple types of data. For proper decision making, multiple types of data should be included in the analysis. Data users are cautioned not to rely solely on one source of data to make decisions as doing so demonstrates an assumption that one size fits all without regard to biological, social, or opportunity backgrounds of students (Gullo, 2013). Mandinach (2012) noted that using data including collaborative discussions with colleagues could be worthwhile; perception data are specifically named

by others (Gullo, 2013). The combined knowledge and experiences of those with access to the data are also relevant (Marsh & Farrell, 2015).

Quality and relevant data. While data may be used in infinite ways, DDDM is complex and can be detrimental if the quality and relevance of the data are not carefully aligned to the decision being made (Gill et al., 2014; Marsh et al., 2006; Ronka, Geier, & Marciniak, 2010). Data must be analyzed so that the meaning is appropriate in context (Mandinach, 2012). Additionally, the data sets must inform practice. As the information absorbs meaning from the context, it becomes useful knowledge that may be applied as facts that guide decision-making. Quality data also relevant are useful for informing databased decisions (Bernhardt, 2016; Mandinach, 2012)

Data for decision-making. For it to be appropriate to gather data, they must relate to a purpose, in this case, decision making. Multiple researchers agreed that data should not be collected to have more data; there must be quality data for DDDM to be most effective (Gill et al., 2014; Mandinach, 2012; Marsh et al., 2006; Ronka et al., 2010). Data inform decisions about achievement gaps, instructional objectives, and student grouping for instruction (Gullo, 2013; Kaufman et al., 2014; Mandinach, 2012). Although the decision-maker's intellect, perceptions, and even emotions may be involved in the decision-making process, the best decisions are those that align with the mission and vision statement and move the collective group toward continuous improvement (Bernhardt, 2016). In the local venue, no qualitative, stakeholder data were collected or used in the decision-making process related to a change in instructional grouping

practice. Applying DDDM best practices to the local school would improve the alignment of the decisions with the problems and intended outcomes.

Instructional Grouping

In education, students of developed societies have historically been assigned to classes with a possible underlying assumption that learning in groups, despite size, is the most productive method to assign students for instruction; however, this assumption is challenged by American research literature that examines learning styles (Dunn et al., 1990). Researchers pointed to grouping as one of the action-based decisions made in classrooms using data (Kaufman et al., 2014). When analyzing data to make action-based decisions regarding grouping, it is important to understand the existing achievement gaps, scientific and psychological research, differences in students relative to instruction, and methods to continuously improve these decision-making processes. Numerous practices for grouping students exist in education.

Scientific and psychological research. Research-based educational decisions for practices and programming are the intention of federal level officials as evident in the American Recovery and Reinvestment Act (2009). Gardner, in his Multiple Intelligences (MI) theory, and Gullo, more recently, cautioned that utilizing a uniform model for educating students may not meet the needs of all (Gardner, 2006; Gullo, 2013). Neuroscience and biological researchers on brain structure and child development stated that some behaviors related to learning are innate and may affect student reception of knowledge necessary for reaching achievement goals (Dubinsky, Roehrig, & Varma, 2013; Fabes, Martin, Hanish, Galligan, & Pahlke, 2015; Sax, 2005). Teachers, when

presented with researched-based information about their learners instinctively reflect upon their practice in relation to those ideas (Chadwell, 2010). One such area of research presented to teachers is neurobiology.

Partnerships between neuroscience research and education present prospects for laying the fundamental groundwork for educational practice and policy (Busso & Pollack, 2015). Neuroscience concepts are appearing infused with teacher professional development (Dubinsky et al., 2013). Using data to inform practices and continue improving student achievement is the ultimate goal; teachers show enthusiasm for learning about neurological and biological factors that may contribute to building better learning environments (Hook & Farah, 2013). Some researchers suggested a need for better connections among practitioners in the educational arenas and neuroscience researchers (Hardiman, 2012). Busso and Pollack (2015) reviewed claims that neurological structure and biology are keys in educating students; however, they cautioned that framing education only through the lens of neurobiological sciences might cause inadvertent changes to views, goals, and values. To make the most informed decisions, however, educators must know the neuroscience concepts connected to instructional decisions, so they may inform instructional decisions.

Achievement gaps. The National Staff Development Council recognized that an achievement gap identifies the differences in test performance among student groups; however, the members encouraged research consumers to know the identification of achievement gaps does not describe the legacies of "exclusivity and institutional racism" that contribute to the gaps within the United States (Wei, Darling-Hammond, &

Adamson, 2010). The gap in achievement between white and non-white students is longstanding (Pitre, 2014). Lundberg and Startz (2000) expressed that the legacy of past discrimination is perpetuated, appearing as inequalities in society, even if no contemporary discrimination is present. The nation's most poorly performing schools encompass disproportionate concentrations of minority groups. Poverty was cited as the root cause of the academic achievement gap between majority and minority children in the United States, and eradication of such is fundamental to successful education reform and eliminating the disparity between racial groups (Berliner, 2006; Lewis, 2007; Stevens & Wood, 1995). This poverty was exacerbated in U.S. schools by philosophies of exclusion through which children were not exposed to challenging academic subjects offered at more affluent schools (Lewis, 2007). Academic achievement and length of time spent living in poverty are directly correlated; more time spent in poverty equals lower achievement academically (Hair, Hanson, Wolfe, & Pollak, 2015). Understanding the demographics of a student population, therefore, would be relevant to stakeholders making informed decisions to improve or alleviate achievement gaps (Bernhardt, 2016; Mandinach, 2012).

Closing the achievement gaps between student groups remained a focus of educational policy and reform both within our country and abroad (Doris, O'Neill, & Sweetman, 2012). The gender achievement gaps have narrowed since the 1970s according to the NAEP (2012), but gaps persist (National Center for Education Statistics, 2013). According to Bowles and Gintis (2002), schools should offer experimental

territories to build a society that offers material benefits and freedoms to everyone. Unfortunately, their vision was viewed somewhat more radical than realistic.

A growing gender achievement gap has been of concern since the early 1990s. Statistics showed girls moving forward more quickly than boys. Girls perform better than boys in many countries and across many subjects (Carvalho, 2016; Stoet & Geary, 2015). Alarmingly, boys are more likely to be enrolled in special education, be diagnosed with ADHD, and least likely to complete a bachelor's degree in college (Conlin, 2003). Boys were not just falling behind girls during the 1990s, Pollack (1998) indicated that they were doing worse than they had done before, falling behind their own functional capabilities. Across the last decade, the view of which gender is most at risk for achievement in education has shifted between the sexes. The gender achievement gap has fluctuated, but a persistent gender gap remains. Students in the United States showed an achievement deficit when compared to international learners, especially in mathematics (Crawford-Ferre & Wiest, 2013; Dillon, 2010; Feniger, 2011). Reactive practices focused on narrowing the gender achievement gap, including single-sex instructional grouping, are based on a general consensus, noted by early psychologists and explored by theorists, that males and females differ biologically and socially (Bigler & Signorella, 2011; Doris et al., 2012; Goodkind, Schelbe, Joseph, Beers, & Pinsky, 2013; Hayes, Pahlke, & Bigler, 2011; Unger, 1979). These sex-based differences are a piece of the data set that influences instructional grouping decisions. Moreover, Gullo (2013) reminded, a variety of data are essential to DDDM.

Gender differences relative to classroom instruction. Most public schools are part of a large network of gender-defined activities. Gender stereotyping and socialization affect the educational environment through curriculum, organization, staffing, and expectations. While theories of sex-role socialization attempted to explain gender differences in terms of learning and successfully explained the psychology behind how children come to demonstrate gender-specific behaviors, these theories do not sufficiently explain the sources of the behaviors (Stevens & Wood, 1995). However, there are those who support single-sex instructional grouping for social reasons (Goodkind et al., 2013; Weil, 2008; Younger & Warrington, 2002). While students enter kindergarten with narrow achievement gaps, the disparity becomes evident by middle childhood and early adulthood especially in spatial reasoning skills (Hayes et al., 2011; McCrea, 2010; Robinson & Lubienski, 2011). Sax (2005) reiterated numerous times in his work that sex differences are more significant in childhood than in adulthood. Gurian, Stevens, and King (2008) identified differences in gendered brains as having structural, chemical, processing, and hemispherical differences.

Sex differences in brain-related behavior and cognition exist (Chadwell, 2010; Raznahan et al., 2010), and stakeholders faced with instructional decisions need to be informed. Fundamental to understanding the implications of single-sex or co-ed grouping in education, then, is the concept that gender differences exist that could potentially influence classroom environments, students' ability to learn, achievement, and teacher interactions. Innate, biological differences exist between boys and girls in brain structure (Chadwell, 2010; Sax, 2005). Understanding the differences in brain structure and

responses to environmental stimuli benefits both educators and the students they teach (Bonomo, 2010; Dubinsky et al., 2013). Anecdotal data related to the differing responses by students are data that may be useful to decision makers.

Boys may have an advantage because they are active, thereby self-stimulating their spatial abilities and increasing development of the right hemisphere (Gurian, Stevens, Henley, & Trueman, 2011). However, this poses a disadvantage, as boys can be intrusive to other students. While calming boys' impulsivity and aiding in learned control is necessary, guiding girls toward physical movement in learning environments stimulates their space and place intelligence (Gurian et al., 2011). According to Gurian and Ballew (2003), the male sex rather than female more often relies on logical-mathematical intelligence. Boys are more reliant on this type of intelligence than girls are. Musical stimulation is potentially a powerful influence on learning for both males and females because it is a whole-brain activity. Sousa (2011) declared that the remarkable discoveries about growth, development, and learning processes of the human brain have allowed scientists to design extremely successful educational interventions. Brain imaging technology gives scientist much more detailed information about how different activities affect the human brain (Spielhagen, 2013). Chadwell (2010) cautioned educators to ensure best practices for data collection and evaluation to ensure equity between instructional experiences for each sex group.

Spielhagen (2013) described brain research demonstrating that the left inferior frontal gyrus lights up during male reading where the frontal lobe is engaged on both sides of the brain when females read. Girls can generally better meet the traditional

classroom goals because they learn to read earlier and find it easier to listen, pay attention, speak, and write (Gurian et al., 2011). Because navigational tasks engage different sections of the brain for each gender, boys and girls may approach these topics differently. Girls often verbally process and feel less restricted in their attempt of such tasks when boys are not present while boys are more apt to move ahead without processing the task (Gurian, Stevens, & Daniels, 2009b). The implications of male-female differences demonstrate the importance of connecting classroom environments and instruction to brain-based research. These research-based notions reveal a need to ensure that decisions are driven by the knowledge that people learn differently.

While researchers such as McFadden (1998), Sax (2005), and Gurian and colleagues (2009a) recognized that gender differences exist, many classroom educators are not aware of the findings. Schools in the United States face the overwhelming challenge to prepare students from multi-faceted lives to enter the workforce with the education and skills necessary to be successful. The student population represents the ever-changing image of modern-day America. Students represent varying cultures, ethnicities, socioeconomic statuses, and values. Educators must attempt to reach each individual child, given the increasing accountability pressures and sanctions for failure show improvement (Wei et al., 2010).

Answering the question of best meeting the individual needs of students necessitates the study of student grouping options and their impact on student achievement. Single-sex instructional grouping is an attempt by teachers and educational institutions to meet the needs of students (Bigler & Signorella, 2011; Fabes et al., 2015;

Hayes et al., 2011). "Whether in the heartland of the United States or the heart of Africa, single-sex classes provide a compelling way to accommodate the education needs of [children]" (Spielhagen, 2013, p.41). Single-sex, or single-gender, education potentially plays a role in "improved grades and test scores, more positive attitudes about school, and increased participation" (Harjes, 2010, p.2). A closer look at the grouping practices in education, academic achievement gaps, and achievement gaps related to grouping models and gender may provide insight and or guidance for this study.

Ability grouping or tracking. *Ability grouping* or *tracking* is a grouping practice that involves placing students of similar ability levels together, most often in separate classrooms (Merrit, 2015), planted roots in the early 20th century with response to a scientific management principle. The principle "Work up the raw material into that finished product for which it is best adapted" sheds light on the foundation of instructional grouping. "Applied to education, this means: Educate the individual according to his capabilities" (Bobbit, 1912, p. 1). The testing and measurement movement of the 1920s exposed large differences in achievement and intelligence among the students in a typical classroom. Tracking became a scientifically measurable practice with developing IQ tests, followed by standard achievement tests (Stevens & Wood, 1995). Tracking grew rapidly and spread throughout the United States during the 1950s, peaked in the 1960s and early 1970s, and remains an influential factor in American education (Gamoran, 2001; Merrit, 2015). Ability grouping manifests in different forms: some groups are formed as separate classes in separate rooms while others are smaller groups formed from a larger group within the same classroom (Merrit, 2015). There are

different forms of ability grouping. Homogenous grouping places students with similar ability levels together. Heterogeneous grouping practices putting students into groups without regard to their ability. Achievement based grouping practices are often intentional; however, other grouping methods also can affect student learning.

Social grouping. Social grouping—the division of students based on social status or class, impacts student achievement in the United States. Decades after *Brown v. Board of Education* and the concentrated effort to restructure school boundaries minimizing effects of segregated residential neighborhoods on education, disparities abound. Students are sorted into relatively homogenous ethnic and racial groups due to residential segregation. McCreary (2011) argued that narrowing the gender achievement gap is not as significant as narrowing socioeconomic and minority gaps.

Single-sex instructional grouping. Co-educational grouping is widely accepted in education. The earliest sector of single-sex schools (i.e., schools with single-sex instructional grouping) opened in urban areas, serving low-income, minority students (Bigler & Signorella, 2011). Single-sex instructional grouping began as an avenue to reach those who were most at risk (Klein, 2012). Single-sex instructional grouping was limited to schools that were federally unregulated. However, there has been expansion in single-sex instructional grouping since the amendment to Title IX regulations by the U.S. Department of Education in October 2006 lifted federal regulations (Fabes et al., 2015; Pahlke et al., 2014; Protheroe, 2009). McCreary (2011) asserted that literature discussing the increase in single-sex instructional grouping had all but ignored the real reason, which he identified as an existing achievement gap between students of different races, not

between the genders. Nationally and internationally, improving mathematics performance and closing mathematics achievement gaps are a matter of government concern (Doris et al., 2012; McCrea, 2010; Novotney, 2011; Protheroe, 2009; Robinson & Lubienski, 2011). Single-sex instructional models include class offerings school-wide, by division, or in specific grades; some models include separate facilities while others are a portion of a co-educational facility.

Academic research includes mixed reviews of the impacts and implications of single-sex instructional grouping (Fabes et al., 2015; Gurian, Stevens, & Daniels, 2009a; Mael, Alonso, Gibson, Rogers, & Smith, 2005; Pahlke et al., 2014; Prendergast & O'Donoghue, 2014; Smithers & Robinson, 2006). Proponents for single-sex instructional grouping traditionally offer short- and long-term benefits. A non-exclusive list of benefits includes: elimination of distraction-related to hormonal changes and maturation; elimination of stereotypical judgements; more opportunities for students of each sex to excel in content areas perceived as a weakness; the ability for teachers to address different learning styles more consistently; remedy for inequality in interventions; improved academic achievement; confidence, self-esteem increases; narrowed achievement gaps within the group allowing teachers to have greater impacts; and fewer social pressures inhibiting learning (Goodkind et al., 2013; Hayes et al., 2011; Salomone, 2006; Younger & Warrington, 2002). Further, Salomone (2003) offered that single-sex instructional grouping supporters focus on overcoming and preventing social and educational disadvantages faced by minority youth populations to prepare students for the roles they will assume as adults; decrease drug use, violence, and teen pregnancy; and

increase academic achievement. In contradiction, researchers argued that causal studies of single-sex instructional grouping had flaws in the design including selection bias (Bracey, 2006; Hayes et al., 2011; Palkhe, Hyde, & Allison, 2014; Park, Behrman, & Choi, 2013). Others described the financial, social, and time costs associated with single-sex instructional grouping (Bigler & Signorella, 2011; Hayes et al., 2011), and some concern was raised about the legality of sex segregation in schools (Klein, 2012; Halpern et al., 2011). Some discussed a decline in the achievement of boys (Santos, Galligan, Pahlke, & Fabes, in press). Globally, however, researchers recognized that children benefit from interaction with both members of the same gender and of the opposite gender (Fabes et al., 2015).

No matter the geographical context, sex and gender are used to identify differences in people. Our social expectations, work and family obligations, and rights: property, political, and educational have been defined by sex and gender. Gender and education intersect in areas of social relations, school experiences, and curricular practices (Eckes & McCall, 2014). Sex or gender grouping, grouping by which students are sorted based solely on sex-identification—male or female—is a controversial practice for educational grouping (Daly & Defty, 2004; Friend, 2007; Hughes, 2007; Klein, 2012; Novotney, 2011). Single-sex instructional grouping is not the be-all, end-all solution to closing the achievement gap, but it is an option. Regardless of the instructional grouping method, it is essential for educators to use various types of data to make decisions when tasked with meeting the unique needs of each learner.

DDDM for continuous improvement. Bernhardt (2016) focused an entire text on the question "What does it take to improve schools so that all students learn every year, in every grade level, and in every subject area?" (p.1). Of Bernhardt's eight research-based best practices to improve student learning, the following three are relevant to the local case and this study:

- (2.) Teachers and administrators must *honestly* review and use their data—*all* their data, not just analyze a gap here or there.
- (6.) Staff must *collaborate* and *use* student, classroom, grade-level, and school-level data. Teachers need to work together to determine what they need to do to ensure learning in *every* student.
- (8.) Schools need to rethink their current structures as opposed to *adding on* to what exists. (Structures include how curriculum and instruction are delivered. Add-ons are programs and interventions added to close a gap.) (p.1-2)

When making decisions about instructional grouping or any other educational concern, it is important that actions move the institution toward a shared vision and mission that focuses on continuous improvement rather than just compliance (Bernhardt, 2016). By applying Mandinach's (2012) 4-Step model for gathering data, creating contextual information, and using appropriate knowledge to inform actionable decisions the outcomes may prove beneficial to all stakeholders as it establishes a data culture that involves transparency, sharing, and collaboration.

To apply this framework and continuous improvement process to the local case regarding concern over single-sex instructional grouping, a first step in educational programming that creates success through instructional grouping, curriculum, or other means may be awareness of sex-specific brain or learning differences and the factors that influence achievement, a next important step is examining the impact of differences in the classroom. To make an appropriate decision, the data relative to classroom teaching and learning must be evaluated. McFadden (1998) reviewed some sex differences, commenting:

> …simple intuition handles well the idea that complex behaviors and structures—higher order functions—can differ between the sexes, but it stumbles over the existence of sex differences in what are regarded to be simple, low-level functions and structures. Why this counter intuition? Perhaps because the existence of sex differences in simple, low-level abilities carries the implication that they—both the sex differences and the abilities—have, all along, been more important than has been appreciated. (p.262)

Simply moving female students into one room and schooling male students in another is not always productive (Chadwell, 2010; Protheroe, 2009; Sax, 2006). Without data to support or ascertain the benefits of an instructional approach, it is difficult to make the most appropriate decision.

Well-laid, responsive plans focused on the specific needs of the learner are necessary. Data-driven decisions require multiple types of data to include perceptual and achievement data (Gullo, 2013). Classroom productivity comes when students benefit

from attendance and make progress towards achievement. Ultimately, one can conclude that teachers who are sensitive to the needs of individual learners in the classroom by explicitly implementing strategies geared toward the needs of each one can make a difference, and knowledge of sex difference based on brain research has the potential to impact classrooms in ways yet to be measured. Spielhagen (2013) argued that teacher preparation before being assigned to a single-sex instructionally grouped classroom is a critical factor and added that an insignificant percentage of teachers report changing classroom teaching practices based on single or mixed-sex classrooms. Dubinsky et al. (2013) have even suggested a parallel relationship between neurobiological information related to sex and learning and education. However, the data, in context, must be available to educators so they may make informed, knowledgeable decisions (Mandinach, 2012). Without all the information, the most informed decisions evade stakeholders. DDDM cannot become the norm without ensuring the decision-making parties have access to relevant, reliable, quality data that relates to the decision that has or is to be made (Gill et al., 2014; Marsh et al., 2006; Ronka et al., 2010). Providing quality data to inform local populations may bridge the gap in available research.

Implications

Findings from the data collection include stakeholders' perceptions (from administrators, teachers, and leadership team members) of DDDM processes in the local setting related to the single-sex instructional grouping practice for students in Grade 5 at the local school. Analyzing these data may provide the local venue with a deeper understanding about (a) the value of and processes of gathering and analyzing data for

informed decision making and (b) the benefits or disadvantages of single-sex instructional grouping for stakeholders. Potential projects emerging from the data collection may be a professional development with supporting materials or a white paper about the local DDDM process. This paper could include discussion on the value of qualitative data in decision-making or the implications of a student's sex and related neurobiological factors on his or her learning, behavior, and achievement in school. The project will address the gap in best practice for decision making and share the themes revealed through data collection with stakeholders. The present administration or other stakeholders in the state may use the resource to inform future practices or decisions related to student learning groups or other curriculum and instructional concerns.

Summary

DDDM, as an essential pillar of education, cannot be achieved unless quality data are collected and subsequently used to inform decisions. Advancing neuroscience research and classroom implications include information that educators may apply in curricular and instructional programming that best meets the learners' needs. The sex of learners potentially influences their reception and application of knowledge; therefore, classroom grouping based on sex may potentially benefit students. Barriers for educators in using data to drive decisions include the lack of (a) quality data and (b) various types of data. The purpose of this study was to provide insight from administrators, teachers, and leadership team members about the DDDM processes surrounding decisions related to single-sex instructional grouping in Grade 5 at the local school. Analyzing multiple types of data may reveal insight about the decision-making process to eliminate single-

sex instructional grouping, subsequently providing support for decision-making teams in similar, instruction-related contexts.

Section 2 includes the setting and sample, instrumentation, materials, and research methodology. These are pertinent to gaining a deeper understanding of this practice. A deeper understanding may lead to improved data-based decisions at the site school.

Section 2: The Methodology

Case study research may be used by school administrators, teachers, or employees in other fields unrelated to education (Hancock & Algozzine, 2011). This case study was based largely on interviews. Seidman (2013) described interviewing as qualitative research with the power to explore the experiences of people, especially in social science arenas. This methodology was logical for this study as the purpose is to provide insight into the decisions regarding the practice of single-sex instructional grouping in Grade 5 at the site school. Studying this case shed light on what teachers, administrators, and leadership team members perceived about single-sex instructional grouping for the students in Grade 5.

This section includes a description of the case study research design I used to collect data to reduce the gap in best practices for data-driven decision-making related to instructional grouping of students in Grade 5 at the local school. The problem at a Southeastern elementary school was that a decision to suddenly eliminate single-sex instructional grouping in the fifth-grade classes was made without a proper analysis of all data, and an understanding of the benefits or disadvantages of single-sex instructional grouping are unknown for the local population. I shared the research approach, participant selection, and methods for data collection and analysis.

Research Design and Approach

Merriam (2009) defined *research* as the systematic inquiry process by which more is known after being engaged in the process than before engaging. According to Merriam (2009), researchers engage in research to contribute knowledge, improve

practice, assess value, or address a specific, local problem. Researchers, scholars, practitioners, and evaluators in social science fields often perform research to make an impact. The purpose of this study was to explore stakeholders' perceptions of single-sex instructional grouping for students in fifth grade at the site school.

Case Study Research

Case study research is common in social science disciplines including education (Yin, 2014). Case study research is centered upon a problem that needs to be understood and may include an event, program, process, activity, or individual (Hancock & Algozzine, 2011). Characteristics of case studies include (a) a focus on a phenomenon, (b) descriptive research, seeking to explore, and (c) identification of themes, rather than testing hypotheses (Hancock & Algozzine, 2011). The case study design was appropriate for this study because the site is a single school, formerly utilizing the single-sex instructional grouping model. The data needed to address the local problem were based in stakeholder perceptions regarding the decision-making process related to the local instructional grouping model, and the goal of the study was to gain a deeper understanding of the decision-making practices related to single-sex instructional grouping in this geographical region.

Best practices for DDDM indicate a need to analyze multiple types of data and to then triangulate those data before making instructional decisions (Gill et al., 2014; Gullo, 2013). At the local venue, data were not analyzed before or after the decision to eliminate single-sex instructional grouping in the fifth-grade classrooms. Although there are existing quantitative achievement data that the administration may have reviewed for

achievement and gender indicators, there were no qualitative data available. There is no evidence that the administrators used the quantitative achievement data in the decision-making process.

Through this case study, I explored administrator, teacher, and leadership team member perceptions of single-sex classroom education at this school for fifth-grade students. Adding these qualitative findings to the existing quantitative data provided a more well-rounded picture of the single-sex instructional grouping at the local school. While it is commonplace to focus on formally collected annual achievement data, such a streamlined approach does not allow regard for social background, opportunities, or biological maturation and may create a shallow picture of the learning (Datnow & Park, 2014; Marsh et al., 2006; O'Neal, 2012; Gullo, 2013). Achievement data need to be combined with stakeholder experience before action is taken related to the data (Huguet, Marsh, & Farrell, 2014). The decision to discontinue this instructional grouping resulted in classes being conjoined in January 2015 without what some viewed as any regard for what the families, teachers, administrators or other school leaders thought about the single-sex instructional grouping model for students (A.C., personal communication, February 1, 2015). One person, the building administrator, made the decision to discontinue single-sex instructional grouping; the focus of this study was on the perceptions beyond that one person.

A descriptive case study provided the opportunity to gain a deeper understanding of stakeholders' perceptions of the potential impacts of this practice so the school will have qualitative data to inform future decisions related to student grouping. Quantitative

data, while available in-house, were not available for this project study because the population size was not large enough to ensure the protection of students.

Justifying the Design

I used the case study design to collect data that described the DDDM process related to practice of single-sex instructional grouping for fifth grade students so administrators may have a better understanding of (a) the value of processes of gathering and analyzing data for informed decision making and (b) the benefits or disadvantages of single-sex instructional grouping for stakeholders. I considered multiple research designs for approaching the local problem in this study: program evaluation, quantitative, and qualitative. I considered, but rejected, program evaluation as a methodology because Merriam (2009) noted that program evaluation is primarily used for decision-making purposes. While decisions may be made based on the information revealed in the study, the intent of the study was not simply informing decision-making. I considered quantitative designs for this study, but I dismissed the quantitative designs because they were not appropriate for the purpose of the research or sample. Leung (2015) noted that quantitative research primarily examines statistical comparisons objectively, I dismissed the quantitative design because my intention was to understand the perceptions of the stakeholders involved in the decision-making processes at the site school. Because the purpose of the study was to better understand the local situation, a qualitative tradition was most appropriate for the purpose of this study.

I, therefore, considered the following qualitative approaches to determine which would best align with the parameters of the study: phenomenological, grounded theory,

ethnographic, narrative, and case study. Phenomenological methodologies seek to understand how individuals make sense of their social world (Vagle, 2018). This design did not apply to the problem in my study as I was seeking to understand the DDDM practices among the groups of stakeholders within the school. Charmaz (2014) noted that the intent of grounded theory research is to build theories from the data collected in the study; I rejected this design because that was not the intent of my study. Ethnography, which also a qualitative design, did not apply to this research problem because the purpose of an ethnographic study is to employ participant observation to study the culture of society (Creswell, 2012; Glesne, 2011). Clandinin (2016) described the narrative methodology as the telling of a continuous story from an experience; I rejected the narrative design because the population of potential participants who could tell the entire story was seemingly limited. I knew that I would have pieces of the story from different perspectives. Therefore, I chose a case study design for the study.

Yin (2014) emphasized that choosing a case study design is positively associated with the need to explain a circumstance. The goal of this study was to investigate the DDDM processes in the local venue related to single-sex instructional grouping in Grade 5 and the sudden change in the practice midyear by the school principal. A description of stakeholder perceptions of the DDDM process used regarding single-sex instructional grouping for students in Grade 5 at the local school may provide data to inform future decisions and lead to a deeper understanding of both DDDM practices and the benefits or disadvantages of single-sex instructional grouping in the local population.

Participants

Participants in this study contributed descriptive data about DDDM processes related to single-sex instructional grouping for students in Grade 5 at the local school. Case study research hinges on the collection of data from a variety of sources (Baxter & Jack, 2008; Yin, 2014). I purposefully selected participants to represent three groups of stakeholders: administrators, teachers, and leadership team members from the faculty and staff of the site school.

Criterion for Selecting Participants

I subdivided participants into the categories for data collection using these criterion: (a) teachers who have taught Grade 5 in the site school during the implementation of single-sex instructional grouping practices, (b) any administrator who participated in the decision to initially implement or subsequently withdraw single-sex instructional grouping in Grade 5, (c) leadership team members who have assisted teachers in planning for instruction or had a role in the decision-making process to initially implement single-sex instructional grouping in Grade 5.

Number of Participants

Creswell (2012) suggested limiting a qualitative study to few individuals because "the ability to provide an in-depth picture diminishes with the addition of each new individual and a larger number of cases may result in superficial perspectives" (p. 209). Including participants from each representative stakeholder group (administrators, teachers, and leadership team members) provided multiple perspectives to assist in gaining a deeper understanding of this practice. Creswell (2014) noted that the sample

size in qualitative studies hinges on the type of design. His recommendation, based on a review of numbers of studies, is for case studies to have about four to five cases (p. 189). The total population of administrators, teachers, and leadership team members who were part of this grouping model and decision-making process was estimated between 10 and 13. I interviewed two administrators, three teachers, and three leadership team members for a total of eight interviews for the study

I know that there were three possible administrators. I invited each one to participate. I did not know many teachers or leadership team members that had perceptions to share based on experiences. Therefore, I invited all faculty who were listed on the site school's public website in order to allow self-identification.

Gaining Access to Participants

The building administrator acknowledged that she welcomed interviews to build qualitative data collection about this practice and the surrounding decisions. I contacted all potential participants with an invitation to participate using email addresses publicly listed on the school's website. The invitation to participate (Appendixes B & C) included a description of the study. Upon receiving a response to the invitation to participate either through the respondent's personal, confidential email or by phone, I conducted a prescreening conference with each potential participant using prescreening questions to determine eligibility to participate (Appendix D).

Creswell (2012) defined a snowball sample as "a sampling procedure in which the researcher asks participants to identify other participants to become members of the sample" (p. 628). At the end of each interview, I provided a copy of the invitation to

participate and consent form to the interviewee and asked that he or she shares it with any potential participants who may be able to provide insight into the practice of single-sex instructional grouping for students in the site school, thus creating a snowball sample. I used the same prescreening procedures for the potential participants in the snowball sample when they contacted me. The prescreening questions provided me the opportunity to identify participants who truly met the criteria for the study. Snowball sampling took place for 2 weeks after the initial interview.

Researcher-Participant Relationships

Participation in the study was voluntary. Potential participants volunteered by making contact via email or phone. The voluntary choice to contact me about potential participation allowed me access to each potential participant. During the call, I established an informal researcher-participant relationship. After concluding that the potential participant met the criterion for participation using prescreening questions, I briefly explained the purpose of the study and the expected parameters of participation. Participants were asked to be available for one interview lasting no longer than 1 hour at a time and location of convenience for the participant. The relationship with participants was further established during the interview as I collected demographic information and reviewed the parameters and purpose of the study. Interviewees were also asked to participate in member checking by reviewing a succinct narrative description of the findings electronically. Each participant was given 2 weeks to respond to the opportunity for member checking.

Measures for Protection of Participants

Walden University's Institutional Review Board approved the study (#09-26-17-0279027). I did not use the site school as a location for interviews as that could interfere with participants' professional commitments. All data collected were maintained in electronic form on the researcher's secure computer with NVivo Software. Paper artifacts were electronically uploaded and immediately shredded for confidentiality. Electronic records will be destroyed after 5 years. The computer and software program are password protected.

For the protection of the site school and its stakeholders, the state, city, district, and school name was omitted in every way. No participant names were used. Names provided by participants within answers were recorded within transcripts and in findings by the first letter only. Participants' rights were protected with alphabetic coding for interviews (e.g., Teacher 1 was coded as *T1*). Informed consent was signed by each participant upon agreement to participate in an interview. Participant confidentiality was maintained throughout the project study within the audit trail, interview protocols, and any reported findings.

Data Collection

Creswell (2014) identified the tool for data collection to be the researcher. Further, he explained that qualitative researchers may use a protocol, but it is atypical for a researcher to rely on instruments developed by other researchers. The goal of interviewing is to understand the experiences of the stakeholders through their eyes and to document what they find meaningful (Seidman, 2013). Interviews are a vital source in

case study research and served as the primary data source for this study. In this case, interviews with stakeholders involved with the site school during the implementation of single-sex instructional grouping in Grade 5 provided data about the DDDM processes surrounding this practice, the practice itself, and its effect on students.

Conversational questioning and a welcoming environment are vital to respondent answers. The processes of data collection for case study research, while following a formal protocol, are not routinized (Yin, 2014). According to Yin (2014), researchers can ask about facts, opinions, or insights by using an open-ended structure. A semi-structured interview style was utilized in the interviews for this study. I asked participants to share their perceptions about how data were used in the school, the data processes surrounding single-sex instructional grouping in Grade 5 for students, and their perceptions of these processes and the grouping method. Probing and follow up questions were used for clarification. I developed the interview protocol using the guidelines provided by Creswell (2014). The protocol was shared with committee members and fellow educators not part of the study prior to submission for IRB approval, and it is provided as Appendix E.

Interview Style and Settings

Participants were chosen to represent three stakeholder groups, including administrators, teachers, and leadership team members. Interviews were conducted in person at a location of convenience; via phone; or via personal, confidential email, based on participant request. Face-to-face interviews offer immediate reactions, as participants often display emotional responses. Creswell (2014) suggested this situation when the

participants can share comfortably and not hesitant to speak. Telephone interviews offer the conversational quality of face-to-face interviews and are useful when meeting at an identified location is unreasonable or impossible (Creswell, 2012). While the ability to observe the emotional responses of the interviewee can be lost when an interview is conducted via electronic mail, interviews conducted via email provide reflection time and potentially the same verbal content as one carried out face to face (Merriam, 2009). Creswell (2012) indicated this interview style is appropriate and beneficial when participants are in different geographic locales. This site school is geographically located 40 miles from the researcher's home. Efforts were made to meet each interviewee at a place of convenience. However, due to time constraints, the relocation of some participants to other states, and the request of some participants identified through snowball sampling, telephone and email interviews were often more reasonable for this study. Three phone interviews, 2 in-person interviews, and 3 email interviews were conducted.

Participant Response and Data Collection

Upon approval from Walden University's Institutional Review Board (#09-26-17-0279027), I began the process of data collection. The first step in data collection was to invite potential participants via email using the addresses provided on the school's public website. I emailed potential participants on the same date as approval from Walden's IRB. Each interview was planned to last less than 1 hour; and, no interviewee requested additional time.

Participants responded via phone and through text message to express interest in participating. For each participant, I completed a prescreening interview to establish eligibility. All participants who expressed interest were eligible to participate. I interviewed participants from each subgroup including teachers (T1, T2, and T3), leadership team members (LT1, LT2, LT3), and administrators (A1 and A2). Before each interview, participants signed the consent to participate. Interviews were conducted by phone (T1, A1, and A2), via email (LT2, LT1, T3), and in person (T1 and LT3). Each participant was offered a paper invitation to participate to share for snowball sampling after the interview.

Sufficiency of Data

Interviews with three stakeholder subgroups of the local population established multiple sources of information, provided understanding for the case. While there is not a prescribed specific number of participants for qualitative studies, researchers stop data collection when saturation has been established (Creswell, 2014). Upon completion of three interviews from teachers, three interviews from leadership team members, and two interviews from administrators, I was not gleaning new information from the participants. Based on this conclusion, I allowed 2 weeks beginning on the date of the last received interview responses—October 29, 2017—for snowball sampling participant responses. At the end of the snowball sampling process, I received no additional interested participants.

Interview Process

After obtaining informed consent from each participant (see Appendix D), I began the interview by collecting demographic information about each participant. The

researcher-developed protocol (Appendix F) included essential components: the date; location; interviewee's initials; stakeholder subgroup identification; opening ice-breaker question, followed by five or fewer interview questions to answer the guiding research question; probes and follow up questions which may allow participants to clarify or elaborate on their perceptions; a statement that includes appreciation for participation and an invitation to invite other potential participants by sharing the research invitation; and space between questions to record observations about emotions or gestures and/or participant responses (Creswell, 2014; Milagros Castillo-Montoya, 2016).

I created interview protocol documents for each interview within NVivo for the interviews. Seidman (2013) shared that effective questions come from the researcher's purpose for the study, careful listening, and thoughtful responses. While open-ended questions, probes, and follow-up questions were drafted for the study, semi-structured interviews allowed me to respond to the interviewees.

A specific recipe for effective questioning does not exist (Siedman, 2013). However, establishing rapport, staying on target during interviews and remembering the purpose of the study is essential to data collection and the study (Yin, 2014). I asked probing questions derived from personal/professional experience, theories, and the research. During interviews, as I used the phrase "Tell me more…" to clarify or seek deeper insight into the practices or perceptions shared by interviewees.

