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Elementary Teachers' Perceptions Regarding the Use of Data Decision-Making for Instructional Practice

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This is to certify that the doctoral study by

Joy Swain

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Walden University
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At an elementary school in the northeastern region of the United States, elementary teachers struggled with using data to make instructional decisions. The purpose of this qualitative study was to explore elementary teachers' perceptions about how their teaching experiences prepared them to use data to make lesson decisions. The theoretical-conceptual frameworks of this study were Bandura's self-efficacy, a theoretical framework of data use at the building level, and organizational routines framework. The data collected from interviews with 8 elementary teachers revealed their perceptions of having to use data to make lesson decisions and how these perceptions influence their teaching practices. The data were organized and categorized as theoretical, organizational, and substantive. The themes that emerged from the coded data were the demands of too many strands of data, the need for additional building of teacher data knowledge capacity, barriers to data fidelity in the classroom, and the need for a supportive infrastructure. This study may result in positive social change for teachers at this elementary school and district administrators and personnel at nearby school districts by providing insights on how to best support elementary teachers with appropriate targeted training for using data to make lesson decisions.

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Dedication

The desire to undertake this study came from the need to give teachers a voice about their teaching practices. I am dedicating this work to all of my current and former colleagues and educators who continue to be standard bearers for quality education. You continue to champion the causes that help all students achieve academic and social success, especially students from low socioeconomic backgrounds.

I also dedicate this work to all parents, especially HVE (pseudonym) parents who are our partners, all the current and former staff at HVE, and peers from other schools and departments in the school district. You are my inspiration and thank you for challenging me to seek excellence in teaching. I hope this study will contribute to research best practices.

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My sincere gratitude and thanks to my husband, Captain (ret) Anthony (Tony) Swain, USN, and our son, Trevon Swain—my lighthouse. Your continued support and belief in me throughout this study have been my source of strength and determination. My dream became reality because of both of you. Tony, this journey was possible because of you and you unflinching strength. Thank you. To my siblings, coworkers, peers, and supporters who took this journey with me, I want to express my gratitude and say this is also for you. To my Walden colleagues, Karen Spader and Norma Chandler, your support and guidance were invaluable.

Finally, to my parents Lloyd Simon and Rosie Simon, I am forever grateful for your strength and sacrifices. From you, I learned that hard work and overcoming challenges are character and success builders. Thanks for nurturing my curiosity and passion for learning.

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Section 1: The Problem

The Local Problem

School districts across the nation are held accountable for student success, improving student achievement, and closing the achievement gap. According to the U.S. Department of Education Office of Planning, Evaluation and Policy Development (2011), schools need to prepare students to be college and career ready; improve assessments to better measure students' skills; and develop, recruit, and maintain a staff of effective teachers and leaders. According to the Hope Valley Elementary School (HVE; pseudonym) principal, teachers reported being overwhelmed, frustrated, and not prepared for using data for student assessment and instructional decision-making, citing lack of experience, support, and training. This disconnect may be responsible for teachers' avoidance of using data, resulting in ineffective intervention practices, misdiagnosed assessment, and lack of rigorous instruction.

Teachers are at the forefront of the current trend transforming America's school system from some students learning and achieving to all students learning. One major shift in public education is the use of data by schools for assessment and instructional decision-making in meeting individual learners' needs. There has been a shift away from assessing and measuring students using generalized static testing and grading systems based on criteria set by individual teachers for completed assignments to more data-based approaches that require using standard-based grading systems. Another shift was from unfocused development of staff capacities to use data to targeted professional development (PD) centered on data training needed to improve teacher data

competencies. A further shift is moving from comparing students' performances to only school or state standards to comparing students' performances to national and international standards (Glassman, 2011). To provide teachers with appropriate support and training in using data to improve their practices, it is critical to understand teachers' proficiencies and needs (Office of Planning, 2011). Data-driven decision-making has moved from being optional to being regarded as required.

Without teachers' fidelity to the implementation of interventions based on preassessment data, monitoring progress data, and data evaluation, the outcomes for improving teacher use of data is meaningless (Bianco, 2010). The Response to Intervention (RTI) model was established by the Colorado Department of Education to use student performance data to make instructional and monitoring decisions. The model is composed of a three-tiered approach: use of tracking intervention student forms, reading coaches, and video clips made by teachers to enhance data-driven instruction. The RTI pilot model indicated that student outcomes from RTI were positive according to these criteria: students improved in literacy, referral rates dropped for study team assessment, the number of students classified for special education services decreased, and feedback from teachers using the RTI model were positive. However, teacher fidelity to implementation of intervention remains a challenge and can impact the integrity of RTI application (Bianco, 2010). With support, appropriate training, and (PD), teachers can improve outcomes by using data for decision-making about instructional practices (Bianco, 2010).

Definition of the Problem

The problem at HVE was that teachers were not using data with fidelity to guide instruction and make instructional decisions to improve student outcomes. *Fidelity* refers to the degree or extent an intervention or treatment is implemented as intended in school-based practices (Sullivan, Bell, Jones, Caverly, & Vaden-Klernan, 2016; Wang & Lam, 2017). Using data appropriately requires that teachers and supporting staff at each grade level have weekly collaborative planning meetings. At these meetings, they are required to analyze and discuss assessment data accessed from the district data warehouse, examine students' work, and devise intervention plans based on academic needs. Each teacher is responsible for analyzing their own class data to make diagnostic evaluation that identifies gaps between their students' academic performance and state targets.

Hope Valley School District (HVSD) is in the mid-Atlantic region of the United States. In 2010, the district required that all schools use data to measure student success, guide instructional practices, and improve teachers' capacity as instructional leaders and effective educators. HVSD invested a substantial amount of financial resources on (PD) over the previous few years with the goal of helping all teachers develop a comprehensive understanding of assessment data. According to the U.S. Department of Education Office of Planning (2011), studies have shown that for data to positively influence student learning teachers need to use data for instructional decisions by planning and providing differentiated instruction in conjunction to collecting and analyzing data.

However, the low success rate of teachers using data to make decisions and plan instruction driven by that data is a major challenge and concern for HVSD and individual schools. Members of one school in the district, HVE, noted that teachers were frustrated with using data and felt disconnected from the data-based decision process. Based on HVE teachers' discussions, professional training feedback, and the principal's observational notes 2011, teachers have resisted using district and state assessment data to make decisions regarding instructional approaches and practices. Instead, teachers have relied on personal observations and assumptions about students' learning and students, constructing tests that were not aligned to state standards or indicators, which resulted in learning gaps for students because students' needs and strengths were often misdiagnosed, lessons and instructions lacked rigor, and ineffective intervention strategies were used.

Teachers reported that their frustration stemmed from a feeling of being rushed and not having the appropriate support to address the task and the lack of meaningful assessment training (HVE, 2011). Teachers at HVE struggled with using data. According to the HVE principal, they did not know what data to collect, what the data represented, how to interpret the data, how to employ data reasoning when several calculation steps are required, how to develop hypotheses based on data analysis, how to develop measurable assessments, and how to implement data-driven practices. It is important that HVE teachers develop and institute data-based decision process practices with fidelity in order to meet state, district, and school mandates.

A similar trend is occurring nationwide as school districts meet federal reform mandates for improving student achievement and teacher practices. School districts with a strong emphasis on data-driven decision-making practices have teachers and staff who struggle with understanding the implications of the data, developing assessments to measure success, and using the data to adjust their practices (Office of Planning, 2011).

Rationale

The purpose of this study was to explore elementary teachers' perceptions about using data and their ability to use data for decision-making and instructional planning. Therefore, I collected data via interviews of elementary teachers from HVE. The HVE teachers not only experienced difficulty accessing and retrieving appropriate data from the county's data warehouse, but when hard copies of the data were provided to them by the testing coordinator they grappled with analyzing the data, making instructional decisions, and planning intervention strategies to improve students' performance. P. Brown noted that this difficulty led to teachers becoming resistant to attending weekly grade level meetings because they felt unprepared to disaggregate and analyze data. Two HVE teachers reported that in their more than 30 years of teaching students at the elementary level they had never experienced such anxiety and frustration attending weekly grade level meetings. They added that during these meetings they felt insecure, frustrated, and threatened by the data process and the demands for them to access and analyze data. Therefore, they had purposely avoided attending some of these meetings. This study shed light on some of the barriers that contributed to elementary teachers' insecurities about data, a deeper understanding of their resistance to using data, and their

perceptions about their data knowledge and abilities. In addition, this study provided strategies and (PD) information that support elementary teachers in building their capacity as data leaders, data users, and data-based decision makers.

Evidence of the Problem at the Local Level

As one of the largest school districts in the nation, HVSD has a strong and steadfast commitment to preparing students to be career, college, or workforce ready. A career is defined as a permanent profession that someone trains for (Merriam-Webster.com, 2017), and *workforce* refers to a country's total number of employed individuals, including those employed in armed forces and civilian jobs, as well as those seeking work (BusinessDictionary.com, 2017). To meet the No Child Left Behind (NCLB) Act of 2001 federal mandate and state reform mandates of the Common Core State Standards (CCSS) and Race to the Top initiatives, HVSD responded by conducting a series of districtwide and in-school PD training for all schools. Workshops and training were focused on development of rigorous instruction, concept-based curriculum, accessing and retrieving data from the district's intranet data warehouse, data analysis, and use of data to make decisions to drive the instructional practices. The development of teachers as instructional leaders in the building and principals as change leaders are top priorities of HVSD. Recruiting and maintaining a cohort of teachers with effective instructional practice is a primary goal of HVSD.

The state adopted the CCSS for mathematics and reading/language arts in 2010. Full implementation of the CCSS initiative began in school year 2014. The state-led CCSS initiative established a set of educational standards aligned with international

benchmark standards designed to prepare all students for college, career, workforce, and global marketplace. These standards are now the basis for the state's current curriculum. With a focus on accountability and transparency, the state and HVSD systems have aligned their school reform program with the federal school reform grant Race to the Top program to improve instruction (Institute of Education Sciences, 2009). The centerpiece of this reform is on teacher recruitment and development, retention of effective teachers and leaders, and creation of a data system to provide teachers with data to measure student success.

Teachers are at the forefront of leading these changes (U.S. Department of Education, 2010) and are accountable for student success. Schools will have to adopt a data-driven approach to meet these college- and career-ready standards, which demand using data to measure both student success and teachers' instructional abilities. PD training at HVE has been focused on the improvement of teachers' knowledge about assessment data, the practical application of data skills or strategies to their teaching, and in understanding the instructional implications of data for student learning.

Evidence of the Problem from Professional Literature

Currently the use of researched-based strategies and practices or evidence-based practices (EBP) is becoming standard practice in education (Troia & Olinghouse, 2013; See, Gorard, & Siddiqui, 2016). Cook and Odom (2013) stated that EBP aligned with the CCSS implement in science for students in special education. Cook and Odom contended that although no practice will help every student children and youth with disabilities, EBPs are good starting points. However, a study of 12 teachers in Grades 6–8 indicated

that teachers did not put forth much effort in using data to differentiate instruction, and when they did, it was to validate previous held concepts about students' abilities (Reed, 2015).

There have been other problems with using EBPs. For instance, a study of four school districts showed that opportunities for accessing data using analytical tools and technology to improve educational decision-making was growing (Porumb & Gavureanu, 2015; Supovitz, Folley, & Mishook, 2012). Users had difficulty determining meaningful or appropriate data, the infrastructure for data support was insufficient, and having data did not transcend to usage. Additionally, Superfine (2008) reported that over time teachers showed apathy toward learning and resisted adoption of new curriculum changes or PD. Teachers became inattentive to how their planning decisions influenced students' learning opportunities based on their conceptions, prior knowledge, experiences with planning, and instructional decision-making, culminating in resistance to PD and new curriculum adoption.

To understand if potential teachers shared similar experiences about using data, a study of preservice teachers' integrated bachelor's/master's program was conducted. The findings from the study indicated that preservice teachers' confidence increased, shifting "from a more limited, student-oriented, immediate view of inquiry to a more holistic, professional future-oriented view of inquiry" with practice and support (Truxaw, Casa, & Adelson, 2011, p. 87). Although these preservice teachers are potential teachers rather than practicing educators, their perceptions and confidence about their ability to use inquiry for instructional decision-making were similar to those of practicing teachers.

Both groups—preservice and practicing teachers—experienced frustration with having to use data, were reluctant to assume leadership roles, resisted incorporating best researched practices, and reverted to using personal experiences, not data.

The preservice teachers' experiences paralleled those of HVE's teachers and support staff. To address this issue and provide teachers with the appropriate support and resources, HVE's leadership team, composed of administration and teacher leaders, conducted weekly grade level meetings and classroom visits. The team noted that at weekly collaborative grade level meetings many teachers did not have their students' assessment data to analyze, discuss, or plan with. During classroom visits the team observed disparities among the grade levels in differentiating instruction based on the analysis of the data. The classroom environments lacked the evidence or artifacts that supported the use of small group instructions, technology infused lessons, and hands-on activities. These documented visits revealed that teachers felt ill-equipped to access data from the district's data warehouse, inadequate when trying to analyze data, and overwhelmed by the increased workload. These experiences resulted in teachers' frustration with and resistance to using data (HVE, 2011).

Definitions

Adequate yearly progress: A yearly measurement by NCLB to determine how every school district and public school is academically performing on standardized test (Maryland State Department of Education [MSDE], 2012).

Annual measurable objectives: Yearly reading and mathematics targets for all students and each subgroup that school and district must meet as described by NCLB (MSDE, 2012).

Change agents: Teachers who lead or propel educational change in their setting (Braund & Campbell, 2009).

Common Core State Standards (CCSS): Curriculum standards for reading/English language arts and mathematic adopted by states (MSDE, 2012).

Data-based decision-making: The collection and analyzing of data to guide instruction to improve student outcome (Squires, Canney, & Trevisan 2009).

Data culture: A school or district's attitude and practice of using data (Archbald, 2011).

Data warehouse: A computer system where educational information is stored from *several* sources by integrating it into on single electronic source. Data warehouses allow data to be retrieved, manipulated, and updated from multiple data bases connected to each other using individual student identification data (Institute of Education Sciences, 2009).

Differentiated instruction: Meeting individual student needs by tailoring instruction (U.S. Department of Education Office of Planning, Evaluation and Policy Development).

Experiential learning: "The process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984, p. 41).

Maryland School Assessment: A state test to measure student achievement in Grades 3–8 in reading, mathematic, and science (MSDE, 2012).

Professional learning communities: An ongoing process to promote a school culture of collaboration, development of teacher leadership, enhancement of teacher practices focusing on improving student learning (Leclerc, Moreau, Dumouchel, & Sallafranque-St-Louis, 2012).

Self-efficacy: A person's beliefs about their own competence, motivation, and determination, as well as persistence to succeed in spite of repeated failure (Bandura, 2001).

Stakeholder: A person or group who has a vested interest in an organization (LaPointe, Brett, Kagle, Midouhas, & Sanchez, 2009).

Significance

For some elementary teachers, data are resources that help them connect and reflect on how their teaching practices influence their students' learning. However, for a majority of teachers, data are seen as a yardstick to measure and identify failures and not as a tool for improving instruction (Spillane, 2012). There is a need to empower teachers to be assessment literate and to become comfortable with data (Anfara, 2010). Ways to improve teacher development as data practitioner experts include providing PD focused on the use of data for decision-making that is connected to instructional change (Cavanagh & Garvey, 2012; Lange, Range, & Welsh, 2012); creating a culture for positive teacher interactions for discourse about data (Anderson, Leithwood, & Strauss, 2010; Lange et al., 2012; Spillane, 2012); instituting professional learning communities

(PLCs) to develop trust, structure, and collaboration among teachers for improving student learning (Cavanagh & Garvey; 2012; Lange et al., 2012); and providing data coaches to assist teachers in accessing, selecting, and collecting appropriate meaningful usable data (Goren, 2012) and helping teachers manage problems they encounter during planning (Superfine, 2008).

Guiding/Research Question

Research on the use of data by teachers has illuminated the need for teachers to be skilled data users. Teachers' attitude and perceptions about their teaching and data capabilities influence their behaviors, adoption of new practices, and ability to perform effectively in the classroom. To understand why teachers at HVE were reluctant to use data, I used a descriptive qualitative research design. I on one research question: What are teachers' perceptions about using data to inform their lesson design decisions as a means of improving instructional practices?

Through semistructured open-ended interviews, teachers had a forum to share their experiences and their perceptions about using data. For HVE teachers to achieve success in using data, they need to know how to access relevant data, disaggregate and analyze the data, and make instructional decisions based on the data. In the school year of 2013–2014, the HVE school district transitioned to the CCSS—a standards-based framework requiring all teachers to assess data, use data to monitor academic achievements, make instructional decisions to improve students' success, and enhance their own instructional practices and content knowledge (MSDE, 2013).

Review of the Literature

This literature review provides an overview of the conceptual-theoretical framework of my study and research studies of teachers' data-based decision-making to improve their instructional practices. There is limited research on elementary teachers' perceptions and teaching experience in using data to make instructional decisions. The focus of this literature review is on the perceptions, attitude, and feeling of teachers.

Literature on this topic was mostly qualitative because the qualitative approach is used to focus on exploring the participants' deeper perceptions and feelings (Lodico, Spaulding, & Voegtle, 2010). Although many of the studies were not focused primarily on elementary teachers' perspectives and were conducted in various school level settings, the participants and their experiences were similar.