System for Tracking Data

A chain of evidence was established through an electronic research log on my computer. Transcripts, reflections, notes, and narratives were organized electronically on

my personal computer. Computer-assisted data analysis was utilized through NVivo software. Within the software, I recorded and tracked the time, date, and location of each interview. Further, I electronically uploaded copies signed consent forms and interview notes when I took them. Face-to-face interviews were recorded using the voice recorder on my iPhone. These voice files were uploaded to the electronic project within NVivo and deleted from the cellular device immediately. Telephone interviews were recorded using the TapeACall application on my iPhone. The audio file was uploaded into NVivo and deleted from the cellular device immediately. Email interviews responses were saved as electronic documents also uploaded into the project within NVivo. I transcribed phone and face-to-face interviews within the NVivo software creating an interview transcript for each participant.

Each interview was transcribed exactly, except in the case of names mentioned by the participant. Names were typed as a first letter only. This measure protected the site school and participants' confidentiality. The data collected for the study are housed on my personal laptop and protected with an unshared password.

Role of the Researcher

Data collection for the study required me to interview administrators, teachers, and leadership team members who meet the study criterion. I currently have no professional role at the study site; however, as I was employed as a teacher in the site school during the 2013-2014 school year, I do have a prior working relationship with some staff at the site school. I have no other relationships with participants at the site. I left the school on good terms with my colleagues and parent stakeholders. To eliminate

any potential ethical concern, my prior employment at the site school was disclosed to all possible participants in the invitation emails and the consent form (Appendixes B-C).

The researcher-participant relationship was established during screening phone calls and further developed during interviews through transparency about the study's purpose, reviewing expectations for participants, and the explanation of participant protections. Participant responses to interview questions did not have a risk of influence on employment or student quality of education received. Responses were confidential and were not shared with others. I have no supervisory role or educational role related to the participants' current livelihood. Past encounters are not perceived to be a threat to data collection.

Discrepancies

The descriptive results from this case study informed the gap in practice in DDDM relative to grouping students in Grade 5 at the local school. Discrepancies were not noted in the data. Yin (2016) noted that qualitative research procedures should be described in detail to create transparency for peer review. I demonstrated transparency through memos and reflections recorded in a research journal typed in the NVivo software research log as data were analyzed. An excerpt from the research log is included in Appendix G. These records served as my notes, questions, and thoughts during data analysis. The research log, housed within the software, became part of the data set.

Assumptions, Limitations, Scope, and Delimitations

It was assumed for this study that the personal communications relayed by school stakeholders were true. Further, it was assumed that the current faculty of the site school

remembered the DDDM events leading to and after the practice of single-sex instructional grouping took place. Additionally, the study was limited to only the details that stakeholders who responded to the participation request or were reached through snowball sampling recalled from memory at the time of the data collection for the study. The scope of the study included stakeholders from one school in one district within one state in the Southeast region of the United States.

Data Analysis

This study contributes to the gap in best practices for decision-making relative to students in single-sex instructional groupings in Grade 5 at the local school. I describe the administrator, teacher, and leadership team member perceptions of single-sex instructional grouping for students in the local population. I systematically analyzed data collected through interviews with stakeholders who experienced this practice.

Transcription

Interviewers who personally transcribe recordings are more connected to the information (Siedman, 2013). Therefore, I transcribed the interviews. Siedman (2013) advocated for transcribing the entire interview rather than portions that may seem important to alleviate the potential to impose the researcher's ideas too early. The interviews for T1 and T2 were transcribed on the date of the interview. The email interviews did not need to be transcribed, but I copied the content of the interviews into the NVivo software upon receipt. The interviews with LT3, A1, and A2 were transcribed 3 days after the interviews.

Software Assisted Analysis

A thorough description of the data, separate from interpretation, was necessary and was generated and housed in NVivo software. I initially began with queries to analyze word counts and frequencies throughout all interview transcripts. I made notes in my researcher log. I performed software-assisted analysis to contribute to the transparency and efficiency of data analysis for the study and provide an electronic recording source for all data collected. NVivo did allow for the review of transcripts to be more efficient throughout data collection. As I added data sources—interview transcripts—to the project file in NVivo, I compared the data to examine trends in word frequencies. I created word clouds and frequency charts to review initial perceptions from stakeholders. Examples of these initial data tools can be found in Appendix H.

Coding

Qualitative data analysis is non-linear in nature and requires comparisons across various themes and sources throughout the process. "Each data source is one piece of the puzzle that contributes to the researcher's understanding" of the case (Baxter & Jack, 2008, p.554). Coding is one way of analyzing qualitative data (Saldaña, 2013). Coding can be completed using a priori codes that are predetermined on key concepts and emergent codes developed as the data are reviewed (Stuckey, 2015).

Coding is interpretive and can summarize or synthesize data (Saldaña, 2013). In this case, I began by creating documents within the NVivo software for each interview question. On these documents, I inserted participant responses by subgroup and participant respectively. Additionally, I created documents for perceptions related to the

impact of single-sex instructional grouping on student achievement, student behavior, and differentiation to meet the needs of students. Reorganizing the information in this fashion provided me the opportunity to reread each interview and to identify and compare participant responses.

The process of coding for this study included the use of a priori codes, multiple readings of the transcripts, and highlighting and dragging phrases from the transcript text to the appropriate code. A sample screenshot from NVivo is included in Appendix I. Initially, I used priori codes representing the four pillars of the DDDM framework—data, knowledge, information, and decisions. Additionally, I added codes for each subgroup's perceptions related to DDDM and to single-sex (SS) grouping. Then, I began the process of coding the data: I opened each document created in NVivo and highlighted, sorted, and dragged the data to the appropriate node. While rereading and coding the transcripts and data compilation files, I used memoing to record my observations and thoughts in the research log for the study (excerpt in Appendix G). After coding was completed, I prepared a succinct narrative summary of findings for each participant for member checking. I used this list of codes in the study: *data, knowledge, information, decisions, administrator DDDM perceptions, administrator single-sex perceptions, leadership team DDDM perceptions, leadership team single-sex perceptions, teacher DDDM perceptions, teacher single-sex perceptions*, *and participant roles in the site school*. For this study, coding was logical as I explored stakeholder perceptions of single-sex instructional grouping for students in the local setting. Therefore, coding allowed me to identify commonalities in the interviewee responses.

Participant Roles

During each interview, I explored the role of each stakeholder during the time of single-sex instructional grouping in Grade 5 at the site school. All qualified participants for the study were female. A range of participants included one administrator that held many roles during the time of implementation, with her most significant being the role of building principal when this instructional grouping method was discontinued. Another participant was the administrator who grouped students in Grade 5 into single-sex instructional groups. Participants in the leadership team member subgroup included the first teacher who taught the boys' class and moved into an instructional facilitator position after year one, a literacy coach and the grade level representative for the leadership team. The teachers who participated had first-hand experience as one taught the boys' class for one year, one taught the girls' class for one year, and another who began teaching in the first semester of the year the single-sex instructional grouping method was discontinued.

Data Analysis Results

After approval from Walden University IRB, I gathered data for the study through semi-structured interviews with participants representing three stakeholder groups: administrators, leadership team members, and teachers. I interviewed the participants in person, via phone, and via email. Face to face and telephone interviews were recorded. I transcribed each interview into NVivo software for software-assisted analysis.

Building the Findings from the Problem

To build findings from the problem, I analyzed the data for the study using all the interview transcripts. Figure 2 is a visual representation of the coding process for the study. Initially, I used priori codes representing the four pillars of the DDDM framework—data, knowledge, information, and decisions. Additionally, I added codes for each subgroup's perceptions related to DDDM and to single-sex (SS) grouping. It was clear from the transcripts that data, information, and knowledge were synonymous to the interviewees. I placed the items I had coded as data, information, and knowledge into one category I termed types of data. Interviewees mentioned many different decisions made at the school; I felt it was important to highlight the decisions that stakeholders recognized, so I determined these portions of the data would be categorized as examples of decisions. The processes of decision making in the school were important in answering the research question in the study. The perceptions of all three stakeholder groups related to DDDM were placed into a category of decision-making processes. Finally, I collapsed all three stakeholder groups' perceptions of single-sex grouping into a category.

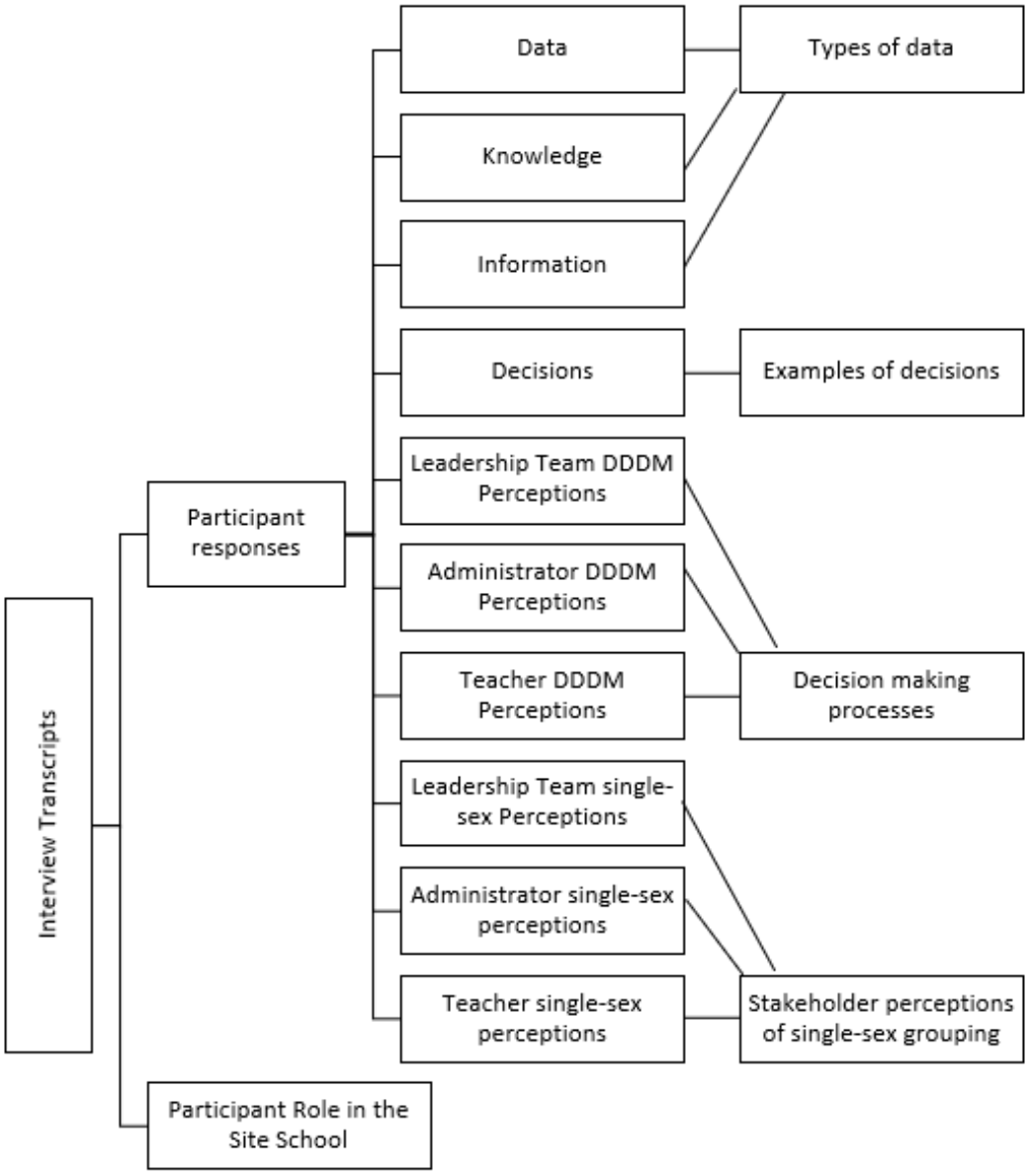

Figure 2. Visual representation of data analysis coding. Priori codes were combined to establish four overarching categories of data identified in the interview transcripts.

The four overarching categories represent vital information related to the decision-making processes and stakeholder perceptions of single-sex instructional grouping in the site school. These four categories represented the themes from data

analysis: (a) types of data, (b) examples of decisions, (c) decision making processes related to single-sex instructional grouping in the school, and (d) stakeholder perceptions of influences of single-sex instructional grouping in Grade 5. I used quotes from participants to support themes. To ensure participant identity protection, I used a letter-number system (A1, A2, LT1, etc.) to identify participants. For example, Administrator 1 was given the participant identification of A1. I used the same structure for identifying participants. A detailed summary of participant responses can be found in Appendix J.

Types of Data in the Site School

This theme was established during data analysis. During interviews, participants shared information about the data used by the site school staff. Participants mentioned multiple types of data. During data analysis, I marked each mention of data, information, and knowledge in the interview transcripts. For example, LT1 mentioned decisions about planning for staff development and named "observations, feedback from teachers to the instructional team, classroom walkthroughs by administration, and engagement checks" as data sources. T1 stated, "We do a growth assessment periodically, and I use that to determine whether or not the grouping is actually beneficial to the students." Each participant in the school named at least one type of data; however, there were not clear distinctions between the data themselves and the information and knowledge gained from the data. Ultimately, I merged the information and knowledge codes into types of data because they represented the type of data that the stakeholders used rather than information gleaned from the raw numbers and observations and discussion of the

information to generate knowledge as defined by Mandinach's DDDM Framework (2012).

I categorized the types of data into groups that described the data. For example, data about student transportation to and from school, free/reduced lunch, and whom students live with was grouped into demographic data.

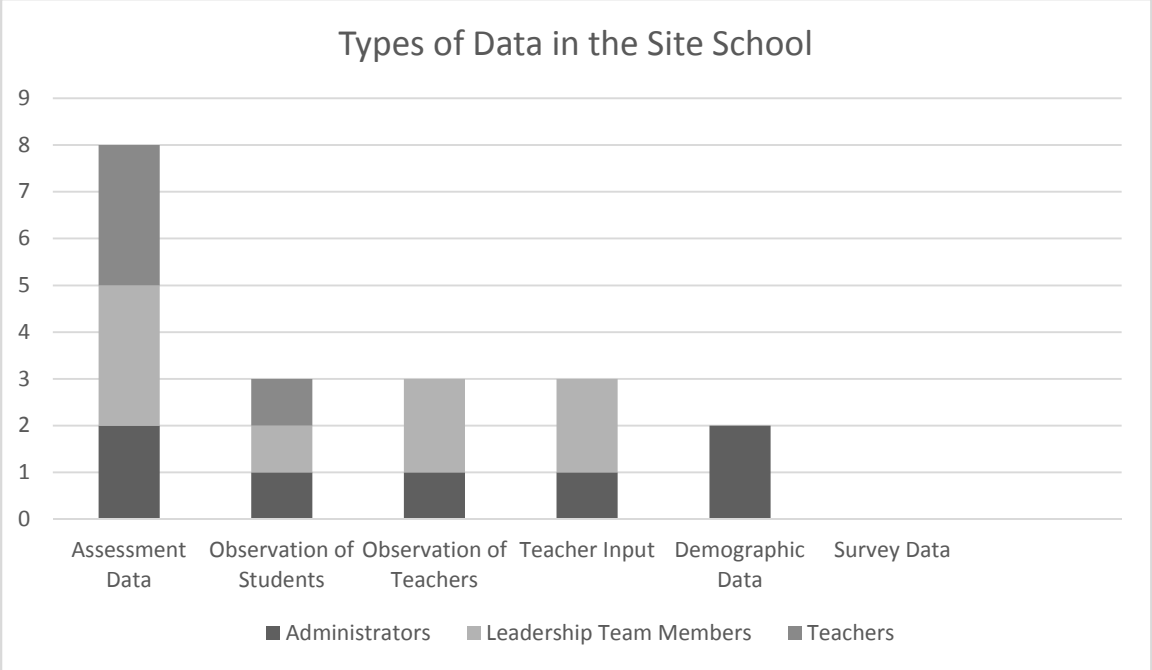

Figure 3. Types of data in the site school mentioned by respondents during the interviews. The bars on the graph quantify the number of participants from each stakeholder group who mentioned the type of data during the interview.

Figure 3 includes that following types of data mentioned by respondents: assessment, observation of students, observation of teachers, teacher input, demographic data, and survey data. Some specific examples of assessment data included STAR learning records, prompt writing, DRA levels, and math unit assessments, report cards, attendance, and behavioral records. Observation of students includes data gleaned from

anecdotal notes and engagement checks. Observation of teachers includes data from submission of lesson plans, classroom walkthroughs and teacher evaluations, and observations made about assignments sent home with students. Teacher input represents teachers responding to administrator and leadership team questioning about needs. Demographic data represent general student data, socio-economic data, and transportation to and from school for students. Survey data represents the data from school climate and stakeholder satisfaction surveys distributed by the district.

Achievement scores are an often-utilized data source but using multiple types of data are encouraged in DDDM (Datnow & Park, 2014; Gill et al., 2014; Gullo, 2013; Mandinach, 2012). However, the data type most often recognized by all participants was assessment data. Less frequently mentioned were observational data and input from stakeholders. No participants mentioned survey data. Administrators mentioned demographic data, but no members of the leadership team or teacher stakeholder groups did so. When using the DDDM framework, stakeholders glean meaning and information from all types of data, individually and in conjunction with other types of data. However, the limited information was only named in isolated incidents by individual stakeholders during the interviews. The information leads to understanding a problem or situation and is knowledge. Data analysis led to only one instance of knowledge in the interview transcripts. Again, this was from one individual stakeholder. Mandinach's framework for DDDM encourages collaboration to move from knowledge to actionable, data-based decisions (Mandinach, 2012). While types of data were mentioned, it is not evident that the pillars of information and knowledge were present in using data in the site school.

Examples of Decisions

Innumerous decisions are made each day in every school. The theme of examples of decisions emerged during data analysis. This theme allowed me to examine the decision-making processes of the school more closely. During interviews, I sought information about the decision-making processes and evidence of decision making in the site school by asking participants about decisions she made in the school. A1 stated, "Decisions made at the school goes in pretty much every area you can think of." She was adamant that the assistant principal and principal ultimately make all decisions. A2 explained that she or the leadership team made decisions such as which teacher will teach each class, who is the best fit for the grade level, discipline decisions, instructional decisions, and decisions about what happens in the school. A2 did emphasize, although, that the decisions about hiring and determining which person was right for the job were hers alone.

Leadership team members shared decisions related to teacher professional development and teacher compliance with timelines and due dates. LT1 stated, "Part of the role of the instructional coach is to plan staff development using the needs of teachers and students." LT2 echoed the involvement in staff development planning. She added, "I make decisions every day based on the needs of my students." LT3 again mentioned making decisions about professional development saying, "…we looked at again the areas that they were good in, the areas we need to work on, and we come up with some PD to help us in those areas." Leadership team members shared information that led to more understanding of their role in the DDDM processes within the school.

Teacher participants spoke of decisions related to student grouping within the classroom for instruction and identifying student needs for re-teaching and additional instruction. T1 stated:

> We group the students in the classrooms based on data. We decide how to pull small groups based on data; as far as decisions that I have helped become a part of in the school, I helped with intervention groups, really whatever is best for the child." T2 said, "I make the decisions on what to teach the students and when to teach it, which groups to put kids in, what to skip in teaching." "I make decisions within my classroom," said T3.

Again, teacher participants shared information related to their roles in the DDDM processes in the site school. Table 1 shows the examples of decisions made by participants. The individual stakeholders mentioned a range of decisions.

Table 1

Decisions in the Site School Identified by Participants

	Participant ID							
Examples of Decisions	A1	A2	LT1	LT2	LT3	T1	T2	T3
Decisions Regarding Logistics	⁎							
Future Teacher Professional Development	⁎		⁎	⁎				
Parental Involvement	⁎				⁎			
Students' Classroom Needs	⁎			⁎	⁎			
Discipline Decisions					⁎			
Instructional Grouping	⁎			⁎		⁎	⁎	⁎
Planning for Intervention Groups				⁎		⁎		⁎
Instructional Content	⁎						⁎	⁎
Instructional Timing							⁎	⁎
Presentation of Instruction					⁎		⁎	
Effective Teacher Selection		⁎						

Decisions regarding logistics include scheduling, arrival, dismissal, and accountability for students and staff within the school day. Future professional development decisions include determining the needs of teachers to grow as professionals in the coming year. Parental involvement decisions include planning activities that will involve families of students in school events. Students' classroom needs include grouping students with peers and providing support to students through instruction and supplies within the classroom. Discipline decisions include assigning consequences for

inappropriate behavior and rewarding appropriate behaviors of students. Instructional grouping decisions are those that include assigning students in groups for the teacher to teach them in small group settings within the classroom. Decisions about planning for intervention groups include lesson planning by interventionists. Decisions about instructional content include deciding what content will be taught. Instructional timing decisions are related to when to teach content and for how long. Decisions about the presentation of instruction include determining how the content will be taught within the classroom. Effective teacher selection is a decision made by the administrator that includes assigning the best candidate to each classroom.

Mandinach (2012) suggested via the framework for DDDM that decisions are the last step in the decision-making process (Mandinach, 2012). For best practice, decisions are made by first examining raw data which is transformed into information and knowledge through discussion. The outcome is a decision based on the knowledge gleaned from the information. There were no examples of decisions named by all participants in the study which provides evidence that the decision-making process may be fractured. Some members of the subgroup that included teachers named the same decisions; this also occurred in the leadership team subgroup but in fewer instances. The administrator participants named none of the same types of decisions. This illustrates that the role, definition, and application of decision making within the school is not shared across stakeholder populations.

Decision-Making Processes Related to Single-Sex Instructional Grouping

Developing the theme of decision-making processes in the site school related to single-sex instructional grouping emerged naturally from the data analysis. During each interview, I inquired about the decision-making processes related to the single-sex instructional grouping method. As I coded the transcripts, I marked perceptions from each of the stakeholder groups. A2 stated, "It was a strategy that I wanted to try to see the different ways genders learned" referring to the initial implementation decision. The participants of the teacher subgroup could not contribute to the conversation about the decision to implement single-sex grouping due to the timing of their employment as teachers in the site school. The teacher participants did teach during the implementation of single-sex grouping; however, none of these teacher participants were present for the initial decision for implementation. One of the teacher participants taught in a single-sex setting in addition to teaching after the decision to co-mingle students. T2 shared, "I don't think we used our data effectively, and I think when the decision was made to change from gendered classes to regular classes I don't think any data was used to make that decision." As I continued repeated readings of the transcripts during data analysis, I examined this them in three separate parts (a) the initial decision for implementation and (b) continuation of single-sex grouping, and (c) the decision to revert to mixed-sex grouping.

Initial Implementation Decision. Figure 4 is a visual representation of the initial decision to implement single-sex instructional grouping in Grade 5. Mandinach's framework for DDDM (2012) is a cycle from data to information then knowledge before

a decision. This framework for DDDM was not implemented sequentially in the initial implementation decision.

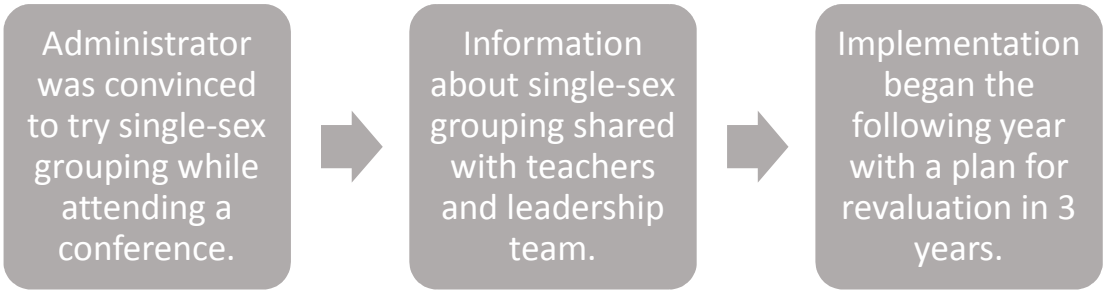

*Figure 4***.** Visual representation of initial implementation DDDM process continuum from left to right to demonstrate the sequence of events in the decision-making process.

The initial decision to implement single-sex instructional grouping in Grade 5 was described by A2 and all participants interviewed from the Leadership Team (LT1, LT2, and LT3). A2 and LT2 attended a professional development conference where single-sex grouping was identified as a research-based practice for reaching struggling learners. The principal had been convinced to try while attending the conference. Upon their return, they shared the information with the leadership team, which included LT3. LT1 shared that the teachers in the pilot year were given one article to read before school began with the implementation of the new single-sex instructional grouping in place. LT1, a teacher at the time, agreed to teach the boys' class. She stated, "Knowing that it takes 3 years to show substantial data for change, the plan was to look at three years of the model to decide to continue or discontinue" (LT1). LT3 stated that the principal decided to attempt this instructional grouping based on research she had read and then told the staff they

would try this for the upcoming school year. In contrast, Mandinach's (2012) framework for DDDM begins with raw data in the form of numbers, observations, and survey data.

Continuing Single-Sex Grouping. Participants were then asked to share their DDDM processes related to continuing the single-sex instructional grouping. A1 recognized that the leadership team compared student achievement at the end of the year to look at male and female scores. They looked at disparities between the sexes and looked at sources that could have contributed. A2 named informal assessments, teacher note-taking about student learning, and student progress in addition to formal state assessments as data sources for justifying the continuation of the instructional grouping method. A2 also shared that data were collected after implementation through classroom observations. The team wanted to "make sure it was a good thing that they wanted to continue." Thus, the team decided to continue single-sex grouping.

Decision to Revert to Mixed-Sex Grouping. Both administrators discussed the need for "strong teachers" for single-sex instructional grouping to succeed. LT3 mentioned that the teachers really made a difference and said, "…in years where we had a really good teacher, it was a really good thing; but one year, the teachers were not passionate about having all boys or all girls in the room." These were not the original teachers who began with implementation because some teachers relocated to other jobs and another was promoted to multiple leadership roles within the district. There is no evidence that teachers received training about single-sex grouping beyond the first year of implementation. According to A1, the administrator responsible for deciding to revert co-gendered grouping in Grade 5, the decision to discontinue was made because of the

fatigue and frustration of the teachers during the last year who were failing with classroom management for both single-sex groups. Figure 5 shows a visual representation of the discontinuation decision for single-sex grouping. The only source of data in this decision was observation of the classroom management issues. Teacher frustration led to a decision; however, there is no evidence of multiple sources of data as recommended by Datnow and Park (2014). There is no evidence from the interviews that the decision-making process aligned with Mandinach's (2012) framework for DDDM which begins with raw data in the form of numbers and observations from which information is gleaned. This information becomes knowledge through discussion and understanding of the data before an actionable choice or decision follows. Multiple stakeholders in this scenario were unaware of the data used to decide, and one named the administrator as the sole decision-maker.

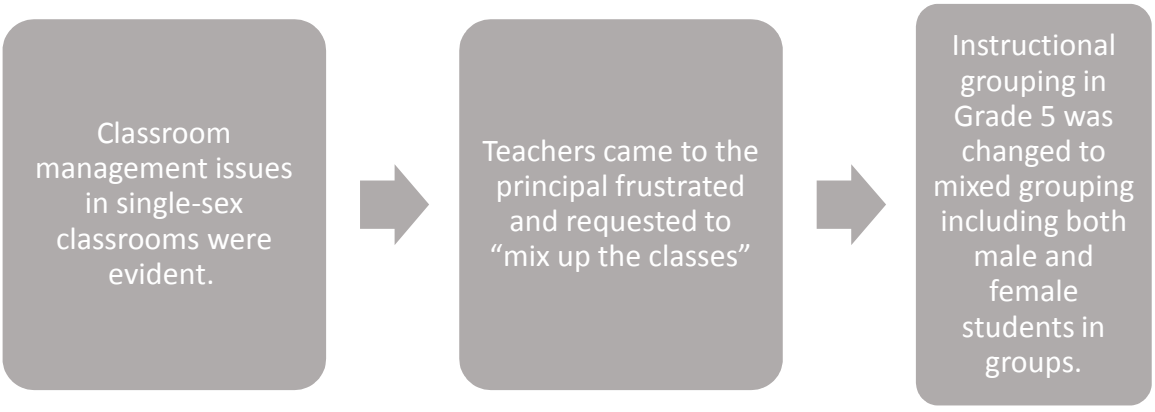

Figure 5. Visual representation of the discontinuation decision process continuum from left to right to demonstrate the sequence of events in the decision-making process.

In sharing about the discontinuation decision, LT2 stated, “Our principal was the decision maker in this process, and I am unaware of the data sources that were used.” T1 said the data really decides, but she did not elaborate on the type of data. T2 and T3 were both unaware of how the decision for single-sex grouping had been made or what data sources had been consulted in the process. There is no evidence of using multiple data sources used in this decision-making process. Datnow and Park (2014) recommended the use of multiple types of data in research-based best practices for DDDM.

Stakeholder Perceptions of the Influence of Single-Sex Instructional Grouping

In developing the theme of stakeholder perceptions of the influence of single-sex grouping, I focused on the last series of questions in the interviews. For the last series of questions in the interviews; I asked participants to share their perceptions of how single-sex grouping influenced student behavior, student achievement, and differentiation. Additionally, they were asked to tell me about data they had to support these perceptions. It is necessary to note that during recruitment for the study, the teachers who taught in the single-sex classrooms at the site school during the year when classes were reverted to mixed-sex grouping did not respond to the invitation, are no longer employed at the site school, and did not show up in the snowball sample. T3 was a teacher in the site school during the year that the single-sex instructional grouping decision was reverted; however, she taught both the boys and girls during different portions of each day.

Each participant shared the perception of the worthiness of the practice of single-sex grouping for students in fifth grade. Each of the eight participants ranked single-sex grouping as beneficial for at least some students in Grade 5. Five of the eight participants

stated that they would return to this grouping method if given the opportunity. A2 stated that she would have liked to expand this method for Grades 3-5, but she was happy she did it in at least one grade level. It is interesting to note that no one mentioned classroom management difficulty as a negative when discussing same-sex classrooms. Regarding the decision to revert to mixed-sex grouping, T3 stated, “It was an awful decision and the behaviors got so much worse and fifth grade went downhill after that happened.”

Table 2 includes quoted participant responses to this series of questions. The participant code on the left identifies the participant who gave the response. The column labels identify the area of influence including student behavior, student achievement, and differentiation.

Table 2

Perceptions of Influence of Single-Sex Grouping on Students in Grade 5

	Student Behavior	Student Achievement	Differentiation
A1	• phenomenal • engaged • few students in the office from those classrooms	• influenced in a positive way because each gender was getting exactly what they needed • students fully committed • higher achievement scores • strong teachers = strong scores	• did not answer
A2	• more comfortable • outgoing • worked well together	• students were more comfortable • students not trying to impress one another • students took more chances in both classes	• boys' classroom more active • girls' classroom quieter
LT1	• boys' behavior documents decreased • girls' behavior remained close to average	• girls grew in achievement more in math and science • boys showed more growth in writing and language • data available through state assessment scores and prompts given weekly by the district	• teachers trained in appropriate techniques for each gender
LT2	• boys were most difficult • girls were talkative	• did not see any specific data showing a direct correlation to student achievement and single-gender classrooms.	• able to pick books more specifically to girls' and boys' interest.
LT3	• boys became more mature • students helped others • girls more competitive	• improved growth on their tests	• clear focus on students' needs
T1	• fewer types of behaviors for the teacher to battle	• for the students it was beneficial for, they were able to succeed in those situations • for the kids that it doesn't really matter who they're with; it didn't necessarily benefit them in one way or the other.	• differentiation is based on ability; gender didn't impact ability level grouping in the classroom
T2	• behavior improved	• students wanted to do better • students weren't distracted • raised the standard of learning	• more comfortable being in a lower achieving group
T3	• fewer fights • fewer referrals • increased on-task behavior	• more likely to be on task/engaged • greater achievements • student academic goals were met	• easier because of fewer distractions • students less embarrassed by level

The focus of this study was to understand the decision-making processes within the site school. These data related to the example of a decision of discontinuing single-sex instructional grouping in Grade 5. The perceptions about single-sex instructional grouping methods within the site school are largely positive. The data related to this theme could contribute to future decision-making related to instructional grouping in the site school. Mandinach's (2012) framework for DDDM begins with raw data by which decision-makers can gather information and form knowledge about the problem. Data related to the theme of stakeholder perceptions of single-sex instructional grouping may become part of the raw data set for future decision making related to instructional grouping in the site school. The team of stakeholders may benefit from using these data to glean information and knowledge prior to making future decisions in alignment with Mandinach's (2012) framework for DDDM and best practices for DDDM.

Evidence of Quality

The validity of qualitative studies hinges on key components including credibility, transferability, and confirmability (Merriam, 2009). For this case study, triangulation of interview data from the multiple subgroup sources was utilized to demonstrate credibility. Member checking was used for a measure of validity and credibility. For member checking, narrative summaries of findings were emailed to each participant on November 29, 2017. Participants were asked to review the narrative and provided a reply to add clarity if they felt it was necessary. No reply was necessary if no clarification was needed. No replies were received from participants after 2 weeks. Letter and number

codes were used for identification of participants to assure protection of participant identities.

The data sources used for this study included audio recordings, field notes, interview transcripts, and a research log. Audio recordings were created for all face to face and phone interviews. During phone interviews, I created field notes to record voice inflection and record where the participant's voice indicated feeling. All information obtained can be accessed on my personal computer and is password protected. Applications on my smartphone used for recording also require password access. Field notes and transcripts are stored electronically on my personal computer.

Transferability was promoted through selection of participants representing various groups of stakeholders and through rich descriptions of the data including a list of codes utilized during the data analysis. The NVivo software provided an electronic database to house memos, reflections, connections, and notes related to the study; a succinct narrative description of the findings has been sent to interviewees for member checking. I established confirmability through the audit trail including a description of the design, data collection, and analysis as well as triangulation of data toward common themes and findings.

Outcomes

The intent of this research was to explore all available data leading to the decision to discontinue single-sex instructional grouping for students in Grade 5 and inform all stakeholders about the decision-making processes in the local school and improve the data available contributing to improved resources to allow the school to make more

informed decisions during DDDM processes relevant to decisions such as grouping in the site school and serve as an example for others with similar concerns or issues. These data may inform future grouping decisions within the local school, district, and state or provide information for others who face similar decisions. The question to be answered in this study was:

> What are administrator, teacher, and leadership team member perceptions regarding how data were used in the DDDM for single-sex instructional grouping for fifth-grade students?

Four pillars essential to effectively using data to drive actions within the school are defined in Mandinach's DDDM Framework (2012). The first pillar includes the raw data themselves. This pillar was represented in the data analysis. The participants named types of raw data. The participants did not all give the same examples, and there was no evidence of multiple data sources being used in conjunction with one another. Collaboration to glean information and build knowledge to make decisions was also nonevident.

A stakeholder cannot be expected to glean information from the raw data if he/she does not first understand the data. A prerequisite for implementing best practices for DDDM in schools is data literacy (Van Geel, Keuning, Visscher, & Fox, 2017). *Data literacy* is defined broadly as the ability to use and understand data effectively to inform decisions (Mandinach & Gummer, 2013). Marsh and Farrell (2015) described a need for data literacy as a necessity to participate in DDDM moving from raw data to information, knowledge, and then actions as described in Mandinach's (2012) framework for DDDM.

Data literacy is underdeveloped in the site school as evidenced by the participant responses in the study. LT2 stated that data were used by the principal but was unsure which data. T1 and T2 were also not sure which data sources were used in decision-making for the school. In examining the data collected in the study, four themes emerged including (a) types of data, (b) examples of decisions, (c) decision-making practices in the site school, and (d) perceptions of single-sex instructional grouping in the site school. Through these lenses, I presented the outcomes of the study. Data literacy is essential to using raw data effectively. I embedded the pillars—data, knowledge, information, and decisions—as applicable into the themes that emerged from the data within the outcomes of the study.

Types of Data

While there is some evidence of multiple types of data being used by some individuals, the same data sources are not evident between stakeholder groups. The same data sources were not evident among stakeholders within the same subgroup. For example, in the teacher subgroup, only one teacher mentioned observation of students as a type of data. However, all teachers mentioned assessment data. In the administrator subgroup, demographic data were only mentioned by one administrator. Overall, study participants did not define nor use data in the same manner. Collaborative inquiry is essential to effective data use (Mandinach & Jackson, 2012). Evidence of collaboration among the stakeholder groups was not evident in the general decision-making processes within the site school. DDDM calls for a universal social shift in commitment across all levels of a school unit (Mandinach & Johnson, 2012). Based on the data analysis, the

stakeholder groups acted as individual units in the site school. There is no evidence that the groups of stakeholders worked collaboratively to move from data to information, knowledge, and then decisions. The commitment to DDDM is incomplete in this school.

Examples of Decisions

While each participant listed specific examples of decisions made in the school, the same decisions were not listed by all participants. Decisions were not a result of information and knowledge gleaned from data as suggested by Mandinach (2012). Instead, personnel within the school made decisions and used data as justification *after* the decision had been made. Some participants could not name the data source for some decisions.

Decision-Making Processes in the Site School

The expectation to use data to drive instruction in the site school was clear; however, the action of using data to drive instructional grouping decisions on a scale greater than the classroom was not evident in the actions described. One leadership team member stated that "We are not all using our data; we are collecting it and filing it away" (LT3). This response correlated to a statement by Mandinach and Johnson (2012) that identified a void between compliance with data collection and using data to drive instruction. While the data were pervasive within the school, the DDDM practices of the school are inconsistent.

Based on the experiences shared by the participants, data were used in the instructional grouping decision for justification but not for decision-making. For the decision about implementation and discontinuation of single-sex instructional grouping,

the decision-making model began with the decision. A1 returned from the conference having decided to begin single-sex instructional grouping. Then, only after the school administrator had made the decision to begin or end the instructional grouping method, data were collected to justify the decision that had been made or to determine if the decision was a good decision.

School administrators should model DDDM by using data when speaking to stakeholder groups and in supporting discussions (Mandinach & Johnson, 2012). The subgroup populations in the site are not collaboratively sharing DDDM processes for all actions within the school as evidenced in the interviews. The school administrator makes the decisions, and some participants do not know the data sources used in the decision-making process. For example, LT2 spoke of the discontinuation decision saying she was unsure of the data sources used. T2 and T3 were also unaware of the data consulted.

DDDM is not a one-size fits all solution to school success. It is evident from the interviews across all subgroups that data are available in the school. What is less evident, however, is what the data mean to the stakeholders in the school and how data guide decisions in the school. Gullo (2013) advocated using multiple types of data including perceptual and achievement data; each participant named assessment data on at least one occasion during the interview process. However, fewer participants named multiple types of data.

Perceptions of Single-Sex Instructional Grouping

During the study, perceptual data were collected from participants about the influence of single-sex instructional grouping in the site school. These data revealed

perceptions about the influence of single-sex instructional grouping on student behavior, achievement, and differentiation. Participants were largely positive about the practice. In fact, all respondents had positive recollections of single-sex grouping as a practice. The snowball sample did not provide me with participants who complained about single-sex grouping in the local school. These perceptual data may add to the quantitative achievement data collected previously by the school as part of the state mandated assessments. These data may provide value in future instructional grouping decisions at the local school.

Summary

A descriptive case study provided the opportunity to gain a deeper understanding of stakeholder's perceptions of the decision-making process related to instructional grouping for students in Grade 5 at the local school. Understanding stakeholder perceptions provided additional data that could potentially influence future instructional grouping practices locally. Moreover, this investigation may provide a model for improving data-based decision making that could serve as a model for future instructional decisions locally or in other venues. A description of the project for the study, the project's objectives, a justification for the project genre, and a description of how the project focused on the problem will be included in Section 3.

Section 3: The Project

Introduction

In this study, I explored DDDM practices of the site school related to the instructional grouping of students in Grade 5. Based on the outcomes of this study, there are missing pieces in implementing best practices for DDDM in the site school. Based on Mandinach's (2012) framework for DDDM, decision making begins with collecting raw data. From the data come information and knowledge before decisions should be made. In the site school, data were collected; however, there is not strong evidence that connections were subsequently made from the data. One stakeholder described data use in the school by saying, "We are collecting it and filing it away" (LT3). The findings from the study revealed that data were widely available at the school, but data use was not unified.

Participants noted many types of data collected and reviewed at the school. The stakeholders interviewed for this study indicated that data were collected for compliance and after implementation to support decisions. Decisions were often made by the administration, and the team of stakeholders were informed of the decision. Data were used to justify an existing decision rather than following Mandinach's (2012) framework of moving from data to information, then knowledge and then finally to a decision. The data analysis in Section 2 showed that the practices related to DDDM at the school were not cohesive or collaborative between stakeholder groups.

Additionally, there is evidence in the findings that demonstrated a need for developing the stakeholders' capacity for data use. One stakeholder stated, "I would say

that most of the decisions made for the school are made using data" (T1). However, no specific data sources or decisions were mentioned. Another stated, "I would say that the data is always there; it is not always used effectively. In many situations, it's not. We know it's there, but we don't know how to interpret it to impact the students we're teaching" (T1). DDDM cannot be well implemented without all stakeholder groups being trained in how to use, interpret, and develop action steps.

In planning a project to encourage more effective data use and increase data literacy, I used Walden University's library electronic database and Google Scholar to find articles related to encouraging data-driven decision making in schools and increasing data use for instruction that are current and peer reviewed. In the search of literature for the direction of my project study, I used these key phrases: *increasing data use in schools, encouraging data-driven decision making in schools, encouraging data-driven decisions in education, improving decision making in education with data, data-driven decision making in education, data use for school improvement, data literacy in schools, data-based decision making in schools,* and *data use teacher collaboration.*

The need for data-literate educators who can demonstrate evidence-based decision making is underscored by the Every Student Succeeds Act (ESSA, 2015). Within ESSA, educators are called to use multiple data sources including summative and formative assessment data as well as data related to behavior, attitude, attendance, and others. Further, within ESSA, guidelines are provided for the use of funds to improve the capacity of stakeholders including principals, teachers, and school leaders to disseminate data in formats that can be understood by parents and families. Marsh and Farrell (2015)

noted that educators have access to multiple sources of data; however, having access to data does not mean they have the data literacy skills necessary to navigate and use the data effectively for decision making.

Essential to teacher success is knowing how to use data. Mandinach and Gummer (2016a) expressed that data literacy is a set of skills acquired and grown throughout the career of a teacher. Although professional learning has often been attributed to facilitating effective data use, the lack of professional learning opportunities designed to improve teachers' use of data was cited as a contributor to the continued struggle (Jimerson & Wayman, 2015). Some educational leaders have invested in supporting teachers' capacity for DDDM while others struggle due to lack of resources or expertise (Marsh & Farrell, 2015). Developing the capacity of teachers to use data increases the capacity of school leaders (Gerzon, 2015). As expectations for educators to use data to inform instructional practice increases, some educators are struggling (Jimerson & Wayman, 2015). Another practice for increasing teacher capacity for data use is hiring instructional coaches in schools who provide information, modeling, and practice using data (Huguet et al., 2014).

Rationale

Data literacy is necessary for success. Mandinach and Gummer (2016b) expressed the urgency of developing teachers' data use abilities. Best practice for teaching data literacy education includes collaboration between educators in hands-on learning in workshops to provide practical experience (Ridsdale et al., 2015). These experiences provide the opportunity for learners to figure out processes, make mistakes, and practice.

The idea of a coaching solution was not feasible for this project study; consequently, a professional development project focusing on building teacher capacity for data use through data literacy and collaboration will increase the capacity of the school to meet the needs of its students. The message in the research is clear: professional development in using data is an urgent need for current educators (Mandinach & Gummer, 2016b; Schildkamp & Poortman, 2015).

I designed this project to increase data literacy among practicing educators to increase the capacity of the school stakeholders to make decisions based on data to successfully meet the instructional needs of students at the site school. The professional development plan supports the needs of the school stakeholders by bringing awareness to data sources that may be used and help teachers know what to do with data once they are collected. These needs were evident in the interviews as T2 and T3 explained they did not know what data were used in the decision-making process. LT2 stated that the data were collected and put away. Multiple stakeholders expressed interest in knowing what to do with the data once they are collected (LT2, T1).

Review of the Literature

A group of experts from diverse stakeholder groups developed a definition of data literacy in the Data Quality Campaign (2014); by definition, "data-literate educators continuously, effectively, and ethically access, interpret, act on, and communicate multiple types of data from state, local, classroom, and other sources to improve outcomes for students in a manner appropriate to educators' professional roles and responsibilities" (p.1). This general definition of data literacy served as a stepping-stone

for Mandinach and Gummer (2016b) to develop the definition of data literacy for teachers (DLFT). In this more refined definition, these colleagues dove into the cognitive skills and knowledge necessary for data literacy (Mandinach & Gummer, 2016b). The more refined definition that follows connected the data themselves with practice and named specific knowledge to help educators understand the depth of DLFT.

> Data literacy for teaching is the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting all types of data (assessment, school climate, behavioral, snapshot, longitudinal, moment-to-moment, etc.) to help determine instructional steps. It combines an understanding of data with standards, disciplinary knowledge, and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn. (Gummer & Mandinach, 2016b, p.2)

The current data-driven society (Dunlap & Piro, 2016) necessitates building data literacy for success. Types of data and the need to use data are increasing (Mandinach & Gummer, 2013), and teachers need support for data use (Reeves & Chiang, 2017). Datnow and Hubbard (2015a) highlighted that lack of training limits teacher capacity to use data effectively. Schildkamp, Poortman, Luyten, and Ebbeler (2017) found that teachers are unsure about data use. Teachers struggle to connect data to instructional decisions (Reeves & Honig, 2015). However, data literacy is a necessity in current practices of accountability and data-driven expectations. ESSA (2015) further propelled educators toward evidence-based, data-driven decisions. Researchers agreed that continuous learning through professional development and workshops is key to

increasing the data literacy and capacity of educators (Mandinach & Jimerson, 2016; Reeves & Honig, 2015; Vanlommel, Van Gasse, Vanhoof, & Petegem, 2017).

Professional development as support. Based on the call to action for professional development providers and stakeholders to provide professional development to support teachers (Reeves & Honig, 2015), I chose professional development as the genre for my project. Mandinach and Jimerson (2016) encouraged continuous learning through professional development. Vanlommel et al. (2017) expressed the need for high-quality, sustained professional development workshops to guide teachers to use data efficiently for decision making that influences instructional practice and student performance. While some call for the inclusion of preservice teachers in professional learning about data use (Mandinach & Gummer, 2013; Mandinach & Jimerson, 2016; Reeves & Chiang, 2017), the data in this study support an immediate need for increasing the data capacity for educators currently practicing in the site school. A call to increase the data literacy of current educators has been made in the research (Dunlap & Piro, 2016; Farley-Ripple & Buttram, 2015; Mandinach & Gummer, 2016a). For this project study, I focused on developing data literacy and capacity for use in current teachers within the site school by providing professional development.

The need to use data is increasing as society has evolved to become more data-driven (Pentland, 2013), and the volume of data teachers are expected to interact with is increasing (Mandinach & Gummer, 2013; Schildkamp et al., 2017). Building data literacy is not a simple task (Mandinach & Gummer, 2013); it takes developing skills over time with ongoing support of continuous learning (Gerzon, 2015; Mandinach &

Jimerson, 2016). ESSA (2015) called for "instruction in the use of data and assessment to inform and instruct classroom practice" (p.296). Teachers need training and support for data use (Reeves & Chiang, 2017), and this support can be provided by professional development specialists and school districts (Mandinach & Gummer, 2016a). Professional development is one way to support teachers.

Mandinach and Jimerson (2016) noted that teachers must move beyond understanding the data and transform instruction by putting their interpretations of the data to work. Professional development to develop data literacy capacity, which demonstrates an integrated approach that allows professionals to connect curriculum, instruction, and assessment to academics with the data to encourage students, is ideal (Mandinach & Gummer, 2016a; Mandinach & Jimerson, 2016; Reeves & Honig, 2015). Expectations for data use are not disappearing (Huguet et al., 2014), and ongoing professional development with ongoing support is necessary to support teachers (Bocala & Boudett, 2015; Gerzon, 2015). According to Reeves and Honig (2015), teachers reported a need for data-related professional development related to their needs surrounding the relationship between instruction in the classroom and assessment. Sinek (2015) shared that participants must know why they are engaging and what change may come from the learning. Capacity building is not the transfer of skills and knowledge but occurs in a social learning environment that allows for reciprocal learning between leaders and participants that allows individuals to use participation in activities and social interactions to construct knowledge and make sense of information (Bocala & Boudett,

2015; Huguet et al., 2014). Data teams working together to inform practice is touted throughout research as appropriate and effective.

Factors supporting data use for educators. Collaboration is one of the most frequently named factors in successful data use. Keuning, Van Geel, and Visscher (2017) noted that collaborative teams are comprised of leaders, coaches, teachers, and aides. With data teams, teachers are not left alone to explore data and attempt to put it into use; discussion allows for incorporating knowledge from more than one individual and has compensated for individual gaps in knowledge or data skills (Mandinach & Gummer, 2016a). Data teams benefit from social learning and collaborative activities which allow them to combine knowledge (Huguet et al., 2014; Schildkamp & Poortman, 2015). These activities are more likely to assist teachers in using data individually when necessary (Huguet et al., 2014). Discussions about data with colleagues may lead to better connections to data (Dunlap & Piro, 2016).

Educators working together to use data to drive decisions and instruction need support (Gerzon, 2015; Marsh & Farrell, 2015). This support is essential as teachers navigate the challenges relative to decision making (Reeves & Chiang, 2017). Support for data use comes from the system as a whole in these categories: (a) Human capital resources such as professional development and support positions including coaches that support social learning and collaborative sense-making; (b) Technology and tools such as data management systems which give educators access to organized data sets and protocols for data analysis which guide implementation of data use; and (c) Formal and informal practices such as scheduled time to work, establishing data teams, and collective

contribution of knowledge that may allow for collegiate interactions which enhance data use (Farrell, 2014). Support also comes through reciprocal sharing of ideas and experiences among stakeholders including leaders, teachers, coaches, and aides (Bocala & Boudett, 2015).

Some other factors influence data use in education. Individual knowledge and skills related to data influence the effectiveness of data use (Keuning et al., 2017). Structured time to work with data is also a contributing factor (Farley-Ripple & Buttram, 2013; Keuning et al., 2017). Timeliness of data and availability in addition to having appropriate data available are necessary (Farley-Ripple & Buttram, 2013; Schildkamp et al., 2017). These factors work in conjunction with support and collaboration for successful data use (Farley-Ripple & Buttram, 2013; Marsh & Farrell, 2015). Professional development is one avenue for increasing data capacity among practicing educators.

Literature Related to Project Content

After researching professional development as a genre appropriate for meeting the need discovered in this study, I continued reviewing literature related to the content of the project. In synthesizing the research, I organized the information into three themes of data capture, meaning making, and information sharing which are components of data-related professional learning shared by Jimerson & Wayman (2015). In continuing researching, I coded the articles and information according to these themes, and I plan to use these themes as pillars in my professional development.

Capturing the data

Data capture involves preparing for discussions about data. This is both an individual and collaborative phase (Jimerson & Wayman, 2015). Within the capturing phase, understanding types of data is essential. Some of these types of data may include assessment data, attitudes, well-being, behavior, health, and attendance; while student performance data may loom above educators daily, these other types of data contribute to the whole picture and are essential to data-driven decision making (Mandinach & Jimerson, 2016). Schildkamp et al. (2017) also reiterated the need for reviewing multiple types of data and added that teachers must know and be able to locate the data needed and access it within a quick timeframe.

Accessing the data alone is not enough. Thoughtful data use has the potential to promote higher student achievement; misuse of assessments for high stakes decisions without regard for other types of data can be detrimental (Datnow & Park, 2017). Another component of data capture is to choose appropriate data sets and subsequently ask appropriate questions about the data (Farley-Ripple & Buttram, 2013; Jimerson & Wayman, 2015; Schildkamp et al., 2017). Fundamental to choosing appropriate data sets is understanding what each data set provides. Teachers must have support for data use from school and district leaders including structured time to work with data (Farley-Ripple & Buttram, 2013); often this support begins with funding for human capital in positions that coach and guide data discussions (Marsh, Bertrand, & Huguet, 2015). Data used in schools for decision making must be "useful, informative, and actionable" (Mandinach & Jimerson, 2016, p.3).

A final component of capturing the data is ensuring ethical practices by educators (Mandinach & Jimerson, 2016). Risks of privacy violations, lack of transparency, and even social discrimination are possible if data are not carefully handled (Lepri, Staiano, Sangokoya, Letouze, & Oliver, 2016). All stakeholders, no matter their role, are responsible for securing the privacy and confidentiality of the data used (Mandinach & Jimerson, 2016). Teachers must understand how to secure data and protect the privacy and confidentiality of the students; further teachers and stakeholders need to be able to communicate about data with various audiences (Mandinach & Gummer, 2016a). After capturing the data, educators must transition to making meaning from the data collected.

Making Meaning from Data

Encouraging teachers to make decisions based on data rather than intuition is necessary because sometimes teachers may not consider all sources of data or the consequences of decisions (Vanlommel et al., 2017). Sometimes available data are not sought or consulted by teachers (Vanlommel et al., 2017). Encouraging belief in data through collaborative inquiry can help increase individual skills for data use (Schildkamp & Poortman, 2015). The intention of making meaning from data is to combine individual and collaborative interpretations from the data and plan for actions to follow (Jimerson & Wayman, 2015). To make meaning from the data, teachers must know how to ask appropriate questions (Ridsdale et al., 2015). Mandinach and Gummer (2016b) present skills for transforming data into information including considering the impact and consequences; testing assumptions; assessing patterns and trends; understanding and

using data displays; and, summarizing data to explain its meaning. Once meaning is established, information should be shared.

Sharing Information about Data and Making Decisions

Educators who have made meaning of data may contribute back to the school by encouraging more effective, informed stakeholders (Jimerson & Wayman, 2015). Information that is not shared is likely to result in lost or isolated learning (Jimerson & Wayman, 2015). When data teams share information, the organization can support the team by providing structures or processes (Jimerson & Wayman, 2015). During information sharing, information can be transformed into decisions. Some steps in the process of making decisions from information and evaluating the outcomes are determining next instructional steps, diagnosing student needs, monitoring the performance of students and changing classroom practices, and making instructional adjustments while re-examining the original questions or problems (Mandinach & Gummer, 2016b). Some habits of mind for educators who are data literate are defined by Farley-Ripple and Buttram (2015) including a "shared commitment to action, assessment, and adjustment; intentional collaboration; and relentless focus on evidence" (p.7). Collaboration and dialogue rich with data is essential to successful data use and increased data literacy among educators.

Summary

The research question for my project study was intended to delve into the data-driven decision-making practices in the site school. Based on the outcomes of the study, increasing the stakeholders' capacity for data literacy may influence future decisions to be

more aligned with best practices for DDDM. A review of the literature encouraged professional development and collaboration as essential elements to improve data literacy and use. Professional development is most effective when participants can connect the content to prior information or learning (Jimerson & Wayman, 2015). Further, Jimerson and Wayman (2015) advocated for an embedded professional development process complete with a reciprocal knowledge and support from all stakeholders.

Project Description

The project created, *Collaborative Learning Experiences for Data-Driven Decision Making,* is a professional development project that will provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data-driven decision making that will increase the data literacy of the participants. The overall goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions. Resources, existing supports, and finding solutions to potential barriers are critical to the success of the project.

Resources and Existing Supports

Potential resources needed for the project are limited, and the trainer can provide most. One necessity for this project is time. Many schools have common planning time that among teachers that will provide for weekly training time to be accommodated. In working with the participating stakeholders, time will need to be scheduled weekly for the final work sessions after the initial presentation on the first day. These sessions are 1 hour each and could be scheduled after school if necessary. Another resource for the

project's success is a meeting space that is private where participants can discuss pertinent data. A meeting space such as a classroom would sufficiently meet this need.

Potential Barriers and Solutions

One potential barrier to this project is participants' competency in finding data collected within an assessment platform. To overcome this barrier, the trainer could work with school support staff to ensure that each teacher can access his or her data sets. Another potential barrier to the project is that the data discussed within the project may not be available for all classrooms or in all schools. This project has been developed to meet the needs of the site school. A trainer can amend the implementation of the project to exclude non-applicable sessions or add additional sessions related to other data sets that may be more prevalent within their locale.

Implementation Including Timeline

The timeline of implementation for the professional development is intended to embed the learning for participants across a full semester of the school year. The first session of the professional development project is a 6-hour introduction to concepts related to data-driven decision making. During this one-day session, participants will be introduced to the purpose and goal of the project. Participants will participate in a carousel activity about types of data and make connections about how types of data relate to decisions made in schools. A presentation about DDDM and research-based best practices related to DDDM and an introduction to important concepts related to data literacy will be shared with participants. At the end of the session, participants will identify collaborative data teams within the school.

The remaining 18 hours of the professional development are structured primarily into sessions lasting 1 hour each. The first half of the 18 hours will be primarily trainer directed and include information about comparing data use for school improvement versus compliance, exploring critical questions of continuous improvement, and examining the four main types of data to create a comprehensive data profile for the school collaboratively. Capturing the data is part of the content for the first 9 hours. Then, a 6-hour work session will allow the school to work toward a comprehensive list of strengths and challenges built from the data profile and begin making meaning from the data and sharing information about the data using the problem-solving cycle for DDDM.

The remaining 5 sessions of the professional development are 1-hour sessions for teachers to focus on making instructional decisions at the grade, classroom, or individual student level. During these sessions, participants will be asked to bring captured data sets and work collaboratively to make meaning from the data, share information about the data, and use the data to make decisions. Types of data explored throughout the sessions include NWEA Assessment data, DIBELS/DRA Assessment data, Edulastic Assessment data, and formative classroom assessment data for reading and math. These sessions will allow stakeholders to work with data in collaborative settings and build data literacy through discussion and reflection. The project deliverable (Appendix A) includes the professional development action plan, narrative trainer notes, and attachments for the trainer.

Roles of Student and Others

The role of the student is to develop and potentially present the professional development experience or to provide enough materials for the project to be presented by another trainer. The role of the student when delivering the professional development is to provide suggestions, helpful resources, and guide discussions. The role of others for the project is active participation in professional development sessions. Participants will be asked to participate in collaborative discussions, record information, and reflect on learning. Participants will also be asked to collect data and bring those data with them to professional development sessions.

Project Evaluation

The goals of the project, *Collaborative Learning Experiences for Data-Driven Decision Making,* are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions. Evaluation of the project will be ongoing and include both formative and summative assessments. Throughout the project, the trainer will record anecdotal notes about the participation level in the professional development within the trainer log. These observations and notes will provide data for the trainer to reflect upon the training and adjust the process as needed. Other formative assessments used for evaluation of the program include participant charts created during the activities of the first session, the stapleless book that participants create to record information about types of data, and reflective journals used throughout the remaining sessions to record learner reflection. Further, each session

allows for formative assessment through question and answer opportunities. The trainer will observe participant responses throughout activities and give verbal feedback.

A summative assessment of the project may be completed by comparing participant responses to the inventory about data use in the school. Participants will complete a pre and post survey about data use in the school during the second and last sessions respectively. The results can be used to evaluate the project. At the culmination of the last session, the trainer can reflect upon participation levels, reflections from participants, and comparisons of pre and post data surveys to reflect upon the training experience and adjust as needed.

Project Implications Including Social Change

Social Change

The project, *Collaborative Learning Experiences for Data-Driven Decision Making,* addresses the need to increase data literacy of educators so that data may be used more effectively to inform decisions within schools. Data collected during interviews revealed that data literacy is underdeveloped in the site school. The findings from the study revealed widely available data not used in a unified manner. The data were not used to arrive at a decision but rather to justify the decision that had been made. Further, the study revealed that the data were not discussed collaboratively among all stakeholders.

The project has multiple potential implications. Once implemented, the stakeholders will be more familiar with best practices for DDDM. Throughout implementing the project, each participant will use data and reflect upon the decisions that each type of data may influence. Discussions about the data sets collected by

participants may open communication among stakeholders. Within the site school, the potential of social change is great as participants see the value of multiple types of data and correlate these data to decisions within the school. Social change will be seen as teachers, instructional coaches, and administrators feel empowered to make decisions based on data.

Local Community and Far-Reaching

Within the local community, school administrators share best practices through weekly meetings that include administrators from multiple campuses. The building administrator for the site school may share the positive influence of increasing data literacy for her campus stakeholders with others. The project could be implemented in other sites and allow for an expansion of knowledge among many schools within the district. Positive social change from the project implementation may be shared with neighboring district leaders and ultimately have an impact across multiple districts within the region and the state.

Developing educational stakeholders who are data literate will have lasting social change effects on the educational reform efforts. Stakeholders informed about multiple types of data and their influence in making decisions for students in individual classrooms, schools, districts, and states could aid in advocating for best practices in DDDM for future decisions. Sharing this professional development plan for encouraging collaborative learning experiences about DDDM with the site school, school districts, and across the state could promote social change from a better understanding of DDDM in education.

Conclusion

This project outlines a plan for a professional development series that provides real-time collaborative learning experiences to practicing educators related to data, data analysis, and DDDM that will increase the data literacy of the participants. The professional development project (Appendix A) is comprised of 19 sessions that are intended to encourage weekly, embedded professional development across one semester of the school year. The project includes an action plan for the sessions, narrative notes for the trainer, and multiple attachments to support the implementation of the professional development project. Positive social change can occur through increased data use and literacy. Increased data use may empower teachers and administrators to reflect upon prior decisions and make future decisions informed by data to better support school reform efforts.

Section 4 includes reflections and conclusions relative to the project study. It addresses project strengths and limitations and alternative approaches to the project. I reflect on my development as a scholar, project developer, and leader through this experience. Implications, applications, and future research are addressed. In conclusion, I personally reflect on the doctoral experience.

Section 4: Reflections and Conclusions

In this section, I present the strengths and limitations of the project. I discuss recommendations for alternative approaches to solving the problem in this study. I reflect on the project development and evaluation and my personal growth in the areas of scholarship, project development, and leadership. I share potential social change relative to the project. In conclusion, I summarize the entire project study process and reflect on my personal growth throughout the process.

Project Strengths

The project, *Collaborative Learning Experiences for Data-Driven Decision Making,* is a professional development project developed to provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data-driven decision making. The project has strengths that could increase the data literacy of the participants. My project was guided by data collected from teachers, leadership team members, and administrators with experiences related to decision making about single-sex instructional grouping at the site school. The intent of the project was to build the capacity of school stakeholders to use data for data-driven decision making through professional development incorporated into the routine professional learning of teachers for one full semester. Jimerson and Wayman (2015) advocated for professional development that is embedded to provide for a complete process of reciprocal learning and collaboration among stakeholders. Mandinach and Gummer (2016a) noted the importance of discussing data to build educator capacity for data use. The professional

development provides multiple opportunities for discussion and introduces participants to different types of data including quantitative, qualitative, and perceptual data.

The project allows for embedded professional development with many opportunities for discussion as team members collaborate to delve into data. This is a strength of the project as Bernhardt (2016) shared that staff need professional development that is job-embedded and continues over time. The professional development project provides a collaborative learning environment that promotes support for teachers as data are explored. The data team members are given opportunities to align data use to best practices for data-driven decision making; this is a strength as staff must work together to make decisions about how to ensure learning for each student (Bernhardt, 2016). Implementing the project can lead to school-wide improvement in data capacity and data-driven decision making fostered through support and collaboration from the data team. This could promote change within classrooms and the school because teachers who are more data literate can use data to improve their future. Schools that focus on data as a means for improving are more successful than those who focus on data for compliance purposes (Bernhardt, 2016).

Project Limitations

While the project is grounded in research, there are limitations. One limitation of the project is that it was retrospective in nature. The interview data collected were based on the details that stakeholders recalled from memory at the time of the study. Moreover, the participants were limited to those reached through the public records and snowball sampling. The participants who responded all had positive recollections of single-sex

grouping. Reflections about single-sex grouping in the site school that were not positive may have provided another area of opportunity for the project. Remediation of this limitation might include a partnership with the local site school to access personal contact information for all faculty and staff employed during the time of single-sex instructional grouping. Comparing new data with the data from this study may present an opportunity for additional information to be added to the project.

This project was designed with an elementary school in a southeastern state. This is a project limitation as it may not include examples of all sources of data used in a middle or high school or another state or region. However, remediation of this issue is obtainable by initiating the professional development plan for data use and data-driven decision making. The purpose and process of the project would remain; however, other types of data could be inserted and examined. Implementing this project across multiple school sites, states, or regions could lead to broader positive social change.

For successful implementation of this project, a school must buy in to the value of the learning. A school administrative team will need to support the project by giving time and meeting space for 18 weeks. Teacher members and instructional staff who are part of the data team must uphold their role and responsibilities throughout the learning sessions. If any stakeholder fails to support the project during implementation, the project success may be at risk. Communicating the benefits of the project with school and district stakeholders could expose the potential social changes and garner support from the school and district.

Recommendations for Alternative Approaches

I chose a professional development project to address the local problem indicated in this study. The local problem was that a decision to eliminate single-sex instructional grouping in the fifth-grade classes was made without analysis of all types of data; understanding the existing decision-making processes and determining the degree of disconnect to a DDDM framework may provide valuable insight for better integrating DDDM into local school processes, thereby creating more successful reform. The outcomes of this study demonstrate missing pieces in implementing best practices for DDDM.

An alternative solution to the problem could be providing a data coach within the site school. Data coaches are persons hired to support teachers and school staff in using data effectively within a school. Providing a data coach could potentially provide in-house one-on-one support to teachers as decisions need to be made or new data sets are encountered. The data coach could provide instruction and the teachers could collaborate with this individual to implement best practices for data use. This one-on-one coaching may increase the data capacity of individual teachers. As individual teachers become more comfortable with data use, the school culture could shift toward focusing on data in a more unified manner.

Another approach to address the limited data capacity of teachers is to increase instruction within preservice teacher education programs. The undergraduate programs across the nation prepare teachers to present knowledge to learners and increase academic achievement successfully. The need to use data to guide instruction is ever growing and

emphasized by educational policy. Implementing additional instruction for preservice teaching candidates that introduces concepts of data-driven decision making through data collection, understanding the data, and collaboratively discussing data could provide more effective decision makers in classrooms and schools. Although this approach may not have an immediate impact in the school, there is potential for much future improvement.

I created the professional development project to address the limited data capacity leading to data-driven decision-making practices not aligned with research-based best practices. An alternative definition of the problem could have been that school leaders were not practicing collaborative leadership for decision making. Often, the participants shared that the administrator decided. An alternative solution to address this problem could be professional development for the school leaders surrounding collaborative decision making and school leadership. This could potentially provide opportunities for discussion between school leaders and teachers that may increase teacher knowledge about data and how the school leaders may be using it behind the scenes to present solutions to staff.

Analysis of Learning

The first residency of this doctoral adventure focused on the idea of becoming a scholar-practitioner. I intentionally sought a degree that focused on the practice of education rather than simply the theories when I decided to seek a terminal degree. Through my doctoral adventure, I have developed as a scholar. As I have grown in my depth of knowledge and ability to research solutions to problems, I have also grown in

practice. I have spent numerous hours studying literature, seeking guidance from my committee, making observations in schools, and listening. As a practitioner, listening has been the greatest skill I have developed. Listening allows me to see a problem from multiple angles. As a practitioner, considerations must be made for all stakeholders when making decisions or devising potential solutions. Because of my experiences, I am now confident in my ability to see problems as opportunities to enact positive social change in local and global communities.

Scholarship

Scholarship, academic achievement at higher levels, is intimidating. The adventure to achieve scholarship and become a scholar has been exhausting. It has been full of mountainous terrain and low valleys; but, passion for improving educators' ability to reach students effectively and efficiently helped me continue to pursue my goals. As a scholar, I developed a project driven by a local problem and the needs of educators to understand the value of data. My desire to support teachers through efficient and effective data use to improve schools and actuate positive social change in the local site by improving decision making through increased data capacity led to developing my project.

During my first residency for the doctoral program, I realized how much more I had to learn as a scholar. As I determined the gap in practice for my project study, I discovered that I had always learned for immediate practice. However, becoming a scholar has taught me that I need to learn knowledge for immersion into a topic. This immersion allows me to be a saturated learner better equipped to lead others and contribute to scholarly works related to my topics of passion. As I created this project, I

immersed myself in information about the project contents, professional development best practices, and how to reach educators effectively. This realization not only changed my approach as a learner, but it has changed my approach as an educator. I encourage colleagues to learn all they can and find their passion.

Scholarship is part of the doctoral adventure. Becoming a scholar requires an individual to gain academic knowledge about research and skills required to conduct research to solve a problem. In this adventure toward scholarship, I have grown in my knowledge about educational theories and decision making in education. I have stretched my abilities and knowledge base far beyond what I dreamt. This has shaped me into a better listener, leader, and educator. The trials and tribulations of this adventure have changed who I am as a learner.

A scholar is an investigator. The investigation begins with finding the problem. A scholar uses research skills to apply relevant literature and theories to the problem. The scholar synthesizes the application of this knowledge and ultimately leads to a potential solution to the problem. The investigation and development of a solution as a scholar is essential to success. Although I felt like I was prepared for the adventure toward scholarship, I have met many challenges along the way. Overcoming these challenges has made me ready to face future research and continue to propel positive social change.

Completing the doctoral adventure included many new achievements. I have become a more concise writer. In researching, I have developed in my abilities to find relevant, current research to substantiate a problem or support a solution. The abundant APA knowledge I have gained has helped me both in this adventure and in my daily

practices as an educator. I have been able to share these skills with others who have begun this adventure since I started. My time management abilities have also grown throughout this process. I have overcome many obstacles as I have developed as a scholar. Using these research skills to create a possible solution to the problem was the most interesting part of this process. For me, I began this adventure to help educators. So, developing the project has meant the most. I learned to analyze qualitative data. I also learned to seek solutions to the problem within the literature to create a potential project grounded in research. I have read more than ever before. Creating the solution to the problem was the part of this journey that made the most sense.

The most challenging aspects of this adventure for me began with setting my expectations higher than reasonably attainable. I felt when I started this journey that I needed to change the whole world. I learned after the first research site I was using denied access when I moved across the country that scaling my study back, so I could learn more efficiently, would be necessary. There were many obstacles along the way as I balanced being a wife, mother, teacher, and school administrator with being a student. Overall, this adventure has been the most challenging endeavor I have endured. Through the adventure, I have learned how to seek knowledge, accept assistance, develop new skills, and continue even when it is difficult.

After responding to the needs of the teachers, leadership team members, and administrators, through the creation of the professional development project, I feel accomplished as a scholar. I was not ready to influence my field in this way when I began 7 years ago. Through identifying a problem, researching literature related to the gap in

practice, and providing a potential solution to the problem, I have learned what is necessary to influence positive social change. This knowledge will not end at the culmination of this project. I am a life-long learner, and through developing as a scholar, my desire to support educators has only grown larger. This passion will continue to provide me with the desire it takes to investigate problems and find solutions. This desire defines me as a scholar and will drive me to continue to be a life-long problem solver.

Project Development

Project development was the next step after identifying the local problem, research and synthetization, and data collection and analysis. As the project developer, I learned that I had to set specific goals that met the focus of providing real-time collaborative learning experiences to practicing educators related to data, data analysis, and data-driven decision making to potentially increase the data capacity of participants. The qualitative data collected through interviews and current research determined the project direction. Analyzing the interview responses provided me insight to address the practices surrounding DDDM in the site school. The data revealed that using data was inconsistent and using data to drive decisions was not aligned with best practices for DDDM.

To increase the best practices surrounding DDDM, stakeholders need to have knowledge and experiences with data, data analysis, and the decisions related to the data. I designed the project to meet the needs of teachers, leadership team members, and stakeholders in the site school through embedded professional learning across a full semester. Professional development and teacher support were suggested in the current

literature. I planned a professional development that embedded learning, so teachers would have ongoing support as they learned new skills related to data. The professional development is designed to provide opportunities for collaboration and discussions about data.

Developing the project began with a purpose, goal statement, and objectives for the learners. These components were used to drive the plan for professional development. I learned as the project developer I had to encourage participation and seek strategies to engage teachers in learning. The data demonstrated a need for building data capacity of the educators. The current literature promoted professional development as a support for teachers and additionally pointed me toward providing an embedded model. I considered these data and concluded that I would conduct an introductory session at the beginning of a school year that provided a basic data overview for teachers. Then I developed ongoing, weekly sessions that allowed teachers to bring in real-world data and work with it throughout an entire semester. As the project developer, I remained focused on developing participant's capacity through knowledge about data, data analysis, and decisions related to the types of data. The professional development plan allows for time to learn about each type of data, discuss the data collected, and collaboratively discuss the implications of the data and make decisions using the data. All members can take away real-world experiences with data sets.

In considering project development for a school, a project that meets the needs of the stakeholders, is cost conscious, and can be easily merged into the current schedule may increase the longevity of implementation. As a project developer, I considered the

needs of the local elementary school in developing the project. I focused on data sets available at the site school and most relevant to instructional decisions. In considering costs, I planned to be the trainer to reduce funds needed to pay a trainer and utilized resources common to the school. Looking at the time needed for the professional development project was important. I focused on a plan that required limited meeting time weekly but encouraged ongoing collaboration and support as teachers found their way through data. As I reflect on my project development, I see I have grown. I am considering factors I would not have thought of in the past such as time and financial resources. I maintained my focus on the purpose of the project while investigating options for encouraging social change.

Evaluation of the project is ongoing through formative and summative assessments. The success of the project hinges on willing participation and support from school stakeholders. If any stakeholders fail to uphold his or her responsibilities, the project may risk failure. To encourage buy-in, the project is based on data relevant to the classroom teachers, leaders, and administrators. Much of the professional development happens during school hours. The project is cost-effective as no equipment or supplies are necessary that are not regularly available in the school. As the student, I am responsible for the training; this limits the necessity for additional funding to hire a trainer. Positive social changes might promote continued support, participation, and subsequently continued success.