Search Strategies

Search strategies for the literature review included keyword search of terms such as data-based decision-making, data-driven decision-making, data in practice, assessments and decision-making, data and decisions, and educational reform. I also used the Boolean search phases data and decision and instructional practice, data and teacher and perception, and data and attitude and decision. Additional search methods involved searching by titles and authors referenced in articles and books, by topic of the study, and journal title searches. I searched ERIC, SAGE, EBSCO and the Teacher Reference Center. I also searched for journal articles and books at my school and the county's professional libraries, via Google Scholar, and at my local libraries.

Theoretical-conceptual Framework

This study's three theoretical-conceptual frameworks are Bandura's self-efficacy, theoretical framework of data use at the building level, and organizational routines. The self-efficacy framework relates to this study because if elementary teachers become more comfortable in their relationship with data, they are more likely to take on challenges of learning to use data, commit themselves to meeting and overcoming these challenges, and become more willing to share their experiences with others so others may benefit from their experiences. The strategies recommended by Wayman, Cho, Jimerson, and Spikes (2012) in data use at the building level and organizational routines by Spillane (2012) provided a foundation for understanding elementary teachers' perception of using data in their practice.

B**andura's theory of self-efficacy.** According to Bandura (1979, 1997, 2001, 2006), the social cognitive theory model emerged from the work of social modeling. Although social modeling is pervasive and central in daily life, research on the social modeling process was nonexistent until Miller and Dollard's (1941) *Social Learning and Imitation*. The model focused on the phenomenon of modeling based on discrimination learning within a specific case but lacked information on the influence of learning by observing, determinants, and the mechanisms involved. Responding to this void, Bandura (2001) redirected his new social learning theory to address cognitive, social, emotional, and behavioral competences. The theory now addressed how people regulate and motivate their behavior to have control over what they can do by committing themselves to overcoming challenges to have success. Bandura's quest led him to further develop the

conceptual framework of self-efficacy. His self-efficacy theory is based on three human agency modes—personal, proxy, and collective.

These three modes can be linked directly to learning concepts in educational research used for development of learning tasks and activities through social interactions and learners' beliefs about their ability as they intentionally contribute to circumstance in their lives not just the outcomes (Bandura, 1989, 1997, 2006). In the personal agency mode, individuals control and self-regulate their actions in completing learning tasks. In the proxy mode, individuals influence others with the resources or knowledge to gain their desired outcomes. A person's self-efficacy is influenced by their experiences gained through social modeling. In collective agency, individuals are viewed as interdependent on each other for getting what they desire. People work collaboratively to achieve their goals as many of these goals are only achievable through collective efforts (Bandura, 2001).

Teachers' self-efficacy about their teaching skills and practice may have an impact on their effectiveness in the classroom. Teachers' perceptions about their ability to use data to support instruction and their lack of experience in collection of appropriate data influence their attitude to using data. Analyzing data also influences their motivation to act based on how competent they feel about themselves to perform these tasks, because "people influence their environment, which in turn influences the way they behave" (Merriam, Caffarella, & Baumgartner, 2007, p. 289). Teachers' daily practices involve a culture of problem solving that requires them to apply their knowledge and experience about teaching, pedagogy, learning, and best practices to plan and implement instruction.

With the current emphasis on schools using data to make decisions for instructional purposes, teachers' experience, knowledge, and self-efficacy about their competency and abilities to plan and teach based on data will be key elements for building their capacity as instructional leaders and decision-makers.

Holzberger, Philipp, and Kunter (2013) extended Bandura's (1997) framework to classroom teachers' experiences, noting that as students experience academic success, teachers' self-efficacy about their capabilities and abilities to teach tends to increase. With higher self-efficacy, elementary teachers may begin to accept responsibility for not using data as directed and renew their effort for mastering how to access, collect, analyze, and make instructional decisions based on data. When elementary teachers are knowledgeable about the content they teach, given the appropriate data support, and adequate opportunities for dialoguing with colleagues about data, elementary teachers may transform their lives in the classroom from despair to optimism.

Theoretical framework of data use at the building level. Wayman et al.'s (2012) framework expands on the principle that education can be improved if educators use the information gained from using data to change their practice. The use of data by educators is influenced by the progression from data to knowledge to classroom practice based on a three-element system: attitude toward data, leadership of the principal, and data they are able to access from the data warehouse system. Data and information are not the same, and it is important to distinguish between the two in order to change classroom practice. Data are anything that teachers use to help them know their students

such as quizzes and test scores; information is the outcome derived from the use of data. Educators use this information to modify classroom practice.

Organizational routines theoretical framework. Routines provide the mechanism for schools to study data in practice (Spillane, 2012). First, routines focus the attention at school toward the interactions of the school staff and away from specific individual behaviors or actions. During these interactions teachers and school leaders debate which data are necessary and the meaning of the data for instructional purposes. Second, organizational routines focus on the interaction patterns of the staff rather than on unique occurrences because patterns reflect the standard operational routines of the school. Personnel in schools can analyze changes in routines to evaluate if these changes are influenced by data use. Interaction patterns are critical to understanding how the current data are used in practice and to predict how the outcomes of the efforts to change practices lead to use of data. Finally, routines allow examination of the social structure and as the make-up of the social structure of the agency is what promotes the interactions.

Current Research Literature

This review literature is composed of two subsections: (a) PD for teachers and how it impacted teachers' instruction and attitude and (b) teachers' decision-making process, their experience in using data, and the impact it had on their students' achievement. School districts and school organizational infrastructure for using data were explored to help understand problems that teachers face in using data consistently and frequently in their practice. Additionally, teachers' perceptions about their abilities to use data and engage in dialogue with peers to promote a data rich culture where all school

staff are committed to student and teacher learning are also explored. The last review was used to examine the nature of data warehousing and the implications for teachers and school districts.

Table 1

Research Methodology Used in the Review

Qualitative	Quantitative	Mixed-Method
Bresciani, 2010	Haviland, Turley, & Shin, 2011	Anderson et al. 2010
Jukic & Jukic, 2010	Kaiser, Rosenfield, & Gravois, 2009	Collie, Shapka, & Perry, 2011
Lange et al., 2012	Kalita, 2010	Mertler, 2009
Schaffhauser, 2011	Aljawarneh, 2016	Shumack & Forde, 2011
Singh, Upadhyay, & Yadav, 2012	Nunn, Jantz, & Butikofer, 2009	Squires et al., 2009
Spillane, 2012	Penuel & Gallagher, 2009	U.S. Department of Education, 2011
Wholstetter, Datnow, & Park, 2008	Piro, Wiemers, & Shutt, 2011	Wayman et al., 2012
Yardley, Teunissen, & Dorman, 2012		

The participants in the studies were educational practitioners at all academic levels who use data to make decisions related to improving student performances. At the higher levels of education, data use is interwoven into the core of the decision-making related to promoting student learning and effective teaching through faculty development, identifying and providing resources, scholarships, technology consultation and training, and academic programs that support assessment of student learning in K–12 (Ball &

Christ, 2012; Bresciani, 2010; Collie et al., 2011; Hurst-Wajszezuk, 2010; Kaiser et al., 2009; Kalita, 2010; Piro et al., 2011; Singh et al., 2011).

Professional Development and Impact on Instruction

Teachers who are satisfied with teaching are more likely to use new strategies, be engaged in the decision-making process, and pursue learning new instructional practices that help students achieve (Kelly & Cherkowski, 2015). For teachers to change practices they have to be willing to take risks, to be reflective of their practice, and must feel that their input is valued and not mandated. Teachers also need ongoing instructional and data support to help them build confidence in their own practice (Kelly & Cherkowski, 2015).

Kaiser et al. (2009) analyzed data from 274 teachers in 27 schools from six school districts in the mid-Atlantic state that implemented the instructional consultation model during the 2002–2007 school years. This model allowed Kaiser et al. to investigate teachers' perceptions of satisfaction and skill development in meeting students' need. They found a significant, positive relationship existed between teacher's satisfaction with the instructional and behavioral strategies, data-based decision-making, and problem-solving skills they acquired from instructional consultation and their ability to apply these strategies in their practice. Highly satisfied teachers intended to use the newly acquired strategies in the future, became more reflective about their own practice and student learning, and were more committed to planning differentiated instructions because they better understood how to assess students. These are some critical elements for sustaining a long-term data culture in schools. Wohlstetter et al. (2008) stated that changing the behavior of teachers to use data cannot simply be mandated by school systems; teachers

must understand the value of data in conjunction with establishing a data culture and a common language in the setting.

In order for teachers to develop and to become change agents, teachers must be actively engaged in both professional training and curriculum design, both of which influence what they do (Penual & Gallagher, 2009; Zein, 2016). Additionally, understanding teachers' ability, the support they require, and teachers' assumptions about pedagogical design capacity are critical components in broadening the instructional impact teachers have on student outcome (Penual & Gallagher, 2009; Zein, 2016). Shumack and Forde (2011) had similar findings about business educators' perceptions regarding PD on classroom instruction. In their descriptive and correlational research study, they found a strong positive correlation between business educators' teaching practice and PD. Teachers were positively influenced by PD to change their practice, reflected more on their teaching and ways to improve instruction, were excited about the subject they taught, and were more willing to learn and implement new ideas, practices, and techniques. Another statistical correlation was that teachers' confidence in their ability to teach increased because student achievement improved due to the new knowledge and strategies gained by the teachers through PD. Shumack and Forde also recommended that administrators and teachers carefully select PD based on identified teachers' and students' needs.

Data in Practice and the Decision-making Process

Personnel in school systems are investing heavily in data warehousing to support schools with retrieving, collecting, organizing, and disaggregating data to make decisions

in real time. Data warehousing has been a common practice in the business world; however, in education there is very limited research on how data warehousing is used to support decision-making (Singh et al., 2011). In their multisite case study, Singh et al. (2011) noted that in planning student instruction, teachers lacked experience using data to address individual needs of students. However, when teachers were actively involved in using data and empowered and saw the impact it had on student achievement, they supported using data to improve instruction. Schaffhauser (2011) described how some school districts are contracting with organizations with data expertise to collect and analyze their district data to assist schools and teachers in data-based decision-making. Analyzed data allows users to see the data as indicators and to create reports linked indicators to interventions and bridge the data with the interventions to create an implementation plan. District leaders have evaluated the efficacy of schools to determine the appropriate training and support needed and to involve all stakeholders in the process of enhancing students' performances through teacher practice (Schaffhauser, 2011).

Daily and across all subject areas, classroom teachers assess students' performance and make decisions about student learning in a variety of ways (Mertler, 2009). However, the assessment and decision-making are often connected to informal types of data such as teacher observations, student–teacher conferences, and checklists rather than empirical tests. With the emphasis on data-driven decision-making, many teachers expressed feelings of inadequacy at assessing students using data and felt uncomfortable in making decisions about assessments. After receiving training in assessment, teachers reported their confidence and skill levels improved and that they

were more prepared to apply and share the newly learned skill with others at their individual school setting. Teachers who were highly satisfied with instructional consultation training on problem solving, collaboration, assessment and intervention strategies, and monitoring student progress were more likely to perceive the expectations for student outcome were met or were exceeded (Mertler, 2009).

Elementary teachers became frustrated when asked to make sense of the data they were analyzing and to make instructional decisions based on the data (U.S. Department of Education, 2011). This frustration stemmed from their limited skill in locating appropriate data, performing calculations, making comparison with the data using district- and school-based assessments, and understanding the meaning behind the data. Teachers who had positive experiences using data were more likely to be engaged in using student data to question their assumptions about students and their learning, keep an ongoing collection of data in a data notebook or file to help keep them informed of instructional and intervention practice as well as student growth, and to have dialogue with other colleagues**.** Today school reform leads to demands for teacher and administrator accountability and transparency in meeting the NCLB reform mandates for student achievement by collecting, analyzing, and interpreting data and using data to drive instructions. Nationwide school district personnel are investigating strategies to raise student performance and build teachers' competencies as effective instructional leaders (Park & Datnow, 2009).

Using a nine-step system, Bresciani (2010) explained how schools could establish an effective data-division decisions strategic planning process. The first step is to create a

strategic plan; Step 2, gather forecast and trend data; Step 3, carry out a capacity review to determine resources; Step 4, clearly articulate goals and indicators of success; Step 5, meet the strategic goals by prioritizing action plans; Step 6, alignment of institutional priorities with division resources; Step 7, begin to review the outcomes of the assessment program; Step 8, distribute and redistribute resources to meet goals; and Step 9, make decision-making process systematic.

Decision-making based on student data have forced states to revamp their assessment accountability process in measuring students' and teachers' performances (Dunn, Airola, Lo, & Garrison, 2013). The state of Idaho developed the Idaho Comprehensive Literacy Assessment in 1997 to measure students' reading ability and the relationship between teachers' literacy knowledge and effectiveness in teaching literacy. Educators' gained confidence and trust in their ability to use data, as they worked in groups and shared knowledge about data. Squires et al. (2009) revealed Idaho educators experienced difficulties and frustration using data for assessment and decision-making. Understanding the problem-solving component within the decision-making process, Ball and Christ (2012) developed what they termed a framework for practitioners to understand the curriculum-base measurement assessment and the response to intervention model with the emphasis placed on reading at the primary grade level. They provided recommendations for school psychologists to incorporate when analyzing identified problems regarding students' performance and the intervention strategies proposed for individual students.

The recommendations by Ball and Christ (2012) emphasized the need for developing assessments of high quality, making responsible decisions, and bridging the gap between research and practice. The researchers Ball and Christ (2012) identified challenges that influence problem solving and response to intervention effectiveness. Analysis of the challenges revealed in most cases that assessments and decisions were poorly aligned. The data collected did not provide information related to the specific area of inquiry to the problem in order to make responsible decisions about remediation, resources, or intervention. Another problem was that school psychologists did not stay informed and connected to current research best practices on decision-making based on data, meaning remedial or intervention strategies were not in line with current research on curriculum-base measurement. Also, the decisions made regarding students were mostly attributed to one single source of data rather than from multiple sources that would have yielded a more comprehensive and complete database to make high quality decisions to eliminate redundancies of ineffective interventions.

District and School Organizational Structures for Data Practice

For data to transform schools, policymakers must clarify how data should be used and not just what data should be researched and collected (Spillane, 2012). Spillane (2012) argued further that policymakers work on the assumption that using data is relatively simple and that practitioners can simply follow guidelines to make decision about the data while excluding potential problematic factors. Problematic factors such as practitioners' experiences with data, the situation for which data are collected and used, the everyday use of data in school, and how the new information is interpreted and

observed by the practitioners in their daily practice influence practitioners' attitudes to data. Research on the use of data and decision-making based on data should evolve around the study of practice or the everyday use of data by schools. Anderson et al. (2010) put forward similar views about district policymakers. They also noted that district policymakers dictate the data collection process and decision-making guidelines to school as shaped by state accountability system with limited insights regarding the daily operation of schools. Principals' leadership and the organizational structure that they establish within their school were the most productive and intensive patterns for data use in the improvement of student learning.

Wayman et al. (2012) found that most educators wanted to use data to support classroom practice but faced barriers and problems stemming from district-wide policies that made it problematic to implement data-driven decisions in the classroom by teachers. Findings from this three-school district study were that current district policies, principal leadership, and computer data system inhibited effective data use by teachers. By writing policies that focus on how data fit or do not fit into the everyday practice of school, the daily use of data in the classroom, and providing the appropriate support to educators for working with data can influence positive effective change to improve instruction. In their mixed-method 5-year study of 180 schools across 43 districts in nine states Anderson et al. (2010) produced similar findings that district leaders and principal leadership influenced data use and expectations. Productive use of data in schools was reported at the district level where district leaders established expectations and monitored data activities for use in school improvement, modeled district decision-making process,

provided tools and resources, and developed data experts to assist schools. At the school level, principal leadership was the key factor. Principals who worked collaboratively with teachers, were data savvy, and refrained from always presenting themselves as data experts were more successful. These practices served several purposes: they allowed other teachers to take the lead, helped to build teacher capacity as data leaders, and created a school climate of trust and confidence among staff. Successful principals also developed a network for data experts to provide training and support to the staff.

Educators' Perceptions About Data and Social Interactions

Teachers' self-efficacy increased with their perceptions of improved intervention outcomes, how satisfied they felt about results, making decision based on data, and collaboration. From effective interventions emerge effective teachers who have the skills and capabilities of handling challenging academic and behavioral issues that arise in the classroom (Nunn et al., 2009). At the College of Education at California State University, the faculty's understanding, confidence, and attitude in program assessment increased and improved with ongoing, focused PD. PD workshops provided opportunities for participants to work in collaborative activities and practices. Faculty attitudes and confidence improved as their understanding of their roles and expectation grew about assessments (Haviland et al., 2011). A quantitative study by Collie et al., (2011) showed that teacher commitment is a critical issue for schools, teachers, and students as it is directly related to school success, learning and teaching, and well-being. The social environment is central to changing practices and for changes and innovation to be adopted (Collie et al., 2011). Two-school based factors, school climate and social-

emotional learning influence teacher commitment to schools. A positive school climate had significant influence on teacher commitment and predicted three types of teacher commitments: greater general professional, future professional, and organizational commitments to the teaching profession. The school climate influences the decisions teachers make about student learning and the resources they use to both assess and improve learning. The variables that predicted teachers' commitment and stood out in school climate were collaboration with peers and student–teacher relations. The social environment impacted teachers' levels of decision-making input related to students' learning and performances. Greater commitments by teachers were predictors of improved teaching performance, and lower attrition, burnout, and turnover rates. The consequences of low commitments by teachers are financially and academically costly to schools and school districts. The financial costs come from replacement and training of new teachers and the academic cost are students and their learning as their learning is interrupted by the loss of teachers who are experienced and qualified. To promote higher levels of commitment by teachers schools need to foster a positive school climate and nurture teachers and students relations.