Leadership and Change

I was born with leadership skills. My mom has shared stories of how I would tell others how to run a church program or family event from the age of 2 or 3. However, developing leadership that is influential has been a process. When I began this doctoral journey, I was a new leader in education holding the role of team leader for my group of teachers. I found it frustrating to see a problem and not be able to provide the answer. More than the answer, I sought to fill the need for support. It was this internal desire to fill the need of teacher support that guided my project. Sometimes expectations of teachers seem unattainable. It is only with support and collaboration that success is found. As I have continued this journey, I have moved from teacher team leader to building level administrator. Developing my leadership skills through investigation and research has helped me to provide support to colleagues.

The best leaders are those who lead by example and provide support along the way. Leaders promote change. For me, change began internally. I wanted to lead others to be less stressed and more efficient in the classroom. However, I did not have the knowledge base to guide them. For me, this journey to scholar-practitioner has led me to discover and learn many things about data-driven decision making and its relevance in education. The secondary change came as I gained confidence in my knowledge. I shared knowledge and ideas about educating students that I learned from my research with colleagues and seeing changes in their stress level and individual confidence in approaching data to be more efficient in the classroom. Being a change agent through leadership encouraged me to continue this doctoral adventure over the past 8 years. I

knew that I wanted to continue so I could be the change agent for frustrated teachers collecting data for compliance with no understanding of how or why it is necessary.

Using the knowledge gained through this doctoral adventure, I developed a project that may promote change for teachers. Developing the data capacity of educators through professional development has the potential to create far-reaching change. The change may begin in only one school; but as those people grow in confidence and capacity, colleagues will share information and lead others to increase data capacity across other schools and organizations. Developing teachers comfortable with data use may contribute to change across regions or even the state. Teachers who feel supported to use data will encourage others to do the same. Some say that good leaders create followers, but great leaders create new leaders. Creating new, confident leaders in data use encourages me to persevere.

Reflection on Importance of the Work

As a classroom teacher, I collected data with limited direction about its purpose. Often, the reason for the data was not clear. Decisions made by administrators were seemingly made around me with no regard for the data my colleagues and I were collecting. Teaching in an increasingly data-driven world means I needed to understand the data and their purpose. More than that, I feel compelled to share this knowledge with colleagues in my local area and across the nation. The expectation is that all educators can proficiently use data to drive instructional decisions and promote individual student growth and achievement in the classroom. However, educators cannot just do this. For teachers to succeed in using data to drive instructional decisions, they need support. This

internal desire to provide support to colleagues near and far has provided me the drive to persevere in this doctoral adventure.

The purpose of my project is to offer opportunities for teachers to practice using data and increase their data capacity. The plan for professional development includes activities and lesson content that will help educators become more aware of types of data, data analysis, and connect data to decisions within the school. As a practitioner, I have learned that teachers feel the most supported when they can ask questions. Leading a professional development series that allows teachers to have collaborative discussions and ask questions during each meeting may let me practice what I have established as a potential solution to encourage best practices for DDDM in the local elementary school. Developing this project shows my growth as a scholar-practitioner.

Implications, Applications, & Directions for Future Research

This project has the potential to influence social change across individual, organizational, and societal levels. The project may influence policy and practice across multiple education settings. Recommendations for future practice and further research are shared to encourage further reflection and change.

Social Change

This project was developed to promote social change among practicing educators to increase data capacity and subsequently efficiency and effectiveness of decision making. Through this project, I highlighted the necessity to collect data to gauge learning and learn about our learners with the practices of using these data to drive decisions for success. In a policy-driven, data-driven society, educators should be both proficient and

comfortable with data use. The real-time collaborative experiences in this project have the potential to encourage individual teachers, instructional coaches, and administrators in a local school to become empowered by the data they have available.

Bailey (2015) described a model of community learning built on a pay-it-forward philosophy. In such a change, transformation happens because one person or small group sees success from learning and implementing new information. As that group sees success, they share their success and teach other individuals about the information they have learned and are applying. Then, the training experiences are shared with an entire school. School administrators share with administrators from other schools. The school organization shares with state agencies, and so on. In this way, this project has the potential to influence communities of educators positively and in conjunction students and families locally, regionally, and globally.

Implications

Educational policy is continuously increasing the demand for educator proficiency in data use. I saw a need for the teachers in the local elementary school to understand the types of data that could be collected and how they may be useful. These implications resulted in developing a professional development project that allowed for real-time collaborative data use and discussion. Applying the professional development plan of this project may not meet the needs of a different school or set of stakeholders. This project was developed for a local elementary school. Before the project is implemented in other schools, the evaluation of the project should occur. Conducting interviews and data analysis for the population that the project will be designed for will

ensure reliability. Project changes allow for customization to the data sets available in the local school. Continuing my project in some capacity will allow for the efforts of my last seven years to be far-reaching and potentially globally impactful. Seeing my project provide support and build capacity for data use across multiple populations would make my work in completing this study worthwhile.

Future Recommendations

Data analysis from this project study supports implications, applications, and future research. Literature shows teacher support, data literacy and data capacity, and preservice teacher learning as factors influencing DDDM in schools. Research from this study at the local site indicated a lack of best practices for DDDM related to instructional grouping decisions and inconsistency in utilizing data in the school.

A teacher's data literacy and capacity for data use may affect his or her ability to use data to make decisions. If teachers are simply collecting data for compliance, the data are not being used effectively. Providing real-world collaborative learning experiences that expose teachers to multiple types of data sets potentially results in more effective use of the data collected. This change in effectiveness can lead to better implementation of best practices for DDDM in schools. Future research could help to find other methods of increasing the data literacy and capacity of educators to influence more productive DDDM. Future studies could also be conducted to identify the influence of preservice teacher candidate learning on DDDM practices in schools.

Conclusion

Section 4 allowed me to reflect on my final project study. In the reflections, I examined the strengths and weaknesses of the project study. I addressed limitations of my study and recommendations for alternative approaches. I described my learning and growth through the doctoral adventure. I reflected overall on my work, the potential social influence, as well as leadership and change. I concluded with implications, possibilities for future research, and potential applications of my project.

Through this qualitative case study, I learned how to persevere in one of the most challenging adventures life has brought me. I have learned to address local problems and gaps in practice through research. The project I designed was based on the data gained through interviews and current research. I concluded that a professional development plan provided the best solution for encouraging positive social change. I designed a project to increase data literacy among educators. The results of this project may lead to more effective use of data to make decisions in the local site school.

I have accomplished my goal of developing a plausible solution to a local problem and gap in practice. I am passionate about supporting teachers and about using the data we collect for decision making that increases efficiency and effectiveness. Data collection without action serves only as compliance. I seek to encourage other educators to value the data collected and use them to make decisions that influence the learners and their families in our reach. Knowing that my project will encourage positive social change by fostering best practices for DDDM makes me feel accomplished as a scholar-practitioner and leader.

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Appendix A: Project

Collaborative Learning Experiences for DDDM Action Plan and Trainer Notes

The professional development project *Collaborative Learning Experiences for DDDM* provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data-driven decision making. The project includes 3 components for each training day:

- Action plan—step by step guidance for each day including participants, materials, and indicators of learning
- Trainer notes—narrative directions for the trainer to guide his/her preparation and activities during the training
- Attachments—attachments for each training day including participant sign in sheets, PowerPoint presentations with presenter notes, participant worksheets, and other attachments as needed.

Note: Attachments are titled according to the narrative trainer notes and action plan. The attachments to the appendix are correlated to the action plan steps below.

Day	Step	Attachment
1	1	1-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
1	1	1-2: Presentation of Purpose and Goal
1	1, 6	1-3: Day 1 End of Day Reflective Evaluation
1	2	1-4: Examples of Types of Data Charter *after* Completed Carousel
1	2	1-5: Instructions for Stapleless Book
1	3	1-6: Sample Scenarios for Data Driven Decision Making

1	4	1-7: Presentation for Increasing Awareness of Best Practices for DDDM
1	5	1-8: Presentation for Introduction of Concepts Related to Data Literacy
1	6	1-9: Presentation Identifying Collaborative Data Teams
1	6	1-10: Data Team Rosters
2	1	2-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
2	1	2-2: Inventory About Data Use
2	2	2-3: Presentation about Non-Negotiables for Continuous Improvement
2	4	2-4: Trainer Log
3	1	3-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
3	1,3,4	3-2: Trainer Log
3	2	3-3: Presentation for the Continuous Improvement Framework
3	3	3-4: Presentation About Data Sets for Answering Critical Questions
4	1	4-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
4	1,3,4	4-2: Trainer Log
4	2	4-3: Presentation to Introduce Demographic Data
4	3	4-4: Presentation to Share the Cycle for Analyzing Data
5	1	5-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
5	1	5-2: Participant Worksheet
5	3	5-3: Trainer Log
6	1	6-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
6	2	6-2: Presentation Related to Data Disaggregation
6	3	6-3: Trainer Log
7	1	7-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
7	1,2,4	7-2: Trainer Log

7	2	7-3: Presentation to Introduce Perceptions Data
7	3	7-4: WebQuest Recording Page for Participants
8	1	8-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
8	1,3,4	8-2: Trainer Log
8	2	8-3: Presentation to Introduce Student Learning Data
8	3	8-4: Sorting Activity Cards
9	1	9-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
9	1,3,4	9-2: Trainer Log
9	2	9-3: Presentation to Introduce School Processes Data
9	3	9-4: School Processes Worksheet
10	1	10-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
10	1,3,4	10-2: Trainer Log
10	2	10-3: Presentation About Observation Data
10	3	10-4: Trainer Guide
11	1	11-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
11	1,4,5,6	11-2: Trainer Log
11	2	11-3: Presentation Related to “How did we get to where we are?”
11	3	11-4: Participant Worksheet
11	4	11-5: Presentation About Key Points for Data Use
11	5	11-6: Presentation to Introduce and Practice Problem-Solving Cycle
12	1	12-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
12	1,5	12-2: Trainer Log
12	2,3,4	12-3: Participant Worksheet
12	4	12-4: Trainer Guide

13	1	13-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
13	1,5	13-2: Trainer Log
13	2,3,4	13-3: Participant Worksheet
13	4	13-4: Trainer Guide
14	1	14-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
14	1,5	14-2: Trainer Log
14	2,3,4	14-3: Participant Worksheet
14	4	14-4: Trainer Guide
15	1	15-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
15	1,5	15-2: Trainer Log
15	2,3,4	15-3: Participant Worksheet
15	4	15-4: Trainer Guide
16	1	16-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet
16	1,5	16-2: Trainer Log
16	2,3,4	16-3: Participant Worksheet
16	4	16-4: Trainer Guide
16	5	16-5: Inventory About Data Use

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 1 (6 HOURS)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce types of data to participants • Explore how different types of data relate to decisions made in the school • Increase awareness of best practices for data-driven decision making • Introduce of important concepts related to data literacy • Identify collaborative data teams within the school

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Deliver and discuss purpose, goal, and instructional goals related to the project and today's session.	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint presentation shown to the whole group	--Laptop --Projector --Screen --Remote --PowerPoint Presentation --End of day evaluation --Participant sign in sheet	30 min.	Whole group discussion including questions and answers Participant sign in sheet
2. Introduce types of data to participants	Teachers Instructional Coaches	Trainer CIA Leader Principal	Types of Data Carousel activity with Trainer/Leader facilitation	--Chart paper for carousel activity prepared with data types --Markers for the groups to use --Stapleless book materials for participants --Stapleless book	90 min.	Participants will have recorded each type of data and examples within stapleless book. Carousel activity charts.

				instructional video https://drive.google.com/file/d/10rXO-oc_0UsoJpbf3nRSQQf1Oo5uO6xg/view?usp=sharing		Whole group discussion including questions and answers. Trainer will circulate to facilitate discussion and answer questions.
3. Explore how different types of data relate to decisions made in the school	Teachers Instructional Coaches	Trainer CIA Leader Principal	Collaborative discussion and whole group sharing	--Sample scenarios for data driven decision making --chart paper --markers	45 min.	Small group discussions and chart making. Participants in small groups will share with whole group. Whole group discussion including questions and answers. Trainer will circulate to facilitate discussion and answer questions.
4. Increase awareness of best practices for data-driven decision making	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint presentation shown to the whole group DDDM Model and research based best practices related to DDDM	--Laptop --Projector --Screen --Remote --PowerPoint presentation --brain poster --sticky notes	45 min.	Whole group discussion including questions and answers. Aha moment notes

5. Introduction of important concepts related to data literacy	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Presentation with embedded discussion and jigsaw activity.**	**--Laptop --Projector --Screen --Remote --PowerPoint presentation --Brain poster --Sticky notes --chart paper --markers**	**120 min.**	**Whole group discussion including questions and answers. Aha moment notes**
6. Identify Collaborative data teams within the school	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint presentation to show data team members	--Laptop --Projector --Screen --Remote --PowerPoint presentation --data team rosters --brain poster --sticky notes	30 min.	Whole group discussion including questions and answers. Aha moment notes Completed data team rosters.

Day 1 (6 hours)

The goals of today's session are to (a) introduce types of data to participants, (b) explore how different types of data relate to decisions made in the school, (c) increase awareness of best practices for data-driven decision making, (d) introduce important concepts related to data literacy, and (e) identify collaborative data teams within the school. Today's session is scheduled to last 6 hours. It is essential that participants sign in each time they attend a professional development session (see Attachment 1-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will deliver and discuss the purpose, goal, and instructional goals related to this professional development project and today's session. This is a whole group presentation using the PowerPoint (see Attachment 1-2: Presentation of Purpose and Goals). Please accept and answer questions. 100% participation is desired from the group as measured by the end of day evaluation form (see Attachment 1-3: Day 1 End of Day Reflective Evaluation).

In Part 2 of today's session (objective a), participants will demonstrate prior knowledge about types of data through a carousel activity. The trainer should have prepared ahead of time chart paper for the activity. To prepare the chart paper, the trainer will write one type of data as a heading (Demographic Data, Perceptions Data, Student Learning Data (Literacy), Student Learning Data (Math), School Processes Data, Observation Data). Hang the chart paper around the room on the walls. Next, divide participants into 6 groups. Each group will be given a marker to record ideas and assigned a type of data to begin. Explain to participants that small groups of participants

will rotate together to discuss the types of data displayed around the room. Each small group should attempt to add 3 new things to each type of data chart, but they are welcome to add more until time is called. When the trainer calls time, participants will rotate to the next type of data chart and repeat the same process. Ultimately the whole group will have provided many samples of different types of data. The trainer will give participants 3-5 minutes at each chart to discuss the type of data and add examples to each chart. The trainer should observe groups and add ideas if a group is seeming to struggle or if there are key examples that are not listed on the types of data chart. Examples are included (see Attachment 1-4: Examples of Types of Data Charts *after* Completed Carousel).

After all groups have had the opportunity to place examples on each of the 6 charts, ask participants to return to their seats. Explain to participants that they will be making a stapleless book to record the information from this activity. Each participant will need directions for making the book (see Attachment 1-5: Instructions for Stapleless book; if these directions are unclear to participants, show the instructional video found in the action plan), one pair of scissors, and one piece of blank 8.5 x 11" paper. Assist participants as needed in preparing the stapleless book.

When participants are ready, begin with demographic data and share examples. Highlight key examples from each type of data chart. Participants should record the examples of each type of data in their stapleless book during the whole group discussion. The trainer will facilitate the discussion of each type of data encouraging participants to record types of data in their notes and filling in missing information as needed for participants.

In Part 3 of today's session (objective b), participants will explore how different types of data relate to decisions made in the school. The trainer will distribute a sample scenario for data driven decision making to each group of participants (see Attachment 1-6: Sample Scenarios for Data Driven Decision Making). Participants will read the scenario card and brainstorm which types of data may be helpful in making the decision in the situation. Participants will create a chart on chart paper that represents the scenario's problem and lists types of data the group finds helpful. One spokesperson for the group will share the small group's solution with the whole group. The trainer will facilitate discussion and answer questions and may add to the data listed if the small group is missing vital content.

In Part 4 of today's session (objective c), the trainer will share information to increase awareness of best practices for data-driven decision making with participants. The presentation (see Attachment 1-7: Presentation for Increasing Awareness of Best Practices for DDDM) will be shown to the whole group and will include an overview of the DDDM Framework and research based best practices related to DDDM. Whole group discussion and questions will be encouraged. At the end of the presentation, the trainer will ask each participant to record his/her "Aha!" from the presentation on the front of a sticky note with his/her name on the back. Sticky notes will be placed on the brain poster on the wall. Trainer note: The brain poster should be created on chart paper by the trainer by drawing a brain and writing "Aha!" as the title. An "Aha!" is the most important thing that the participant is taking away from today's session. Explain that this may not be the

same for each participant. Review the Aha moment notes after the lesson and use them to clarify information for participants if needed.

In Part 5 of today's session (objective d), the trainer will share information about data literacy with participants. The presentation (see Attachment 1-8: Presentation for Introduction of Important Concepts Related to Data Literacy) will be shown to the whole group and includes support for data use, capturing the data, making meaning from the data, sharing information about data and decisions. Whole group discussion and questions will be encouraged. This presentation includes a jigsaw activity. Notes for completing the jigsaw activity are found within the presentation. At the end of the presentation, the trainer will ask each participant to record his/her "Aha!" from the presentation on the front of a sticky note with his/her name on the back. Sticky notes will be placed on the brain poster on the wall.

In Part 6 of today's session (objective e), the trainer will share information about members of a school staff that are part of collaborative data teams within the school (see Attachment 1-9: Presentation Identifying Collaborative Data Teams). At the end of the presentation that identifies the roles these personnel have in the school, participants will move into data teams based on the information. The teams will exchange contact information and create a data team roster list to be shared with the trainer (see Attachment 1-10: Data Team Roster). At the end of the presentation, the trainer will ask each participant to record his/her "Aha!" from the presentation on the front of a sticky note with his/her name on the back. Sticky notes will be placed on the brain poster on the wall.

At the end of the day, explain the remaining training schedule to participants. There will be 18 more hours in this professional development series. Personnel will meet weekly. Most sessions will be 1 hour in length with one 4-hour group work session. Ask participants to submit the Data Team Roster and the end of the day evaluation forms as they depart from training day one.

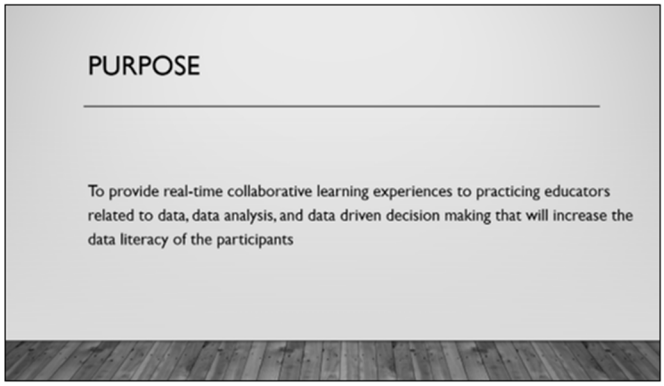
Attachment 1-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 1-2: Presentation of Purpose and Goal

Slide 1

Slide 2



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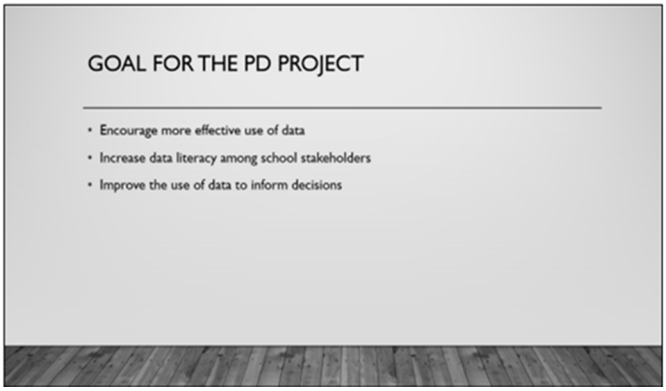

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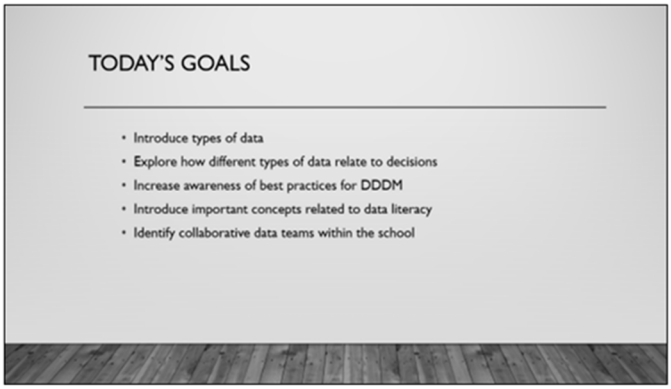

Slide 5 

Presenter Notes

Slide 1	Trainer welcomes participants and introduces the professional development. A brief introduction from the trainer about personal professional experience related to this topic will be helpful in building participant-trainer relationship to work together.
Slide 2	Share that the results of the study that culminated in this professional development project concluded that much data were available in the school; however, the data were not being used consistently. The purpose of the professional development is to allow stakeholders to work together to develop increased data literacy. Stakeholders who are data literate are more able to make informed decisions about educational practice. More informed decisions may lead to better decisions leading to more successful school reform.
Slide 3	Overall, the professional development project will take place over 19 sessions. The first session is 6 hours. This is an introduction to DDDM and its role in education. The remaining sessions give participants an opportunity to explore types of data that are available to school stakeholders. Participants will be encouraged to use data collaboratively and more effectively. Data literacy will be increased through the professional development sessions. Collaboration among stakeholders may lead to improved data use when making future decisions.

Slide 4	Today is the longest of the professional development sessions in this series. The session will include 5 goals. Participants will be asked to take part in multiple activities throughout the day which include a carousel activity about types of data, scenario examples that allow participants to discuss data use and decisions, a presentation that shares best practices for data driven decision making, an introduction of important concepts related to data literacy, and ultimately development of data team rosters for the school.
Slide 5	Allow participants to ask questions about today's session or upcoming professional development sessions in this series. Answer participants' questions.

Attachment 1-3: Day 1 End of Day Reflective Evaluation

Date _____ Participant Name (optional)_____

To assist me with supporting your needs in this professional development series, please share your understanding of the content presented today. Reflect upon the concepts of support for data use, capturing the data, making meaning from the data, and information about data and decisions.

_____

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Additionally, list the members of your collaborative data team.

_____

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Attachment 1-4: Examples of Types of Data Charts *after* Completed Carousel

This attachment represents the charts that will be created during the carousel activity during day one in Part 2. The trainer will write one type of data as a heading on each of 5 pieces of chart paper. Then, hang the chart paper on the walls of the room. Follow the directions given in the trainer narrative notes above. These examples represent completed charts after the carousel. **The examples on this document are non-exclusive lists. Other examples may be added by the trainer or participants during training.**

Student Learning Data (Literacy)	**Demographic Data**	**Observation Data**
• ACT Aspire • Basal Series Assessments • DRA • DIBELS • Running records • Letter naming assessment • Sight word assessments • Reading logs • Homework • NWEA	• Student name • Address • Age/Grade/Birthdate • Race/Ethnicity • Number of years attending this school • Siblings • Transportation to/from school • Student sex • Personnel credentials	• Anecdotal notes • Video • Work samples • Skill checklists • Peer observations • Administrative walk throughs
Student Learning Data (Math)	**School Processes Data**	**Perceptions Data**
• Fact fluency • Problem of the day • Quizzes/bell work • Homework • Classroom based independent practice • ACT Aspire • Textbook Based Unit Assessments • Fluency Assessments	• Parental involvement • Technology • Tutoring • RTI • Policies and procedures • Science fair • Special Education • Direct instruction • Differentiated instruction	• Interviews • Focus groups • Questionnaires • Surveys *Participants include stakeholder groups: parents, students, staff, community members, etc.

Attachment 1-5: Instructions for Stapleless book

Materials: 1 piece of 8 ½ x 11-inch paper, 1 pair of scissors

1. Hold the paper portrait style. Fold it in half lengthwise.
2. Hold the paper landscape style. Fold it in half lengthwise creating 4 equal sections.
3. Fold each half in half again creating 8 equal sections.
4. Cut the paper on the lengthwise fold of the 2 center sections.
5. Once the paper is cut, refold lengthwise.
6. Push the corners of the paper to the center creating a cross like shape in the middle.
7. Close the book using one end flap as pages 1-2. The center flap becomes pages 3-4. The other end becomes pages 5-6, and the other middle flap becomes pages 7-8.

Instructional video available at https://drive.google.com/file/d/10rXO-oc_0UsoJpbf3nRSQQf1Oo5uO6xg/view?usp=sharing

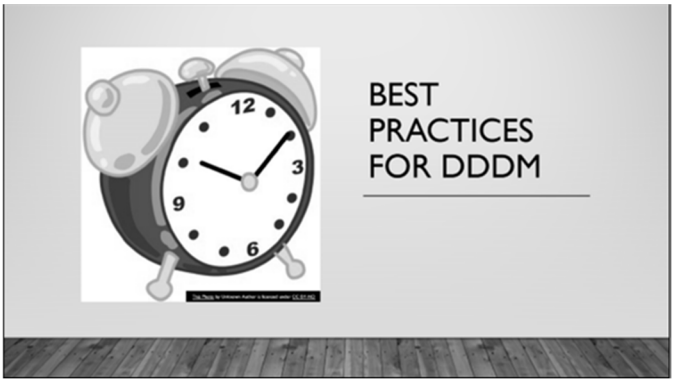
Attachment 1-6: Sample Scenarios for Data Driven Decision Making

A new third grade student has enrolled in your school. He transferred from a private school that does not participate in state testing. Your administrator has asked you to decide if he should attend after school intervention.	You are a kindergarten teacher. You meet 20 new students on the first day of class. Your administrator has asked you to turn in a copy of your reading small groups by the end of the week.
You are a sixth-grade teacher. In one period of the day, a student is sleeping in class. You have asked him to wake up every day. He does but falls back to sleep within minutes.	You are a teacher. When giving a math test on multi digit multiplication, less than 50% of your students earned a passing score.
Your school offers after school intervention for students who are behind in reading. Who should attend? Justify your answer.	Your school offers after school intervention for students who are below grade level in math. Who should attend? Justify your answer.
Your school has been cited by the Department of Justice for inequality in disciplinary practices resulting in over-suspension of minority students.	A new principal has begun working at your school this year. You need to justify what you have been doing on “theme” days in your classroom.
Your administrator has questioned the achievement of students in your classroom. You need to prove student's reading levels and how you have made growth with each student.	Your administrator has questioned the achievement of students in your classroom. You need to prove student's math levels and how you have made growth with each student.

Note: Cut these scenarios apart. Give one scenario to each small group with chart paper. The group will write a decision to be made for the scenario at the top of the chart and list types of data that may be useful for making the decision. The group will choose one spokesperson to share their results with the whole group. Whole group discussion and ideas may be added. The trainer will facilitate the whole group discussion.

Attachment 1-7: Presentation for Increasing Awareness of Best Practices for DDDM

Slide 6



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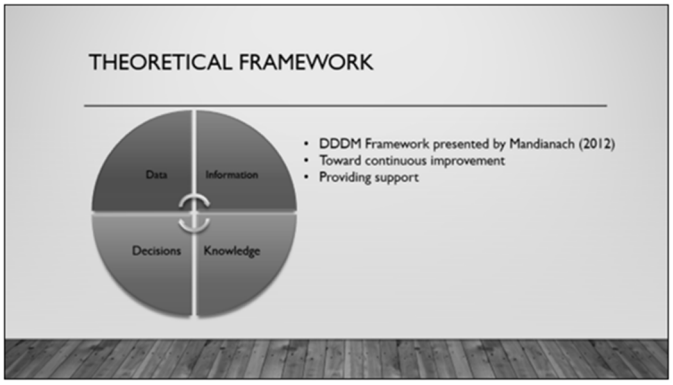

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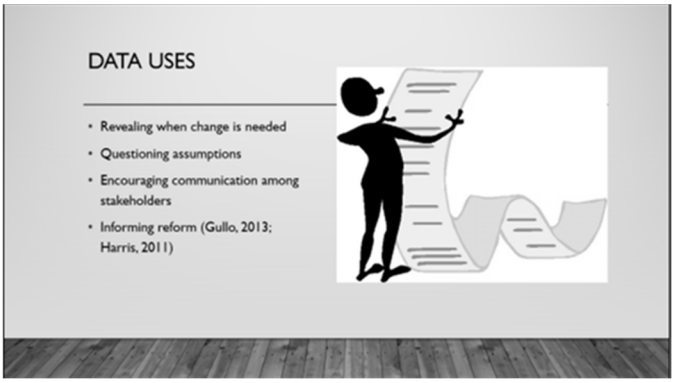

Slide 9

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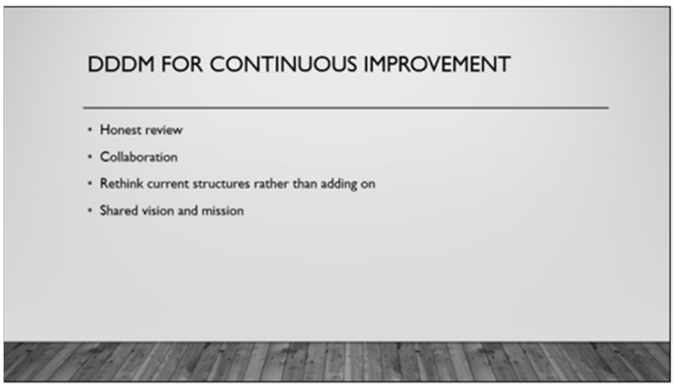


Slide 11

Slide 12

Slide 13

Presenter Notes

Slide 6	Data driven decision making has been a long-standing practice in business and industry. Data use and data driven decision making is growing in education. Research regarding DDDM in the field of education is growing. Gone are the days of decisions being made because it *feels right* or because it *seems right.*
Slide 7	In keeping with the definition of DDDM as the ongoing cycle of actions determined from information and knowledge gleaned from discussions about data (O'Neal, 2012), this professional development is built upon concepts of the DDDM framework presented by Mandinach (2012). Data are the raw numbers, opinions, or surveys gathered from relevant individuals. From data, meaning is gleaned through context; this is the information. Knowledge is the information that is useful to guide actions such as steps that may be taken in the local setting. And, decisions are the actionable choices made based on the knowledge developed from the data. As a stakeholder makes a decision, these data are analyzed in context and become useful information—more than just raw digits or comments bulked together. Sifting and sorting through data often reveals unseen facts or relationships that become valuable information. Once data are more informed, the most relevant data sets or facts become meaningful knowledge that may guide the stakeholder's decision-making process. Once the stakeholder acts upon a choice that is influenced or informed by the meaningful knowledge that originated in the raw data, the stakeholder makes a databased decision.
Slide 8	Data are used for a wide variety of reasons in education. Data may be helpful in revealing when change is needed, to question assumptions of stakeholders and encourage communication, and to inform reform. Data may also be beneficial in informing decisions about instructional objectives, student grouping for instructions, and achievement gaps. The collection of formal data has been encouraged through legislation for accountability in education.

Slide 9	For proper decision making, multiple types of data should be included in the analysis. Data users are cautioned not to rely solely on one source of data to make decisions as doing so demonstrates an assumption that one size fits all without regard for biological, social, or opportunity backgrounds of students (Gullo, 2013). Mandinach (2012) noted that the use of data including collaborative discussions with colleagues can be worthwhile; perception data are specifically named by others (Gullo, 2013). Also of relevance are the combined knowledge and experiences of those with access to the data (Marsh & Farrell, 2014).
Slide 10	While data may be utilized in infinite ways, DDDM is complex and can be detrimental if the quality and relevance of the data are not carefully aligned to the decision being made (Gill et al., 2014; Marsh et al., 2006; Ronka, Geier, & Marciniak, 2010). Data must be analyzed so that the meaning is appropriate in context (Mandinach, 2012). Additionally, the data sets must be used to inform practice. As the information absorbs meaning from the context, it becomes useful knowledge that may be applied as facts that guide decision-making. Quality data that are also relevant are useful for informing databased decisions (Bernhardt, 2016; Mandinach, 2012). For it to be appropriate to gather data, they must be relevant to a purpose, in this case, decision making. Multiple researchers agreed that data may not be collected to have more data; there must be quality data for DDDM to be most effective (Gill, Borden, & Hallgren, 2014; Mandinach, 2012; Marsh et al., 2006; Ronka et al., 2010). Data inform decisions about achievement gaps, instructional objectives, and student grouping for instruction (Gullo, 2013; Kaufman et al., 2014; Mandinach, 2012). Although the decision-maker's intellect, perceptions, and even emotions may be involved in the decision-making process, the best decisions are those that align with the mission and vision statement and move the collective group toward continuous improvement (Bernhardt, 2016).

Slide 11	Bernhardt (2016) focused an entire text on the question "What does it take to improve schools so that all students learn every year, in every grade level, and in every subject area?" (p.1). Of Bernhardt's eight research-based best practices to improve student learning, the following three are particularly relevant to the local case and this study: • Teachers and administrators must *honestly* review and use their data—*all* their data, not just analyze a gap here or there. • Staff must *collaborate* and *use* student, classroom, grade-level, and school-level data. Teachers need to work together to determine what they need to do to ensure learning in *every* student. • Schools need to rethink their current structures as opposed to *adding on* to what exists. (Structures include how curriculum and instruction are delivered. Add-ons are programs and interventions added to close a gap.) (p.1-2) Actionable decisions should move the group toward a shared vision and mission focused on continued improvement rather than compliance.
Slide 12	Without all the information, the most informed decisions evade stakeholders. DDDM cannot become the norm without ensuring the decision-making parties have access to relevant, reliable, quality data that relates to the decision that has or is to be made (Gill et al., 2014; Marsh et al., 2006; Ronka et al., 2010). DDDM, as an essential pillar of education, cannot be achieved unless quality data are collected and subsequently used to inform decisions. Analyzing multiple types of data may reveal insight about the decision-making process within your school. DDDM is not a finite process and it takes time and support to effectively implement it into a school.
Slide 13	Allow participants to ask questions about this portion of today's session. Prompt participants to participate in the "Aha! Moment" activity. Answer participants' questions.

Attachment 1-8: Presentation for Introduction of Concepts Related to Data Literacy

Slide 14

IMPORTANT CONCEPTS RELATED TO DATA LITERACY

Slide 15

WHY?

- Every Student Succeeds Acts (ESSA, 2015)
  - Multiple data sources
  - Funding to improve capacity
  - "instruction in the use of data and assessment to information and instruction classroom practice" (p. 296)

Slide 16

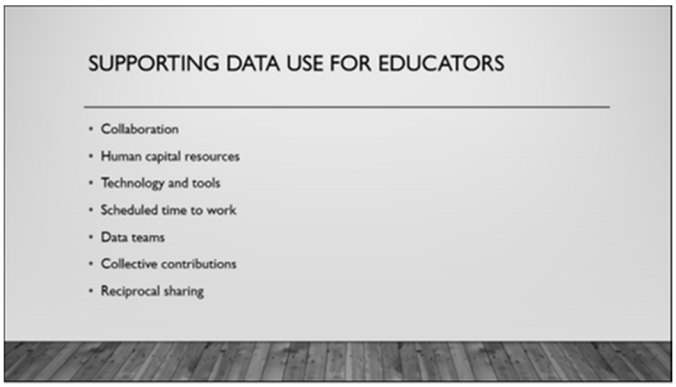
WHAT?

- Definition of Data Literacy for Teachers refined by Mandinach and Gummer (2016).
- Accountability and data-driven expectations
- Awareness

Slide 17

CAPACITY BUILDING

- Not transfer of skills and knowledge
- Social learning environment
- Data teams
- Connections



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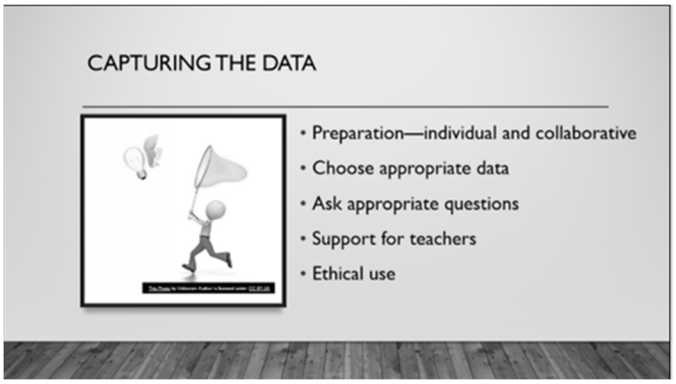

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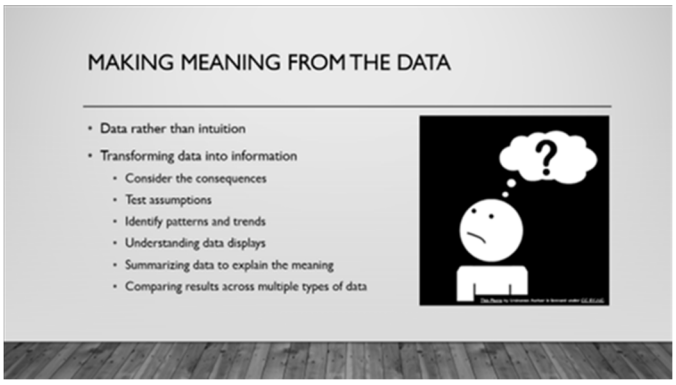

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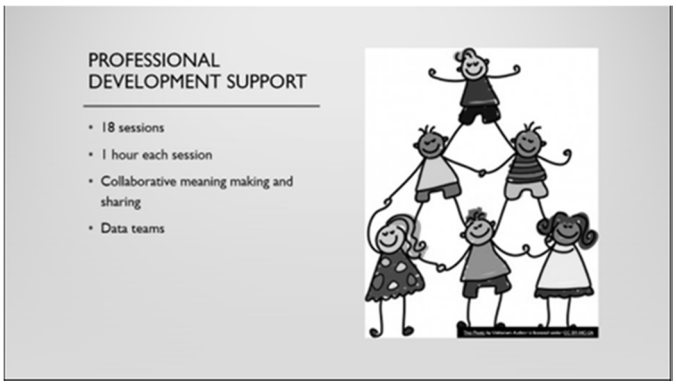


Slide 25

Presenter Notes

Slide 14	The next portion of today's session will focus on important concepts related to data literacy.
Slide 15	Every Student Succeeds Act (ESSA, 2015) has underscored the need for data-literate educators who are able to demonstrate evidence-based decision making called for continually by policy makers. ESSA calls for the use of multiple data sources including summative and formative assessment data as well as data related to behavior, attitude, attendance, and others. Further, ESSA provides for the use of funds to improve the capacity of stakeholders including principals, teachers, and school leaders to disseminate data in formats that can be understood by parents and families. Data literacy is a necessity in current practices of accountability and data driven expectations. ESSA (2015) further propelled educators toward evidence based, data driven decisions. Researchers agreed that continuous learning through professional development and workshops is key to increasing the data literacy and capacity of educators (Mandinach & Jimerson, 2016; Reeves & Honig, 2015; Vanlommel , Van Gasse, Vahoof, & Petegem, 2017). ESSA (2015) called for "instruction in the use of data and assessment to inform and instruct classroom practice" (p.296). Teachers need training and support for data use (Reeves & Chiang, 2017), and this support can be provided by professional development specialists and school districts (Mandinach & Gummer, 2016). Professional development is one way to support teachers. The intent of this professional development series is to better equip teachers to use data that are available to inform instruction and help students be more successful.
Slide 16	Mandinach and Gummer (2016b) developed the definition of data literacy for teachers (DLFT). In this more refined definition, these colleagues dove into the cognitive skills and knowledge necessary for data literacy (Mandinach & Gummer, 2016b). "Data literacy for teaching is the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and

	interpreting all types of data (assessment, school climate, behavioral, snapshot, longitudinal, moment-to-moment, etc.) to help determine instructional steps. It combines an understanding of data with standards, disciplinary knowledge, and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn." (Mandinach & Gummer, 2016b, p.2) Data literacy is a necessity in current practices of accountability and data-driven expectations. This project is designed to increase data literacy among practicing educators to increase the capacity of the school stakeholders to make decisions that are based on data to successfully meet the instructional needs of students at the site school. The professional development plan supports the needs of the school stakeholders by bringing awareness to data sources that may be used and help teachers know what to do with data once they are collected.
Slide 17	The current data-driven society (Dunlap & Piro , 2016) necessitates building data literacy for success. Capacity building is not the transfer of skills and knowledge but occurs in a social learning environment that allows for reciprocal learning between leaders and participants that allows individuals to use participation in activities and social interactions to construct knowledge and make sense of information (Bocala & Boudett, 2015; Huguet, Marsh, & Farrell, 2014). Data teams working together to inform practice is touted throughout research as appropriate and effective. Teachers reported a need for data-related professional development that is related to their needs surrounding the relationship between instruction in the classroom and assessment to be able to make connections. Sinek (2015) shared that participants must know why they are engaging and what change may come from the learning. Best practice for teaching data literacy education includes collaboration between educators in hands-on learning in workshops to provide practical experience (Rids dale et al., 2015). These experiences provide the opportunity for learners to figure out processes, make mistakes, and practice.

Slide 18	Collaboration is one of the most frequently named factors in successful data use. Keuning , Van Geel, and Visscher (2017) noted that collaborative teams are comprised of leaders, coaches, teachers, and aides. With data teams, teachers are not left alone to explore data and attempt to put it into use; discussion allows for the incorporation of knowledge from more than one individual and has been known to compensate for individual gaps in knowledge or data skills (Mandinach & Gummer, 2016). Data teams benefit from social learning and collaborative activities which allow them to combine knowledge (Huguet, Marsh, & Farrell, 2014; Schildkamp & Poortman, 2015). These activities are more likely to assist teachers in using data individually when necessary (Huguet et al., 2014). Discussions about data with colleagues may lead to better connections to data (Dunlap & Piro, 2016). Educators working together to use data to drive decisions and instruction need support (Gerzon, 2015; Marsh & Farrell, 2017). This support is essential as teachers navigate the challenges relative to decision making (Reeves & Chiang, 2017). Support for data use comes from the system as a whole in the following categories: (a) Human capital resources such as professional development and support positions including coaches that support social learning and collaborative sense-making; (b) Technology and tools such as data management systems which give educators access to organized data sets and protocols for data analysis which guide implementation of data use; and (c) Formal and informal practices such as scheduled time to work, establishing data teams, and collective contribution of knowledge that may allow for collegiate interactions which enhance data use (Farrell, 2014). Support also comes through reciprocal sharing of ideas and experiences among stakeholders including leaders, teachers, coaches, and aides (Bocala & Boudett, 2015). Some other factors influence data use in education. Individual knowledge and skills related to data influence the effectiveness of data use (Keuning, Van Geel, & Visscher, 2017). Structured time to work with data is also a contributing factor (Farley-Ripple & Buttram, 2013; Keuning, Van Geel, & Visscher, 2017). Timeliness of data and availability in addition to having appropriate data available are necessary (Farley-Ripple & Buttram, 2013; Schildkamp et al.,

	2017). These factors work in conjunction with support and collaboration for successful data use (Farley-Ripple & Buttram, 2013; Marsh & Farrell, 2017).
Slide 19	Have participants form 7 equal groups. Assign each group one of the topics related to supporting data use for educators from the previous slide. Give participants 5-10 minutes to discuss these 3 items related to the topic. Tell participants that they will be sharing the group information in a jigsaw which means that after their group has met about their assigned topic, 1 person from the group with join 1 person from each of the other groups to form groups of 7 people who will each have information to share about the 7 different topics. Set a timer or listen for groups to finish discussing their assigned topic. Participants should be sharing about the support they have experienced, support they would like to have, and the influence of the support based on their assigned support topic. As groups finish the initial discussion, count aloud 1, 2, 3, 4, 5, 6, 7 getting one person from each of the 7 groups to join you at the front. Send that group of 7 people to begin discussing each of the topics for supporting data use. Continue pulling groups of 7 (one person from each topic group) until all participants are in a group and able to share their topic with others and learn about others' experiences with different support topics. For the sharing piece, give participants approximately 5 minutes per person to share their group's topic and the information related to the topic. This activity will take approximately 45-50 minutes.
Slide 20	Jimerson and Wayman (2015) named 3 components of data-related professional learning including capturing the data, making meaning from the data, and share information related to the data. The research that was compiled to build this professional development project were organized into these three components. These will be the pillars of the remaining sessions of this professional development project.
Slide 21	Data capture involves preparing for discussions about data. This is both an individual and collaborative phase (Jimerson & Wayman, 2015). Teachers capture individual data from each student through assessments, observations, and conversations. Collaboratively,

teachers may work with other school personnel to compile individual data into data sets that represent the group. Some of these types of data may include assessment data, attitudes, well-being, behavior, health, and attendance; while student performance data may loom above educators daily, these other types of data contribute to the whole picture and are essential to data-driven decision making (Mandinach & Jimerson, 2016).

Schildkamp et al. (2017) reiterated the need for reviewing multiple types of data and added that teachers must know and be able to locate the data needed and access it within a quick timeframe. Accessing the data alone is not enough. Another component of data capture is to choose appropriate data sets and subsequently ask appropriate questions about the data (Farley-Ripple & Buttram, 2013; Jimerson & Wayman, 2015; Schildkamp et al., 2017). Fundamental to being able to choose appropriate data sets is understanding what each data set provides. Future sessions in this professional development series will guide teachers in using sets of available data with fidelity.

It is essential that teachers have support for data use from school and district leaders including structured time to work with data (Farley-Ripple & Buttram, 2013); often this support begins with funding for human capital in positions that coach and guide data discussions (Marsh, Bertrand, & Huguet, 2015). Data that are used in schools for decision making must be "useful, informative, and actionable" (Mandinach & Jimerson, 2015, p.3).

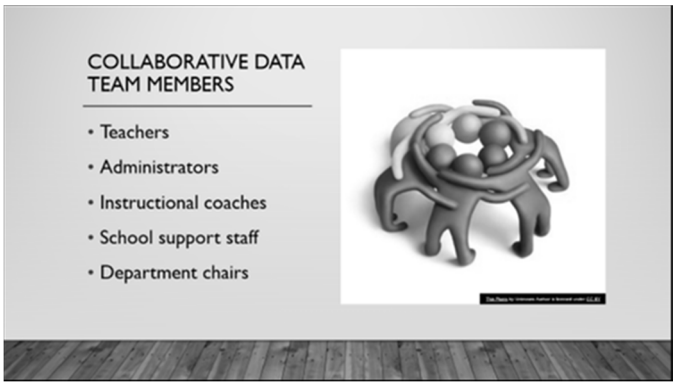
A final component of capturing the data is ensuring ethical practices by educators (Mandinach & Jimerson, 2016). Risks of privacy violations, lack of transparency, and even social discrimination are possible if data are not carefully handled (Lepri , Staiano, Sangokoya, Letouze, & Oliver, 2016). All stakeholders, no matter their role, are responsible for securing the privacy and confidentiality of the data that are used (Mandinach & Jimerson, 2016). Teachers must understand how to secure data and protect the privacy and confidentiality of the students; further teachers and stakeholders need to be able to communicate about data with various audiences (Mandinach & Gummer, 2016).

Slide 22	Encouraging teachers to make decisions based on data rather than intuition is necessary because in some cases teachers may not consider all sources of data or the consequences of decisions (Vanlommel et al., 2017). Sometimes available data are not sought or consulted by teachers (Vanlommel et al., 2017). Encouraging belief in data through collaborative inquiry can help increase individual skills for data use (Schildkamp & Poortman, 2015). The intention of making meaning from data is to combine individual and collaborative interpretations from the data and plan for actions to follow (Jimerson & Wayman, 2015). To make meaning from the data, teachers must know how to ask appropriate questions (Ridsdale et al., 2015). Transforming data into information requires a skill set and collaborative inquiry. Ask participants to discuss ways that they have made meaning from data in the past. Give 5-10 minutes for the discussion. Encourage participants to share experiences with their table group. Circulate to prompt for more information from participants.
Slide 23	Information that is not shared may result in lost learning. Educators who have made meaning of data may contribute back to the school by encouraging more effective, informed stakeholders (Jimerson & Wayman, 2015). Data teams share information that can support the organization throughout the processes of decision making. Sharing information can help teams determine next steps such as determining next instructional steps, diagnosing student needs, monitoring performance of students and changing classroom practices, and making instructional adjustments (Mandinach & Gummer, 2016). Collaboration and dialogue that is rich with data is essential to successful data use and increased data literacy among educators.

Slide 24	The professional development series focuses on collaborative learning experiences surrounding various data sets. During the professional development sharing information is vital. The professional development sessions are one hour each. Participants will be introduced to the Continuous Improvement Framework (Bernhardt, 2016) and review data sets for the school. Participants can expect to work collaboratively with colleagues and the trainer to make meaning from the data through discussion and share the information to make improvements.
Slide 25	Allow participants to ask questions about this portion of today's session. Prompt participants to participate in the "Aha! Moment" activity. Answer participants' questions.

Attachment 1-9: Presentation Identifying Collaborative Data Teams

Slide 26



Presenter Notes

Slide 26	Collaborative data teams are individuals working in a school who will collaborate and discover meaning within data sets together. Data teams may be comprised of teachers from similar content areas or from same grade spans. Administrators can be part of any data team within the school. Instructional coaches, if available, should participate on data teams relevant to the teachers they support. Department chairs should also join data teams relevant to the content areas they support.

Attachment 1-10: Data Team Roster

Participant Name	Job Title	E-mail address

*Please submit this roster to the trainer before departing the session today.

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 2 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce concepts of using data for continuous improvement • Compare actions of compliance versus continuous improvement in schools

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Initial Inventory about data use in the school (pre-assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Google Form	--technology devices for teachers to complete survey form -survey form on Google --participant sign in sheet	5 min.	Submission of the initial inventory from each participant.
2. Non-negotiables for continuous improvement	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint related to non-negotiables for continuous improvement	--Laptop --Projector --Screen --Remote --PowerPoint presentation	10 min.	Whole group presentation and discussion including questions and answers. Trainer log

3. Compliance versus continuous improvement	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Vote with your feet activity**	**--*Data, Data Everywhere* Second Edition, Bernhardt, 2016 pages 2-4**	**30 min.**	**Whole group discussion including questions and answers. Trainer log.**
4. Reflecting on continuous improvement versus compliance	Teachers Instructional Coaches	Trainer CIA Leader Principal	Participants will reflect on learning from the session.	--reflective journal for participants --writing utensils	10 min.	Whole group discussion including sharing, questions, and answers. Trainer log
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants that in the next session, demographic data will be explored.	--trainer voice --trainer log	5 min.	Whole group discussion including questions and answers.

Day 2 (1 hour)

The goals of today's session are to (a) introduce concepts of using data for continuous improvement and (b) compare actions of compliance versus continuous improvement in schools. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 2-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to complete an initial inventory about data use in the school (see Attachment 2-2: Inventory About Data Use). Participants will complete the form online through Google forms at https://goo.gl/forms/PtFgvmldMAAId5Lm1 . One hundred percent participation is desired from the group as measured by the number of form responses received.

In Part 2 of the session (objective a), the trainer will share the presentation related to non-negotiables for continuous improvement (see Attachment 2-3: Presentation About Non-Negotiables for Continuous Improvement). The presentation will be shown to the whole group. Whole group discussion and questions will be encouraged.

In Part 3 of the session (objective b), the participants will participate in a vote with your feet activity to compare actions of their school in the categories of compliance and continuous improvement. The trainer will label one wall Side A for compliance and another wall Side B for continuous improvement. Directions for the activity are in the presentation for this training session. The trainer will need a copy of *Data, Data Everywhere* (Bernhardt, 2016). As part of the activity, the trainer will need to prepare a

T-chart on chart paper. Label the left “Compliance” and the right “Continuous Improvement”. After each voting activity, record the number of participants who are on side A under Compliance and side B under Continuous Improvement. At the end of the activity, the trainer can use the data to determine if the school is more compliance focused or more focused on continuous improvement. Whole group discussion and questions should be encouraged.

In Part 4, participants will reflect in a journal. The reflective journal will be a single subject notebook that is provided to participants by the school or by the trainer. The trainer should explain that this is a place where participants can take notes in any manner throughout the sessions. The intent of the reflective journal is for the participant to have access to the information after the professional development sessions have concluded. The trainer will give participants specific activities for the journal throughout the sessions as well. Today, participants should reflect on learning from the session. Perhaps a participant has thoughts about the 8 non-negotiables or the data related to the current actions of the school. Whole group sharing and discussion should be encouraged. Trainer will observe and use a check mark next to the participant’s name in the trainer log (see Attachment 2-4: Trainer Log) to identify participation in the activity.

In Part 5 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 2-4: Trainer

Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 2-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 2-2: Inventory About Data Use

Inventory About Data Use in Schools

* Required

1. **What data do you use in your school? Mark all that apply.** *
   Check all that apply.
   - [ ] Observation Data
   - [ ] Demographic Data
   - [ ] Perceptions Data
   - [ ] School Processes Data
   - [ ] Student Learning Data
   - [ ] Other: _____

2. **How are decisions made at the school?** *

3. **Which team members work with data at your school?**

4. **Which of the following statements best describes data and decisions at your school?** *
   Mark only one oval.
   - ◯ All decisions at our school are made using data.
   - ◯ Data is collected about many things in our school, but only state testing data are used for decision making.
   - ◯ Many types of data are collected in our school, and most are used for making decisions.
   - ◯ Many types of data are used in our school and none of them are used for decision making.
   - ◯ I know that data are collected in our school, but I am unsure of how they are used.

5. **Rate your level of comfort with analyzing data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

6. **Rate your level of comfort with creating an action plan for a problem using data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

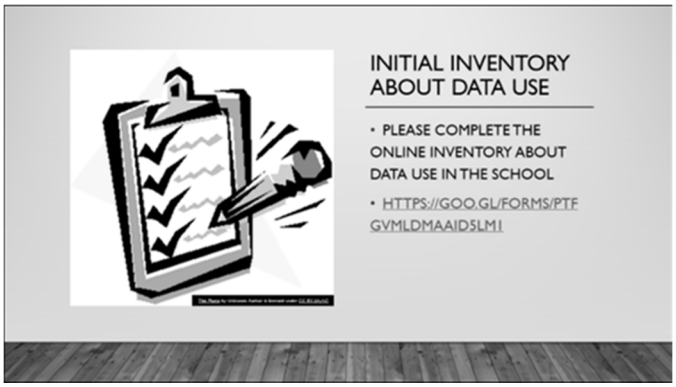
7. **Rate your level of comfort with making decisions using data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

Attachment 2-3: Presentation About Non-Negotiables for Continuous Improvement

Slide 27

Slide 28



Slide 29

Slide 30

Presenter Notes

Slide 27	In today's session, participants will be introduced to concepts of using data for continuous improvement and compare actions of compliance versus continuous improvement.
Slide 28	Participants will login online and complete the initial inventory about data use in the school.
Slide 29	Bernhardt (2016) shared 8 non-negotiables for schools to make continuous improvement and to reach every child, every year. Based on many years of research, these things are necessary for successful school improvement (Bernhardt, 2016). • It is necessary for all teachers and administrators to believe that **all** children are able to learn. If some teachers or administrators do not believe that all students are able to learn, then no learning will take place. • Rather than analyzing gaps in the data, stakeholders must review and use data honestly. • All school staff must be moving forward in the same direction toward one common vision. • School need one plan for implementation; multiple, unrelated plans cannot be effectively implemented. One vision with one plan is key. • The assessments, strategies for instruction, and curriculum used in the school must be aligned to learning standards for students. Staff need to agree about what we want students to know and do. • Working together is essential. Teachers and administrators need to collaborate and use data at many levels including student, classroom, grade-level, and school data. This ensures learning for each student. • Professional development and learning opportunities need to work differently when the data reveal that student learning is not at what is expected. It is important for these learning opportunities to be ongoing, embedded into the workplace, and focused on results. •Current school structures may need to be rethought and changed rather than adding more to the current programming.

Slide 30	In this activity, participants will vote with their feet to identify which scenario describes the school more. The trainer will introduce the activity by reading aloud the excerpt from pages 2-3 of *Data, Data Everywhere* (Bernhardt, 2016). Using the chart on page 4, the trainer will introduce the key actions schools take to guide improvement. Actions on the left of the table are actions focused on compliance. Actions on the right are actions that schools take when committed to continuous improvement. The trainer will read both statements and participants will move to either side of the room to show which statement best represents the current actions of the school. The trainer will record the number of participants who move to side A (compliance) and to side B (continuous improvement) on a chart. Participants will be asked to justify why they chose the side they did. Whole group discussion will be encouraged.

Attachment 2-4: Trainer Log

Day _____ Part _____
Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 3 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce framework for continuous improvement • Introduce data sets that help answer critical questions

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about the last session on the fire wall. Trainer will answer the burning questions.	--burning questions poster --sticky notes for questions --writing materials --sign in sheet --trainer log	10 min.	Burning question notes from participants. Sign in sheet Trainer log.
2. Introduce framework for continuous improvement	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint presentation introducing components of framework for continuous improvement. Whole group presentation.	--Laptop --Projector --Screen --Remote --PowerPoint presentation	10 min.	Whole group discussion including questions and answers. Trainer log.

3. Data sets that help answer critical questions	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Whole group presentation of critical questions and data sets that help answer each question.** **Whole group discussion with questions and answers.**	**--reflective journals for participants --writing materials --trainer log**	**35 min.**	**Participants will record critical questions and types of data in reflective journals.**
4. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants the topic for the next session to spark interest and allow them to begin thinking about the topic.	--trainer voice --trainer log	5 min.	Whole group presented with topic for the next session. Trainer log.

Day 3 (1 hour)

The goals of today's session are to (a) introduce framework for continuous improvement and (b) introduce data sets that help answer critical questions. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 3-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. This poster should be created by the trainer using chart paper by drawing flames and writing the title "Burning Questions". The trainer will take and answer burning questions. Burning Questions are questions that are lingering in participant's minds. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 3-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will share the PowerPoint presentation on the Continuous Improvement Framework whole group. (see Attachment 3-3: Presentation for Continuous Improvement Framework). Discussion and questions will be encouraged. The presentation notes will guide the presentation for the trainer. The trainer will use the Trainer Log to record discussion points, reflections, or questions from the presentation.

In Part 3 of the session (objective b), the trainer will present the presentation about the types of data that help to answer critical questions (see Attachment 3-4:

Presentation About Data Sets for Answering Critical Questions). Participants will record the questions and notes during the presentation in their reflective journals. The trainer will check journals and make notes in the trainer log (see Attachment 3-2: Trainer Log) if a participant needs assistance or did not participate.

In Part 4 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 3-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 3-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 3-2: Trainer Log

Day _____ Part _____
Activity: _____
_____

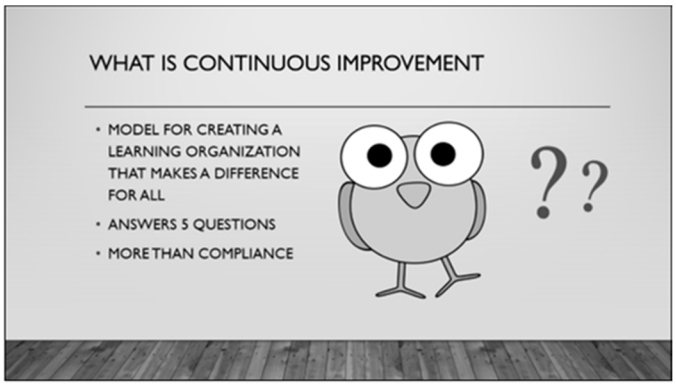
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

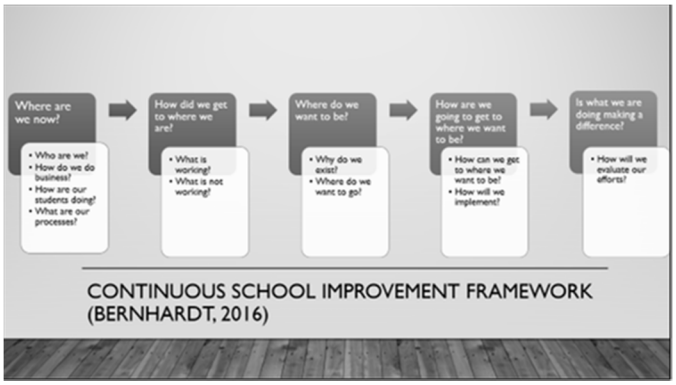
*add more sheets if needed

Attachment 3-3: Presentation for Continuous Improvement Framework

Slide 31



Slide 32



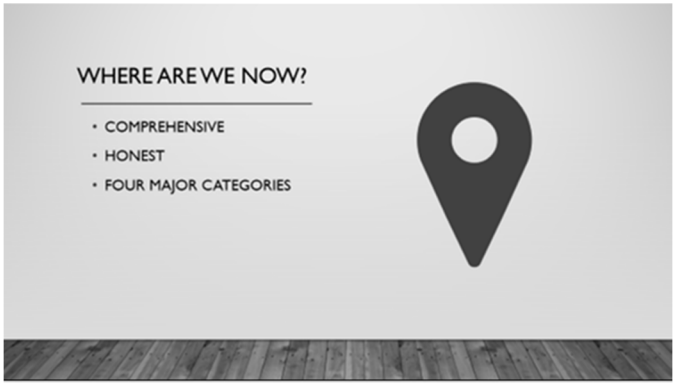
Presenter Notes

Slide 31	The Continuous School Improvement Framework is intended to guide schools as they work to improve teaching and learning for all (Bernhardt, 2016). Many schools skip the preliminary components of the framework and evaluate the gaps between where they are and where they want to be. (Bernhardt, 2016). The purpose of today's session is to introduce the framework and the data sets that help to answer the questions within the framework so that we can work toward a complete picture of the school using multiple types of data from multiple sources. The Continuous School Improvement Framework answers 5 key questions: Where are we now? How did we get to where we are? Where do we want to be? How are we going to get to where we want to be? Is what we are doing making a difference? Answering these questions is critical to moving toward improving learning for each student each day in our school.

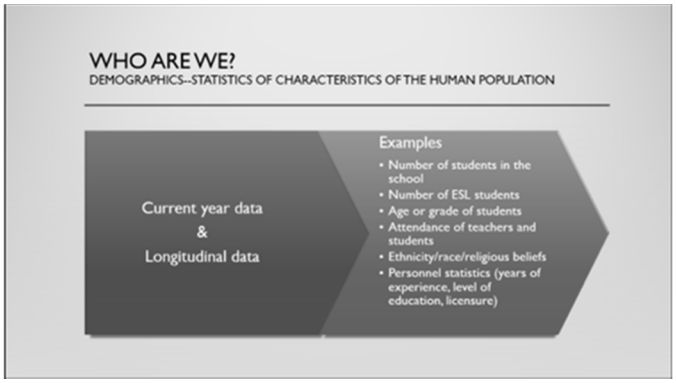
Slide 32	The Continuous School Improvement Framework includes 5 critical questions. Each question has sub-questions that help stakeholders answer the larger question. The first component of the framework is where we will focus most of the time in this professional learning series. Answering the question of where we are now leads a school to developing a complete data picture and increases the data literacy of stakeholders as they discover what types of data are available and how each data set may be beneficial to the school. In the next few slides, we will expand the sub-questions of where we are now and look at types of data that help us to address each question.

Attachment 3-4: Presentation About Data Sets for Answering Critical Questions

Slide 33



Slide 34



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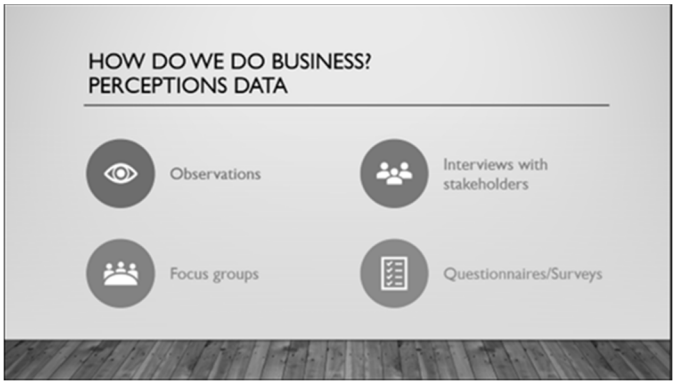
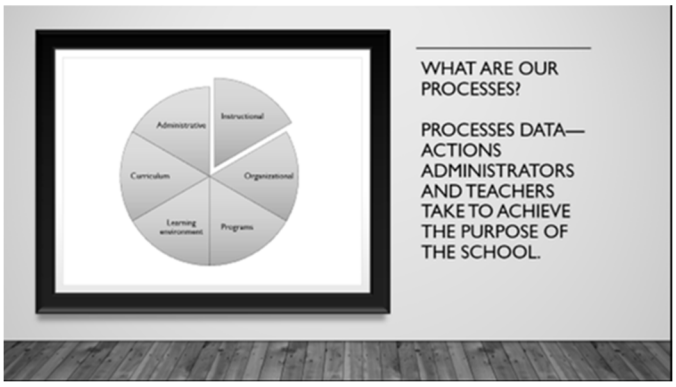


Slide 36

Slide 37 

Presenter Notes

Slide 33	Asking the question of where we are is the first part of planning for continuous improvement. This step requires a comprehensive and honest look at all school data, not only the results of student learning. It is important to use multiple types of data that fall into four categories including demographics, perceptions, student learning, and school processes (Bernhardt, 2016).
Slide 34	The question "Who are we?" is the first of the sub-questions to answer the overarching question of "Where are we now?". In this question, stakeholders will use demographic data about the district, school, students, staff, and the community. Demographic data represent the current context of the school and help to describe trends (Bernhardt, 2016).
Slide 35	Perceptual data tell teachers and administrators about what stakeholders are thinking about the school as a learning organization and help to answer the question "How do we do business?". This question reviews culture, climate, and processes of the school.
Slide 36	Student learning data help to answer the question "How are our students doing?". Multiple types of assessment data are used to answer this question and to measure student learning. In the whole group discussion, name formative, summative, and diagnostic measures used in the school to reflect student learning. Student learning data help staff know that students are in fact retaining the information that is being taught. This data can be collected and analyzed by individual student, teacher, classroom, grade, and school. Additionally, student learning data are sometimes compared across a district.

Slide 37	Data about the processes of the school are the measures over which schools have near complete control (Bernhardt, 2016). These are the actions stakeholders take to achieve the school's purpose. Processes include instructional strategies, organizational processes, the programs that are in place, learning environments within the school, curriculum that is taught, and administrative procedures. Some processes are habit while some are customary for the school. The processes that help the school improve are also a portion of the processes data. These data are important because they inform us about the way we accomplish work, the results from the work, and help us to identify what is and is not working. It is the processes of a school that produce results.

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 4 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce demographic data • Share the cycle for analyzing demographic data sets

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about the last session on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --sign in sheet --trainer log	10 min.	Burning question notes from participants. Sign in sheet Trainer log.
2. Introduce demographic data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group presentation to introduce demographic data and its relevance to the school. Discussion and questions encouraged.	--reflective journals for participants --writing materials --trainer log	10 min.	Reflective journals Trainer log

3. Share the cycle for analyzing demographic data sets	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Whole group presentation of the cycle for analyzing demographic data sets. Discussion and questions encouraged.**	**--chart paper --markers --reflective journals for participants --writing materials --trainer log**	**35 min.**	**Participants will record the cycle information in reflective journals for future use. Trainer log.**
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants the topic for the next session to spark interest and allow them to begin thinking about the topic.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 4 (1 hour)

The goals of today's session are to (a) introduce demographic data and (b) share the cycle for analyzing demographic data sets. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 4-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. This poster should be created by the trainer using chart paper by drawing flames and writing the title "Burning Questions". The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 4-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will present information to introduce demographic data (see Attachment 4-3: Presentation to Introduce Demographic Data). The presentation notes will guide the presentation for the trainer. The trainer will use the Trainer Log to record discussion points, reflections, or questions from the presentation.

In Part 3 of the session (objective b), the trainer will present the presentation about the cycle for reviewing data (Attachment 4-4: Presentation to Share Cycle for Analyzing Data). Participants will record the cycle and appropriate notes during the presentation in their reflective journals. The trainer will check journals and make notes in

the trainer log (see Attachment 4-2: Trainer Log) if a participant needs assistance or did not participate.

In Part 4 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 4-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 4-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 4-2: Trainer Log

Day _____ Part _____
Activity: _____

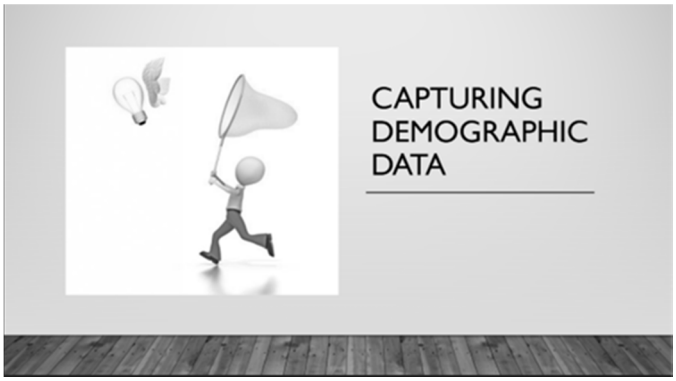
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

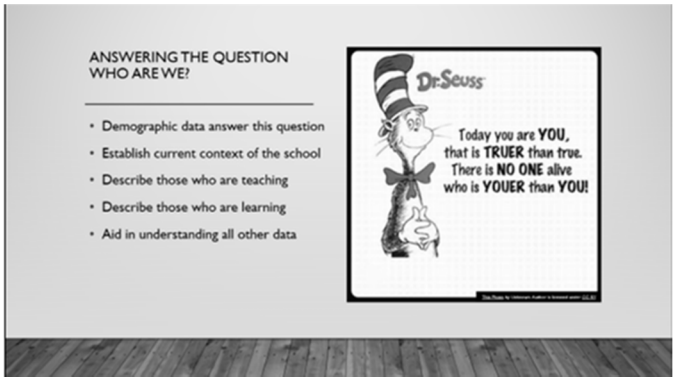
*add more sheets if needed

Attachment 4-3: Presentation to Introduce Demographic Data

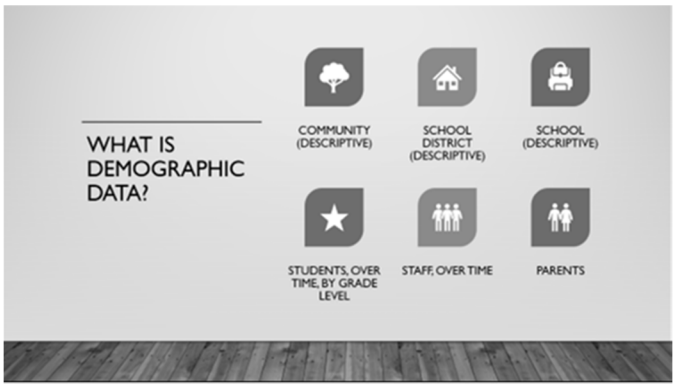
Slide 38



Slide 39



Slide 40

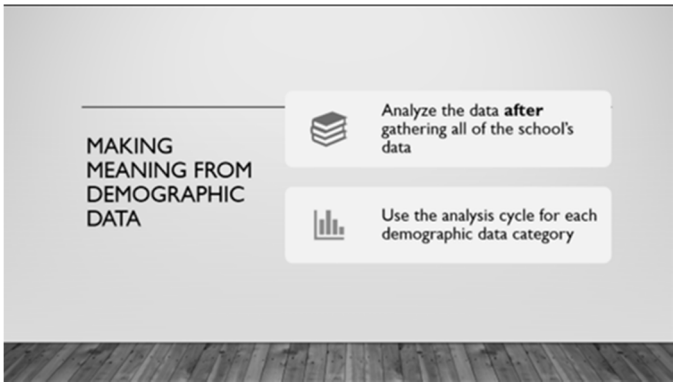


	Presenter Notes
Slide 38	Demographic data are captured throughout the year and are most often housed in information systems. Demographic data describe both the characteristics of the human population within the school and the system itself. Demographic data are not static. The context of the school is critical for understanding all other data about the school and to make decisions.

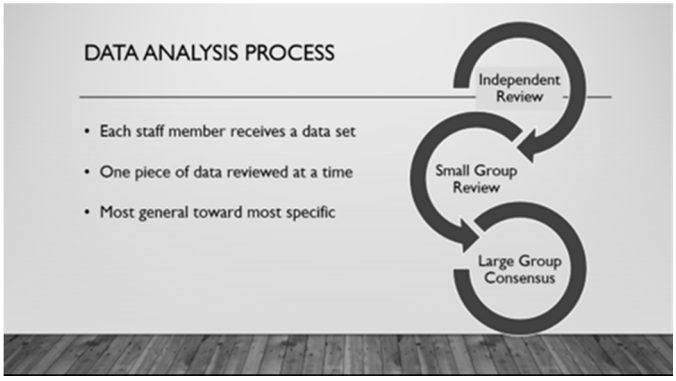
Slide 39	Demographic data answer the question of who we are for the school. The demographic data help to establish the current context of the school. The data describe both the population of staff and the population of learners in the school. Demographic data inform staff about the school structure.
Slide 40	The trainer will introduce different types of demographic data collected by the school. Typical demographic data that may be gathered can be found on page 20-21 of *Data, Data Everywhere.* The trainer will share examples of demographic data in each category. • Descriptive data about the community includes information about the location and its history. Additionally, it includes information about community resources, involvement, and partnerships with the school. • Descriptive data about the school district includes information about history, the number of schools and stakeholders over time and by grade level. • Descriptive data about the school includes historical data, location, areas of the community where students live who attend, the type of school, and number of stakeholders, number of students elected to come from another area. This may also include data related to funding, federal programming, safety, class size, extracurricular activities, and other programming options. • Data related to students over time includes information about attendance, mobility, retention, and success. It may also include living situations, preschool attendance, gender, transportation, and discipline incidents. Also included in student data are graduation rates, college success, and dropout rates. • Data relate to staff over time includes information such as credentials, years of experiences, staff attendance, and number of employees in each stakeholder group. • Data related to parents includes home language, level of education, parental involvement, and living situations.