Yardley et al. (2012) found that experimental learning is related to social learning theory because the learning environment influences learners and vice versa in a qualitative study of medical students in medical education through residency, clerkships, and early stages of workplace experience. Experimental learning occurs through the interactions of collaborative engagement among people in the workplace as they learn from experiences in the context of their authentic setting. Social learning and

experimental learning approaches are relevant to educators and their practice because when learners actively engaged in their surrounding they gain knowledge as new experiences are linked to previous ones. Assessments of authentic base practices of medical students were used in the design of curriculum in medical education because real-life services are the primary medium through which healthcare practitioners learn to practice as professionals. Educators can use this information to help learners gain knowledge by guiding students to understanding how their present and future activities are connected and by making the activities they engage in personal and meaningful to each of them. Yardley et al. also emphasized that learners' experiences might influence their perceptions and perspectives on an event and thus, the meaning and knowledge they construct from this event in their work setting.

Similarly Hurst-Wajszczuk (2010) applied Kolb's learning styles inventory approach to the development of a video consultation program in the University of Colorado at Boulder's Graduate Teacher Program to help graduate lecturers, many of them first time lecturers, by offering a tool to improve their teaching. Assessing students' learning styles and preferences, skill levels, and remediation resources, the college could then design courses to keep students engaged and possibly reduce the drop-out rate of college students. In renaming Kolb's four-quadrant cycle concept model as the graduate teacher program model of the processes for learners to learn, and to improve learning the college personalized and adapted the model to their specific needs. The concrete experience stage was renamed feeling; the reflective observation quadrant was renamed watching; the abstract conceptualization stage was renamed thinking; and active

experimentation was renamed the doing stage. Implications of this study to the classroom setting is for practitioners to design lessons that interest (concrete experience/ feeling) students by using real world examples, explaining to students exactly what will be covered and using a timeline to represent this information (reflective observation/watching), asking questions to get all students engaged (abstract conceptualization /thinking), and having students apply this knowledge to new situations (active experimentation/doing). Understanding how people perceive information and process this information could improve the academic culture for both students and teachers.

The research indicated that 21st century educators at all levels are tasked with getting all students ready for college and career by raising the standard for every student and having better assessment practices. To meet the current reform mandate of the U.S. Department's A Blueprint Reform: The Reauthorization of the Elementary and Secondary Education Act, 2010 many states are holding educators and school leaders accountable for student success. Additionally, states are measuring their effectiveness by including student achievement data in the teacher and principal the evaluating process (Piro et al., 2011). Because of this federal mandate, teachers are faced with the challenge of using data to assess students, make instructional decisions, developing meaningful rigorous tasks, and identifying learning outcomes to meet the instructional needs of all students (U.S. Department of Education, 2010).

Data Warehousing

Although the business world and most organizations already make decisions with quantitative data by capturing data relative to different areas of their operations, the majority of academic institutions are now focusing efforts on making decisions based on data and in the development of establishing data warehouse systems for storing and retrieving data (Aljawarneh, 2016; Lai & Hsiao, 2014). Data warehouses allow organizations to store archival data from a variety of sources and then used the data to understand trends in the organization that occur over time. Knowing these trends is valuable to decision-makers of organizations in planning future goals, setting financial obligations, and allocating resources. Likewise, the data stored and analyzed in the online analytical processing multidimensional data cube model discussed by Kalita (2010) is useful for understanding trends and patterns of student drop-out at educational institutions. This model allows decision-makers at educational organizations to look at students' dropout patterns and the causes behind dropping out. The institutions, in turn, use the information obtained from the cube to make decisions on the support required for student retention. Jukic and Jukic (2010) identified the data warehouse challenges and issues academic institutions encounter in the management of information databases and systems.

Implications

In the field of higher education my study will contribute to the body of knowledge of teacher data practicum. The findings from my study could help stakeholders and school leaders understand elementary teachers' perceptions about how prepared and

confident they felt in using data for instructional decision-making. When elementary teachers' instructional decisions have positive student outcomes, teachers adopt a more confident outlook about their abilities and are likely to share these experiences with other teachers as well as school and district leaders. The information gained from elementary teachers' exchanges could be used by school and district leaders in the development of district-wide PD and on-going in-house follow-up training targeted at improving elementary teachers' ability to use data to improve student achievement.

Social change could involve development of a data support network for teachers and principals as well as redesigning current district curriculum guides and assessments. The revamped resources would be designed as teacher friendly, which would include specificity regarding what data to collect, protocol for data meetings, and data-based decision practical training guides that promote interactions and collaboration among school staff.

Data-driven decision-making is relatively new to school communities, and research is very limited on how teachers perceive and use data in their daily practice. Further research is needed to determine the factors that hinder teachers' efforts to use data and make decisions effectively in their practice. The findings from this study may reveal teachers' attitudes about the use of data to drive instruction, which in turn would convey teachers' underlying concerns, feelings, and challenges as data users and instructional leaders. Studies like this may help provide teachers with the instructional tools needed for using data, making decisions, planning, and implementing effective instructions for all learners. If quality teaching is the cornerstone of student success and

high quality schools, then teachers must be given the appropriate support and necessary tools to meet the demand of an era of high-stake testing and data accountability.

My study could also promote student accountability and differentiated instruction through data analysis and structured interventions. When relevant data is analyzed, teachers can look for students' patterns of strengths and needs and what instructional factors might contribute to patterns of weaknesses. With this information, they can also foster student accountability as they design steps to address students who excel and students with needs through differentiated instruction. Students who excel might receive in-class enrichment activities and interventions might be instituted for students who still need help.

Finally, administrators of elementary schools might have an interest in my study to understand the best approaches for building professional discourse among school staff, empowering teachers to be data experts, and the best practices to enhance teachers' decision-making skills. Principals could play a critical role in building a cohesive and collaborative climate in their building. By structuring time, setting expectations, and providing support for ongoing collaborative grade-level or vertical team planning, principals may help to create a forum for teachers and staff to share and work in teams. Principals could use these meetings to help build teachers' confidence and abilities in by establishing a process from one of teaching to a culture of learning. Collaborative and grade-level meetings could be the support and resource to help teachers overcome difficulties they may face as they collect and analyze data, identify instructional implications, and develop strategies and learning outcomes.

Summary

The research indicated that school districts across the nation are tasked with increasing accountability and transparency for student performance by establishing monitoring and data systems, which means that recruiting and retaining a highly qualified effective instructional workforce is paramount. One major shift in public education is the use of data by schools for assessment and instructional decision-making and away from decision-making based on tradition, assumptions about students, and intuition about which programs may or may not support teacher instructional practices and student achievement. Social cognitive theory and experimental learning theory underscore learners' experiences and how learners acquire knowledge from social interactions and the environment through observation, modeling, reflective practices, and replicating the learned behavior to new situations (Collie et al., 2011; Kolb, 1984; Merriam et al., 2007; Yardley et al., 2012). As elementary teachers operate in a data-driven environment embedded with routines to support collaboration, data discourse, and data training, they begin to integrate the newly acquired strategies and skills into their practice believing they can influence student learning (Bandura, 2006; Dunn et al., 2013; Nunn et al., 2009; Spillane, 2012; Wayman et al., 2012).

For elementary teachers' capacity as instructional and data leaders to increase, teachers need the support of district leaders and principal leadership. When teachers' instructional decisions result in improved student performances, teachers' self-efficacy about their own abilities also increases. Elementary teachers were then more willing to accept responsibility for their actions and student learning and to take on the challenges

of learning to use data to make decision about instructional practices (Anderson et al., 2010; Singh et al., 2011; Spillane, 2012).

Some major contributors to elementary teachers' decision-making processes seem to come from targeted PD that is meaningful and meets teacher's specific needs, development of a district data warehouse system for storing archival data making it a "one-stop shop" for elementary staff to access, retrieve, and disaggregate data for decision-making, and a strong viable support network of data experts for improvement of student academic success (Aljawarneh, 2016; Jukic & Jukic, 2010; Kalita, 2010). Using data to plan instructional practices, set learning goals, and evaluate teachers is no longer a choice for school but a necessity that they can no longer afford to ignore. With the focus in education today on teachers using data to guide their teaching practice, understanding teachers' perceptions and self-efficacy about using data may be critical in raising the educational standards for all school in the United States.

Teachers will need to reassess and reevaluate their practice to address the demands of designing and implementing standards based lessons with differentiated activities. They will require PD, data support at the district and school levels, and an organizational structure that supports data decision-making. The next section of this study describes the qualitative methodology and analysis of elementary teachers' perceptions about data and the targeted PD designed to provide teachers with the tools for data use. A qualitative analysis of the perceptions of elementary teachers concerning their ability to use data for decision-making and instructional planning and data-focused PD to support teachers in using data is described in the final section.

Section 2: The Methodology

Research Design and Approach

A need exists for an instructional model that supports elementary teachers in the use of data for instructional decision-making. Over the last 5 years, teachers at HVE have had limited success improving student academic performance and using data to make instructional decisions. Data use has been sporadic among grade levels and teachers, with teachers relying on their individual observations, experiences, and assessment knowledge to make instructional decisions that sometimes leads to misdiagnosed assessments, ineffective interventions, and apathy toward lesson designs. Although these practices were common in the past, today's educational setting requires data knowledge, analysis, and application. Understanding the factors contributing to lack of data use by teachers in may help HVE teachers get the support and resources they need from their school and district.

To protect their confidentiality and be informed of their rights, participants completed informed consent forms before the study was conducted. Eight participants were selected from 42 potential participants. E-mail addresses of elementary education teachers from HVE and a teacher liaison guide were provided to me by the HVE principal. Eight elementary teachers from HVE were interviewed using open-ended, semistructured questions. Interviews were approximately 60 minutes long and included probing and follow-up questions to clarify information and gather additional data. I used an audio recorder to record the interviews and then transcribed the notes. Peer reviews and member checking were used to affirm the accuracy and completeness of the

transcribed notes. The data of this study are expressed narratively with visual aids as tables and graphs.

Research Design

I conducted a descriptive qualitative research study to understand elementary teachers' perceptions, feelings, and biases about using data and making decisions in the context of their work settings. For this topic, a qualitative study was appropriate, as it allowed for the study to be conducted in participants' natural setting and in the social context in which they operate. The inductive approach of the qualitative design supported deeper exploration into the nuances related to the problem at HVE. A qualitative study can be used to capture the full complexity of participants' perceptions and how their behavior is influenced by their understanding of these perceptions (Creswell, 2012; Lodico et al., 2010). Additionally, the flexibility of a qualitative design allowed me to make modification during the study as new discoveries emerged and to study a small sample of participants to understand how their unique situations affected them (Maxwell, 2005). Qualitative research in the field of education is a form of inquiry often used to gather the opinions and attitudes of teachers to learn directly from them what is important to them, to provide the contextual framework for understanding the quantitative findings, and to identify variables for future educational studies (Lodico et al., 2010).

Criteria for Selecting Participants

The participants were current full-time HVE teachers who volunteered to participate in the study. Sample size in qualitative studies can vary, and for deep insights and saturation of a phenomenon the researcher should keep the sample size smaller

(Creswell, 2012). In this study, as the sample size was relatively small, purposeful sampling was appropriate to select the participants. HVE has 76 staff members, including 21 regular classroom-based teachers, six special education teachers, and four resource specialists. Of the 21 regular classroom teachers, 12 have intermediate (Grades 3–6) teaching experience, and 10 have 2 or more years of experience in using Maryland School Assessment data for instructional purposes.

Approximately eight teachers who currently or have previously taught in Grades 3–6, referred to as "the testing grades," were selected from the larger population. The sample size of eight was proposed because it represents 80% percent of the targeted population, allowing saturation and redundancy to emerge. I selected participants who have been required to use student data to make instructional decisions and plan outcomes for each of the students they teach. The participants also attended PD on using data at the district and school levels and varied by the following factors: (a) age, (b) years of teaching experience, and (c) grade/subject levels. These criteria were important to participant selection because students' standardized state assessments in Grades 3–6 determine the school's academic performance. Academic performance demonstrates Annual Yearly Progress by meeting Annual Measurable Objectives (MSDE, 2012). If the school does not meet the mandates, it will be declared to be a "school in need" and will be designated for school improvement.

Additionally, the small size sample helped me to establish a fruitful relationship with the participants in their natural setting by building trust and openness. The size also facilitated capturing the complexity of the phenomenon in detail until no new ideas

emerged or information became redundant (see Creswell, 2012). The sample size was practical and manageable, and it helped to create closer relationships with the participants and enhanced the validity of in-depth and rich data collection.

Assumptions

I assumed the interview responses would be truthful and reflective of the participants' own teaching practices and their experiences in using data to make lesson decisions.

Limitations

The validity and reliability of the study findings are limited by my interpretation of the data. It is possible that my biases, personal theories, and beliefs toward data may have been influenced by my experience in having to use data in my school setting. To minimize this possibility and increase validity and reliability, member checks were used. I asked the participants to check and provide feedback on the accuracy of the themes, the clarity and realism of the description, the fairness of my interpretation, and whether my interpretation is reflective of their experiences. Another limitation was the small size of the sample population, which limits the generalizability of the findings. Data were limited to interview responses.

One major limitation is the relationship that I have with the school. I was assigned as an instructional mathematic coach by HVE school district to the school for 2 years and in the last 3 years as a classroom teacher. As a coach, I worked collaboratively with the teachers but had no authority to supervise or evaluate them. This connection with the teachers may have led me to interpret participants' responses as lending support for

teachers' perceptions as factors for not using data with fidelity. I may have unconsciously communicated to participants through my actions my own discomfort and expectations about using data, and they may have interpreted this communication to mean I supported or challenged their views, which may also have led them to alter their response or behavior to meet my expectations or to ease my discomfort. To help me reduce and acknowledge my bias about my study, I kept a reflective journal to document my thoughts and opinions.

I am currently a classroom teacher at HVE and work collaboratively with teachers as their peer. In the past, I worked directly with only two of the current teachers in Grades 3–6 when we were assigned to the same grade level. The other Grades 3–6 teachers were either new to the school or this was our first time directly working together. I do not have authority to evaluate teachers, act as a direct supervisor, hire or fire teachers, or assign additional duties to them. My role in this research was as a researcher, not an authority or expert. My goal was to learn with and from the participants by listening to and analyzing their stories.

As the researcher, it was incumbent on me to be conscious of my verbal and nonverbal behavior and to be attuned to my surrounding so that my actions and behavior reflected my role as a researcher. I had to be cognizant of the relationships I have with the participants. I clarified my relationship with the study and participants and was open about my biases and preconceptions. I established and adhered to a set of guidelines to standardize the interactions I had with participants to further protect the integrity of the data. I reassured the participants that their comments and responses were valued and

would not be judged to create trust and freedom of expression. I maintained self-reflective notes and arranged for member checking to further serve to reduce researcher bias and promote validity of participants' information.

Procedures for Gaining Access to Participants

Gatekeepers help researchers gain access to research sites, recommend prospective participants, help with acquisition of required consent, and understand the organizational network structure (Glesne, 2011). My gatekeepers during this study were the administrators and staff who helped me gain access to participants and to select a location within HVE to conduct my study. Letters of consent were provided to each gatekeeper. My human research-training certificate was submitted to the Walden Institution Research Board (IRB). After my study was approved by Walden's IRB (approval 12-16-14-0193888), I discussed with my gatekeepers a list of potential participants (elementary teacher with experience using data) for approximately 3 weeks.

When my study was approved, I spent approximately 3 hours labeling and mailing invitation letters and consent form to each of the potential candidates. The letter includes the goals of my study and a request for participants' consent. Individuals interested in participating in the study were asked to complete an informed consent form and to return the completed form to me using the interschool Pony Mail courier with my name and school on the envelope. Upon receiving the completed consent forms, I wrote a thank-you note to prospective participants who volunteered within 48 hours. If fewer than eight of the participants had not volunteered to participate, I would have contacted nonrespondents by phone to explain the purpose of the study and answer any of their

questions or concerns related to the study. The demographic information of the eight participants is presented in Table 2.

Table 2

Demographics of Participants

Pseudonym	Subject/Grade	Age	Years teaching
Brenda	ESOL, K, 4th, 6th	46	11
Carol	Math, 4th	53	20
Chastity	Reading, 4th	41	19
David	All subjects, all grades	39	13
Glenda	Math, 4th	62	41
Jacqui	Reading, 5th	58	15
Jennifer	Math/science, 5th	59	14
Keira	All subject, all grades	33	12

Methods of Establishing a Working Relationship

In the invitation letter, I shared my experiences in teaching and my interest in conducting the study. I explained the benefits of the study, how the findings may add to the field of education, and how it may help elementary teachers gain the appropriate support for using data in their daily practice to make instructional decisions to improve student performance. As I interviewed participants I focused on showing respect, being nonjudgmental, showing interest, being a sympathetic listener, and appearing nonthreatening (see Merriam, 2009). I wanted the participants to feel secure and comfortable during the interviews in sharing their experiences and views.