Attachment 4-4: Presentation to Share the Cycle for Analyzing Data

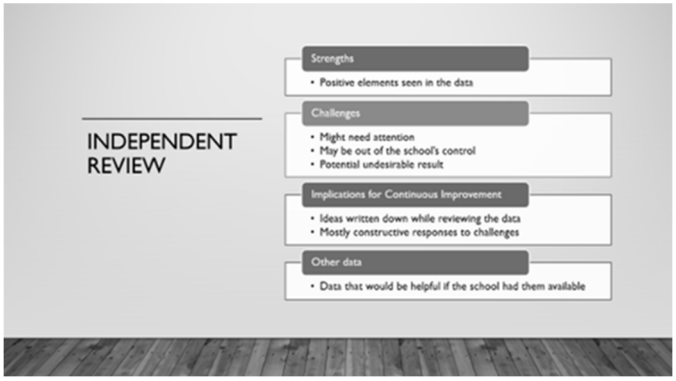
Slide 41



Slide 42



Slide 43



Slide 44

Slide 45

Presenter Notes

Slide 41	Making meaning from data sets is the next step after capturing the data. Today, will examine the data analysis process. Explain to participants that today's session will introduce the data analysis cycle. In future sessions, participants will use this cycle to analyze data sets beginning next session with demographic data. The goal of today's session is for participants to become aware of the process for data analysis and record notes in reflection journals.
Slide 42	In the data analysis process, the trainer or CIA leader will complete the first step or direct the process for Step One. This first step is the step of ensuring that each staff member has a copy of the data set. In some cases this data will be provided by the staff member, but in most cases, the facilitator should provide a copy of the data set. One piece of data should be reviewed at a time. Providing multiple sets or types of data to review simultaneously can overwhelm staff. Data should be reviewed beginning with the most general data (district/school level) and narrow to the most specific level (individual). Steps two through four are an independent review, small group review, and then a large group consensus of the findings. This is the data analysis process, not the decision-making process. The intent of this process is to examine the data, identify strengths, challenges, and potential implications.

Slide 43	Step 2 in the data analysis review cycle presented in *Data, Data Everywhere* (Bernhardt, 2016) is the independent review. This is a step that asks individual stakeholders to review each set of data. It is important in this step that participants write down the first thing that comes to mind. The participant will make notes in four areas: • Strengths seen in the data are positive elements that can be identified from the data. These strengths can sometimes be used as leverage for making improvements on a challenge. An example could be "All students have an attendance rate of 95% or better." • Challenges are found in the data and give the impression that attention should be given to something, a factor exists over which the school has no control, or an undesirable result has occurred. One example of a challenge might be, "The ESL population in the school has doubled in the last two years." It is important to note that challenges are different than weaknesses. Challenges can be overcome by adjusting instruction and practices in a school such as how teachers teach or when homework is assigned. • Implications for the Continuous Improvement Plans are ideas that participants write down while reviewing the data. Implications are frequently responses to challenges. For example, this might be a question that asks if all staff have had professional learning that they need related to cultural responsiveness. It is important to note that implications can be questions or statements but questions are sometimes more easily received by staff, especially those who may be afraid to say the staff needs to improve. •Sometimes while reviewing one type of data, staff determine that more data of a different type may be helpful. These determinations are recorded in the other data we wish we had box.

Slide 44	During Step 3, participants will move into small groups. Within the small groups, individual participants will share their thoughts about the data set. The small group will develop commonalities about the four components of the data analysis. The group will also discuss other data and determine how to gather the data and when it can be reviewed. The small group will make a list of commonalities on chart paper to be shared with the larger group in the next step.
Slide 45	The purpose of the large group consensus is to move the small group results to a combination of comprehensive strengths, challenges, implications, and other data. In this activity, small groups will place their chart paper on the wall across. A reporter from each small group will stand near his/her chart with a marker. Beginning on the left, the first reporter will read the strengths the group found. As this reporter reads, reporters from the other groups will mark strengths that are the same off their own posters. Proceeding in a clockwise pattern, the next reporter will read remaining strengths. Ultimately, this results in a comprehensive list of strengths by combining all strengths presented by the groups without duplications. *Repeat these steps in a counterclockwise direction for challenges. Continue through implications and other data using an alternating direction and starting point. The result of this activity is a large group consensus of what the data tell us about the school. These data are agreed upon by the stakeholders of the school.

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 5 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Analyze demographic data sets • Graph demographic data for school data profile

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Review cycle for analyzing data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Review steps for analyzing data.	--Participant data analysis worksheet	10 min.	Sign in sheet
2. Analyze and graph data to create school profile	Teachers Instructional Coaches	Trainer CIA Leader Principal	Analyze demographic data sets using participant data analysis worksheet.	--chart paper --markers --participant data analysis worksheet --writing materials --trainer log --demographic data sets from the school leader	50 min.	Participant Data Analysis Worksheet
3. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants the topic for the next session to allow them to begin thinking about the topic.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 5 (1 hour)

The goals of today's session are to (a) analyze demographic data sets and (b) graph demographic data for school data profile. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 5-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session (objective a), the trainer will review the steps in the cycle for analyzing data from the prior session and distribute the participant worksheet for use in today's work session (see Attachment 5-2: Participant Data Analysis Worksheet)

In Part 2 of the session (objective b), the trainer will distribute demographic data sets to participants and ask them to participate in analyzing the data. Participants will record their work on their participant worksheets individually and then on chart paper during small group analysis. The trainer should act as a facilitator during this work session. Note: This process is explicitly described in the text *Data, Data Everywhere* (Bernhardt, 2016) and was presented in the prior session. You may choose to read pages 23-26 before this training session.

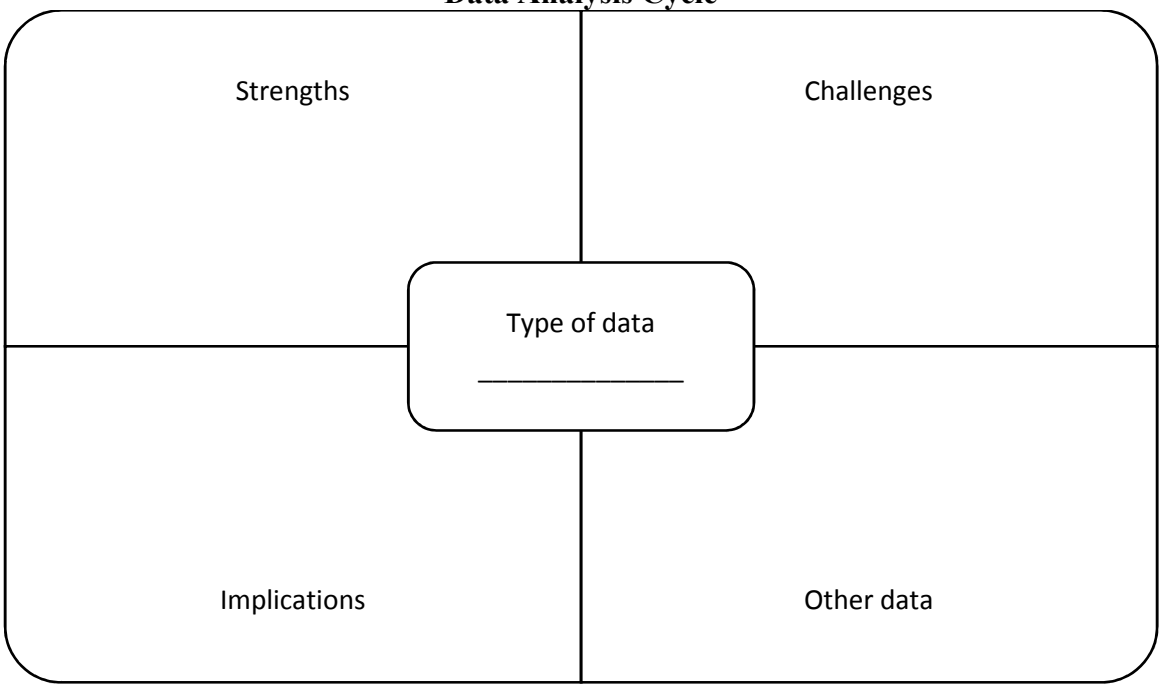
In Part 3 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 5-3: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 5-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 5-2: Participant Worksheet

Data Analysis Cycle



Independent Review Small Group Review

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 5-3: Trainer Log

Day _____ Part _____

Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 6 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Combine group results to establish a comprehensive list of implications, challenges, and strengths for the school based on demographic data • Define data disaggregation • Define demographic data as the context for reviewing other data sets for a school

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Large group consensus	Teachers Instructional Coaches	Trainer CIA Leader Principal	Large group consensus of demographic data analysis.	--*Data, Data Everywhere* (Bernhardt, 2016, pg. 26) --group charts from prior session --markers	40 min	Sign in sheet Chart paper from session.
2. Define data disaggregation and demographic data as the context for reviewing other data sets	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group presentation about data disaggregation and demographic data as the context for reviewing other data.	--participant reflective journals --writing utensils --sticky notes --brain poster	15 min	Participant notes. Trainer log. Aha moment notes
3. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants the topic for the next session to spark interest and thinking about the topic.	--trainer voice --trainer log	5 min	Whole group presented with data topic for the next session.

Day 6 (1 hour)

The goals of today's session are to (a) combine group results to establish a comprehensive list of implications, challenges, and strengths for the school based on demographic data, (b) define data disaggregation, and (c) define demographic data as the context for reviewing other data sets for the school. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 6-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session (objective a), the trainer will facilitate the large group consensus activity to develop the comprehensive list of implications, challenges, and strengths formed from the small group charts related to the school's demographic data. This process is explicitly described in the text *Data, Data Everywhere* (Bernhardt, 2016, p. 26). The trainer should act as a facilitator and encourage participation from all personnel.

In Part 2 of the session (objective b and c), the trainer will share the whole group presentation that defines disaggregation and defines demographic data as the context to be used to review all other data (see Attachment 6-2: Presentation Related to Data Disaggregation). This session will conclude the focus on demographic data for the school. The trainer should collect Aha Moment notes about the presentation.

In Part 3 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make

anecdotal notes about the session using the Trainer Log (see Attachment 6-3: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

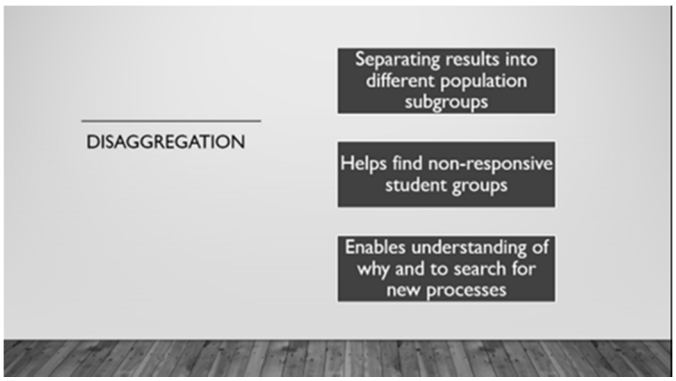
Attachment 6-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 6-2: Presentation Related to Data Disaggregation

Slide 46

Slide 47



Presenter Notes

Slide 46	The trainer should remind participants that demographic data describe both the learner and the teacher. It is through the lens of demographic data that we can understand all other data in our schools. When demographic data are used for disaggregation, it is best to sort based on few subpopulations at a time instead of many. For example, look at student achievement in math for students in Grade 3. Narrowing the results to be ESL students in Grade 3 may create a group size that is not of a reliable size. Most states use a minimum group size of 40 for reliability. In house, it is acceptable to look at smaller groups for the purpose of individualized planning.
Slide 47	Demographic data play a vital role in data disaggregation. Subgroupings of achievement and perceptions data allow us to understand if all students are making the same progress, learning in the same ways, and achieving at the same rate through isolation. Disaggregated data allow the staff to determine if there is something we need to learn to better meet the needs of specific student groups.

Attachment 6-3: Trainer Log

Day _____ Part _____
Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 7 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce perceptions data • Explore questionnaire resources for students, staff, and parents

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about the last session on the fire wall.	--burning questions poster --sticky notes for questions --writing utensils --sign in sheet --trainer log	10 min.	Burning question notes from participants. Sign in sheet Trainer log.
2. Introduce perceptions data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group presentation to introduce perceptions data and its relevance to the school. Discussion and questions encouraged.	--reflective journals for participants --writing materials --trainer log	25 min.	Notes in participant reflective journals Trainer log

3. Explore questionnaire resources for students, staff, and parents	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Participants will explore resources for questionnaires at http://eff.csuchio.edu**	**--electronic device with internet access for each participant --WebQuest recording page --writing materials**	**20 min.**	**Participants will record notes about resources during their WebQuest .**
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Tell participants the topic for the next session and allow them to begin thinking about the topic.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session. .

Day 7 (1 hour)

The goals of today's session are to (a) introduce demographic data and (b) share the cycle for analyzing demographic data sets. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 7-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. This poster should be created by the trainer using chart paper by drawing flames and writing the title "Burning Questions". The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 7-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will present information to introduce perceptions data (see Attachment 7-3: Presentation to Introduce Perceptions Data). The presentation notes will guide the presentation for the trainer. Participants will record notes during the presentation in their reflective journals. The trainer will check journals and make notes in the trainer log (see Attachment 7-2: Trainer Log) if a participant needs assistance or did not participate. The trainer will use the Trainer Log to record discussion points, reflections, or questions from the presentation.

In Part 3 of the session (objective b), the trainer will invite participants to explore resources for questionnaires online. Instructions are provided on the WebQuest

Recording Page for Participants (see Attachment 7-4: WebQuest Recording Page for Participants). The trainer will circulate to facilitate the activity; WebQuest Recording Pages will be submitted.

In Part 4 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 7-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 7-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 7-2: Trainer Log

Day _____ Part _____

Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 7-3: Presentation to Introduce Perceptions Data

Slide 48

Presenter Notes

Slide 48	Perceptions data answer the question of how a school does business. All people perceive the world around them; to know what stakeholders perceive about the learning environment, we must ask. Perceptions data may be gathered through: • Interviews—in person, telephone, or electronic with specific questions to allow in-depth understanding of content • Focus groups—small group that represent people who are asked for their opinions about a topic. May include students, staff, parents, or community members. • Questionnaires—assess perceptions through anonymous completion; easily reassessed to measure change over time. Perceptions data are gathered through the processes of assessing the school's culture, climate, and processes.

Attachment 7-4: WebQuest Recording Page for Participants

Participant Name _____

- Visit http://eff.csuchico.edu . Click on "Questionnaire Services".
- Read the information on the page.
- Scroll to the bottom of the page and explore the sample questionnaires that are available.

View the sample survey for staff. Which question do you believe would give you the most insight? Why?

_____

_____

_____

View a sample survey for parents. Which question do you believe would give you the most insight? Why?

_____

_____

_____

View the sample survey for students. Which question do you believe would give you the most insight? Why?

_____

_____

_____

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 8 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce Student Learning Data • Distinguish between assessment for learning and assessment of learning

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. **Burning Questions** (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about demographic data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session.
2. Introduce Student Learning Data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group PowerPoint presentation to introduce student learning data	--Laptop --Projector --Screen --Remote --PowerPoint presentation	30 min.	Whole group presentation and discussion including questions and answers.
3. Distinguish between assessment for learning and assessment of learning	Teachers Instructional Coaches	Trainer CIA Leader Principal	Sorting activity with small group discussion.	--reflective journals for participants --writing utensils	15 min.	Participant journals with sorting activity. .

5. Next Steps	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Spark interest for the next session by sharing the topic with participants.**	**--trainer voice --trainer log**	**5 min.**	**Whole group discussion including questions and answers.** **.**

Day 8 (1 hour)

The goals of today's session are to (a) introduce student learning data and (b) distinguish between assessment for learning and assessment of learning. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 8-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 8-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will share the presentation related to student learning data (see Attachment 8-3: Presentation to Introduce Student Learning Data). The presentation will be shown to the whole group. Whole group discussion and questions will be encouraged. Participants will be encouraged to take notes in participant journals.

In Part 3 of the session (objective b), the participants will sort types of student learning data into two categories—Assessment of Learning and Assessment for Learning (see Attachment 8-4: Sorting Activity Cards). The trainer will be available to answer questions and serve as the facilitator. Participants will record the sort in participant

journals. The trainer will observe and make anecdotal notes about the session using the Trainer Log (see Attachment 8-2: Trainer Log).

In Part 4 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 8-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 8-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 8-2: Trainer Log

Day _____ Part _____
Activity: _____

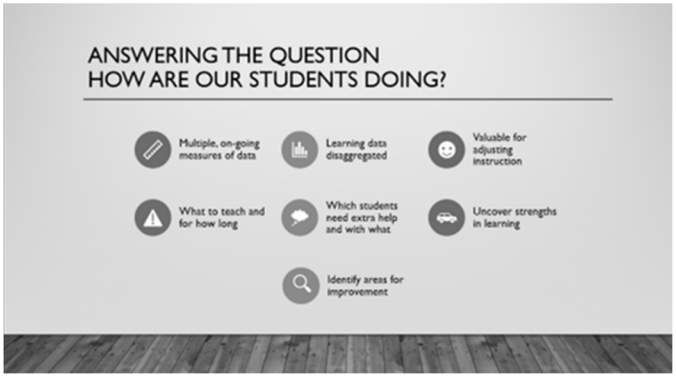
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

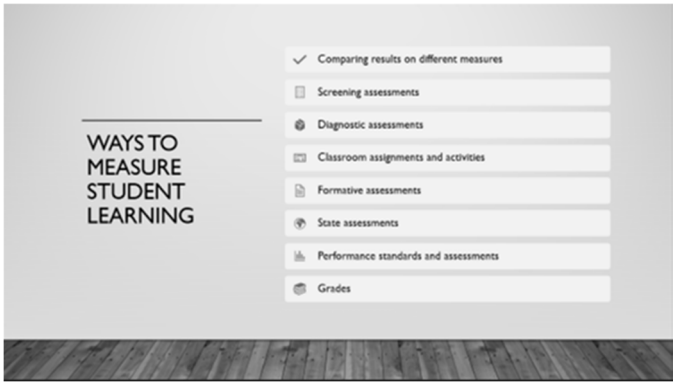
*add more sheets if needed

Attachment 8-3: Presentation to Introduce Student Learning Data

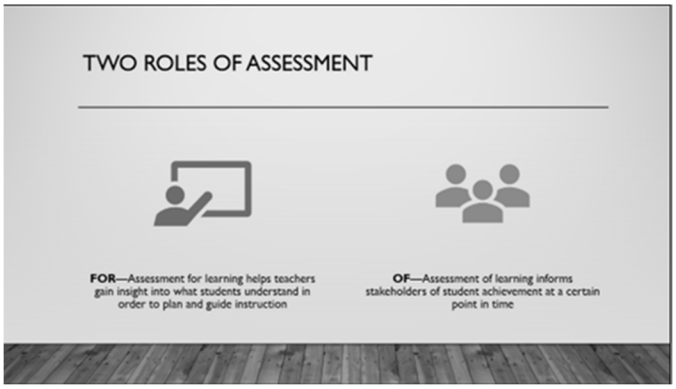
Slide 49



Slide 50



Slide 51



Presenter Notes

Slide 49	Student learning data help to answer the question of how our students are performing. Schools focused on compliance focus primarily on summative data, but those focused on improvement focus on multiple measures of student learning that are on-going. Data is disaggregated and analyzed to help determine what to teach and for how long, which students need extra help and with what, and uncover strengths in learning. Student learning data can also be valuable for adjusting instruction and identifying areas for improvement.
Slide 50	There are many ways to measure student learning. Give participants an opportunity to identify specific assessments in each category that are used in the school.
Slide 51	Assessment has a major role in learning. Assessment for learning allows teachers to gain information that helps them understand what students already know and to plan for instruction to help the students learn. Assessment of learning informs students, teachers, and parents as well as others in the school about the student learning. These assessments measure a student's knowledge at a certain point in time. Assessment is intricately embedded in the learning process and is connected to curriculum and instruction. The trainer will facilitate the sorting activity.

Attachment 8-4: Sorting Activity Cards

Have participants work in groups to sort the following types of student learning data into Assessment **of** Learning and Assessment **for** Learning. Facilitate discussion as you monitor.

NWEA Math	NWEA Reading
iReady Diagnostic	iReady Growth Check
ALEKS Knowledge Check	ALEKS Placement Test
ACT Aspire	Anecdotal notes
Edulastic Unit Assessment	Chapter Test
Pop Quiz	Timed math fluency test
Spelling test	Notebook check
Sight word test	DIBELS
DRA	Work samples/Portfolio

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 9 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Introduce School Processes Data • Identify process data for the school

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. **Burning Questions** (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about demographic data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session.
2. Introduce School Processes Data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group PowerPoint presentation to introduce school processes data	--Laptop --Projector --Screen --Remote --PowerPoint presentation	15 min.	Participant notes in journals. Whole group questions and answers.
3. Identify school programs and processes	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will identify school programs and processes.	--school processes worksheet --writing utensils	30 min.	Participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Spark interest for the next session by sharing the topic with participants.	--trainer voice --trainer log	5 min.	Whole group discussion including questions and answers.

Day 9 (1 hour)

The goals of today's session are to (a) introduce school processes data and (b) identify processes for the school. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 9-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 9-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will share the presentation related to school processes data (see Attachment 9-3: Presentation to Introduce Student Learning Data). The presentation will be shown to the whole group. Whole group discussion and questions will be encouraged. Participants will be encouraged to take notes in participant journals.

In Part 3 of the session (objective b), the participants will use the participant worksheet to identify school processes data in 5 areas—instructional, organizational, administrative, school improvement, and programs (see Attachment 9-4: School Processes Worksheet). The trainer will be available to answer questions and serve as the facilitator. Participants will record the sort in participant journals. The trainer will

observe and make anecdotal notes about the session using the Trainer Log (see Attachment 9-2: Training Log).

In Part 4 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 9-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 9-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 9-2: Trainer Log

Day _____ Part _____

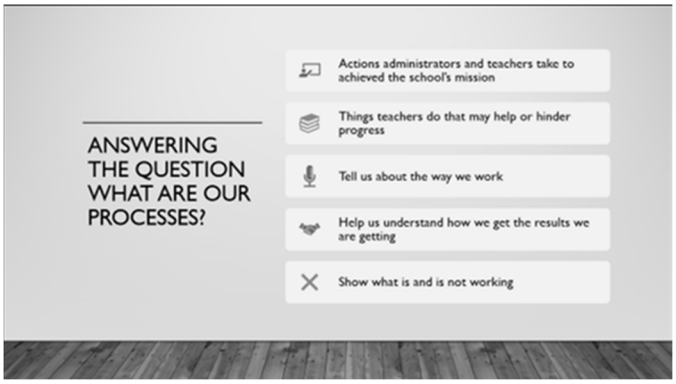
Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 9-3: Presentation to Introduce School Processes Data



Slide 52

Slide 53

Presenter Notes	
Slide 52	Schools have almost complete control over school processes; this is the only measure that schools control almost completely. We cannot control where our student come from, who they are, or why they think what they do, but we can control the processes that shape their learning such as instructional practices, programs, and learning environments. School processes data are things teachers do on purpose, by custom, or habitually. These things my help or hinder school progress. Understanding school processes is Step 1 to clarify how a school is getting its results. It is essential to reflect upon and improve processes. Analyzing processes is necessary in the move from compliance to continuous improvement.
Slide 53	There are 5 types of school processes data. The goal of today's session is to examine the current school processes for the school. These types of processes may include the following examples: • Instructional—direct instruction, differentiation, assignments, technology integration • Organizational—parental involvement, professional learning communities, teacher evaluation, hiring, and observations • Administrative—attendance program, class size, graduation strategies, retentions • School improvement—partnerships, self-assessment, evaluation, mission, vision, data use and analysis • Programs—9th grade academy, at risk, counseling, gifted and talented, special education Participants will list processes for the school. Then, small groups will combine processes data. Finally, a comprehensive list will be compiled through large group consensus.

Attachment 9-4: School Processes Worksheet

Working with your collaborative team, list the processes of your school. Discuss the implications of these processes on student achievement and growth in your classroom, grade level, school, and district. Record your reflections.

Instructional	Organizational	Administrative	School Improvement	Programs

Reflections:

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 10 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Explore observation data • Analyze observations to improve practice versus observations for performance evaluation

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. **Burning Questions** (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about demographic data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session.
2. Explore observation data	Teachers Instructional Coaches	Trainer CIA Leader Principal	PowerPoint related to observation data	--Laptop --Projector --Screen --Remote --PowerPoint presentation	25 min.	Whole group presentation and discussion including questions and answers. Participant notes in reflective journals.

3. Reflect on observation data	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Participants will reflect in small groups and share observations to improve practice versus observations for performance evaluation.**	**--reflective journals for participants --writing utensils**	**20 min.**	**Participants will record answers in reflective journals.** **Trainer log.**
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Spark interest in the next session to get participants thinking.	--trainer voice --trainer log	5 min.	Whole group discussion including questions and answers.

Day 10 (1 hour)

The goals of today's session are to (a) explore observation data and (b) analyze observations to improve practice versus observations for performance evaluation. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 10-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 10-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will share the presentation related to observation data (see Attachment 10-3: Presentation About Observation Data). The presentation will be shown to the whole group. Whole group discussion and questions will be encouraged.

In Part 3 of the session, the participants will reflect on learning in small groups. Participants will be asked to consider observations to improve practice versus observation for performance evaluation. A trainer guide that lists some examples of each type of observation (see Attachment 10-4: Trainer Guide). Participants will discuss observations in each category and make notes in participant journals. Trainer will observe and use a

check mark next to the participant's name in the trainer log to identify participation in the activity (see Attachment 10-2: Trainer Log).

In Part 4 of the session, the trainer will inform participants of the topic of the next session to spark interest. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 10-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 10-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 10-2: Trainer Log

Day _____ Part _____

Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

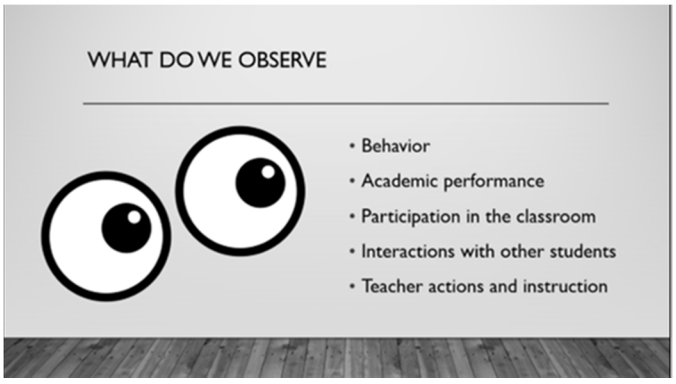
Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 10-3: Presentation About Observation Data

Slide 54

Slide 55



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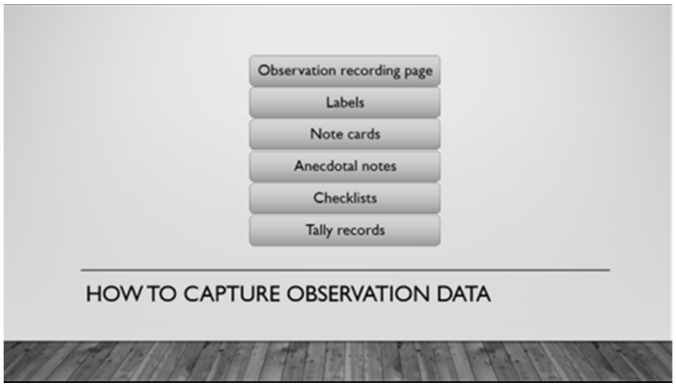

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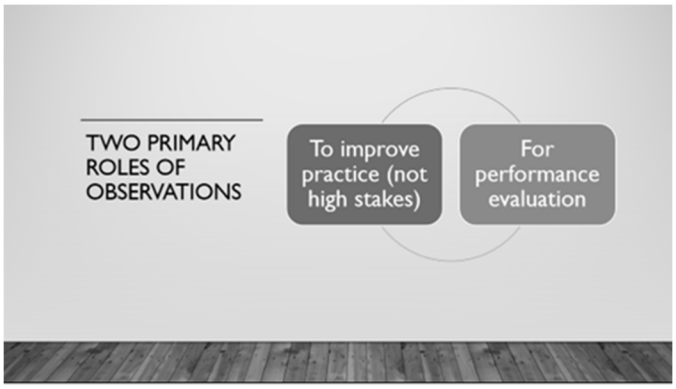

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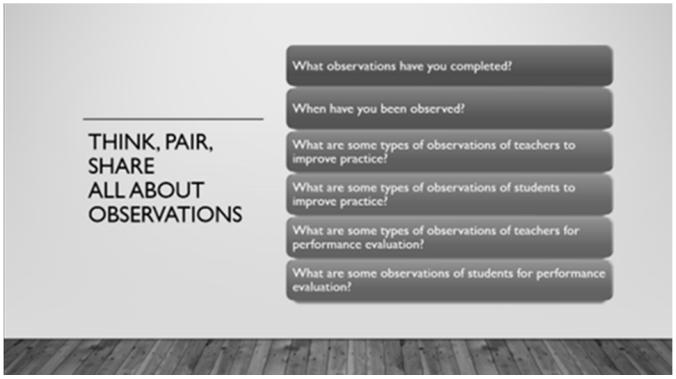


Presenter Notes

Slide 54	Today's session is about capturing observation data. In schools, observations serve multiple purposes. There are observations of students made by the teachers and observations of teachers made by administrators, curriculum specialists, and colleagues. The session today focuses on observation data that may be helpful for school stakeholders.
Slide 55	Trainer will share experiences of observations with the group and discuss what is being observed and why it matters. Trainer will explain that observations can be made at almost any time in any place. But all observations are not helpful. It is important to share with the participants that observations are data and should not include feelings.
Slide 56	The trainer will open discussion about how each of these data collection options for observation data could be beneficial in the classroom or school. The floor will be open for discussion about other data collection tools participants may use for collecting observation data. Participants will be encouraged to record some options for observation data. The trainer will note that observation data should include frequency (number of times something is observed) and notes about the actions observed; the observer should only record the facts. Perceptions about the observation should be reserved for making meaning from the data rather than data capture.

Slide 57	Observations serve two primary roles in education. Some observations are conducted to improve practice and are not high stakes. These observations are often informal and provide an opportunity for the observer to give immediate feedback. Other observations are for performance evaluation. These observations are sometimes high stakes and can result in a grade or even performance-based pay.
Slide 58	This thinking activity will ask participants to consider their background knowledge surrounding observations and share experiences with one another and the whole group. Participants may record reflections in their learning journal. Use the trainer guide for as a reference during this reflection activity.

Attachment 10-4: Trainer Guide

- Participants will have small group discussions about observations. This guide may help you facilitate the discussion activity.
- Ask participants to consider observations that they have completed or times they have been observed.
- Ask participants to think of observations with two purposes:
    - Observations to improve practice (those with no high stakes)
    - Observations for performance evaluation
- Potential examples of observations of teachers to improve practice are:
    - Short walk-through style observations
    - Peer observations
    - Video observations
    - Coaching observations
- Potential examples of observations of students to improve practice are:
    - Anecdotal notes of independent work
    - Notes about reading fluency
    - Notes about interactions with other students
    - Notes about non-cognitive skills and processes relevant to student success
    - Notes about mathematical problem-solving strategies
- Potential examples of observations of teachers for performance evaluation:
    - Formal classroom observations by school administrators
    - Licensing observations
    - Observations by district personnel
- Potential examples of observations of students for performance evaluations:
    - Checklists of skills learned in each content area
    - Standards based report cards

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 11 (6 HOURS)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Explore the critical question "How did we get to where we are?" • Explore key points for data use • Introduce the problem-solving cycle for DDDM • Practice using the problem-solving cycle for DDDM

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about observation data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session.
2. Explore "How did we get to where we are?"	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group presentation related to critical question. Discussion encouraged.	--laptop --projector --PowerPoint presentation	20 min.	Participant notes in reflective journals.

3. Data analysis by collaborative teams	**Teachers Instructional Coaches**	**Trainer CIA Leader Principal**	**Share information about the individual data sets and the set of data for the school.**	**--data sets provided by school leadership --chart paper --markers --participant data analysis worksheet**	**90 min.**	**Data analysis worksheets. Charts created by the group.**
4. Key points for data use	Teachers Instructional Coaches	Trainer CIA Leader Principal	Whole group presentation about key points for data use. Whole group discussion and questions.	--Powerpoint presentation --laptop --projector --reflective journals for participants --writing materials --trainer log	20 min.	Participants record key points in participant reflective journals.
5. Introduce and practice problem-solving cycle for DDDM	Teachers Instructional Coaches	Trainer CIA Leader Principal	Introduction of problem-solving cycle for DDDM with practice.	--PowerPoint Presentation --laptop --projector --Participant reflective journal --writing utensils --trainer log	90 min	Participant notes in reflective journals.
6. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Explain remaining data work sessions to participants.	--trainer voice --trainer log	10 min.	Whole group presented with data topic for the next session.

Day 11 (4 hours)

The goals of today's session are to (a) explore the critical question "how did we get to where we are?", (b) explore key points for data use, (c) introduce and practice the problem-solving cycle for DDDM. Today's session is scheduled to last 4 hours. It is essential that participants sign in each time they attend a professional development session (see Attachment 11-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 11-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will share a whole group presentation related to exploring the critical question "How did we get to where we are?" (see Attachment 11-3: Presentation Related to "How did we get to where we are?"). Participants will take notes in participant journals. Whole group discussion and questions will be encouraged.

In Part 3 of the session (objective a), the participants will analyze strengths and challenges of school-wide data sets using the data analysis process earlier introduced to participants as part of the professional development series. The data sets will be provided by the school leadership team and will include demographic data, perceptions data,

process data, and student learning data. Participants will be encouraged to use the data analysis worksheet to examine the different data sets and record ideas (see Attachment 11-4: Participant Worksheet). The goal of the large group consensus is to establish common strengths and common challenges. The collaborative data teams will use these challenges as a starting point for the problem-solving cycle.

In Part 4 of the session (objective b), the trainer will share key data points (see Attachment 11-5: Presentation About Key Points for Data Use). Participants will record the key points in their reflective journals. The trainer will check journals to evaluate visual representations and make notes in the trainer log (see Attachment 11-2: Trainer Log) if a participant needs assistance or did not participate.

In Part 5 of the session (objective c), the trainer will introduce the problem-solving cycle for DDDM with embedded decision-making practice with the participants (see Attachment 11-6: Presentation to Introduce and Practice Problem Solving Cycle). Participants will record work in their reflective journals. The trainer will check journals to evaluate decision lists and make notes in the trainer log (see Attachment 11-2: Trainer Log) if a participant needs assistance or did not participate.

In Part 6 of the session, the trainer will tell participants that the sessions that follow will be 1-hour work sessions for participants to use the problem-solving cycle to make decisions for their own grade levels, classrooms, or students in small group collaborative teams. the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will be asked to bring data sets with them to the next session. Participants will verbally acknowledge their understanding. The trainer

will make anecdotal notes about the session using the Trainer Log (see Attachment 11-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 11-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 11-2: Trainer Log

Day _____ Part _____

Activity: _____

Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

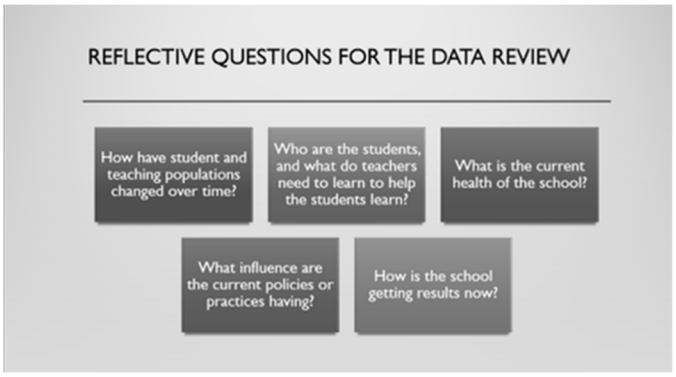
*add more sheets if needed

Attachment 11-3: Presentation Related to "How did we get to where we are?"

Slide 59

Slide 60

Slide 61



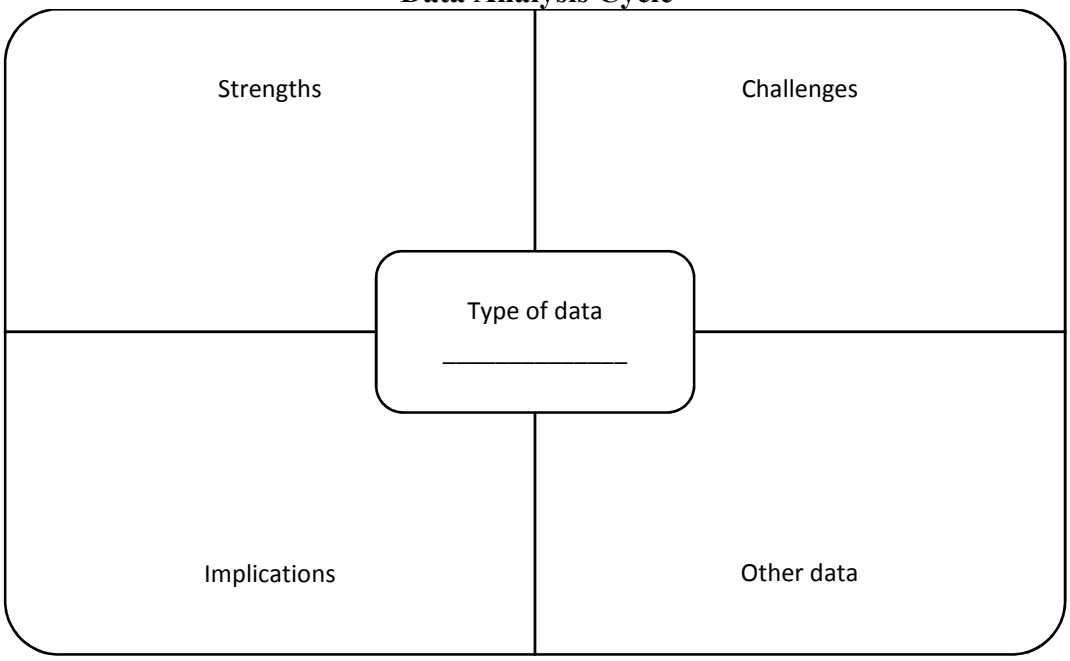
Presenter Notes

Slide 59	Each type of data is important and provides information to stakeholders independently. But, to answer the question of how we arrived at our current point, we must look at the intersections of the data sets. The process of analyzing all data sets together and merging strengths, challenges, and implications will culminate in a school data profile from which all stakeholders can work to find solutions. School improvement planning that is focused on multiple data sets

	and the intersections of these are more thorough than those focused primarily on summative data which then become compliance based. In today's session, stakeholders will be asked to use the data analysis process to look across all data sets previously introduced for the school and evaluate strengths, challenges, and implications of the data. The trainer will facilitate the process to begin at independent review, then small group, and culminate with whole group consensus. Ultimately, today, the group will compile an aggregate list of implications and begin to work toward lessening the challenges within the school.
Slide 60	There are many benefits to the approach of a whole group data review to culminate in a comprehensive data profile. The trainer should encourage all staff to participate. Some of the benefits of participating in a data analysis in this way is that each staff member receives only one type of data at a time and can review it. During discussion of the individual reviews and small group reviews, staff members can hear immediate feedback about the review they have made and reflect upon the reviews of others. This provides reflection and sometimes alters the individual perceptions. Often when staff are not brought together to review data as a whole group, the data are reviewed in parts by some individuals but a whole group review of all data rarely occurs. The review of all data by all staff at the same time is crucial to buy in from the whole group for success.
Slide 61	As participants review data, considering the following could be considered. These questions are not meant to be an all-inclusive list. However, seeking understanding of these reflective questions may lead to a more thorough data review cycle. The trainer should facilitate this activity.

Attachment 11-4: Participant Worksheet

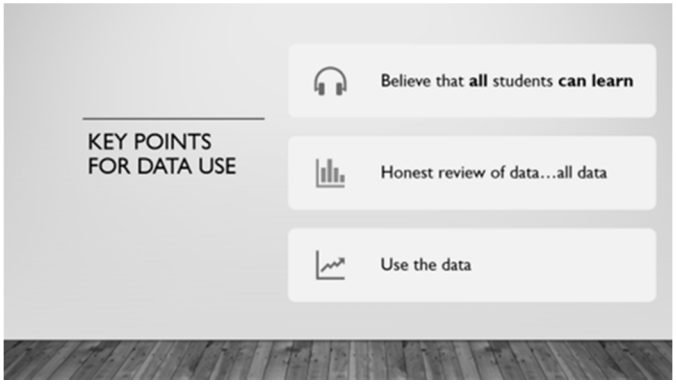
Data Analysis Cycle



Independent Review Small Group Review

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 11-5: Presentation About Key Points for Data Use



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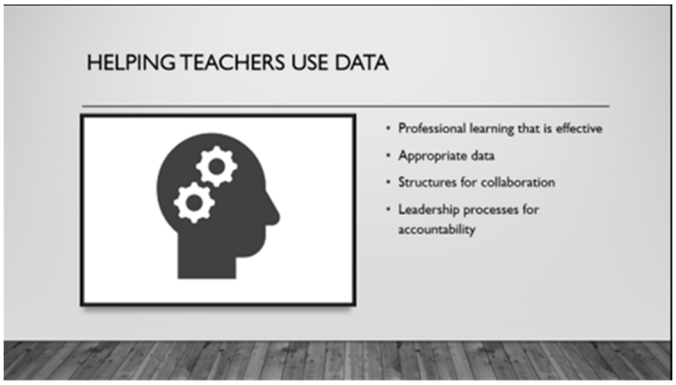


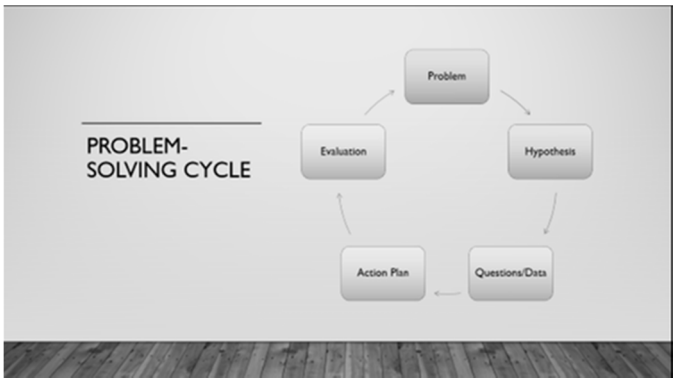
Slide 63

Presenter Notes

Slide 62	For teachers to successfully use data to improve teaching and learning, staff must believe that all students are capable of learning. Sometimes this belief is not yet present if teachers have not yet experienced a time when all their students have demonstrated learning growth. Once a teacher has this experience, his/her beliefs often change. Open the floor for discussion to allow teachers to discuss their belief about student learning. Additionally, staff must honestly review their data, all data from multiple measures. And after reviewing the data, the staff must use the data. Using the data analysis process, staff will be able to recognize strengths, challenges, and implications.
Slide 63	To encourage effective data use among teachers, professional learning that provides opportunities for collaborative analysis and use of data is essential. This requires teachers to have the data in front of them. Another necessity for data use is for leadership in a school to provide structures such as designated time for data analysis. Finally, teachers who are successful at using data are those who have accountability in place. Allow for discussion of how these structures are already in place; facilitate the discussion.

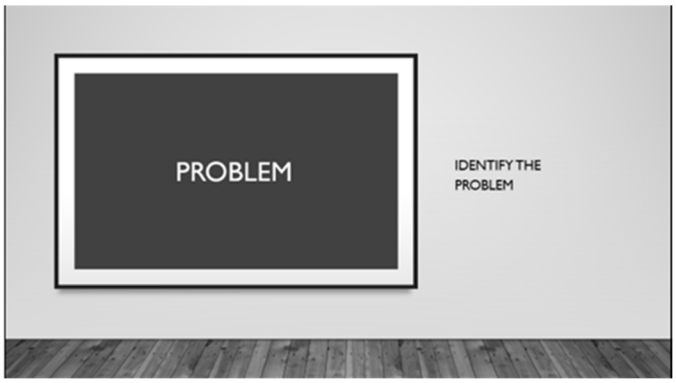
Attachment 11-6: Presentation to Introduce and Practice Problem-Solving Cycle

Slide 64



Slide 65

Slide 67



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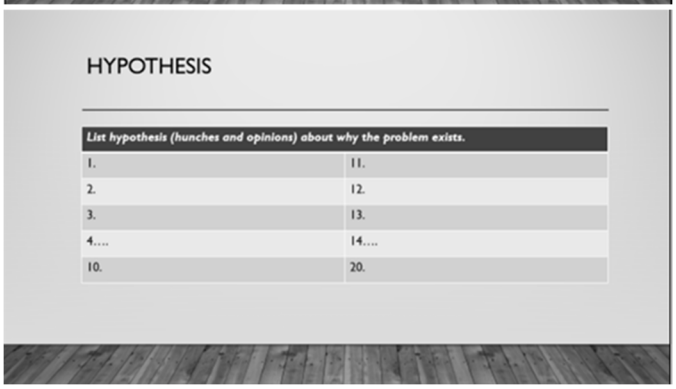

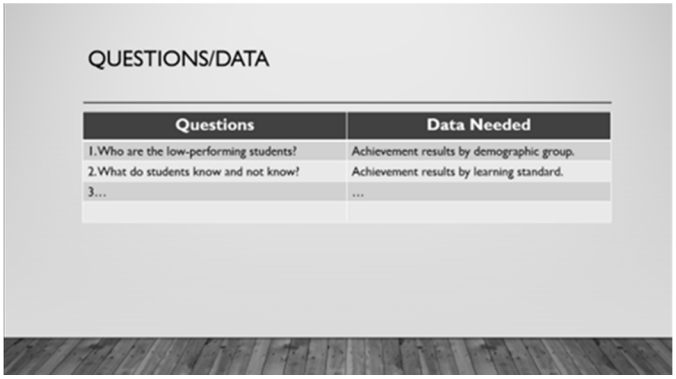

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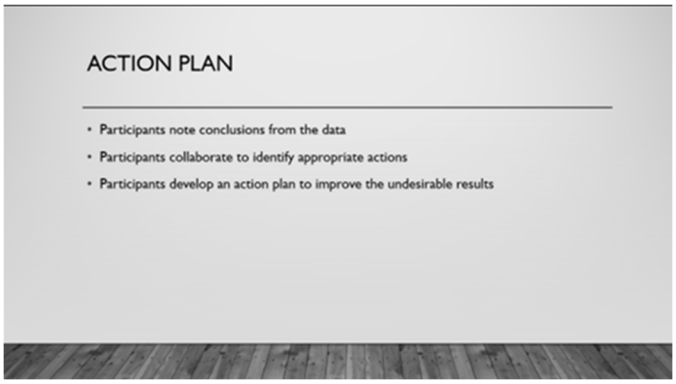

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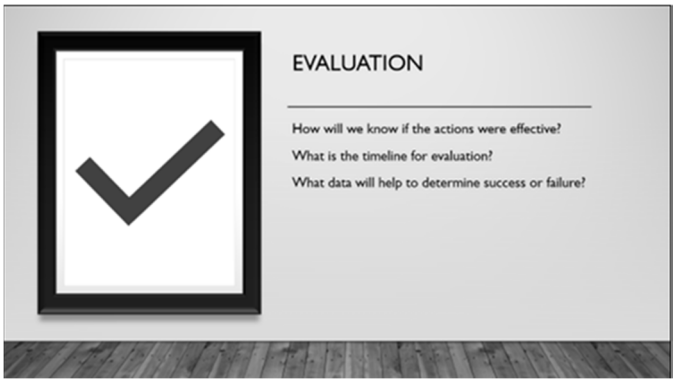


Slide 71

Presenter Notes

Slide 64	Once teachers are familiar with an able to analyze data effectively, then the process of improvement using the data can begin. This part of today's session focuses on the problem-solving cycle that is used by teachers to make actionable decisions about the data they have which may lead to improvement in student learning. During this session, each step of the problem-solving cycle will be presented, and participants will practice using a set of data for training. The data set will be provided by the local school leadership prior to the training. The trainer will facilitate the problem-solving cycle with the staff. The data used during this problem-solving cycle will be school level, summative assessment data.
Slide 65	The problem-solving cycle will be used in training today for staff to practice using data to develop an action plan. To begin, we will look at the steps in the problem-solving cycle. Then, we will work through each step collaboratively using the state summative assessment data for the school. Step 1: Problem—the first step in solving any problem is to identify the problem to be solved. Often when a problem is related to data, the problem is the undesired result that we can see. For example, many students are receiving discipline consequences and missing instruction because they do not tuck in their shirts although it is a rule in the school. Step 2: Hypothesis—this is a time for staff members to brainstorm all reasons for why they think this is a problem. These hypotheses should be listed by all staff and placed on a whole group recording sheet like chart paper. Encourage the team to aim for 20 hypotheses as deeper thinking leads to the true cause of the problem. Examples: It is uncomfortable for students. Students don't like the way it looks. The shirt is too short to tuck in. It isn't cool. It does not align with cultural practices. Students don't want to conform. Students are seeking attention.

	Step 3: Questions/Data—it is essential to identify each question related to the problem and which data will help to answer the question. For example: Who are the students that are not tucking in their shirts? Data needed: demographics about students; Are all teachers expecting students to tuck in shirts? Data needed: observation, teacher survey; What do we need to do to improve compliance? Data needed: processes related to the policy, practices related to the policy. After determining the data needed, staff will follow-up with analyzing what needs to change to get different results. Step 4: Action Plan—the goal is to create an action plan that will eliminate the gaps by remediating the contributing cause(s). Staff will collaboratively develop this action plan. For example, based on the data analysis, the staff concludes the following: (a) The uniform shirts cannot be tucked in because they are too short for most students to tuck in. (b) The updated style of pants have lower waistbands, so it makes it more challenging for shirts to remain tucked in. (c) More than half of teachers are not concerned with students tucking in shirts because it has not relevant impact on student learning. (d) Students are becoming frustrated by staff telling them to tuck in shirts repeatedly, and this frustration is leading to students refusing to participate in instruction. So, based on these conclusions, the staff determines an action plan. In the action plan, staff agree that tucking in shirts may no longer need to be a rule. It is a rule that has been kept over time because of tradition. However, the staff do not feel like it is vital. So, the staff action plan is to stop enforcing the rule that students should tuck in shirts. Step 5: Evaluation—evaluation of the action plan is necessary to know if it is working. The staff agree to reevaluation the problem and the results of the action plan in 4 weeks. Evaluating the problem with new data is essential to determine if the action plan is working or if new data are necessary.
Slide 66	Participants will work through the problem-solving cycle with the trainer as a facilitator. The data will be provided by the school leaders. The data for this practice session will be the school summative assessment data from the state assessment.

Slide 67	Participants will identify a problem using the data. The trainer will encourage participants to record the problem as a statement in their participant journals. The trainer will record the problem on a piece of chart paper.
Slide 68	The trainer will facilitate responses from the participants. Do not attempt to prioritize these reasons. List them as they are named. The goal is at least 20 hypotheses as this encourages deeper thinking from the participants. The trainer will record responses on chart paper; participants will record information in their journals.
Slide 69	During this step participants will develop questions and identify necessary data to answer the questions. Encourage participants to use multiple measures of student data in addition to the summative test results which are the primary set of data under review. Analyze data sets to answer questions. The trainer will record responses on chart paper; participants will record information in their journals.
Slide 70	The trainer will facilitate discussion among participants to help develop an action plan. Participants will record the action plan in their learning journals. The school leaders may summarize the action plan and send it via email to participants.
Slide 71	Participants will work collaboratively to develop a plan for evaluating the success of the actions. Participants will agree on a timeline for evaluation. The school leader may include this plan in the action plan correspondence. The trainer will facilitate the discussion.

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 12 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Make meaning from NWEA Assessment data • Share information about NWEA Assessment data • Make decisions using NWEA Assessment data

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about NWEA Assessment data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials -- participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session. .
2. Making Meaning from NWEA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Members of the data team will share NWEA Assessment data sets brought to the meeting. Each data team member will share his/her questions, concerns, or highlights	--data sets brought by teachers --markers --chart paper --trainer log	15 min.	Collaborative discussion including questions and answers. Participant worksheet.

			from the data.			
3. Sharing information about NWEA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Share information about the individual data sets and the set of data as a whole for the school.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Using information shared by participants and reflections, participants will create a visual representation of demographic data to remain.
4. Making decisions using the NWEA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Data team members will discuss decisions influenced by NWEA Assessment data. Collaborative discussion about decisions that need to be made at this time may be had.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Whole group discussion including sharing, questions, and answers. Participants will record decisions list on participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Ask participants to bring data set for the next session.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 12 (1 hour)

The goals of today's session are to (a) make meaning from NWEA data, (b) share information about NWEA data, and (c) make decisions using NWEA data. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 12-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 12-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will guide teachers to use the participant worksheet to begin collaborative discussion and analysis of the NWEA data they have brought to training (Attachment 12-3: Participant Worksheet). The trainer may ask questions to guide teachers to share similarities and differences in data. The trainer will act as a facilitator for the session. Participant concerns, questions, and/or highlights will be recorded using participant initials, so the trainer will have evidence of participation. Each participant will be asked to share at least one answer.

In Part 3 of the session (objective b), the trainer will encourage participants to share the information they have recorded in Part 1 of the participant worksheet. Participants will record new ideas and notes on the participant worksheet as appropriate

(see Attachment 12-3: Participant Worksheet). Again, the trainer is acting as a facilitator during this session and encouraging collaborative discussion among team members.

In Part 4 of the session (objective c), the data team members will discuss decisions influenced by NWEA data. These decisions will be listed on chart paper by the trainer as they are shared, and participants will record the list of decisions in their reflective journals. The trainer will facilitate potential decision-making opportunities through questioning using the Potential Decisions List (see Attachment 12-4: Trainer Guide). The trainer will ask participants to record decisions that are relevant to their specific grade level, classroom, or individual students on the participant worksheet (see Attachment 12-3: Participant Worksheet).

In Part 5 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will be asked to bring the data set for the next session. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 12-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 12-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 12-2: Trainer Log

Day _____ Part _____

Activity: _____

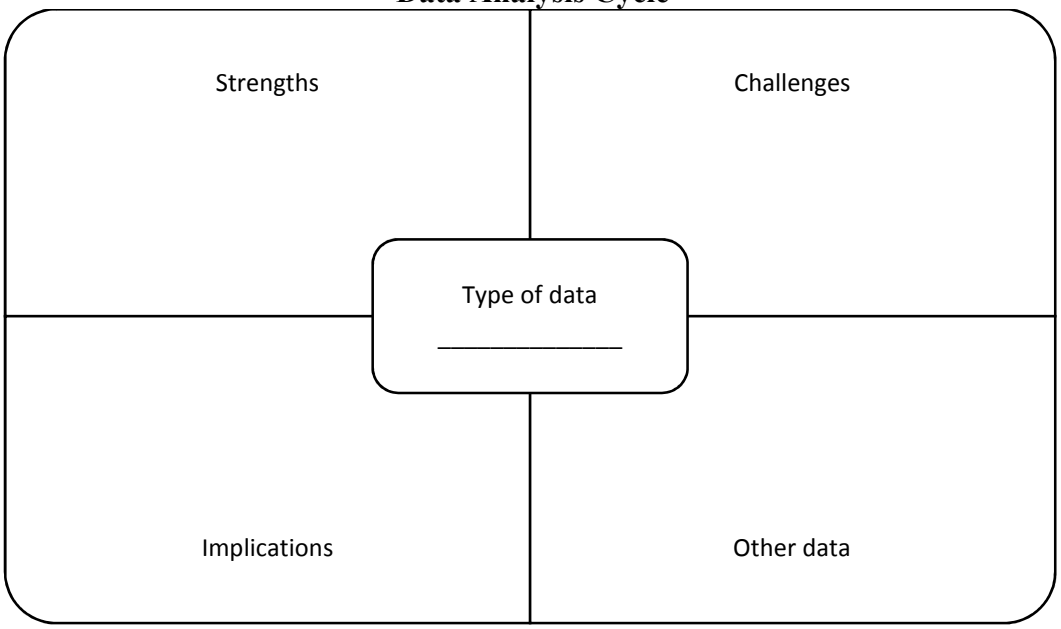
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 12-3: Participant Worksheet

Data Analysis Cycle



Problem/Hypothesis Questions/Data

Action Plan/Decision Evaluation

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 12-4: Trainer Guide

- Facilitate discussions among participants about decisions that are influenced by the data.
- Potential teacher decisions that may be made using the data are:
    - Classroom grouping—this may be the initial placement of students into classes for the upcoming year or grouping of students within a class for small group instruction based on instructional need
    - Lesson planning—teachers may adjust the lesson content that will be present in whole group or small group instruction based on the data
    - Curriculum resources—a teacher may need additional curriculum resources based on the needs revealed in the data; sometimes a teacher may also decide to stop using a resource that is having an undesirable result
    - Pacing—data reveal student instructional needs; pacing of instruction may be adjusted based on data
    - Instruction—teachers may determine a need for more direct instruction or differentiated instruction based on the data
- Potential administrative decisions that may be made using the data are:
    - Student classroom assignment
    - Teacher grade level and teaching assignments
    - Scheduling decisions such as increasing the number of instructional minutes for a specific content area or offering a new course to assist students academically

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 13 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Make meaning from DIBELS/DRA Assessment data • Share information about DIBELS/DRA Assessment data • Make decisions using DIBELS/DRA Assessment data

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about DIBELS/DRA Assessment data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials -- participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session. .
2. Making Meaning from DIBELS/DRA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Members of the data team will share DIBELS/DRA Assessment data sets brought to the meeting. Each data team member will share	--data sets brought by teachers --markers --chart paper --trainer log	15 min.	Collaborative discussion including questions and answers. Participant worksheet.

			his/her questions, concerns, or highlights from the data.			
3. Sharing information about DIBELS/DRA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Share information about the individual data sets and the set of data as a whole for the school.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Using information shared by participants and reflections, participants will create a visual representation of demographic data to remain.
4. Making decisions using the DIBELS/DRA Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Data team members will discuss decisions influenced by DIBELS/DRA Assessment data. Collaborative discussion about decisions that need to be made at this time may be had.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Whole group discussion including sharing, questions, and answers. Participants will record decisions list on participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Ask participants to bring data set for the next session.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 13 (1 hour)

The goals of today's session are to (a) make meaning from DIBELS/DRA data, (b) share information about NWEA data, and (c) make decisions using DIBELS/DRA data. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 13-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 13-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will guide teachers to use the participant worksheet to begin collaborative discussion and analysis of the DIBELS/DRA data they have brought to training (Attachment 13-3: Participant Worksheet). The trainer may ask questions to guide teachers to share similarities and differences in data. The trainer will act as a facilitator for the session. Participant concerns, questions, and/or highlights will be recorded using participant initials, so the trainer will have evidence of participation. Each participant will be asked to share at least one answer.

In Part 3 of the session (objective b), the trainer will encourage participants to share the information they have recorded in Part 1 of the participant worksheet. Participants will record new ideas and notes on the participant worksheet as appropriate

(see Attachment 13-3: Participant Worksheet). Again, the trainer is acting as a facilitator during this session and encouraging collaborative discussion among team members.

In Part 4 of the session (objective c), the data team members will discuss decisions influenced by DIBELS/DRA data. These decisions will be listed on chart paper by the trainer as they are shared, and participants will record the list of decisions in their reflective journals. The trainer will facilitate potential decision-making opportunities through questioning using the Potential Decisions List (see Attachment 13-4: Trainer Guide). The trainer will ask participants to record decisions that are relevant to their specific grade level, classroom, or individual students on the participant worksheet (see Attachment 13-3: Participant Worksheet).

In Part 5 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will be asked to bring the data set for the next session. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 13-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 13-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 13-2: Trainer Log

Day _____ Part _____
Activity: _____

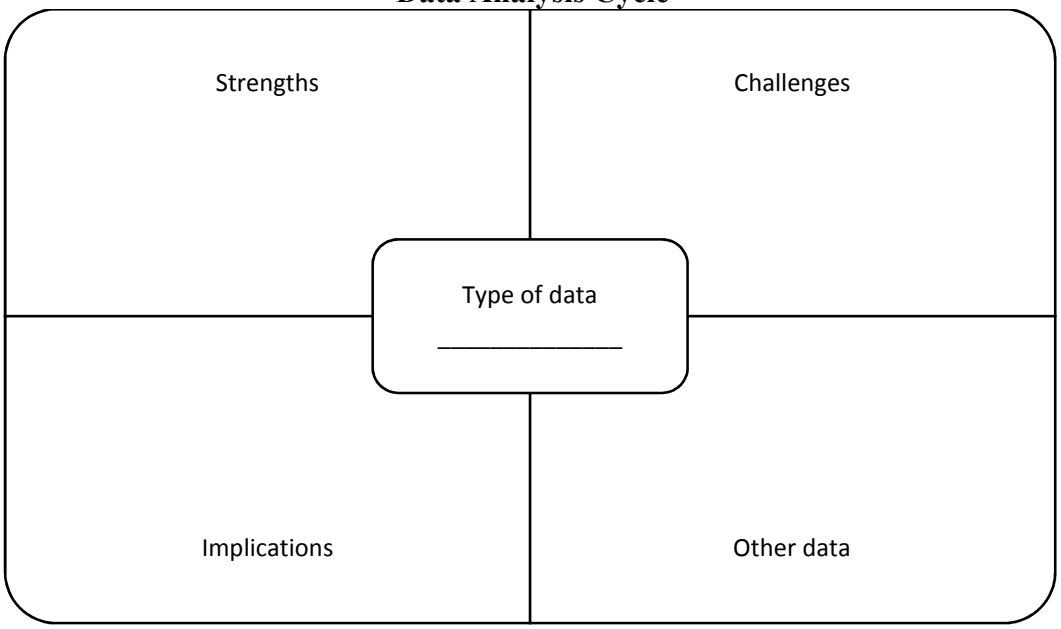
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 13-3: Participant Worksheet

Data Analysis Cycle



Problem/Hypothesis Questions/Data

Action Plan/Decision Evaluation

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 13-4: Trainer Guide

- Facilitate discussions among participants about decisions that are influenced by the data.
- Potential teacher decisions that may be made using the data are:
    - Classroom grouping—this may be the initial placement of students into classes for the upcoming year or grouping of students within a class for small group instruction based on instructional need
    - Lesson planning—teachers may adjust the lesson content that will be present in whole group or small group instruction based on the data
    - Curriculum resources—a teacher may need additional curriculum resources based on the needs revealed in the data; sometimes a teacher may also decide to stop using a resource that is having an undesirable result
    - Pacing—data reveal student instructional needs; pacing of instruction may be adjusted based on data
    - Instruction—teachers may determine a need for more direct instruction or differentiated instruction based on the data
- Potential administrative decisions that may be made using the data are:
    - Student classroom assignment
    - Teacher grade level and teaching assignments
    - Scheduling decisions such as increasing the number of instructional minutes for a specific content area or offering a new course to assist students academically

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 14 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Make meaning from Edulastic Assessment data • Share information about Edulastic Assessment data • Make decisions using Edulastic Assessment data

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about Edulastic Assessment data on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session. .
2. Making Meaning from Edulastic Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Members of the data team will share Edulastic Assessment data sets brought to the meeting. Each data team member will share his/her questions, concerns, or	--data sets brought by teachers --markers --chart paper --trainer log	15 min.	Collaborative discussion including questions and answers. Participant worksheet.

			highlights from the data.			
3. Sharing information about Edulastic Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Share information about the individual data sets and the set of data as a whole for the school.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Using information shared by participants and reflections, participants will create a visual representation of demographic data to remain.
4. Making decisions using the Edulastic Assessment data	Teachers Instructional Coaches	Trainer CIA Leader Principal	Data team members will discuss decisions influenced by Edulastic Assessment data. Collaborative discussion about decisions that need to be made at this time may be had.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Whole group discussion including sharing, questions, and answers. Participants will record decisions list on participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Ask participants to bring data set for the next session.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 14 (1 hour)

The goals of today's session are to (a) make meaning from Edulastic data, (b) share information about Edulastic data, and (c) make decisions using Edulastic data. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 14-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 14-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will guide teachers to use the participant worksheet to begin collaborative discussion and analysis of the Edulastic data they have brought to training (Attachment 14-3: Participant Worksheet). The trainer may ask questions to guide teachers to share similarities and differences in data. The trainer will act as a facilitator for the session. Participant concerns, questions, and/or highlights will be recorded using participant initials, so the trainer will have evidence of participation. Each participant will be asked to share at least one answer.

In Part 3 of the session (objective b), the trainer will encourage participants to share the information they have recorded in Part 1 of the participant worksheet. Participants will record new ideas and notes on the participant worksheet as appropriate

(see Attachment 14-3: Participant Worksheet). Again, the trainer is acting as a facilitator during this session and encouraging collaborative discussion among team members.

In Part 4 of the session (objective c), the data team members will discuss decisions influenced by Edulastic data. These decisions will be listed on chart paper by the trainer as they are shared, and participants will record the list of decisions in their reflective journals. The trainer will facilitate potential decision-making opportunities through questioning using the Potential Decisions List (see Attachment 14-4: Trainer Guide). The trainer will ask participants to record decisions that are relevant to their specific grade level, classroom, or individual students on the participant worksheet (see Attachment 14-3: Participant Worksheet).

In Part 5 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will be asked to bring the data set for the next session. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 14-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 14-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 14-2: Trainer Log

Day _____ Part _____

Activity: _____

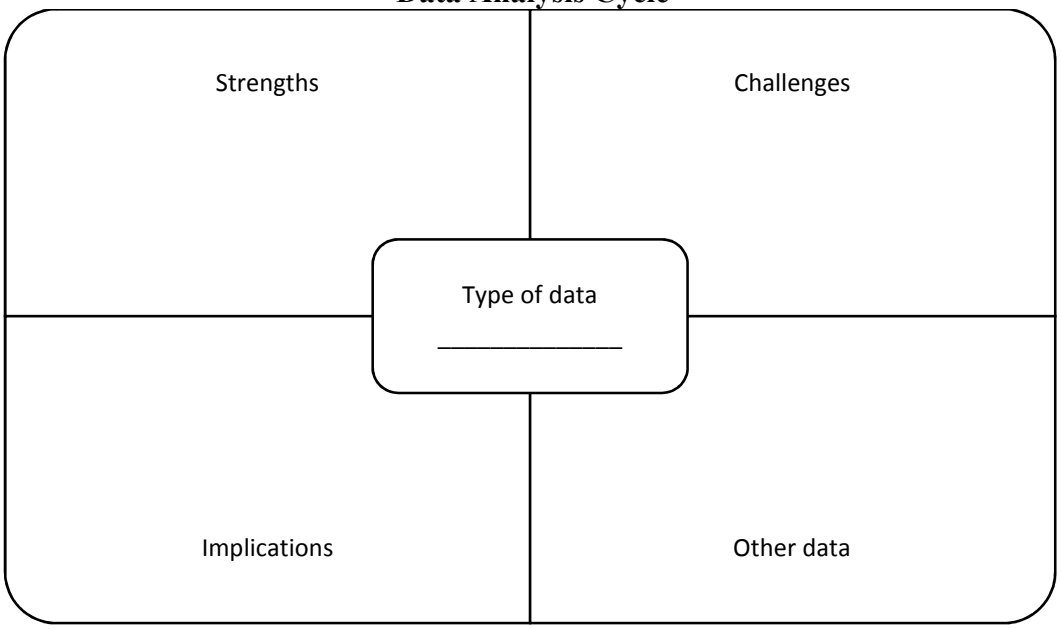
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 14-3: Participant Worksheet

Data Analysis Cycle



Problem/Hypothesis

Questions/Data

Action Plan/Decision

Evaluation

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 14-4: Trainer Guide

- Facilitate discussions among participants about decisions that are influenced by the data.
- Potential teacher decisions that may be made using the data are:
    - Classroom grouping—this may be the initial placement of students into classes for the upcoming year or grouping of students within a class for small group instruction based on instructional need
    - Lesson planning—teachers may adjust the lesson content that will be present in whole group or small group instruction based on the data
    - Curriculum resources—a teacher may need additional curriculum resources based on the needs revealed in the data; sometimes a teacher may also decide to stop using a resource that is having an undesirable result
    - Pacing—data reveal student instructional needs; pacing of instruction may be adjusted based on data
    - Instruction—teachers may determine a need for more direct instruction or differentiated instruction based on the data
- Potential administrative decisions that may be made using the data are:
    - Student classroom assignment
    - Teacher grade level and teaching assignments
    - Scheduling decisions such as increasing the number of instructional minutes for a specific content area or offering a new course to assist students academically

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 15 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Make meaning from Formative Classroom Assessment data for Reading • Share information about Formative Classroom Assessment data for Reading • Make decisions using Formative Classroom Assessment data for Reading

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about Formative Classroom Assessment data for reading on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session. .
2. Making Meaning from Formative Classroom Assessment data for reading	Teachers Instructional Coaches	Trainer CIA Leader Principal	Members of the data team will share Formative Classroom Assessment data for reading brought to the meeting. Each data team member will share his/her	--data sets brought by teachers --markers --chart paper --trainer log	15 min.	Collaborative discussion including questions and answers. Participant worksheet.

			questions, concerns, or highlights from the data.			
3. Sharing information about Formative Classroom Assessment data for reading	Teachers Instructional Coaches	Trainer CIA Leader Principal	Share information about the individual data sets and the set of data as a whole for the school.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Using information shared by participants and reflections, participants will create a visual representation of demographic data to remain.
4. Making decisions using the Formative Classroom Assessment data for reading	Teachers Instructional Coaches	Trainer CIA Leader Principal	Data team members will discuss decisions influenced by Formative Classroom Assessment data for reading Collaborative discussion about decisions that need to be made at this time may be had.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Whole group discussion including sharing, questions, and answers. Participants will record decisions list on participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Ask participants to bring data set for the next session.	--trainer voice --trainer log	5 min.	Whole group presented with data topic for the next session.

Day 15 (1 hour)

The goals of today's session are to (a) make meaning from Formative Classroom Assessment data for reading, (b) share information about Formative Classroom Assessment data for reading, and (c) make decisions using Formative Classroom Assessment data for reading. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 15-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 15-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will guide teachers to use the participant worksheet to begin collaborative discussion and analysis of the Formative Classroom Assessment data for reading they have brought to training (Attachment 15-3: Participant Worksheet). The trainer may ask questions to guide teachers to share similarities and differences in data. The trainer will act as a facilitator for the session. Participant concerns, questions, and/or highlights will be recorded using participant initials, so the trainer will have evidence of participation. Each participant will be asked to share at least one answer.

In Part 3 of the session (objective b), the trainer will encourage participants to share the information they have recorded in Part 1 of the participant worksheet. Participants will record new ideas and notes on the participant worksheet as appropriate (see Attachment 15-3: Participant Worksheet). Again, the trainer is acting as a facilitator during this session and encouraging collaborative discussion among team members.

In Part 4 of the session (objective c), the data team members will discuss decisions influenced by Formative Classroom Assessment data for reading. These decisions will be listed on chart paper by the trainer as they are shared, and participants will record the list of decisions in their reflective journals. The trainer will facilitate potential decision-making opportunities through questioning using the Potential Decisions List (see Attachment 15-4: Trainer Guide). The trainer will ask participants to record decisions that are relevant to their specific grade level, classroom, or individual students on the participant worksheet (see Attachment 15-3: Participant Worksheet).

In Part 5 of the session, the trainer will tell participants the topic for the next session to spark interest and encourage them to begin thinking about the topic. Participants will be asked to bring the data set for the next session and an individual electronic device with internet access. Participants will verbally acknowledge their understanding. The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 15-2: Trainer Log). These notes will identify how many participants acknowledged understanding of the next steps.