Measures for Ethical Protection of Participants

I obtained permission to perform my research from my school district, the study site, and Walden University's IRB before conducting my study. I provided a letter detailing my research study and the potential risks to participants to the IRB, my committee chairs, my school district, and the study site. To show my respect and demonstrate transparency, I fully disclosed to the staff the purpose of the study, benefits and limitations, how the findings will be presented and used, the risks to participants, their rights to participate, and how their information and privacy will be protected and held confidential (see Creswell, 2012). Additional protections were enforced by ensuring participants volunteered for the study and informed consent was obtained, by deidentifying the data, limiting disruptions and interruptions, and involving stakeholders to assess their risks and rights. I also explained to participants that they would be asked to participate in a 60-minute audiotaped personal interview. The audiotapes and transcripts were secured in a combination locked safe (see Creswell, 2012). Participants were reminded that any time throughout the study process they had the right to stop participating or to withdraw from the study without penalty.

Data Collection Methods

I conducted interviews to collect data from the eight participants using semistructured, open-ended questions. Interviews are used in most qualitative studies as the primary collection tool, to verify or collaborate observations, and to capture the opinions, perceptions, and attitudes on a topic (Glesne, 2011; Lodico et al., 2010). To fully understand teachers' perceptions and opinions about using data, interviews with

open-ended questions were appropriate for this study and are an unmatched collection tool for exploring participants' attitudes and perceptions to make meaning of their thoughts. Interviews with open-ended questions allow participants to express their experiences on any perspective, unconstrained by the researcher or research findings from the past (Creswell, 2012).

Another strength of a descriptive qualitative study is that it helps researchers to capture what they do not see and to look for alternative explanations of what they do see. Observations are time consuming and are often a description of an event and not an explanation, thus they are not ideal for capturing the perceptions, views, and attitudes of individuals (Glesne, 2011).

One-on-one interviews were easier for me to control and conduct as opposed to focus group interviews of four to six individuals. Taking notes in focus groups interviews would have been challenging because of the interactions occurring among group members, distractions of side conversations common in group setting, and difficulty in discriminating the recorded voices of individuals (Creswell, 2012).

I scheduled and conducted individual interviews of elementary teachers at HVE School using semistructured open-ended questions, allowing individuals to articulate and share their experiences comfortably. Each interview lasted approximately 60 minutes. I used interview protocols to provide structure and direction (see Maxwell, 2005) to the collection and interview processes. The interview protocols standardized the format for questions, allowed communication to flow in a clear and conversational manner to generate quantifiable data, and supported opportunities for participants to share

contextual details (Creswell, 2012), present their knowledge in potentially unanticipated ways (Maxwell, 2005, p. 92), and expound on the reasons behind their responses. Semistructured interviews required interview guidelines and also allowed for probing or follow-up questions to clarify responses and to gain additional data for deeper understanding of teacher's perceptions, attitude, and opinions of using data in their teaching practice (Glesne, 2011).

Process for Collecting Data

I used a combination of digital audio recordings and notes to record participants' comments during the interviews to ensure that I accurately documented all details of their responses (see Lodico et al., 2010). To ensure privacy and interruption-free interviews for participants, I requested to meet participants in a meeting room at a mutually agreed location at the research site or another meeting place that was free of distractions (see Glesne, 2011). A professional review was conducted to enhance the interview process by recruiting two participants from the targeted population. I scheduled a time to meet with them and asked that they sign a confidentially letter (see Maxwell, 2005). The professional review was conducted at the school site, per participants' request, in their classrooms after school hours, for approximately 60 minutes. Feedback from the professional review indicated that no changes in the interview protocol were needed. The proposed interview questions were appropriate, relative, and reflective of teaching practices (Appendix B).

Prior to beginning my study, I informed the participants that their identities would be kept confidential and their information and privacy would be protected by assigning

them pseudonyms, using a pseudonym for the school, and not providing descriptors that might reveal their true identity (Glesne, 2011). Throughout the interviews, I maintained active listening behavior. I followed-up the interviews with phone calls or visits to the site to sustain and maintain trust and a strong viable relationship with participants.

Following each interview, I wrote reflective notes from the interview onto my computer as well as the digital audio recorded transcribed notes. The reflective notes helped me to organize my ideas and served as the lead-in for analyzing the data (Merriam, 2009). The reflective notes helped to reduce my bias as my own experience and perceptions in having to use data in my teaching practice at the elementary school level may have influenced the study. A peer debriefer challenged me to look at the data from alternative viewpoints and reviewed my interview audio recordings, transcriptions, and notes for areas that reflected bias.

Data Analysis

Glesne (2011) suggested that thematic analysis is appropriate for themes and patterns that usually emerge from interview findings. ATLAS.ti software (2013) was used to organize the data into categories and abbreviated codes or symbols were assigned to themes or ideas in the text followed by a thick descriptive narrative. Coding of the transcribed data created "a framework of relational categories" of the data (Glesne, 2011, p. 195). Themes and subthemes emerged from the data analysis, and I reexamined the emerging categories and subcategories from the coded patterns then aggregated similar codes to arrive at few themes because it is better to write a detailed qualitative report about a few themes than about many themes with general information (Creswell, 2012).

Next, I looked for patterns and relationships within and between the categories and for examples both to support the themes and contrary evidence not supporting or confirming the themes (Merriam, 2009). The data were organized into organizational, substantive, and theoretical categories. Although substantive coding provided in-depth insight derived from participants' interview responses, theoretical coding provided the broader categories of the data. To ensure the accuracy of the collected data, I listened several times to the tape recordings and read and reread the interview transcripts for approximately one month. To add to the credibility of the study, I scheduled member checking of the findings, meeting with participants at a mutually agreed meeting room within the study site. The member checks occurred over the period of a month. Member checking of the findings and my reflection of my personal views and feelings were acknowledged as part of the research design (Creswell, 2012; Ortlipp, 2008). Further validation measures were identification, analysis of discrepant and negative data, and analysis of the feedback from individual members of the Walden committee about the discrepant data and discussed in the study's finding section promoting transparency and validity (Maxwell, 2005).

To share the findings with participants and stakeholders I emailed each to request a 60-minute meeting to present a summary of the findings to the participants and stakeholders to be conducted in the media center at HVE. Stakeholders included the participants, HVE staff, district support staff assigned to HVE, and staff members from other schools in the district.

Data Results

Findings and Themes

The purpose of this qualitative study was to explore elementary teachers' perceptions about using data and their ability to use data for decision-making and instructional planning. To determine elementary teachers' perceptions regarding how their teaching experiences prepared them for using for data for decision-making, I conducted interviews using semi structured open-ended questions. The interview data from this study were used to answer the following guiding research question: What are teachers' perceptions about using data to inform their lesson design decisions as a means of improving instructional practices? In the next section, I discuss how the findings from the study related to the research question. From the findings, four major themes emerged and are discussed in the data analysis section.

Findings Related to the Research Question

Four themes emerged from the data related to the research question: What are teachers' perceptions about using data to inform their lesson design decisions as a means of improving instructional practices emerged from the data analysis. The themes were that these teachers considered there to be

- Too much assessment data: Teachers' perceptions about the amount of and the multitude of strands of data.
- A need for additional building of teacher data knowledge capacity: Teachers' perceptions about analyzing and interpreting data for decision-making and instructional planning.

- Barriers to data fidelity in classroom: Teachers' perceptions related to deficits about data utilization in the classroom.
- A supportive infrastructure: Teachers noted that administrative support is an essential component for building teacher capacity as data experts.

These themes indicate that the elementary teachers participating in this study recognized their instructional practice, knowledge of using data, and pedagogical strategies were essential skills necessary to be effective data-driven practitioners. All participants had high expectations for their students and stressed that data were important to students' academic growth and building their own capacity as data experts, confirming the work of Farley-Ripple and Buttran, (2015) of teachers' belief that ongoing data learning is important to improving their practice,

Participants' Responses

Many participants described data as central to teaching and instructional decision-making. However, the elementary teachers unanimously expressed being overwhelmed and frustrated with the numerous strands of data and having to use data for instructional decision-making and monitoring students' performance. Several underlying themes and subthemes emerged from the data analysis. The four emerging themes discussed in this chapter in order are (a) too much data, (b) building teachers' data knowledge capacity, (c) data fidelity barriers, and (d) supportive infrastructure. Subthemes that were consistent and illustrated teachers' perception of using data are that they felt overwhelmed, found using data to be time consuming, and needed more small group support.

Theme 1: Too much data

Every teacher discussed their experience with too many stands of data. All eight teachers stated data were important to their teaching and that the copious strands of data were overwhelming them and were too much to sort through. According to Brenda, a fourth-grade teacher, there was "too much data and "so much" to sort through that determining the appropriate data was a concern. Carol, a fourth-grade math teacher, stated that the school has "too many data tools for assessing," which resulted in having "too much data" to sort through so that the importance of the data was lost in having to spend so much time sorting through the assortment of data. Two other participants, Chastity, a fourth grade-reading teacher, and David, a sixth-grade reading teacher, shared similar views. Charity felt that the school had "just too many assessments" and for David it was "data for everything and for anything" that overburdened the teaching and instructional practices. They also expressed exasperation with having to maneuver through "so many assessments."

Similarly, Glenda, a fourth-grade math teacher, remarked that there were so "many different measuring sticks" that it did not allow for a comprehensive evaluation of students. She further emphasized her point by saying, "We are losing the whole month of March for testing and not for teaching" resulting in "too much data collection." To further emphasize this point, Brenda spoke of her recent meeting where she was informed that "there are 17 mandated federal tests for children to take" during the 2014–2015 school year. This sentiment, was also a concern of Jacqui's, a fifth-grade reading teacher, who remarked that at the very beginning of the school year she starts assessments of her

students and that the school collects "a lot of assessments" that teachers are expected to mull through and use for instruction. This level of collection, she asserted, has hampered her effectiveness at a teacher.

As a math and science teacher, Jennifer expressed her concern about the "overcollection of data" for just the sake of collecting data. She added that there needed to be a "purpose or justifiable reason" to collect data. Likewise, Keira, a first-grade teacher, said the county is asking for "more and more" assessments to be done with less and less time to do it all. Other teachers were very vocal, making similar claims during the interviews. One teacher dubbed the procedures as the "data monster…it takes more than it gives." Another stated, "Every month, every week, every year it's popping up with a new test. Test, data, and assessments overlapping each other."

Theme 2: Building Teachers' Data Knowledge Capacity

The next theme that emerged from the teachers' transcripts was for additional data support to augment their current data knowledge and data skills. Although each teacher was interviewed individually, they all showed similar enthusiasm and passion about teaching and improving their instructional skills. When asked to describe the data support needed, most were unsure. Exasperated, Charity said, "Help me analyze what needs to be analyzed," and others conveyed that same sentiment. Jacqui had a similar response, stating that there was a need for "more instruction on how to really analyze it and not take it for face value." Glenda, introspectively professed the need for help in triangulating all the pre- and postassessment data because "to flip back and forth" among the data is like searching blindfolded through a mixed bag of "apples and oranges" trying to find a

matching pair of fruit. She continued, “It’s very difficult to get the curriculum out” to plan instruction.

Seventy-five percent of the teachers repeatedly asked for support with the analyzed data. Brenda wanted to know how to use the analyzed data to improve instruction and student learning “to craft more lesson plans, more sample lessons, and model lessons” based on the data. Likewise, Jacqui shared a need for help with “using [data] to our advantage, taking the data and really using it to strengthen student learning.” Most of the teachers suggested that additional data support should be for “small group strategies” to meet the needs of all their students. In Charity’s words, “More support to what I can do to help them, to help me improve my data understanding.” One of the teachers quipped that it was “wishful thinking” to believe that small group support would be available anytime soon.

Theme 3: Data Fidelity Barriers

All of the teachers acknowledged without hesitation that data were important to them and their practice. However, they also begrudgingly confessed to inconsistent data use. Data fidelity was not only a major challenge for the teachers but for the school and county as well. Trust in the data was one of the key barriers for two of the teachers. Carol stated, “I have a problem with the validity of the data.” Jacqui decried, “It’s flawed.” Keira declared, “I use it as a tool to guide, but I have to use my own judgment.” Each of the elementary teachers disclosed that they have more confidence in their own ability to make decisions about student learning based on experience and knowledge about their students rather than the data.

As Carol noted, “It was one more thing to do” and resisted using data and further explained her attitude toward data had improved because of her colleagues’ support and that she was “more enthusiastic about collaborating with my colleagues” about data and using data. Glenda’s attitude resonated with some of the other participants: “It makes me really not like data that much” and “it has become so black and white, so number oriented, so data-driven that so much of what you enjoyed with teaching you can’t really enjoy it anymore.” This sense of ambivalence and displeasure created a haven for lack of data fidelity in the building.

For David and Brenda, having to use data brought about fear and uncertainty. David declared, “I just started really using data, because when I first started I was scared of it and I didn’t know how to pull it and to graph it and to get into all that stuff.” Brenda continued, “I don’t very much care for data all that much, but I do it because it’s important,” a perception shared by all the teachers. With Chastity and Jennifer, data inconsistency stemmed from frustration they felt in their effort to access the data and having time to review the information for instructional purposes. Chastity explained, “We don’t time to really review the data and I don’t think there are support systems in place to help with that.” Jennifer had a similar view: “We get a lot of requirements and request to do things as a result of data, but do I feel we actually supported in it? I can’t say that. One of the biggest barriers to me in using data is simply having the time” Another barrier Jennifer decried was that she “couldn’t get to the data I wanted because the county did not purchased the package, so I stopped and said your system didn’t buy that package so why do it.” Trying to overcome these data barriers were challenges that created

uncertainty and frustration in teachers, which led to inconsistency in using data in their practice.

Theme 4: Supportive Infrastructure

The fourth theme that emerged centered on the administration's infrastructure support system. The eight teachers acknowledged that administration support influenced their desire and attitude for using data. Although five teachers gave high praise for the administration, one teacher rated the support as poor, one was noncommittal, and one was unsure. Brenda and Carol stated the administration has "been a positive a very positive" influence on their attitude toward using data. Brenda said she felt "pretty comfortable with the support and I don't know how it can be better."

Glenda was very optimistic and likewise showered praised: "Our administrative staff is great. We have excellent support and I give kudos to my administration because they took on datawise for us and they helped us understand the datawise process very thoroughly." Carol and Glenda were introspective. Glenda remarked, "I heard of some situations with teachers with no support in school from administration, but not here," and Carol said, administrators "are probably feeling the pressure as we are, if not more, they are supportive as best as they can be."

Both Jacqui and Keira reported that administration support came in the form of personnel support. Jacqui lauded the support: "We can go to our administration and ask for assistance and if there is a sub in building, if there is another hand, you will get it." Keira agreed, "Very, very supportive because it took me two and a half day to do testing they [administration] were like 'Oh! You are not finished, okay, we have an extra sub for

you." Jacqui was also reflective, "With [the] budget cut backs we don't get that additional support we need. However, we get a lot of support from our administration."

David viewed the administration support in terms of "common planning" times for teachers and did not offer any additional comment about administrative support. Unlike David, Jennifer was critical of the administration support, explaining, "I think we get a lot of requirements and request to do things, but do I feel like we actually supported in it? I can't say that." Jennifer was so exasperated she demanded the system be "more proactive as opposed to reactive." Chastity was unsure of the support: "I don't know, I do what I have to do whether I get support or not." It was important to note that administration support impacted teachers' perceptions and desire of using data in their practice.

Subthemes

When asked to describe the barriers and obstacles they perceived they faced in using data, several of the teachers had similar responses. These subthemes were a feeling of being overwhelmed, the time consuming of dealing with data, and the need for more small group support. The first subtheme, a feeling of being overwhelmed, resonated among the teachers trying to use data. They felt overwhelmed by the pressure to implement the school district's datawise policy of benchmark testing, data analysis, and using data for decision-making and instructional planning.

Brenda noted that during the year there is a "challenge in collecting data and time" and from her perspective this challenge "overwhelmed" teachers to the point that they did not want to use data. Similarly, Jennifer said, "It can get a little overwhelming or

maybe unnecessary" to use data and that the emphasis on data has taken the "pleasure and joy" out of teaching. Glenda, who provided PD to the staff, presented a broader perspective. She stated, "The teachers are under a lot of pressure to test" and this feeling of "desperation" is not localized to the school, but "all across the county people are feeling the pain." Keira expressed dissatisfaction with the minimum support she received. She was also dismayed with her current financial status in the county: "It is overwhelming because we are asked to do more, but we are given less and less . . . especially with our pay." As for Jacqui, being overwhelmed centered on "adding more subjects, but we are not adding more time. We are not getting rid of everything" and suggested adding more hours to school day to be able to meet the instructional demands of the county.

Throughout the interview David underscored the plights that beginning teachers or first-year teachers faced in trying to use data by reflecting on his own experience as a beginning teacher: "You can have data for everything, it can be overwhelming, definitely for beginning teachers." It was different for Chastity, who felt overburdened with high stake testing and "not always having parental support." She further explained how the lack of parental support impacted her teaching: "It affected the data because students are not going to achieve as much because the skills are not reinforced at home." This lack of parental support put the onus on her to do more at school. Meanwhile, the teachers used data during their collaborative team meetings and informal assessments as a management tool to help monitor their students' performance and to determine students' individual

needs. Being overwhelmed impacted how effective the teachers felt about teaching and about using data.