Attachment 15-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 15-2: Trainer Log

Day _____ Part _____

Activity: _____

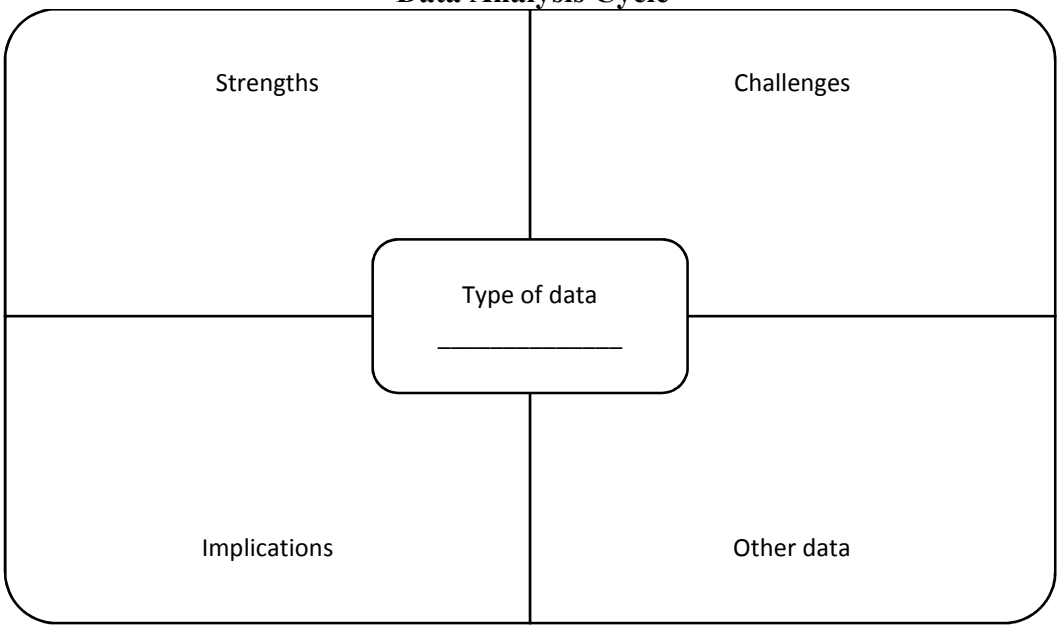
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 15-3: Participant Worksheet

Data Analysis Cycle



Problem/Hypothesis

Questions/Data

Action Plan/Decision

Evaluation

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 15-4: Trainer Guide

- Facilitate discussions among participants about decisions that are influenced by the data.
- Potential teacher decisions that may be made using the data are:
    - Classroom grouping—this may be the initial placement of students into classes for the upcoming year or grouping of students within a class for small group instruction based on instructional need
    - Lesson planning—teachers may adjust the lesson content that will be present in whole group or small group instruction based on the data
    - Curriculum resources—a teacher may need additional curriculum resources based on the needs revealed in the data; sometimes a teacher may also decide to stop using a resource that is having an undesirable result
    - Pacing—data reveal student instructional needs; pacing of instruction may be adjusted based on data
    - Instruction—teachers may determine a need for more direct instruction or differentiated instruction based on the data
- Potential administrative decisions that may be made using the data are:
    - Student classroom assignment
    - Teacher grade level and teaching assignments
    - Scheduling decisions such as increasing the number of instructional minutes for a specific content area or offering a new course to assist students academically

PROJECT STUDY: PROFESSIONAL DEVELOPMENT ACTION PLAN DAY 16 (1 HOUR)	
Local District and/or School:	UNDISCLOSED FOR THIS STUDY
Purpose:	To provide real-time collaborative learning experiences to practicing educators related to data, data analysis, and data driven decision making that will increase the data literacy of the participants.
Goal for PD Project:	The goals of the professional development project are to encourage more effective use of data and increase data literacy among school stakeholders to improve the use of data to inform decisions.
Local Gap in Data/Problem:	Decisions made at the local site are made without collaborative analysis of all types of data.
Significant Instructional Goal(s) to Improve Local Problem	The goals of this session are to: • Make meaning from Formative Classroom Assessment data for math • Share information about Formative Classroom Assessment data for math • Make decisions using Formative Classroom Assessment data for math

STEP	STAKEHOLDERS	LEADERSHIP	ACTIVITY	RESOURCES NEEDED	TIME	QUALITY INDICATORS
1. Burning Questions (formative assessment)	Teachers Instructional Coaches	Trainer CIA Leader Principal	Teachers will place burning questions about Formative Classroom Assessment data for math on the fire wall.	--burning questions poster --sticky notes for questions --writing materials --participant sign in sheet --trainer log	10 min.	Trainer will answer burning questions for the participants to open the session. .
2. Making Meaning from Formative Classroom Assessment data for math	Teachers Instructional Coaches	Trainer CIA Leader Principal	Members of the data team will share Formative Classroom Assessment data for math brought to the meeting. Each data team member will share his/her questions,	--data sets brought by teachers --markers --chart paper --trainer log	15 min.	Collaborative discussion including questions and answers. Participant worksheet.

			concerns, or highlights from the data.			
3. Sharing information about Formative Classroom Assessment data for math	Teachers Instructional Coaches	Trainer CIA Leader Principal	Share information about the individual data sets and the set of data as a whole for the school.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Using information shared by participants and reflections, participants will create a visual representation of demographic data to remain.
4. Making decisions using the Formative Classroom Assessment data for math	Teachers Instructional Coaches	Trainer CIA Leader Principal	Data team members will discuss decisions influenced by Formative Classroom Assessment data for math. Collaborative discussion about decisions that need to be made at this time may be had.	--chart paper --markers --reflective journals for participants --writing materials --trainer log	15 min.	Whole group discussion including sharing, questions, and answers. Participants will record decision list in on participant worksheet.
5. Next Steps	Teachers Instructional Coaches	Trainer CIA Leader Principal	Ask participants to complete the post assessment Inventory About Data Use	--technology devices for teachers to complete survey form -survey form on Google --participant sign in sheet	5 min.	Submission of Google form from each participant.

<u>Day 16 (1 hour)</u>

The goals of today's session are to (a) make meaning from Formative Classroom Assessment data for math, (b) share information about Formative Classroom Assessment

data for math, and (c) make decisions using Formative Classroom Assessment data for math. Today's session is scheduled to last 1 hour. It is essential that participants sign in each time they attend a professional development session (see Attachment 16-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet).

In Part 1 of the session, the trainer will ask participants to place burning questions on the burning questions poster using sticky notes. The trainer will take and answer burning questions. Participants will verbally acknowledge that the trainer has answered questions. The trainer will record the number of participants' acknowledgments in the Trainer Log (see Attachment 16-2: Trainer Log) as evidence of answering burning questions.

In Part 2 of the session (objective a), the trainer will guide teachers to use the participant worksheet to begin collaborative discussion and analysis of the Formative Classroom Assessment data for math they have brought to training (Attachment 16-3: Participant Worksheet). The trainer may ask questions to guide teachers to share similarities and differences in data. The trainer will act as a facilitator for the session. Participant concerns, questions, and/or highlights will be recorded using participant initials, so the trainer will have evidence of participation. Each participant will be asked to share at least one answer.

In Part 3 of the session (objective b), the trainer will encourage participants to share the information they have recorded in Part 1 of the participant worksheet. Participants will record new ideas and notes on the participant worksheet as appropriate

(see Attachment 16-3: Participant Worksheet). Again, the trainer is acting as a facilitator during this session and encouraging collaborative discussion among team members.

In Part 4 of the session (objective c), the data team members will discuss decisions influenced by Formative Classroom Assessment data for math. These decisions will be listed on chart paper by the trainer as they are shared, and participants will record the list of decisions in their reflective journals. The trainer will facilitate potential decision-making opportunities through questioning using the Potential Decisions List (see Attachment 16-4: Trainer Guide). The trainer will ask participants to record decisions that are relevant to their specific grade level, classroom, or individual students on the participant worksheet (see Attachment 16-3: Participant Worksheet).

In Part 5 of the session, the trainer will thank participants for their time and ask participants to complete the Inventory About Data Use (see Attachment 16-5: Inventory About Data Use). Participants will complete the form online through Google forms at https://goo.gl/forms/PtFgvmldMAAId5Lm1 . The trainer will make anecdotal notes about the session using the Trainer Log (see Attachment 16-2: Trainer Log). These notes may compare the pre and post assessment of data use as reflected by participants. These notes may be shared with school leaders for future action.

Attachment 16-1: Collaborative Learning Experience for DDDM Participant Sign-In Sheet

Participant Name	**Participant Signature**	**Job Title**	**E-mail address**

Attachment 16-2: Trainer Log

Day _____ Part _____

Activity: _____

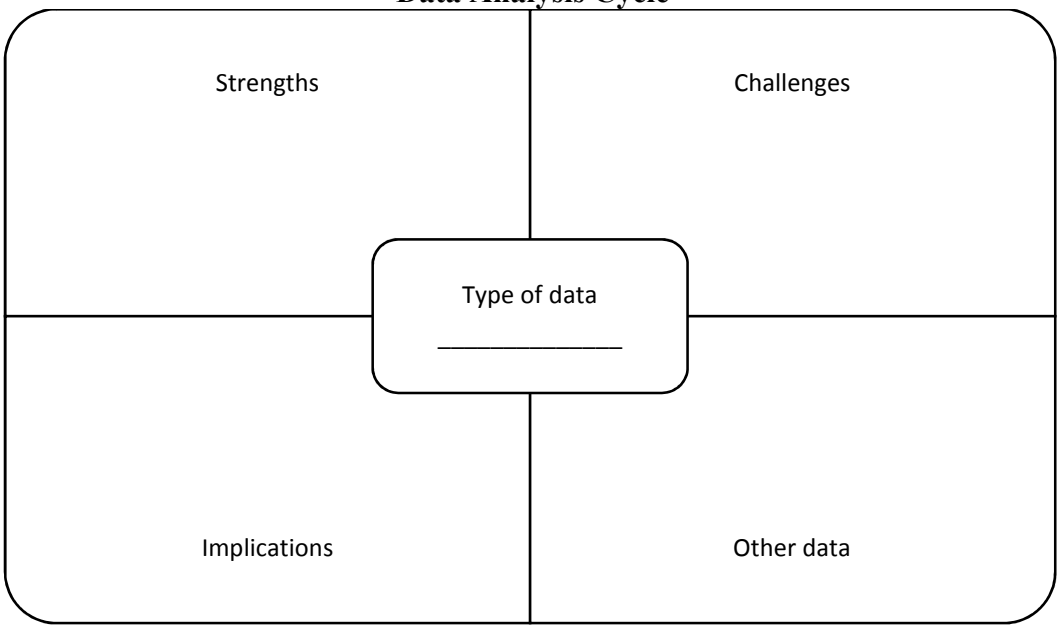
Participant Name	Trainer notes about observations, comments, etc. that demonstrate completion of the activity by participants.

Training Session Day #	**Training Session Action Step #**	**Trainer Reflective Anecdotal Notes**

*add more sheets if needed

Attachment 16-3: Participant Worksheet

Data Analysis Cycle



Problem/Hypothesis Questions/Data

Action Plan/Decision Evaluation

*Create a chart using chart paper that describes the small group review and provides a graph of the demographic data set. Leave the chart with the trainer at the end of the session.

Attachment 16-4: Trainer Guide

- Facilitate discussions among participants about decisions that are influenced by the data.
- Potential teacher decisions that may be made using the data are:
    - Classroom grouping—this may be the initial placement of students into classes for the upcoming year or grouping of students within a class for small group instruction based on instructional need
    - Lesson planning—teachers may adjust the lesson content that will be present in whole group or small group instruction based on the data
    - Curriculum resources—a teacher may need additional curriculum resources based on the needs revealed in the data; sometimes a teacher may also decide to stop using a resource that is having an undesirable result
    - Pacing—data reveal student instructional needs; pacing of instruction may be adjusted based on data
    - Instruction—teachers may determine a need for more direct instruction or differentiated instruction based on the data
- Potential administrative decisions that may be made using the data are:
    - Student classroom assignment
    - Teacher grade level and teaching assignments
    - Scheduling decisions such as increasing the number of instructional minutes for a specific content area or offering a new course to assist students academically

Attachment 16-5: Inventory About Data Use

Inventory About Data Use in Schools

* Required

1. **What data do you use in your school? Mark all that apply.** *
   Check all that apply.
   - [ ] Observation Data
   - [ ] Demographic Data
   - [ ] Perceptions Data
   - [ ] School Processes Data
   - [ ] Student Learning Data
   - [ ] Other: _____

2. **How are decisions made at the school?** *

3. **Which team members work with data at your school?**

4. **Which of the following statements best describes data and decisions at your school?** *
   Mark only one oval.
   - ◯ All decisions at our school are made using data.
   - ◯ Data is collected about many things in our school, but only state testing data are used for decision making.
   - ◯ Many types of data are collected in our school, and most are used for making decisions.
   - ◯ Many types of data are used in our school and none of them are used for decision making.
   - ◯ I know that data are collected in our school, but I am unsure of how they are used.

5. **Rate your level of comfort with analyzing data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

6. **Rate your level of comfort with creating an action plan for a problem using data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

7. **Rate your level of comfort with making decisions using data**
Mark only one oval.

	1	2	3	4	5	
Very Uncomfortable	◯	◯	◯	◯	◯	Very Comfortable

Appendix B: Invitation to Participate E-Mail

DATE OF TRANSMISSION _____

Greetings.

I hope this email finds you well. My name is Michelle Sorrells, and I am a doctoral student enrolled at Walden University. While I was employed in your school as a teacher, I became interested in the data-driven decision-making processes related to the instructional decisions at your school. I am seeking participants who would like to describe their experiences with the data-driven decision-making processes and instructional decisions related to single-sex instructional grouping in Grade 5 in your school.

Attached to this invitation is an informed consent form and description of the study. It includes the purpose of the study and describes factors related to it. It explains that participation is voluntary, and a participant may withdraw from the study at any time.

If after review of the document, you would like to participate in the study or if you have questions about your eligibility to patriciate in the study, please email your response from your personal, confidential email address and include your contact phone number (or other preferred method of communication) so that I may share more details with you. You may also reach me via phone to volunteer or ask questions.

Thank you for your time and consideration.

Michelle Sorrells, M.Ed.
Walden University Research Student

Appendix C: Invitation to Participate, Printed Copy for Snowball Sample

Greetings,

I hope this email finds you well. My name is Michelle Sorrells, and I am a doctoral student enrolled at Walden University. While I was employed in your school as a teacher, I became interested in the data-driven decision-making processes related to the instructional decisions at your school. I am seeking participants who would like to describe their experiences with the data-driven decision-making processes and instructional decisions related to single-sex instructional grouping in Grade 5 at your former school.

Attached to this invitation is an informed consent form and description of the study. It includes the purpose of the study and describes factors related to it. It explains that participation is voluntary, and a participant may withdraw from the study at any time.

If after review of the document, you would like to participate in the study or if you have questions about your eligibility to patriciate in the study, please email please email your response from your personal, confidential email and include your contact phone number (or other preferred method of communication) so that I may share more details with you. You may also reach me via phone to volunteer or ask questions.

Thank you for your time and consideration.

Michelle Sorrells, M.Ed.
Walden University Research Student

Appendix D: Prescreening Questions

The following pre-screening items are provided to determine eligibility to participate in this study. All questions are about XYZ, the local school site, and specifically refer to the decision making or instructional processes related to single-sex instructional grouping in the 5th grade.

1. Are you a teacher?
2. Are you a leadership team member?
3. Are you an administrator?
4. In what capacity did you work in the site school when single-sex instructional grouping was first implemented in Grade 5?
5. In what capacity did you work in the site school when Grade 5 was instructionally grouped by single-sex?
6. In what capacity did you work in the site school when single-sex instructional grouping was discontinued at the site school?

Appendix E: Interview Protocol

DATE _____ **LOCATION** _____

START/END TIME: _____ **LENGTH OF INTERVIEW** _____ (MINUTES)

PARTICIPANT'S INITIALS _____ **STUDY CODE** _____

STAKEHOLDER SUBGROUP IDENTIFICATION _____

INSTRUCTIONS: The interviewer will ask each question in bold print. Probes will be used for clarification and elaboration when relevant to the participants' responses.

INTERVIEW ITEMS

1. **Please tell me how data are used at your school.**

2. **Please tell me decisions you make at school**

3. **Please tell me about a school decision you have been a part of. What was your role? What informed those individuals involved in making the decision?**

4. **Please describe your role in the site school during the time single-sex instructional grouping was in place for students in Grade 5.**

5. **Which of the following would most accurately describe your perception of single-sex instructional grouping for students in fifth grade? Explain your choice. Do you have data to support your perceptions? What data do you use to make instructional choices?**
    a. ____ single-sex instructional grouping was not beneficial for students
    b. ____ single-sex instructional grouping was somewhat beneficial for the girls, but not beneficial for the boys
    c. ____ single-sex instructional grouping was somewhat beneficial for the boys, but not beneficial for the girls
    d. ____ single-sex instructional grouping was beneficial for some students in each sex group but not beneficial for all students in Grade 5
    e. ____ single-sex instructional grouping was somewhat beneficial for all students in Grade 5
    f. ____ single-sex instructional grouping was very beneficial for all students in Grade 5

6. **Research indicates that single-sex instructional grouping potentially influences students. Please talk to me about how you feel that single-sex**

instructional grouping influenced _____. What data did you record or maintain on these aspects? How were these data used in decision-making? Inside the classroom? By the administration?

a. Student behavior
b. Student achievement
c. Differentiation to meet the needs of students

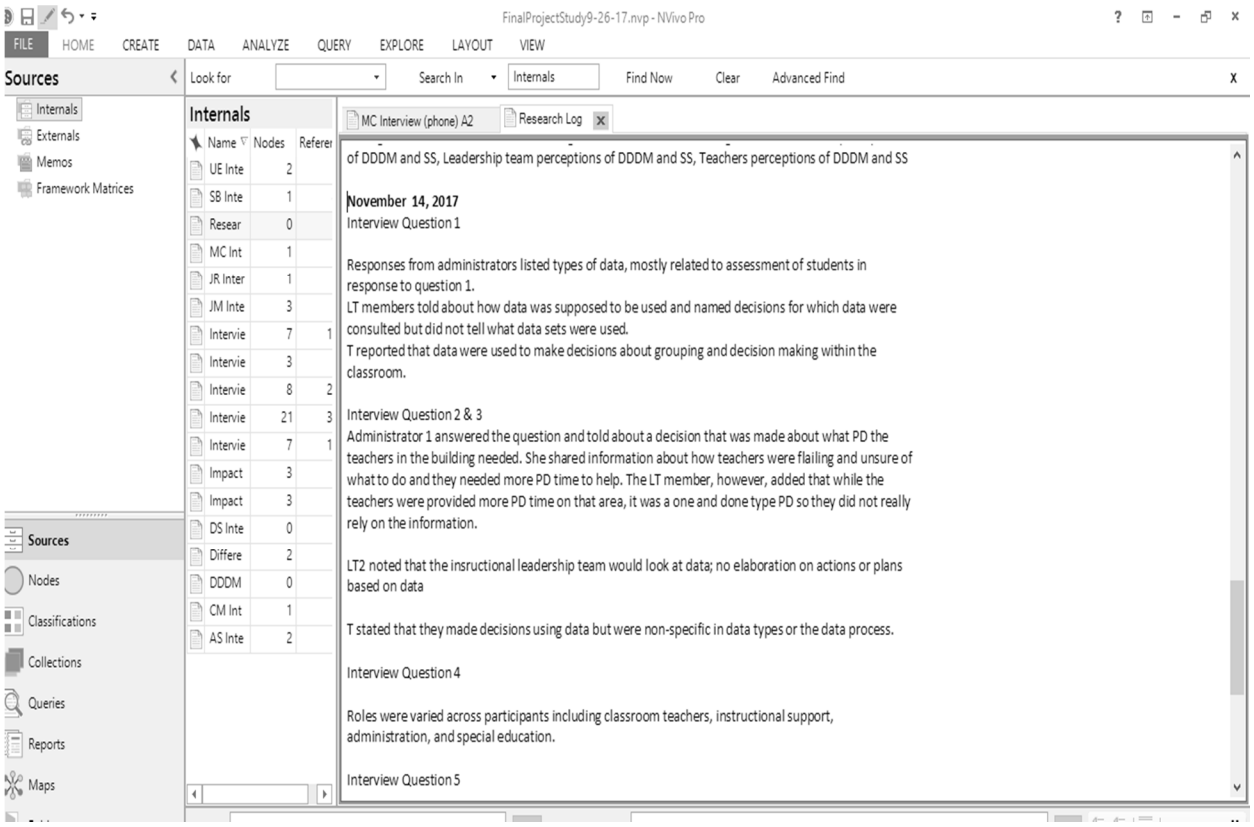
7. **Explain how decisions related to single-sex instructional grouping were made.**
    a. Tell me more about your role in those decisions.
    b. Tell me more about data sources that were used in the decision-making process.

OPTIONAL PROBING QUESTIONS:

8. **Are there any other perceptions you would like to share related to the DDDM processes in the school and/or the DDDM process related to the single-sex instructional grouping in Grade 5?**

The Interviewer will thank each participant for his/her time and participation. Additionally, each participant will be invited to share the opportunity for participation with others who may have experiences that would be valuable for the study.

Appendix F: Excerpt from Research Log



Appendix G: Examples of Word Clouds and Initial Frequency Analysis

Top 100 Words from Interview Transcripts

Interview Question 1 Word Cloud from Responses

Top 100 Words from Interview Transcripts

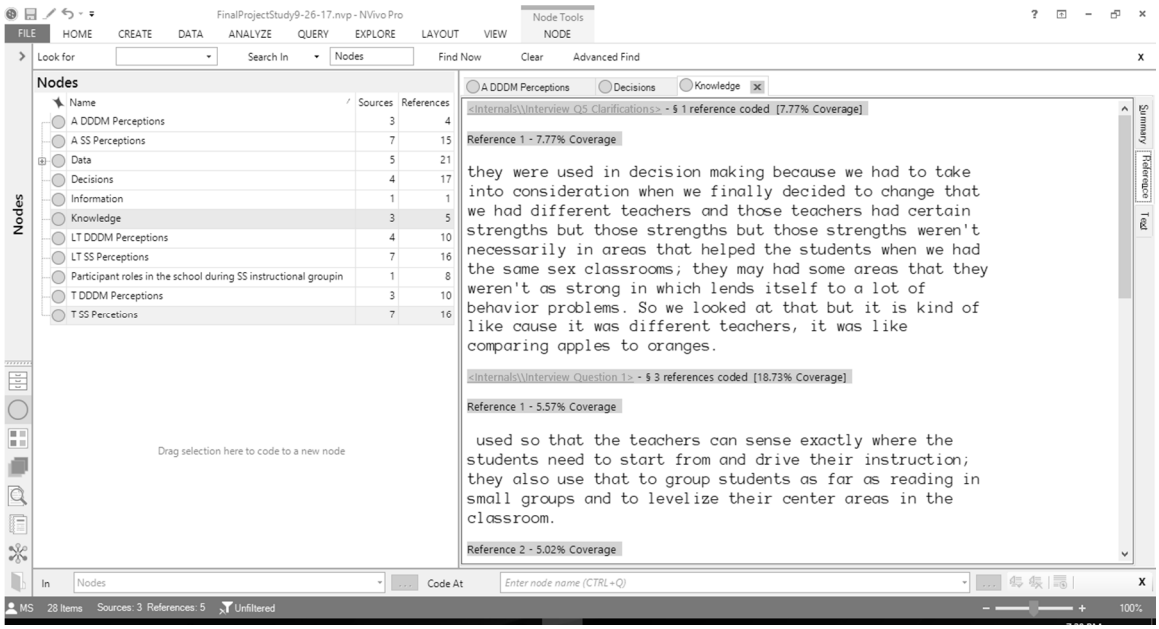
Word	Length	Count	Weighted Percentage (%)	Similar Words
students	8	126	3.09	student, students
grouping	8	116	2.85	group, grouping, groups
instructional	13	99	2.43	instruction, instructional, instructions
single	6	90	2.21	Single
decisions	9	78	1.92	decision, decisions
data	4	77	1.89	Data
teachers	8	64	1.57	teacher, teachers
school	6	61	1.50	school, schools
beneficial	10	60	1.47	Beneficial
boys	4	58	1.42	Boys
make	4	58	1.42	make, makes, making
girls	5	53	1.30	girl, girls
grade	5	50	1.23	Grade
used	4	46	1.13	used, using
classroom	9	44	1.08	classroom, classrooms
need	4	38	0.93	need, needed, needs
think	5	37	0.91	think, thinking, thinks
like	4	35	0.86	like, likely, likes
looked	6	34	0.83	look, looked, looking, looks
tell	4	33	0.81	tell, telling
time	4	33	0.81	time, times
really	6	32	0.79	Really
teach	5	29	0.71	teach, teaching
year	4	28	0.69	year, years
classes	7	27	0.66	class, classes
please	6	27	0.66	Please
behavior	8	27	0.66	behavior, behaviorally, behaviors
just	4	25	0.61	Just
works	5	24	0.59	work, worked, working, works
influenced	10	23	0.56	influenced, influences
things	6	23	0.56	thing, things
gender	6	22	0.54	gender, gendered
know	4	20	0.49	know, knowing
made	4	20	0.49	Made
talk	4	20	0.49	talk, talked, talking
better	6	19	0.47	Better

Word	Length	Count	Weighted Percentage (%)	Similar Words
help	4	19	0.47	help, helped, helps
role	4	19	0.47	Role
somewhat	8	18	0.44	Somewhat
perceptions	11	17	0.42	perception, perceptions
related	7	17	0.42	related
team	4	17	0.42	team
back	4	16	0.39	back
going	5	16	0.39	going
process	7	16	0.39	process, processes
test	4	16	0.39	test, testing, tests
want	4	16	0.39	want, wanted
coming	6	15	0.37	come, comes, coming
participant	11	15	0.37	participant, participants', participate, participated, participating
feel	4	14	0.34	feel, feeling
interview	9	14	0.34	interview, interviewer
together	8	14	0.34	together
well	4	14	0.34	well
achieving	9	14	0.34	achieved, achievement, achievements, achievers, achieving
active	6	13	0.32	active, activities, activity
describe	8	13	0.32	describe
informed	8	13	0.32	information, informed
kids	4	13	0.32	kids
place	5	13	0.32	place, places
question	8	13	0.32	question, questions
decided	7	13	0.32	decide, decided, decides
choice	6	12	0.29	choice, choices
fifth	5	12	0.29	fifth
leadership	10	12	0.29	leadership
part	4	12	0.29	part
areas	5	12	0.29	area, areas
different	9	12	0.29	difference, different, differently
scores	6	12	0.29	score, scores
able	4	11	0.27	able
administration	14	11	0.27	administration, administrator, administrators
explain	7	11	0.27	explain
learning	8	11	0.27	learn, learned, learning
start	5	11	0.27	start, started

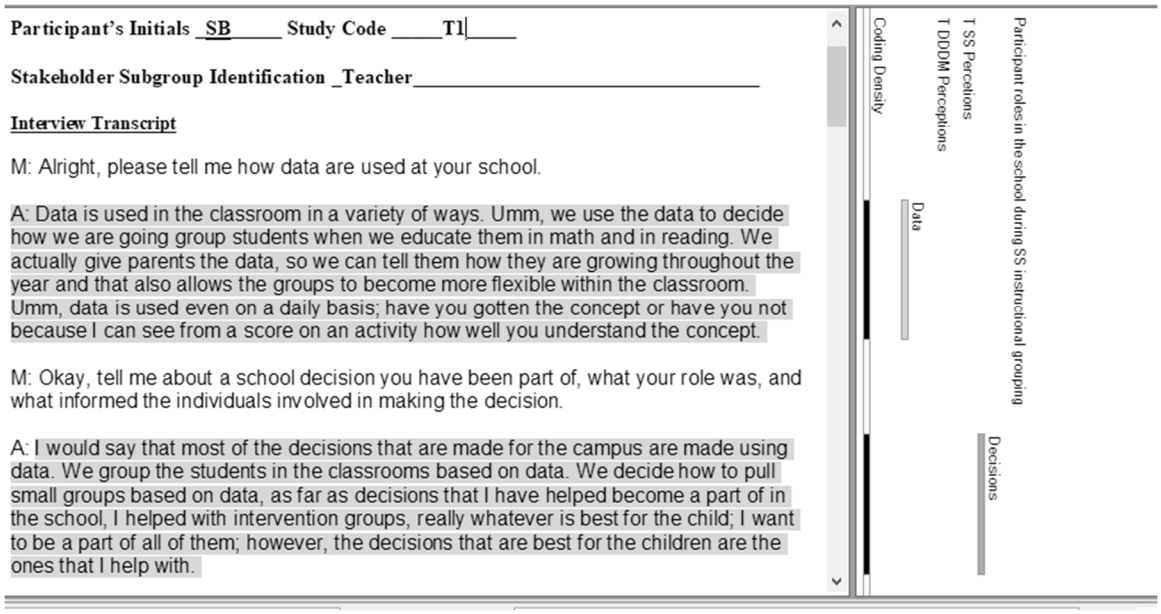
Word	Length	Count	Weighted Percentage (%)	Similar Words
change	6	10	0.25	change, changed, changing
coach	5	10	0.25	coach, coaches
dddm	4	10	0.25	dddm
getting	7	10	0.25	gets, getting
involved	8	10	0.25	involve, involved, involvement
math	4	10	0.25	math
plan	4	10	0.25	plan, planned, planning, plans
research	8	10	0.25	research
understand	10	10	0.25	understand, understanding
lesson	6	9	0.22	lesson, lessons
meet	4	9	0.22	meet, meetings
writing	7	9	0.22	write, writing
allowed	7	8	0.20	allow, allowed, allowing, allows
also	4	8	0.20	also
based	5	8	0.20	based
came	4	8	0.20	came
differentiation	15	8	0.20	differentiation
even	4	8	0.20	even
following	9	8	0.20	followed, following
good	4	8	0.20	good
individuals	11	8	0.20	individual, individuals
much	4	8	0.20	much
principal	9	8	0.20	principal
seemed	6	8	0.20	seem, seemed
still	5	8	0.20	still
strong	6	8	0.20	strong
study	5	8	0.20	studies, study

Appendix H: Screenshots Representing a Coded Interview Transcript

Screenshot from NVivo Software Representing Nodes (Codes), Distribution of Sources, and References.



Screenshot from NVivo Software to show a sample of a coded interview transcript.



Appendix I: Summary of Participant Interview Responses

During the interviews, the first question was "Tell me how data are used in the school." The administrators both answered with types of data that are used while leadership team members and teachers both noted how data were used but did not name specific data sets as a reference point. Answers paralleled one another among subgroup populations and across the subgroups within the site school. Each participant mentioned assessment data at least one time during the interview.

After asking about which data are used in the school, I asked participants to tell me about decisions they make in the school and further elaborate on one decision that he/she had a role in and the data used to make that decision.

- A1 told of decisions related to teacher lessons, professional development, and planning for school programming. She mentioned that the district leaders used teacher success rates on timely submission of student work samples to determine one decision; she also mentioned that all decisions within a school are ultimately made by the school administrator. She stated, "No matter who makes the decision, administrators have to okay it" (A1).
- A2 did not answer this question during the interview.
- LT1 mentioned decisions about planning for staff development and named "observations, feedback from teachers to the instructional team, classroom walkthroughs by administration, and engagement checks" as data sources for decision making about professional development.

- LT2 recognized daily decisions made based on the needs of students, but no data sources were listed for these decisions. She added that the leadership team would decide about teacher support and professional development using “teacher input and administrative observations”.
- LT3 mentioned decisions of the leadership team unrelated to professional development. She shared that the Leadership Team used data from the state summative assessments to determine if teachers were teaching rigorous lessons. She also identified that the leadership team members who represent the teaching staff were responsible for sharing information like what lesson plans should look like, expectations for sending home homework, and identifying what key evidence the administrators and instructional coaches would be looking for in upcoming visits to classrooms. She also added that while she is allowed as a teacher to determine how she will teach information to students, the Leadership Team tells teachers what they will teach and with what resources.
- T1 stated that “most of the decisions made on the campus are made using data”. However, no specific data source was identified. She did say that data are used when grouping students in small groups within the classroom and for intervention groups.
- T2 said that her source of data for decision making was “the coaches and the administration and team teachers”. She stated that she makes decisions on what to each and when to teach it.

- T3 identified that she was in charge of making decisions only within her classroom; she did not mention any data source.

Overall, a range of decisions were mentioned by the individual stakeholders. While there was some similarity between decisions made, there is no obvious connection to a specific data source that is heavily relied on for decision making.

The next question in the interview explored the role of each stakeholder at the during the time of single-sex instructional grouping in Grade 5 at the site school. A1 held many roles during the time of implementation, but her most significant was the role of building principal at the time of the discontinuation of this instructional grouping method. A2 was the administrator who began grouping students in Grade 5 into single-sex instructional groups. LT1 was the first teacher of the male group and moved into an instructional facilitator position after year one. LT2 was a literacy coach. LT3 was the grade level representative for the leadership team. T1 taught the male group for one year. T2 taught the female group for one year. And T3 began teaching during the first semester of the year when the single-sex instructional grouping method was discontinued.

After establishing each participants' role in the school during the implementation of single-sex instructional grouping, I inquired about the decision-making processes related to this instructional grouping method. The initial decision to implement single-sex instructional grouping in Grade 5 was an effort described by A2 and all participants that were interviewed from the Leadership Team (LT1, LT2, and LT3). A professional development conference was attended where single-sex grouping was identified as a research-based practice for reaching struggling learners. A2 and LT2 attended the

conference together. Upon their return, they shared the information with the leadership team which included LT3. After seeking teacher buy-in and research articles, a decision was made to attempt this grouping model for the coming year. LT1 was a teacher at the time and agreed to teach the male group. She stated, “Knowing that it takes three years to show substantial data for change, the plan was to look at three years of the model to decide to continue or discontinue” (LT1).

Both administrators discussed the need for “strong teachers” for single-sex instructional grouping to be successful. LT3 mentioned that the teachers really made a difference and said, “in years where we had a really good teacher, it was a really good thing; but one year, the teachers were not passionate about having all boys or all girls in the room.” A1, the administrator responsible for making the decision to revert to co-gendered grouping in Grade 5, shared her experience:

> *I was the principal while they still had the same sex classroom and then the change came while I was still the building principal. The change was informed because it got to the point where we had some teachers that came in and they were trying to have favor with the students, but they were really having a lot of problems with discipline as in they just really couldn't get a grasp on, on, on in the girls classroom, they felt that there was a lot of drama going on with the girls and then in the boys classroom boys are just very active learners and so they were having trouble keeping them engaged in the way they needed to so there was a lot of classroom management issues so it finally got to the point where we sat down, talked about it we met, this was after we tried to put some things in place, some routines and procedures in place to help, and it just came to the point where the teachers were in tears and they were like "would you please just allow us to mix up the classrooms for the rest of this year? I think it would make a difference; this is not working can we try that please and see?" So we all came to the table and we talked about it and we decided to go ahead and give it a try and change it back in January, so we did change it for the new semester and things did get better for those classes, so because of that we didn't want to go and flip flop and be changing back and forth so we just left it as it was after that.*

The participants of the teacher subgroup were unable to tell about the implementation of the practice of single-sex grouping. These teachers began teaching after single-sex instructional grouping had begun.

The value of the practice of single-sex grouping for students in fifth grade was shared by each of the participants. Each of the 8 participants, ranked single-sex grouping as beneficial for at least some of the students in Grade 5. And 5 of 8 participants stated that they would return to this grouping method if given the opportunity. A2 stated that she would have liked to expand this method for Grades 3-5, but she was happy she was able to do it in at least one grade level.

Much information was gained from the last series of questions in the interviews; I asked participants to share their perceptions of how single-sex grouping impacted student behavior, student achievement, and differentiation. Additionally, they were asked to tell me about data they had to support these perceptions. The table below share the quoted participant responses to this series of questions.

Table A.

Perceptions of Impacts of Single-Sex Grouping on Students in Grade 5

Participant Code	Student Behavior	Student Achievement	Differentiation to Meet Student Needs
A1	Phenomenal; students were engaged; hardly got any students in the office from those classrooms	Really influenced in a positive way because each gender was getting exactly what they needed; students put their all into it and achievement scores were a lot better. When teachers were strong scores were stronger	Did not answer
A2	students being more comfortable; outgoing; working well together	Students were more comfortable, not trying to impress one another; they were willing to take more chances in both classes	Boys were more active and girls were a lot quieter.
LT1	Boys behavior documents decreased; girls' behavior remained close to average.	Girls grew in achievement more in math and science where boys showed more growth in writing and language; data available through state assessment scores and prompts given weekly by the district	In the pilot, the teachers were trained and worked together to develop appropriate teaching techniques for each gender. As the program continued and the school replaced fifth grade teachers repeatedly, training was not followed through.
LT2	Boys seemed to be the most difficult for behavior; girls were talkative	I did not see any specific data showing a direct correlation to student achievement and single gender classrooms.	Teachers were able to pick books more specifically to girls' and boys' interest.
LT3	Boys became more mature and built each other up; the students helped one another; girls seemed more competitive	I think they made better gains on their tests; they may not have all been proficient, but they did make better gains.	It allows the teacher to better hone in on what those kids need; it seemed based on research that boys seem to struggle in certain areas more than girls. She can provide this for them and girls can flourish too.

Table A (con't)

Participant Code	Student Behavior	Student Achievement	Differentiation to Meet Student Needs
T1	Behaviors were more specific to one gender; fewer types of behaviors for the teacher to battle.	I think for the students it was beneficial for, they were really able to succeed in those situations; for the kids that it doesn't really matter who they're with, it didn't necessarily benefit them in one way or the other.	Differentiation is really done by ability level so gender didn't necessary impact the ability level grouping in the classroom.
T2	It made the students behave better	It made the students want to do better for themselves because they weren't distracted, and it raised the standard of learning.	It didn't affect the students as much to be in a lower group. They were more comfortable because they didn't have to worry about what students of the other sex group thought.
T3	Students behaved much differently; less fights, less referrals, more on task behavior	Students were more likely to be on task and engaged. This allowed for greater achievements and student academic goals being met.	Differentiation was easier due to lack of distractions. Students felt less embarrassed about their level which allowed for more successful differentiation.

Participants were then asked to share their DDDM processes related to the single-sex instructional grouping. A1 recognized that the leadership team compared student achievement at the end of the year to look at male and female scores. They looked at disparities between the sexes and looked at sources that could have contributed. The team wanted to "make sure it was a good thing that they wanted to continue". The decision to discontinue was made because of the fatigue and frustration of the teachers during the last year who were failing with classroom management for the single-sex groups. Achievement data were not consulted at the time of discontinuation. A2 named informal

assessments, teacher note-taking about student learning, and student progress in addition to formal state assessments as data sources for justifying continuation of the instructional grouping method. LT1 shared that the teachers in the pilot year were given one article to read before school began. The principal had attended professional development and been convinced to try. Data were collected after implementation through classroom observations. LT2 stated, “Our principal was the decision maker in this process, and I am unaware of the data sources that were used.” LT3 stated that the principal made the decision to attempt this instructional grouping based on research she had read and then told the staff they would try this for the upcoming school year. T1 said the data really decides; but she did not elaborate on the type of data. T2 and T3 both stated they did not know how the decision for single-sex grouping had been made or what data sources had been consulted in the process.