Another emerging subtheme with a different view, but in line with the same thought pattern, was the need for additional time to analyze data to determine the appropriate instructional strategies and outcomes for implementation. Six of the eight teachers acknowledged that time was a challenge for them. Brenda, Chastity and Jennifer declared that part of this challenge was insufficient time for unpacking the data. Jennifer bemoaned, "The biggest barriers to me in using data is simply having the time to sit down and to just focus on that [data]. That type of time to sit down and be that thoughtful can be a challenge. Brenda added, "The time, we collect so much data that time sometimes is an issue." Chastity shook her head and lamented, "We don't really have time to sit and really review the data." They asked that more time be given to implementing the data process and meeting the assessment criteria. David, Glenda, and Jacqui also echoed a similar mantra that time for data was a common barrier for them. Their challenge was to organize time for planning lessons using the data. Jacqui said dealing with the data was "time consuming" and that "teachers need more time to use it." Although David implored teachers "to do it," Jacqui cautioned them "to slow down and pull out what you need, not just move on." Glenda expressed the feeling that all the teachers shared about data, "It is kind of bittersweet, I don't want to do it, but once I have done it and look at it, I feel good."

The final subtheme, lack of additional support for small group instruction, was another barrier for the teachers. With emphasis on differentiated instruction to raise

student achievement, the teachers implemented small group instruction, a strategy commonly used in elementary school. When asked about the support they needed, the teachers mostly wanted a person in the classroom to assist them with small group instruction. David and Jacqui remarked that differentiation for them meant "a crazy amount of groups" that had to be routinely formed and instructed and that it was not always feasible to do because of the class size: "The majority of time it's just me, and pulling [students] to do a minilesson is challenging. We don't have aides in the classroom because of budget cut backs." Jacqui felt a sense of ambivalence toward small group activities and using assessment data. Chastity remarked, "I want them to come in and pull a small group for me so I can focus on another group. I think that will help me improve my data." Despite their commitment to using data, these barriers created a certain amount of ambivalence in their attitude toward data.

Elementary teacher participants were generally in agreement that using data is challenging and also deemed it essential to their practice. Five out of eight participants were unsure of how the school was going to use the data and of how important their own classroom data, such as teacher made test, chapter test, and weekly spelling tests, were in the process. All of the participants felt constant pressure to prepare students for the next upcoming assessment, assessments that were frequent, ongoing and mandated by the district and state. Four of the eight participants deemed the administrative support provided as satisfactory, while the other half pleaded for more support to be effective and in compliance. Most participants complained of having too many assessments, including "seventeen mandated federal test" and wanted more time to teach content. During a

meeting for member checking of findings, Glenda said that: "I know many teachers who say they are using data for planning, but they really are not, and are afraid to tell administration. I go to math meetings and the other teachers there say the same things happen at their school." Most of the participants were concerned about the abundance of testing and were stressed about whether students were actually learning or just regurgitating the information. Jennifer lamented during a meeting for member checking that "We are just teaching to the test-all the time!"

Some data, stood out, however, did not fall into any category and indicated lack of alignment among the various assessments and departments in the district. Jennifer stated in an interview that each department in the district requested different form of assessments and this puts stress on teachers. She noted:

> The math department will ask for something, and the reading department will ask for something else, and Title I will ask for something else…you are being pulled in those directions. They are all separate machines and none is working together . . . [this] can diminish the feeling of being supported.

All teachers acknowledged that the use of data was integral to student improvement and believed the more comfortable they became with using data, the better teachers they will become.

Evidence of Quality

Throughout this study, I evaluated my progress and procedures to ensure that I adhered to the guidelines of Walden University's IRB. An interview protocol was developed that I used to guide my interview with each of the eight participants. While

interviewing the participants, I used audio recording and transcribed notes. I analyzed the data after the interviews by reading and rereading the written transcripts for common patterns and coded the themes that emerged. I protected my participants' confidentiality by deidentifying the interview responses and using pseudonyms.

Outcomes

All eight participants in this study believed that elementary teachers should have more support to analyze data and use data for decision-making and furthermore that the support should be given at their school setting. They believed that PD and training for elementary teachers should involve strategies for data analyzing, data-based decision-making, and the application of these strategies. Additionally, teachers cited the need for more time to understand the data process and to implement the data protocols. Some teachers suggested having additional support staff in the classroom and more collaboration among the various school groups to share data and instructional strategies.

In this study, the elementary teachers used data to monitor and assess student performance and implemented various intervention strategies, such as differentiated instructions, small group instruction in the classroom, data walls in the classroom to display their student academic progress, and collaborative planning. Some teachers indicated that they use data in their teaching practice by discussing individual test scores with their students, establishing a classroom climate of student accountability, and using cooperative learning groups.

The insecurities teachers and administration felt about their data knowledge was one barrier to using data. Not knowing how to infuse data into instruction, insufficient

time, and lack of classroom support were additional barriers that teachers encountered as challenges to classroom utilization of data. To address the lack of data knowledge and data fidelity, the majority of participants hypothesized that the best course of action was to give teachers more time to digest the data and to have ongoing data training. Some of the other participants underscored the importance of building teachers' capacity as data leaders in the building. The remaining participants emphasized additional support for new or beginning teachers (Dunlap & Piro, 2016; Huguet, Marsh, & Farrell, 2014).

Conclusion

In this study, I collected data from elementary teachers at HVE in order to capture the attitudes, perceptions, and biases about data for decision-making for instructional practice and the implications they will be expected to address as they implement the data process. I addressed the research question of teachers' data-based decision-making to improve their instructional practices. A small sample size of eight participants was selected for this qualitative study. The findings were that the elementary teachers encountered myriad challenges in the classroom that influenced their attitudes to using data and the effectiveness of the instructional practices. Teachers, educators, administrators, and school districts may have interest in my study for understanding how to support elementary teachers in using data and in developing effective strategies for implementing the data.

I designed a PD (PD) workshop project based on the findings to enhance and build teacher data capacity. I learned teachers are dedicated professionals who value working independently and yearn for collegial opportunities with peers to improve

student achievement. Additionally, I discovered the pivotal role and impact school climate and culture has on teacher attitude and support. The PD was developed for teachers who are interested in building data capacity skills to influence positive change in their school setting. I designed the PD to bring about teacher awareness of data, provide opportunities for participants to develop data leadership skills, tools to navigate the complex role of teacher leaders, and promote teacher-administration discourse about data implications and finding ways to solve school problems. Current research findings discussed how highly effective teachers perceive using data. A review of the literature about data-decision making provided insights of experts and scholars of data-decision making process to strengthen the findings of this study.

Section 3: The Project

Introduction

This qualitative study was designed to examine elementary teachers' perceptions about their data decision-making abilities and their understanding of how their capacity as data leaders had prepared them to use data. The findings from the study suggest that elementary teachers can enhance their data knowledge and skills from PD. Research on improving teacher practice and knowledge indicated that PD is an unparalleled method for support of teacher practice and student achievement (see Brody & Hadar, 2015).

Responding to the findings, I developed a series of noncredit PD workshops to help teachers build their data capacity knowledge. This study's findings and professional literature review functioned as the foundation for designing and developing this PD program to address disparities in data practice and data-based decision-making. The content of the program includes activities and outcomes that were determined from the emergence of four themes: (a) too much data, (b) building teachers' data knowledge capacity, (c) data fidelity barriers, and (d) supportive infrastructure for improving teachers' data knowledge, data practice, and data-based decision-making abilities. I developed a series of five workshops that are 4 hours each (Appendix A).

Appendix A includes details of the PD workshops developed to build elementary teachers data practice and data-based decision-making knowledge. The workshop participants are provided an agenda for structure, order, and expected outcomes. The agenda lists the days, times, and activities for participants to identify workshop topics and enhance participants on task behavior. In the following section, I present the goals,

rationale, theoretical frameworks, literature review, implementation, project evaluation, positive social change, implications, and conclusion.

Description and Goals

The goal of the PD workshops is to build elementary teachers' data literacy capacity as instructional decision-makers. The objectives of the workshops are to (a) provide elementary teachers with researched-based best practice for using data, (b) connect classroom data to district and/or school-level opportunities for elementary teachers to work collaboratively to analyze classroom data, (c) identify the type of classroom data and data sources to collect, and (d) provide resources and ongoing support that further effective data use at the classroom level.

Rationale

In this study, the eight participants used data to make instructional decisions in their classrooms. Although the participants currently use data in their practice, they expressed a need for additional instructional data strategies and data support to meet school-level and district-wide learning goals for students. These teachers are required to collect and assess data to make data-based decisions that accurately identify student learning strengths and weaknesses and monitor their improvement. For elementary teachers to meet these challenges and connect classroom instruction to student performance, they need specific training that focuses on how to use data to improve student performance. This study's findings and the theoretical frameworks were the basis for the design of the PD workshops. The workshops include data skill pedagogy through (a) implementing strategies for identifying appropriate data to collect, (b) working

collaboratively with peers to analyze data, (c) identifying learning problems and best practice for instructional changes, and (d) developing a classroom-based action plan template.

Theoretical Frameworks

The design of the curriculum was constructed based on the principles of adult learning characteristics of experiential PD theory that involves learning through doing. Learners apply their conceptual understanding and knowledge to real world situations (Burke, 2013; Harvey, Coulson, & McMaugh, 2016). The other theory is transformative learning theory, which is used to emphasize learning through social structures and teacher agency (Bleach, 2013; Maulucci, Brotman, & Fain, 2015). Burke's (2013) model of PD involves the integration of communicative language teaching to create more communicative classrooms to build language skills. Burke identified the following instructional design components for PD: (a) fitting the schedules and needs of the instructor and participants; (b) team building activities that build discourse, understanding, skills, and attitude to support learning outcomes and goals; (c) learning experiences that allow learners to take ownership for their own learning and growth; (d) practice and reflection that provide the learner with opportunities to demonstrate acquired skills; and (e) time for transference and retention of new skills to foster application.

Maulucci et al. (2015) proposed that learners' structures or social and environmental settings and teachers' agency or their ability to effect positive change to influence learning. *Agency* also refers to the choices that individuals make and act upon to make those changes in their lives. Teachers then create a set of value systems

developed from their structure and agency experiences. Individuals modify or change their agency when faced with perplexing predicaments. Opportunities for educators to transform their practice involve three structures: (a) material or symbolic structure that comprise the physical structures to include classroom layout and technology availability, (b) social structure such as schools' and classrooms' norms and patterns, and (c) knowledge structures that involve the organization of information into standards, curricula, subjects, and lessons.

In addition, as teachers work through professional and interpersonal struggles toward achievement of goals, they must examine their values and make value-related decisions (Bleach, 2013). Their struggles guide them to work toward a common goal or purpose that strengthens their sense of self. In addition, when teachers actively engage in discourse, their existing perspectives, knowledge, skills, values, and actions are challenged. Challenges lead to an examination of the effectiveness of their own practice and judgment, bringing about change in practice and attitude.

Review of Literature

The design of the workshops for elementary teachers was developed from the findings of this study and the conceptual framework. I used the search terms *professional development for teachers, characteristics of professional development, effective teacher training,* and *professional development for using data* to find current literature on professional development. The online databases used for the searches were Academic Search Complete, Education Research Complete, EBSCO, ERIC, Google Scholar, and

SAGE. This literature review is composed of research on key components of effective PD, PD for using data, and PD assessments.

There is much research on effective PD such as (Bayar, 2014; Bleach, 2013; Di Gennaro, Pace, Zollo, & Aiello, 2014; Dixon, Yassel, McConnell, & Hardin, 2014; Harvey et al., 2016; and Jenkins & Agamba, 2013 for teacher training. Additionally, researchers have offered a list of key components fundamental to effective PD or in-service training such as Kapanadze, Bolte, Schneider, & Slovinsky, 2015; Sharifzyanova, Shtreter, & Nauryzbayeva, 2015; Sun, Penuel, Frank, Gallagher, & Youngs, 2013; Zwiep & Benken, 2012; Willemse, Dam, Geijsel, Wessem, & Volman, 2015) for meeting the diverse needs of teachers.

Collaboration among teachers is integral for implementing and sustaining new instructional practices. Research on effective instructional practices such as (Bayar, 2014; Bissonnett & Caprino, 2014; Bleach, 2013; Gee, 2016; Fitzgerald & Theilheimer, 2013; Jenkins & Agamba, 2013; Steeg & Lambson, 2015; Sun et al., 2013; Svanbjörnsdóttir, Macdonald, & Frimannsson, 2015; Willemse et al., 2015) highlighted the benefits of collegial cooperation. There is much research on effective PD or in-service training for using data such as (Davies, Busick, Herbst, & Sherman, 2014; Marsh & Farrell, 2015; Jimerson, 2013; Staman, Visscher, & Luyten, 2014; Vanhoof & Schildkamp, 2014; Wayman & Jimerson, 2013) focused on teachers' need.

Key Components of Effective Professional Development

An analysis of the research on PD (Bayar, 2014; Bleach, 2014; Di Gennaro et al., 2014; Dixon et al., 2014; Harvey et al., 2016; Jenkins & Agamba, 2013; Kapanadze et al.

2015; Sharifzyanova et al., 2015; Sun et al., 2013; Zwiep & Benken, 2012; Willemse et al., 2015) indicates the key components that are fundamental to effective PD or in-service training. The components that PD program should include are

- activities based on teacher existing needs (Bayar, 2014; Jenkins & Agamba, 2013).
- long-term support for lasting teaching skills (Bayar, 2014; Jenkins & Agamba, 2013; Zwiep & Benken, 2016).
- teacher input to build ownership and activities relevancy (Bayar, 2014; Jenkins & Agamba, 2013; Steeg & Lambson, 2015; Willemse et al., 2015).
- reflective practice (Bleach, 2013; Di Gennaro et al., 2014; Gallego, 2014; Harvey et al., 2016; Willemse et al., 2015).
- action research to address and improve practice (Bissonnette & Caprino, 2014; Bleach, 2013; Svanbjörnsdóttir et al., 2015).
- collaborative or teamwork to develop communication and decision-making skills (Breault, 2014; Willemse et al., 2015; Fitzgerald & Theilheimer, 2013; Steeg & Lambson, 2015; Svanbjörnsdóttir et al., 2015), and
- differentiated instruction to meet teacher's diverse needs (Dixon et al., 2014; Hanafin, 2014; Sharifzyanova et al. 2015; Oates, Lane, & Germer, 2014).

Matching Teacher Needs

Matching existing teacher needs is one key element of effective PD (Bayar, 2014; Jenkins & Agamba, 2013). Activities in PD should be geared to both veteran and novice teachers so that both groups of teachers can develop their existing skills and acquire new ones. The activities should be related to real school setting and classroom situations and match teachers' existing needs. Matching teachers' needs to activities enables teachers to understand the benefits and see the connections between what happens in their classroom and what they are learning.

Long-term Engagement

Another element of effective PD is duration or frequency of support. Long-term or ongoing engagement activities produce deep and lasting changes in teachers over the traditional short-term or "one-shot" activities (Bayar, 2014; Jenkins & Agamba, 2013). Ongoing and continual support gives teachers the time needed to digest the newly acquired content knowledge and opportunities to apply them to their practice. Bayar (2014) also noted that short-term professional activities do not have the depth required to have long lasting impact on teaching skills. Additionally, as teachers' confidence grows, they are more likely to help other teachers with content and share their professional expertise gained from PD with other colleagues. The effect of sharing improves instructional practices of peers of teachers directly participating in PD (Zwiep & Benken, 2016).

Although both Bayar (2014) and Jenkins and Agamba (2013) shared similar components of effective PD, they differed in how they viewed duration or frequency of

teacher support. Bayar noted duration in terms of long term that is continual and ongoing as opposed to Jenkins and Agamba, who described duration as it related to number of training hours per day.

Teacher Input

In conjunction with teacher needs and duration for PD is teacher input (Bayar, 2014; Jenkins & Agamba, 2013). Teachers should have input in the planning and designing of the activities for PD. Participation in planning the activities allows teachers to develop a sense of ownership, have opportunities to make decisions on the relevancy of workshop topics, and to engage in meaningful dialogue that improves self-esteem and confidence. Codesigning PD also allows teachers to have multiple opportunities to participate in their own learning, to directly represent what they want to accomplish at their school and classroom, and to identify additional needs and support (Steeg & Lambson, 2015; Willemse et al., 2015).

Reflective Practice

An additional characteristic of effective PD is reflective practice (Bleach, 2013; Di Gennaro et al., 2014; Harvey et al., 2016; Willemse et al., 2015). Reflection provides participants with opportunities to reflect and evaluate their own teaching practice, compare practice to research-based theory, cultivate innovative ideas, and improve practice by developing action plans (Di Gennaro et al., 2014). Reflection can occur either during or after an event. For example, during implementation of a lesson on citizenship, a teacher may observe students struggling with developing a concept of citizenship (Willemse et al., 2015). After the lesson, the teacher may reflect on what had particularly

contributed to this disconnect with citizenship development and intervention strategies that might be applied (Willemse et al., 2015).

Reflective practice involves teachers' critical analysis on their practice, which contributes to improving their instructional and content knowledge base (Bleach, 2013; Gallego, 2014; Willemse et al., 2015). During discussions with colleagues and by analyzing best practices and lived experiences, a teacher may reflect on the effectiveness of their own professional actions or judgment in their setting. By actively reflecting on and evaluating their own practice, teachers can increase their sense of professional identity as they gain new knowledge, language, and confidence. Fueled by these interactions with others a change in practice is achieved (Bleach, 2013; Harvey et al., 2016; Willemse et al., 2015).

Action Research

Likewise, action research is a component of effective PD (Bissonnette & Caprino, 2014; Bleach, 2013; Svanbjörnsdóttir et al., 2015). Action research is one way to ensure high quality standards of practice within the school setting. Through inquiry study, practitioners can work together to critically examine and analyze their individual practice for what works or needs improvement. Teachers identify a focus or topic, conduct research, collect and analyze data, and create an action plan to improve classroom learning or instructional practice. For example, teachers could establish a PLC after analyzing student standardized test data. The analysis may indicate that student outcomes are positively influenced by strong educational leadership. Teachers and leaders could establish a PLC to build up the culture of teaching practice by strengthening the school's

leadership team. The leadership teams and teachers would collaborate so they could establish the PLC of teaching teams responsible for a small group of students. The teaching teams would be responsible for teaching and monitoring their group of students on specific content area. Student data from each content area could be used to assess and monitor students' improvement.

Collaboration or Teamwork

Collaboration acts as a catalyst for the development of a PLC that promotes teamwork (Gee, 2016; Willemse et al., 2015). Collaboration occurs among teachers and between leaders and teachers. One benefit of collaboration is that teachers have a voice in the type of PD they receive, which adds to a deeper understanding of the relationship between theory and practice (Fitzgerald & Theilheimer, 2013; Steeg & Lambson, 2015). Another benefit of collaboration is to provide teachers with the opportunity to exchange ideas and discuss practice. Through this format teachers learn more about each other's practice and take what they learned back to their classrooms (Breault, 2014; Willemse et al., 2015). Collaboration is also beneficial to both teachers and school administrators alike as it serves to build coherency in PD and supports a school culture for teacher growth and learning (Steeg & Lambson, 2013; Svanbjörnsdóttir et al., 2015).

One barrier to collaboration in the professional learning community is the lack of trust among teachers, which impedes the instructional improvement. Principals must provide opportunity and coherent infrastructure for teachers to participate in PD. Developing teachers with sufficient content knowledge to become experts and those with collaborative skills to be teacher leaders may be the necessary motivation needed to

sustain and maintain a collegial culture for improvement of instructional practices (Sun et al., 2013).

Differentiated Instruction

Addressing the diversity in teacher learning and abilities require differentiation in PD activities and content (Dixon et al., 2014; Hanafin, 2014; Sharifzyanova et al., 2015). One purpose of differentiation in PD is to provide teachers with the opportunity to increase their pedagogical and content skills by connecting theory with evidenced-based practice. PD focusing on differentiation allows teachers to understand how to differentiate and why differentiation is needed in today's educational settings (Dixon et al., 2014; Sun et al., 2013).

Both experienced and novice teachers can build their professional repertoire by identifying individual strengths, knowledge, interest, and perceived usefulness to create teacher-led expert training teams (Oates et al., 2014.) Teachers noted the biggest transformation in multiple intelligences learning was that differentiation practices were less about doing and more about thinking (Hanafin, 2014). Valuing learners and their multiple intelligences is a transformation in learning perspective practice that "was not a methods-shift but a mind shift" (Hanafin, 2014, p. 137). Another purpose of differentiated PD is to allow teachers to continue their own learning while teaching others about the practice or strategy they learned. Differentiated PD gives new teachers the opportunity to learn from teacher experts about how to implement effective instruction strategies and classroom management through modeling (Oakes et al., 2014).

Leadership Capacity and Responsibilities

Effective PD relies on leadership capacity to involve all school members in the decision-making and leadership process (Kiling & Ozdemir, 2015). The role of school administrators is integral to effective PD and to student learning (Davies et al., 2014). Administrators who establish and uphold an orderly school structure, who create the time for training, who invest in resources, and who have the energy to provide ongoing and descriptive feedback lead by example. School administrators should engage collaboratively with teachers to help set learning outcomes to improve student learning. Funding, resources, and personnel should be strategically used to effectively promote both teacher and student learning (DeMatthews, 2014; Herman, 2012). In planning workshops, administrators should take into account data from multiple sources such as classrooms, teachers, students, and parents (Davies et al., 2014; Stewart & Matthews, 2015).

Administrators should engage themselves and others in determining learning goals and objectives (Davies et al., 2014; Fazio & Karrow, 2013). These objectives and goals should be aligned to state standards in order to help raise student achievement. Administrators may examine teacher feedback to assess and monitor progress of the system-wide learning initiatives. Dialogue and actions of administrators need to demonstrate professional judgment and establish teacher support as a priority. Administrators may identify specific groups of teachers and mandate that they participate in targeted PD to meet their leaning needs (Main, Pendergast, & Virtue, 2015).

Through meaningful discussions and mentoring, administrators can help enhance teachers' sense of efficacy (Allen & Topolka-Jorissen, 2013; Boylan, 2016). Discourse and mentoring should revolve around the evaluation of teacher classroom practice derived from classroom visits such as learning walks. Learning walks are brief classroom visits that provide a snapshot of a classroom to gather evidence base data on a specify focus (Baker & King, 2013). Teachers' comments from learning walks may include notes about a particular strategy they observed or how students interacted in group activities. During the debriefing session, teachers' administrators listen as teachers discuss and reflect on what they observed. Teacher dialogue may include comments such as "You need to visit so and so classroom because it is amazing what she is doing?" or "That was a great lesson, the children were so engaged (Allen & Topolka-Jorissen, 2013). The evidence collected from learning walks engages teachers in dialogue, encourage reflection, and promotes trust to build teacher instructional capacity.

Professional Development for Using Data

Recent studies have examined building teachers' capacity for using data to improve instructional practice and the importance of administrative leaders support for data literacy (DeMonte, 2013; Marsh & Farrell, 2014; Vanhoof & Schildkamp, 2014). During teacher-evaluator conferences administrative leaders can assist teachers by aligning PD to their evaluation data, thereby connecting practice with theory. Administrative leaders can support teachers by establishing structures to support a variety of opportunities for collaborative learning to build a culture for data literacy and sharing of knowledge. For example, administrators can have teachers participate in data

management training if they do not have the knowledge or skills to access and collect data. Administrative leaders can also build data literacy by providing opportunities for social team interactions, and establishing dedicated time for collaboration and support based on teacher data needs.

Teachers can build their data literacy capacity by developing mental models for making sense of data based on a common understanding of what data are and how they should be used (Jimerson, 2014; Jimerson & McGhee, 2013). The mental model approach focuses on four factors to data learning: (a) personal experience, (b) formal training, (c) modeling by school and district leaders, (d) and social interactions. Personal experience can influence teachers' approaches to thinking and learning about the data as they try to make sense of it. Exploring data systems on their own, teachers can connect prior data knowledge with the new data learning to address classroom needs. Formal training, such as learning about data from district conferences or in-house workshops, can help teachers solidify their understanding of data and their abilities to use data as their confidence grow. Modeling by school and district leaders can demonstrate to teachers that a data community exists, including teamwork, trust, and data-rich dialogue. Acting as role models, administrative leaders can help teachers understand that data is a tool to use to inform teaching rather than an intrusion on teaching. Social interaction can be an informal learning resource for teachers that provides them the support and encouragement to use data and in determining how to use the data, which data to use, the purpose for the data, and how data inform instruction.

Brody and Hadar's (2015) 3-year longitudinal study explored how experience with using data in their setting influenced both novice and veteran teachers' responses to PD and their effort in the adoption of new practices. A small teacher educator college in Jerusalem, Israel, designed courses for a PD community (PDC) program that emphasized collaboration between novice and veteran teachers. Novices were defined as those who taught at the education college for ten years or less and veterans had 10 or more years teaching experience at this level. The voluntary participants were faculty members with a varied background in terms of gender, age, seniority, and subject taught. The PDC courses exposed teachers to various techniques for critical thinking about teaching practice and the pedagogy of best practices that they could use with students. Participants exhibited collaboration through reflective journaling, collegial discourse and analysis, and exploration of theories. Participants improved their abilities to think about best practices that help them teach and/or to develop students' thinking skills through immersion in the PD community project. These teacher educators reported that they had improved their thinking, pedagogy, or attitude to examine their instructional practice. (Brody & Hadar, 2015).

Ittner, Helman, Burns, and McComas (2015) highlighted the valuable role of literacy coaches in bolstering teachers' data capacity by tailoring professional learning to meet the individual needs of teachers. The 3-year partnership project study involved six schools both public and charter schools, a nonprofit corporation, a private corporation, and a research university. Coaches can use data gathered from their observation of teachers' instructional practices and their physical classroom environment to identify and

analyze trends. Based on the findings, coaches can then determine the best practices to improve teachers' content knowledge and instructional practices. The professional learning activities may involve evidence-based tools as modeling, small group discussions, and lesson planning to help support teachers' data learning. The introduction of literacy coaches to the school community can help teachers have support in real time through reflective dialogue, modeling, and classroom observations. For example, coaches can use the data collected from observation on classroom practices to aggregate the data to shows the schoolwide trends and use the result to help teachers set learning goals and outcomes for the professional learning communities. The building systems of teacher educators should support teacher learning by promoting evidence or data-based tools to build content knowledge and provide continual support during the new teacher practices implementation phase. All stakeholders in the school community can be change agents who help schools transform instructional practices where students benefit from quality core instruction (Ittner et al., 2015).

Assessment of Professional Development

Main et al. (2015) noted five core levels of information needed when collecting and effectively evaluating high quality PD: (a) reactions of the participants (how satisfied they were with their PD experience), (b) learning by participants, (c) support from organization, (d) implementation of newly acquired skills and knowledge by participants, and (e) learning outcomes of students. Effective PD demands that the learning community of teachers, students, and administrators are collaborators of learning. PD is effective when the presenters/facilitators are knowledgeable, are expert in content and

delivery, and are able to meet teachers' need. The professional learning community with collaboration among staff can improve teachers' pedagogical practice when administrators enact mechanisms to encourage PD participation. Collaboration and effective PD give teachers opportunities to have discourse about classroom issues, set student outcomes, and build self-efficacy beliefs surrounding instructional effectiveness (Main et al., 2015).

Designs of data sources are derived from teacher-participants through pre- and post surveys, reflective journals, and open-ended post survey responses (Martin, Polly, Wang, Lambert, & Pugalee, 2015). Assessment data is an important instructional component for teachers in designing interventions, organizing groups, and in communicating with parents. For instance, feedback from a post survey may help administrators understand some of the challenges teachers encounter in implementing formative assessments so a plan can be developed to support teachers' collection of accurate formative data. During the school year, teachers can use technology tools to generate reports to individualize instruction, to collaborate with other teachers, and share with parents. Ongoing administrator support and data-driven practices allow teachers to be immersed in data learning that builds their data capacity. Administrators can promote teacher interaction by designating specific dates and time for teachers to participate in PD based on grade level, instructional need, or content (Martin et al., 2015).

Deciding the area of focus for PD and evaluation of the process is important (Young & Kaffenberger, 2015). Venkatesh et al. (2014) stated that the evaluation instrument should be composed of course satisfaction, quality of course, and instructor

quality. For example, the result from the evaluation indicated participations viewed course satisfaction, how they felt about attending the workshop as most important to them relative to content such as the objectives, practices, techniques, and resources. The design of the PD programs should help participants link knowledge and teaching with developing pedagogical and administrative skills in readiness for either teaching or being a teaching assistant.

Use of data to assess programs is fundamental for addressing the demands of various groups of stakeholders as parents, students, administrators, policymakers, and educational practitioners (Leontyev, Rebrina, Leontyeva, & Gafiyatullina, 2016). Data can be used to assess the quality of a program and the qualifications and competences of the participants. Additionally, data can be used to monitor progress, activities, and any modification or intervention needed to maintain a successful program. Methods for collecting data comprising videotaping, portfolios, surveys, testing, and observations. Different methods as qualitative, quantitative, and mixed-methods are evaluation tools that can help ascertain a program's quality. The keystone of data collection and reporting is demonstrating to all stakeholders, openness in transparency, accountability, program quality, and student academic competency (Leontyev et al., 2016).

Data collected before (formative) and after (summative) evaluations determine PD changes and/or revisions (Kruger, Van Rensburg, & De Witt, 2016). The formative evaluation provides baseline information for determining changes and is the intervention adopted during training. For example, teachers may find classroom questioning challenging and in this case, a session in which activities on questioning techniques could

be incorporated to address this discrepancy. Formative evaluation included the following components: (a) continual feedback, (b) learning expectations, (c) learning tasks that elicit evidence, (d) self-regulating learning, and (e) peers as learning resources. Formative assessments can help identify actionable program goal revisions, learning gaps in programs, areas for improvement, and determine next steps for training. Summative evaluations are decision-data tools for determining if PD should be extended, revised, or terminated. Both formative and summative evaluations are shared with stakeholders at all levels, teachers, students, administrators, policymakers, and decision-makers (Wylie & Lyon, 2015).

One program evaluation by Phillipson, Cooper, and Phillipson (2015) revolved around a four-step protocol online digital model. The first step required participants to video record one lesson that was less than one hour to evaluate their classroom interactions to help improve pedagogy. The second step involved the collection of the lesson's artifacts such as student work and lesson plan. The third step was to compress the video file and download it onto their computer. In the final step, participants created an audio commentary of the recorded lesson describing strengths/weakness then uploaded the audio and video to Google Drive for feedback from supervising teacher.

Implementation

Professional Development Project

To meet the demands of using data, I developed PD workshops with the goal of improving elementary teachers' data practice in their school setting. The program offers (a) the elementary teacher current research-based content practices on using data, (b)

opportunities for the elementary teachers to apply and implement data strategies, (c) coaching/mentoring of teachers to solidify data practices, and (d) ongoing data support and resources for long-term transformational learning and fidelity for instructional strategies during the first year of implementation.

In this program the learning strategies include understanding the critical role data have in guiding the instructional planning. In the first step, teachers become familiar with measures of multiple data by using achievement and demographic data to measure students' performance. Next, teachers analyze data and ask questions to gain deeper understanding of the data. Finally, teachers use the analyzed data to make instructional decisions and create an action plan to implement in their classroom. They reflect on the influence the decisions had on student outcome. Student outcome establishes the need for further training that may be required in support of teacher data literacy.

Significance-transformational Learning

According to Hoggan and Cranton (2015) transformational learning model, adults construct meaning through active learning by using rich real world examples such as scenarios and discussions. In the first phase of the model, the learner has a disorienting dilemma or experiences that does not make sense to them or fit with their viewpoints/perspectives. In the next phase learners revise their belief systems to resolve the situation through self-reflection, questioning, and critical assessment of their perspective through small group activities and discussions. The presenter/facilitator can help participants engage in the transformative process learning that lead to greater

awareness of their own perspectives and the perspectives of others. Finally, the new perspective is integrated to transform behavior and actions.

Establishing collaborative PLCs coupled with strong instructional practices and resources promote learning (Breault, 2014; Gray, 2016). Learners who have collegial trust, support, and shared values in their school structure are more likely to feel empowered and have success. Educators who are willing to take risks discover the cultural norms of learners, their interests and backgrounds and can plan instructional activities to address these needs. Educators who address learners' diverse learning styles implement best strategies practices increase learners' metacognition, comprehension, and connections for learners to have academic success.

Participants in the workshop come to understand the complexity of using data and how to effectively address using data in their classroom supported by school administration and the leadership team at HVE. The administration with the leadership team can provide participants with onsite and ongoing support for skill and knowledge assessments. The workshops act as a catalyst to help elementary teachers be data leaders as they provide both content knowledge and practical hands-on experiences. Opportunities to practice may empower elementary teachers to be assessment literate and who in turn may embolden students' abilities to achieve and succeed.

Resources and Supports

The workshops for the elementary teachers would be conducted at HVE to minimize travel, location, and training material cost. The media center, workroom, and

computer labs located within the school would provide the training materials and resources needed for conducting the workshops.

I would request staff personnel support to present additional follow-up training for elementary teachers. If this request does not yield participation, I would ask for administrative permission to conduct the workshops (please note the workshops described herein suppose PD lead teachers (PDLT) as the presenters). Participants would complete the workshops on the days designated for PD, which are embedded in the school's monthly and yearly schedule. At the completion of the workshops, participants would be awarded a certificate of completion for data training.

Throughout the school year ongoing announcements would be made as reminders and to promote the additional follow-up training to elementary teachers. The leadership team would maintain copies of all training materials and sign-in sheets. Resources and instructional material would be provided by the school and covered under school's budget allocated for PD. Each workshop plan and schedule that I developed would be provided to the workshop presenters/facilitators. Internet access would be available at the computer labs or on teachers' district-issued laptops. Reference materials and supporting resources would also be available from the media center and professional library.

The program's guiding tool for the PD designed herein would come from the participants' needs assessment. The following information would be assessed by means of a written survey: (a) the elementary teachers' perceptions of using data for instructional decision-making, (b) experience with using assessment data, and (c) preferred learning modality. In the final section of this survey teacher would be able to

provide additional comments regarding their learning needs for PD. Elementary teachers interested in the workshops would have this survey available to them throughout the school year.

The administration department of HVE responsible for approval of this project would require all participants interested in the workshop to complete and submit the survey. Participants' responses to the survey would be name protected to retain anonymity.

The summarized responses from the survey would be charted and displayed on a pic graph labeled with percentages to represent each category accessed. The data would be posted on Google Drive for control access by administration and the leadership team. The data would be used as a guiding tool for developing targeted workshop to address the data needs of elementary teachers deciding to participate in the workshops.

Support-peer Networks

The training targeted in the PD workshops for elementary teachers at HVE includes one-to-one support from the leadership team members and PDLTs. Collaborative research opportunities for participants are embedded throughout the workshops and for application of the new knowledge and acquired skills to new contexts. The presenters/facilitators would present exemplars and best research strategies by modeling and role-playing (Appendix A). Presenters/facilitators would guide, monitor progress of, and support participants throughout the learning process via grade level meetings and instructional planning during the preparation stage (before), coteaching and demonstration lessons in classroom period (during), and post-conferences (after)

classroom visits during the school year. Participants would work in a safe setting conducive to learning with clearly stated workshop objectives. Collaboration would facilitate the participants' interpersonal growth, reflection, and shared learning.

Reflection

Reflective practice in PD is a process targeted to the participants. At the end of each session, participants would respond to questions/prompts in a paper journal about their learning experience and newly acquired knowledge from each session. The self-assessment journal writings would extend participants' understanding of their strength and needs and to help them increase interest and confidence in using data. Instructional specialists would review the reflective journal entries to understand how they can best modify/adjust workshop resources and activities to meet each participant learning needs. An example is that participant's entry may indicate they understand and access new information when visual strategies are incorporated into activities. Instructional specialists may make modification/adjustment to an upcoming session to incorporate visual aids for the participants or have the participant view instructional videos of the skill or concept during the school year.

Peer Coaching

Scheduled collaborative grade level planning and in-house PD throughout the school year provide opportunities for workshops participants to practice and discuss data. The practice and data discussion experiences involve the data improvement process cycle guidelines and protocol checklists. The elementary teachers' data literacy areas to be monitored and evaluated involve (a) interpretation of assessment data, (b) identified

learner-centered problem, (c) identified instructional problem of practice, (d) creation and assessment of instructional intervention strategy. Instructional specialists and leadership team members of elementary teacher data experiences will end each meeting by listing pluses (went well) /deltas (do better) with next steps on the feedback tool. The feedback tool allows elementary teachers and leadership time to reflect and evaluate their own performance in identifying what went well and what can be done better. The feedback tool promotes reflective practice for formulating instructional improvement or modification for upcoming meetings focusing on the teachers' needs and next steps.

Potential Barriers

The use of high-stakes standardized tests or student achievement data for decision-making demands teachers who are highly qualified, content knowledgeable, and data savvy. Use of data to inform decision-making of elementary teachers is challenging, as they often lacked the knowledge and skills to effectively access, collect, analyze, and act on data and the support needed for them to learn (Murray, 2014). School communities that promote collaborative norms and targeted job-embedded PD that aligns with the school's instructional goals increase teacher and student learning (Bond, 2013). PD programs designed to maximize teacher learning are costly, time consuming, and take effort (Hill, Beisiegel, & Jacob, 2013). The instructional specialists and the leadership team may be impacted by increased cost associated with the organization and delivery of the workshops.

Proposal for Implementation and Timetable

The 3-day PD workshops require collaboration among the elementary teachers at scheduled in-house PD days throughout the school year. The elementary teachers would continue with their designated instructional classroom assignments and would attend mandatory district-wide workshops on days designated for (PD). The district-wide (PD) days are designated as professional duty days for teachers and non-school days for students; substitutes are therefore not required for these days. The workshops would be scheduled from 8:00 a.m. - 3:00 p.m. with one 20-minute session break each workshop session (Appendix A).

The first session involves participants' immersing in the data process protocols to establish workshop norms and build the foundation for successfully using data. They learn about the structured data process protocols by organizing the work setting for collaborative work by establishing the norms and teams. At the end of each session participants discuss and share their experience. Finally, participants complete their daily reflective writing and exit ticket. This activity reoccurs to end each session.

The second session consists of participants building data literacy to identify and decompose various types of data through discussions, research, and hands-on learning. They compare data to determine students' strengths and needs as they work together to develop instructional outcomes for classroom application.

The third session is dedicated to navigating online assessment tools and resources that help participants gain a deeper understanding of the implications data have on

instruction. In addition, they practice analyzing assessment data and creating minidata walls that build confidence and knowledge through self-coaching.

In the fourth session participants interact with data from across all grade levels (K–6) to build their data capacity. Participants continue to deepen their data knowledge and skills by accessing online resources and strategies then using the information gathered from online to complete parts of an action plan.

In the fifth session participants learn about strategies and support systems to build a data community through discussions and inquiry activity that promote questioning and decision-making. In the final part of this session, participants engage in learning about instructional strategies for supporting teachers in using data and put together the instructional components of an action plan. This real-world experience supports participants becoming data literate to build their data capacity and leadership skills.

Roles and Responsibilities

I have developed PD workshops to support the use of data by elementary teachers for instructional decision-making. I will be responsible for the logistics necessary for organizing the workshops, facilitating communication among stakeholders, soliciting facilitators, and presentation of all PD workshops along with members of the leadership team. The responsibility for conducting and demonstrating instructional strategies in the session will be assigned to members of the leadership team as this is part of their role and responsibility in the school. Leadership team members will provide ongoing support throughout the school year, as needed, and to participants as they integrate and apply the skills and strategies from the workshops into their practice. I will prepare the workshop

feedback surveys to evaluate the content and value of the workshop presentations and those will be distributed and collected by the presenters/facilitators. The data from the survey will be analyzed by the leadership team and the findings will be shared with HVE participants and other staff members. Participants will be expected to adhere to the norms of the workshop, arrive on time, be an active learner, respect the opinion and ideas of participants, and presenters/facilitators. Participants will engage in reflective journal writing and will practice their skills during workshop activities, in their classroom, and data meetings.

Project Evaluation

The evaluation of each workshop sessions by participants occurs through guided reflective journal writing and exit tickets about their workshop session experiences. This feedback could provide a deeper understanding of teachers' perceptions and thoughts as well as their strengths and needs matriculate each session.

The final workshop session concludes with a request for participants to complete and submit a workshop evaluation survey. Participants have the option of volunteering to provide their names or to remain anonymous. The formative evaluation addresses (a) the viability and meaningfulness of the content, (b) the facilitator's professionalism, knowledge, and support of all learners, (c) content and pedagogical knowledge gained and (d) additional comments or feedbacks. The evaluations and reflections would be analyzed and results presented to the HVE staff on Google drive for future training instructional planning.

Ongoing support for participants would be provided by the PDLTs and leadership team members throughout the school year both in classroom and during grade-level planning. The information shared by participants about their strengths and needs would be used by administrators and the leadership team for planning and designing targeted PD.

Implications Including Social Change

Local Community

The PD workshop is one method of building teacher capacity as data leaders by addressing data-based decision-making needs of elementary teachers. The HVE administration and leadership team can enhance elementary teachers' data knowledge and skills by providing time for data discussions and collaborative solution decision-making. The importance of the workshops is to raise student achievement to the highest level in the school district. Elementary teachers may find the data knowledge and skills develop during the workshop are the support structures for their student learning. Data practices that could be integrated and monitored involve (a) collecting and preparing data from multiple sources, (b) interpreting data and developing theories, (c) teaching students to examine and interpret their own data, and (d) planning and implementing outcomes.

Far Reaching

These workshops could be a model for school improvement of promoting a data-driven culture and building the data capacity of elementary teachers at HVE, development of effective PD for K–12 schools, and influence higher learning institution teacher preparation programs in the United States. Through effective PD elementary

teachers may begin to experience an attitude paradigm shift from being assessment opponents to assessment proponents. As teachers' confidence grows, they may become data leaders who empower their students both academically and socially for success.

Summary

Design and implementation of effective PD for teachers require strong administrative support, qualified, knowledgeable and experienced presenter/facilitators, hands-on activities, reflective practice, and peer coaches. PD targeted for data informed-decision-making involves leadership support, collaboration among elementary teachers, and learning opportunities to practice new knowledge and skills. In this section the collection of data, the analysis, and the findings are addressed. The participants provided insights on their teaching experiences in using data, perceptions of their instructional knowledge and skills, and on how their attitude influence the classroom practice. In the next section, I discuss the interpretation of the findings of my study and the social change impact.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

The purpose of this study was to address the research question relating to a problem at an elementary school in one of the largest school districts in northeastern part of the country and the need to prepare elementary teachers for using data to inform their lesson design decisions. The eight participants interviewed for this study believed that they lacked the knowledge and skills to use data to support students and school improvement. Although this perception of data was consistent among educators across the nations, they differed on the most effective learning activity to build teacher capacity as data leaders (Akiba & Liang, 2016; Newman & Newman, 2013; Quartz, Kawasaki, Sotelo, & Merino, 2013).

The findings from this study have important implications for school and district policy-makers and align with the literature (Datnow & Hubbard, 2016; Niemeyer et al., 2016; Young & Kim, 2010). The main four focus areas to consider are (a) the elementary teachers being overburdened with much data, (b) building teachers' data knowledge capacity, (c) data fidelity barriers, and (d) supportive infrastructure to help teachers become data literate. In the next section, I discuss the workshop's strengths and limitations of the project designed for elementary teachers.

Project Strengths

The strengths of this project directly relate to the research and the analysis of the findings. Kalkan (2016) discussed the "professional learning community, bureaucratic structure and organisational trust" that teachers deemed necessary for "building an

effective school. . . improving the quality of the educational process and student learning" by adopting and not resisting change (p. 1630). Kolbergyte, Indrasiene, and Bardauskiene (2014) indicated that adult learners dissatisfied with the current conditions pursue harmony using self-directed learning to change their social surroundings and improve practice. Christie, Carey, Roberston, Grainger, and University of the Sunshine Coast (2015) provided ways that adult educators and prospective teachers change their teaching practice and upgrade pedagogical knowledge by reconsidering underlying assumptions to transform school culture and improve student learning. Through transformative practice, teacher leaders can be the change agents of the school (Christie et al., 2015; Kolbergyte et al., 2014). Kalkan's and Christie et al.'s focus on change and on teachers' instructional roles as relevant, self-directed, and professional are what I am seeking to achieve in the PD based on the findings of this study.

Another strength of the project is the use of a qualitative research design to gain insights of the perceptions of participants and to better understands how these perceptions influence behavior using rich descriptive language. The participants shared how their experiences and perceptions at HVE have prepared and failed to prepare them for using data to inform their lesson design in this study. The findings may result in positive social change to HVE school district, other school districts in the state, and the department of education, by providing useful information on the instructional data needs of teachers.

Another strength was the practical experience and application opportunities for participants to apply the newly acquired knowledge and skills through simulations and real-life to activities. The design of the PD workshops and the learning activities was

based on the responses of the participants for preparing elementary teachers about practices and strategies for data decision-making in their classrooms. Most of the training would provide elementary teachers with opportunities to improve their knowledge and skills about data and about how to build a data culture in their school setting. In addition, the elementary teachers would develop instructional strategies to work collaboratively to effectively analyze and use data for instructional lesson design.

Another design of the workshops is that the sessions can be presented in consecutive order or intermittently and with information to help with positive change for both the local school educators and district policymakers. The reflective practice of the workshops may offer deeper insights of teachers' needs and perceptions as they are participating in the workshops. These reflections would allow for adjustment and modification in real time in support of confidence building. As the aim of the workshop is to improve the performance of participants not to grade their participation a formal grading system was not employed allowing for more open and constructive dialogue and feedback.

Recommendation for Remediation of Limitations

The major limitation of the project is that it relied on the support from various stakeholders in the school district. School district area leaders assigned to support the school's instructional needs were often redirected or reassigned to other area schools. This lead to derailment of joint projects and teacher training. Parent involvement were at most minimal and often adversarial. As a result, the school's outreach to parents remained at a distance and impacted the advancement of learning. The school district

implemented budget cuts that targeted reductions or eliminations of instructional programs and personnel. School personnel felt overwhelmed with assessments and school culture and this led to teacher resistance and high teacher turnover. The project I have designed is to help teachers build confidence and take risks to support student learning and to also invigorate passion and curiosity of dedicated teachers. I believe that providing teachers with opportunities to practice their craft in a series of ongoing targeted (PD) and willing to undertake new roles, they will continue to be lifelong learners engaged in self-development. I am aware that providing a solid and research-based plan to a school or district is not sufficient to guarantee a program's success.

Billings and Kasmer (2015) discussed the need for evidence of change for teachers at every school level. It is viable expectation that educational leaders at schools often judge the pace of transformational change with an eye on speed than on teacher incremental growth. Leaders must find a balance between moving too fast and leaving staff behind who then become disenfranchised and moving too slow and becoming noncompetitive, thus diminishing the ability to grow.

School administration dictates the organizational climate and culture and thinks real change is more than the physical correction and improvements but encompasses all improvement and arrangement relating to instructional activities and educational system in schools (Hosgorur, 2016). The organizational cultures of school may either be conducive to or work against teacher growth. Furthermore, teachers who are eager for change may find colleagues resistant to change and uncooperative and disenfranchised. Therefore, this project is designed for schools where a support network for teacher

growth and development are the expectations. Nevertheless, to cultivate a learning culture for teacher development in schools that do not readily support this outlook, trained (PD) lead teachers in the school may participate in district-wide PD, then redeliver to teachers at their own schools.

One of the project limitations could be the qualitative research design method of a small sample size of eight participants from one of the largest school district in northeastern region of the United States. The small sample size did not allow for generalization to the larger population (Lodico et al., 2010). Another limitation of the project could be in the funding. In the past, grants and school funding provided funding for PD teacher stipend and incentives; however, with budget cuts and reduction in school grants this option may not be available or guaranteed.

Admittedly, having the workshops scheduled on days the district has designated for PD may cause a conflict because the district might elect to have a specific training schedule for district-wide PD. If this conflict should arise, the workshops could be rescheduled for days the school has designated for PD.

Scholarship

As a scholar, student, and educator, my doctoral journey has taught me that tenacity, organizational skills, and having a plan are the keys to a successful doctoral program completion. I have learned to set both short- and long-term goals as milestones to measure progress and to achieve my desired outcomes. I credit my staying focused and engaged in the program to my colleagues at Walden, reading of other doctoral studies by Walden students, and my coworkers.

The findings from this study demonstrate that teachers are life-long learners. When given targeted support, resources, appropriate training, and most importantly time, teachers welcome the opportunity to broaden their knowledge to improve instructional practices. Teachers understand that students' academic and social success depends on their ability to meet the diverse needs of all students and to implement myriad instructional strategies to ensure success. Students need teachers who use data to make instructional decisions, are reflective of their practice to enhance pedagogical thinking, and work collaboratively with peers to champion their success. Finally, as a scholar-practitioner it is my intent to be an advocate for all learners, to use best research practices, and to aspire for a unified and better world.

Project Development and Evaluation

I applied my knowledge and experience as an educator with critical analysis skills to design the curriculum for preparing elementary teachers to use data for lesson decision-making. The curriculum is designed to improve attitude about data usage and promote teachers as data leaders through best practice in teaching and pedagogy. Prior to the curriculum writing, I used my notes from previous workshops, my experience as an instructional coach, and knowledge gained from peers to compose a schedule of learning activities to support teacher success with data. Additionally, I complied a list of instructional strategies for integrating into the curriculum. I also offered opportunities for self-reflection and feedback by the elementary teachers to access areas of strengths and needs, the impact of the training on performance, to identify areas to reinforce or for

additional support of the newly acquired skills, as well as revision of the training resources.

Leadership and Change

The responses from the participants provided me more insightful information for critical self-reflection of my teaching and instructional practices and my role as an educator. I will continue to be committed to the academic growth and development of adults and students from diverse background, especially students from low-socioeconomic status in achieving success. I will remain dedicated to the transformational learning needed for changing the attitudes and beliefs of teachers and learners. My classroom environment will embody a safe and inclusive culture to promote positive personal and social development. I will continue to offer ongoing support to the teachers by developing relationships and establishing a resource network for empowering teachers as life-long learners.

Analysis of Self as Scholar

My growth and development as a scholar are directly related to my Walden's experiences. The collaboration and discourse with Walden peers challenged me to view ideas and information with a critical eye for objectivity and fairness. I came to understand we shared a common desire to better understand the impact learners' perceptions and attitude have on learning. Walden University provided me with the opportunity to research and write about a topic engaging me as a scholar and is at the forefront of today's academia discourse. I discovered two of the critical elements of a doctoral journey were tenacity and time, especially during the research process. Walden's strong

and rigorous academic programs combined with the high expectations from my committee members challenged me to stay a life-long learner. In completing this study, I fulfilled my quest for information and knowledge with the hope of adding to the field of higher education in advancing building the data capacity of educators.

Analysis of Self a Practitioner

Successful teaching requires being a knowledgeable and skillful facilitator in the learning process. I realized from the project, having a comprehensive and inclusive learning format in a safe and welcoming environment set the foundation for learners to be actively and responsibly engaged. At times, during the doctoral journey I questioned myself with fleeing thoughts of altering my plan; however, perseverance took over and I prevailed. I have spent countless hours navigating the research process resulting in deep self-reflection and analysis of my actions and learning. I am even more committed to being a change agent and an advocate for learners from all academic and social backgrounds. Learning is not stagnant, but an ever-evolving process.

Analysis of Self as Project Developer

Writing this project curriculum was most rewarding. I designed the curriculum to support elementary teachers in using data for lesson decision-making and to promote self-governance through transformational experiences. The core of the curriculum is founded on best teaching practices and designed to address some of the identified concerns of elementary teachers at HVE. Although this project has been the most comprehensive academic undertaking I have taken thus far, my hope is that it sets the stage for future endeavors. My future aspirations are to design curriculum and PD for practitioners, local

school district, and school districts nationwide to improve the quality of teacher training and student academic success.

Overall Reflection

This Walden journey was not without challenges nor was it taken alone. My fellow Walden colleagues and I overcame challenges and unexpected turns of events such as work-related responsibilities, time management constraints, and family obligations. The guidance and encouragement of my committee chair was of pivotal assistance to keeping the process moving in a positive and forward direction. Much of my growth as a practitioner and development as scholar evolved from the development of this project which may be a catalyst for influencing social change.

The Project's Potential Impact on Social Change

Social change is derived from social awareness and this study embodies the core of research best practices that could be the framework for the academic and social development of educators. Prior to this study, limited research had been undertaken about elementary teachers' data capacity and their perceptions of using data for lesson decision-making. The findings of the study contribute to the mountain of evidence of research on how to support elementary teachers in using data to make lesson decisions. Walden University's (2017) commitment to social change for students is to "apply new skills, expand their networks, gain deeper knowledge, and consider a variety of perspectives in order to better address practical problems at an individual level as well as within their organizations, communities, and society at large" (Social Change Section, para 4). In accordance with Walden's social change principles, I explored elementary teachers'

perceptions of how their teaching experiences have prepared them for using data to make lesson decisions.

Overall, the positive social change that may emerge from this study is the deepening of teachers' data knowledge. I surmise the leadership team may use the findings of this study as a reference resource to develop targeted PD to help elementary teachers develop the knowledge and skills to effectively analyze data and use the information for improvement of school and student learning. My assumption is that positive social change may materialize in the areas of elementary teachers' attitude and perceptions of data. As elementary teachers participate in frequent learning opportunities and acquire the necessary skills and knowledge, it is expected their confidence will grow into a more positive relationship with data. I think social change may happen within the school culture of school leaders' accountability. I expect school leaders will apply the findings to endorsing a data culture focused to the improvement of classroom practices and student learning and from assessment and monitoring of programs and systems in the school.

Ultimately, I believe the findings of this study may bring about enduring positive social change of elementary teachers use of data for lesson decision-making to improve student learning. Recognition and development in elementary teachers' perceptions, attitudes, acknowledgment of skill levels, factors hindering use of data, and technological infrastructure may improve the quality and effectiveness of elementary teacher support for continuous academic and social progress. I believe a momentum for positive social change may come forth from elementary teachers' empowerment of students who stand

up against inequalities and prejudices in and outside of the classroom environment. Students can become keenly aware of some of the education inequities existing in schools and seek to become advocates for social justice in education. Students can learn to become socially active by engaging in community service. Elementary teachers at HVE geared with the pedagogical knowledge and data literacy can be the change leaders addressing the issues of data-informed decision-making practices for K–12 schools and institution of higher learning in the United States.

Implications, Applications, and Directions for Future Research

In this study, I analyzed the perceptions of eight elementary teachers from HVE, a public school in the northeastern region of the United States, regarding their teaching experiences in using data for lesson decision-making. Although the research evidence from this study cannot be generalized to the entire teaching community given this study's limitations, it is my belief that similar findings might emerge from a study with a larger sample and suggest further research with a larger sample size, including participants from secondary schools within the local school district and neighboring school districts. If the existing program data gap needs were addressed from the workshops proposed to elementary teachers, I would conduct a 2-year follow-up study to assess whether they met the data needs of elementary teachers in using data to make lesson decisions.

Further studies are suggested to explore additional factors such as principals' perceptions about using data for instructional decision-making. A suggestion for further workshop could target training for teachers as data coaches to help students learn to collect, analyze, and make decision about their own data. Additional inquiry may be

needed to measure the substantive of teachers' data knowledge growth for longstanding changes to teacher practice.

The findings from this study indicated that although elementary teachers' willingness to participate in PD to deepen their data knowledge and their ability to make data decisions is important, ongoing data support may be needed in order to become data literate.

Conclusion

The findings from this study showed the perceptions, attitudes, and biases of elementary teachers from HVE have about using data to make lesson decision and the data tasks they were required to undertake. I interviewed eight participants from HVE for this study about their perceptions and how their teaching experiences prepared them for using data to make lesson decisions were resilient and committed to student learning. I interviewed each participant with open-ended semi structured questions. As I interviewed, gathered, and analyzed data, I wanted to understand the phenomenon and how participants make meaning from their experiences (Merriam, 2009). While (PD) of teachers is a primary focus of many educational reformers and stakeholders, this study focused on teachers making instructional decision based on data (James-Ward & Abuyen, 2015; Jingping, Johnson, & Przybylski; McKenney & Mor, 2015).

The problem that initiated this study was that elementary teachers were not using data with fidelity and to make data-driven decisions in schools. When I interviewed, and collected data from the participants, I became aware of some of the instructional implications issues they encountered in their practice, how they addressed them, and how

they overcame organizational issues at their school. I collected data guided by the research question: What are teachers' perceptions about using data to inform their lesson design decisions as a means of improving instructional practices?

This study is significant as it reveals teachers' perceptions of using data and data support that they need to become change agents. Teachers who self-reflect and are self-directed may inspire other colleagues to do likewise, and to use their skills and knowledge to improve the culture and climate at their school. The results from this study contribute to the growing body of research by addressing data deficiencies in programs and processes at HVE. Additionally, participants from the PD infuse collegial collaboration and action planning in their school to promote meaningful dialogue and outcomes. Suggestions for building teachers' data capacity include providing ongoing targeted data support, time for building knowledge and skills, and building a data learning community.

When schools make learning a priority and support teachers, the inadequacies of lack of resources and deficient conditions that impede learning are minimized and student achievement is increased when schools engage in ongoing improvement efforts (Grace & Harrington, 2015). Schools in the 21st century will demand more use of data and will challenge teachers to be data experts and "if employees are not conscious of how the change will affect them, they will surely resist changing or with best estimation, they will remain neutral (Hosgorur, 2016, p. 2048). Teachers who are empowered transform their learning environment and provide opportunities for all students to flourish.

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Appendix A: The Project

Goals: The 3-day PD support teachers in acquiring the skills and knowledge that will improve their instructional data decision-making abilities for school improvement targets. Teachers participate in hands-on learning activities to build confidence, learn about instructional strategies, navigate data systems, enhance data knowledge, develop leadership skills and establish the foundation for positive social change in their school setting. The presenter/facilitator will use small group, collaboration, reflection, and well-facilitated discussions to help teachers apply their unique abilities to address school improvement goals that are targeted, meaningful, and doable in their school setting. seek opportunities

Learning outcomes: Teachers will be able to develop effective data-driven instruction practices and reliable structures in their school. Teachers will be able to identify and determine student strengths and needs. Teachers will analyze the various PARCC resources and its instructional implication, gain a deeper understanding of the new PARCC tools and information and analyze scored PARCC released items. Teachers will understand how to provide structure to help support leadership in using data and resources in assessment to support the decision-making process. Teachers will engage in self-reflection that will build confidence of practice in their development as data leaders. Teachers will develop data and communication strategies. At the conclusion of the PD, participants will complete an action plan for data-based decision-making process that takes into account participant knowledge, focus, skill, a proposed time frame and budget, and school needs.

Target audience: The targeted audience will be eight K-6 elementary teachers, who have volunteered to participate in this project.

Components: The PD will be organized into the following topics that will act as a guide tool to help participants reach their goal of developing into a data leader for their school and context:

Day 1: Supporting data-driven instruction for Common Core Learning

Day 2: Understanding, Identifying, and Using Multiple Data Sources

Day 3: Building teacher capacity as data leaders

The plan for the professional development (PD) project was based on the four findings and acts as a guide to pinpoint how assessment illiterate teachers build capacity to be data expert leaders. The design of the project focused on assisting teachers, who volunteer as participants in the PD, to gain insights of being data leaders, a deeper understanding for the data-decision making process, develop a comfortable relationship with data, awareness of the multitude of skills, acumen, and attitude required for the role of teacher data expert as well as clearer perspectives on the impact of relationships and the culture of a school may have one's own ability to influence school improvement. Finally, as the findings indicated teachers are instructional planners keenly aware that organizational skills underpin achievement of goals, thus the third day will facilitate action planning and compilation of data tools and resources.

The activities for each day are prepared with notes for the presenter/facilitator with a slide presentation for each session. The slide presentations include guidelines, logistical information, and links required for the presenter/facilitator to conduct the

session. Participants will have access to both a hard copy and an electronic version of the slide presentations and will view the presentation projected on the screen at the front of the room. Formative assessments are imbedded throughout the slide presentation with self-assessment links for pre-and post-assessments. Additionally, a summative assessment questionnaire at the end of day 3 is indicated in the presenter/facilitator notes. The (PD) project with topic, activities, and time for each day is outlined in charts below:

Day 1: Data Driven Teacher-Understanding Data Driven Instruction

Time	Topic	Method
8:00 – 8:30	Registration	Sign-in
8:30 – 8:50	Overview of the Day's Session.	Presentation handout
8:50 – 9:05	What data means to me?	Turn and Talk
9:05 – 9:30	Data team meeting	Video Video capture sheet
9:30 – 9:55	Determining causes and solution at school	Group work using chart paper
10:00 – 10:15	Break	
10:15 – 11:15	Using data to identify and address causes and solutions	Gallery Walk- discussions on gallery walk
11:15 – 12:00	Data Decision-Making	Video-Data-driven decision Group discussion
12:00 – 1:00	Lunch	On your own
1:00 – 2:30	School Data We Use	Group activity Graphic organizer
2:30 – 3:00	Closing Session	Reflecting on our learning

Day 1 Workshop		
Participants: Elementary Teachers		
Data Driven Instruction for Common Core Learning: Day 1		
Setting: Elementary School		
Topic: Data Driven Teacher		
Purpose	• To analyze data meeting structure and systems • To identify key components necessary for ongoing data analysis of student learning.	
Learning Objectives	• To help teachers understand the importance of using data to guide instructional practices.	
Outcome	• To develop effective data-driven instruction. practices and reliable structures in their school • To determine student strengths and needs	
Time Required	420 minutes-7 hours	
Material	• Welcome Letter • Video Clip: Data Team Meeting Video Capture Worksheet • Video Clip: Data Decision Making • Markers, Chart paper, tape • Sticky note for "Parking Lot" • Index cards 5x7 • Scissors • Journals	
Activities	• Registration	8:00 - 8:30
	• Introduction and Overview: Facilitators and participants are introduced. Objectives and outcomes are shared	8:30-8:50 Session 1

	• Establish Norms, the agreed standard of behavior. Example, active listening, positive feedback • Norms on chart paper, post, and review as needed • Icebreaker: Participants draw a flag on an index card with symbols or objects that represent you or who you are.	
	What Data Means to Me • Participants respond to "What Data Means to Me" Participants share out their response.	Session 2 8:50 – 9:05
	Data Team Meeting • Give each participant a copy of the Video Capture Sheet. They will fill it out as they watch the video. • Video of "Data Team Meeting" https://youtu.be/QcuOFpRgOK8 Discussion of video -Turn and talk to neighbor and share your notes from the data capture sheet. Then share out to group.	9:05 – 9:30 Session 3
	• Give each group a sheet of chart paper • Group Assignment: Each group determine causes for not using data at school and some solutions. Chart responses on chart paper. Post	9:30 – 9:55 Session 4

	completed charts on walls around room.	
	• Break	9:55 – 10:15
	Gallery Walk: Groups will rotate around room to next station and discuss the response and add additional content to chart. Repeat until all groups have visited each station. • Group Discussion: Each group goes back to original station and discusses what was added. What did they learn from the gallery walk? Were there common causes and solution shared by the groups? • Whole Group Discussion: Participants share out to the whole group what they discussed in the group discussion	10:15 – 11:15 Session 5

	Data Driven Decision • Show video: https://www.youtube.com/watch?v=L3eO8gYmWCc • Group discuss "How the information in the video relates to their teaching and using data?"	11:15 – 12:00 Session 6
	• Lunch	12:00 – 1:00
	School Data We Use • Show video: https://www.youtube.com/watch?v=L2-VY1mogHAAfter watching video group activity: Complete graphic organizer "School Data We Use"	1:00 – 2:30 Session 7
Self- Assessment	Closing session • Reflective Writing 3-2-1: • Record three things learned • Record two things they found interesting and would like to learn more about • Record one question they still wonder about • Exit-ticket: How can we better organize for collaborative inquiry?	2:30 – 3:00 Session 8

Facilitator/Presenter Notes for Day 1

Data Driven Teacher-Understanding Data Driven Instruction

The facilitator/presenter will complete the following tasks before conducting the presentation and the start of the first session.

- Organize the materials and arrange furniture to accommodate small group interactions. Check audio equipment prior to the session and download video clips onto computer or USB thumb or flash drive.
- Create an area for a "Parking Lot" with chart paper where participants may post question, concerns, or ideas with sticky notes.
- Place in the center of each table the listed material for the day.
- Welcome participants as they arrive and have them sign-in to register for today's training.
- Begin the first session. Introduce yourself and give an overview of three-day (PD) program. Explain the program is designed to help them develop into data leaders, learn about the data decision making process, identify individual strengths and needs, and on the third day depart with an action plan to help support their school's improvement plan. Explain the first day is focused primarily on understanding data and determining causes and solutions, and the following two training days will be geared to unpacking, disseminating, and data decision-making.
- Write the norms for the group on chart paper
    - Respect the ideas of others

  - We will speak respectfully and stay on topic
  - Actively participate and communicate authentically
  - Limit sidebar conversations
  - Silent cell phones – limit to emergencies

- Ask participants if they agree with the norms and would they like to add or replace with others. Adjust norms as necessary based on responses, then note on chart.
- Let participants know they are free to take care of personal needs as necessary throughout the day.
- Once norm consensus has been met, begin session one.
- **Sessions 1-7**

Please use the slide presentation as a guide for the activities for the day. The facilitator/presenter will be part of the presentation for a small period of the day. The slide presentation will provide the training information.

- The slide presentation contains all the required information for the participants and the handouts that the participants will use for each session. An electronic version of the presentation will be available to all participants.
- Monitor participants' needs throughout the day and gauge their responses or actions. Provide additional breaks as needed.
- Links to videos are imbedded in the slides.
- Distribute the materials listed for each activity and decide on a method to

collect materials to help with organization.

- Participants place all completed assessments in the center of the table for collection.
- After the closing session, organize and clean-up the room.
- Presentation slide shows are found for sessions 1-7 in the appendix on the following pages:
    - Session 1: Introduction and overview, page
    - Session 2: What data means to me, page
    - Session 3: Data Trends and Patterns
    - Session 3: Data team meeting, page
    - Session 4: Identify causes and solution, page
    - Session 5: Data decision-making, page
    - Session 6: School data we use, page
    - Session 7: Closing session, page

A.1. Needs Assessment

The purpose of this needs assessment is to identify data needs to plan professional development activities to build your data capacity as data users and leaders.

1. How important is it for you to use data to support the instructional practice? (think differentiated instruction, interventions, small group instruction)

   a) very important b) important c) somewhat important d) not important

2. What are some of the challenges you face or encounter in using data? (time, access to data, too much data)

3. What are some of your most successful encounters in using data?

4. What is your greatest data need?

5. In your opinion, what can be done to improve student achievement in your classroom and in your school

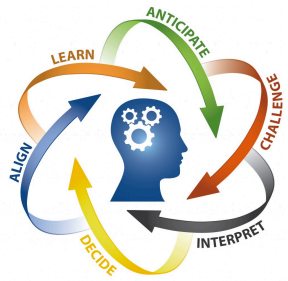
6. How best do you like to learn?

   a) Independently only b) in groups c) somewhat important d) not important

7. Please provide any additional comments that you would like to make.

A.2. Welcome Letter Sample

(This is a sample of welcome/introduction letter to teacher that can be shared with to them before implementing the workshop)



Dear Data Leaders,

Welcome and thank you for attending the math workshops on using data to improve instructional decision-making. We hope that during the five workshop sessions you will gain a deeper understanding of data and instruction. The workshops involve both discussions on data implications on instructions and also hands-on sessions using online resources.

We are very excited about having you here with us. Throughout the entire workshops the focus will be on addressing participant's questions and concerns about data. We hope the workshops will provide a valuable opportunity to share and work collaboratively in groups.

At the end of the workshop, we hope we will have achieved our objectives as stated in each session. If we can help make your experience more meaningful please do not hesitate to contact your workshop facilitator.

We greatly appreciate your suggestions and comments.

Sincerely,

Administration, Hope Valley Elementary

Presentation and Handout (Day 1, Introduction)

Data Driven Instruction for Common Core Learning

Presentation and Handout (Day 1, Session 1)

Learning Outcomes

Participants will:

- ✓ Understand the importance of using data to guide instructional practices
- ✓ Understand data teams and its purpose
- ✓ Identify and discuss the different types of data
- ✓ Navigate and decompose various types of data to identify patterns and mastery

...in order to emerge eager, energetic and knowledgeable to begin using data!

Group Norms!

- Respect the ideas of others
- We will speak respectfully and stay on topic
- Actively participate and communicate authentically
- Limit sidebar conversations
- Silent cell phones – limit to emergencies

Some questions we have are great but would take us off the subject and distract us. We put them in the parking lot so that we don't lose them and can address them at a later time.

THE PARKING LOT

Icebreaker

1. Select an index card
2. Use the card to design a flag
3. Use symbols or objects that represents who you are
4. Share out-explain what the symbols or objects means and how it represents them

What Data Means to Me

Think/Pair/Share

- THINK: "What Data Means to Me"
- PAIR: with a partner discuss your thoughts
- SHARE: with the whole class some ideas on the topic.

Presentation and Handout (Day 1, Session 3)

Data Team Meeting

- The video will illustrate the data team process
- Take notes of what you hear, see, or have questions about

https://youtu.be/ZAQoJIkpNoWc

- Then, Turn and Talk.
- Share out to the group

A.3. Video Capture Sheet, Day 1 Session 3

Your Name: _____

Topic: _____

What I saw	What I heard	Questions I have
Notes		

Data Team: The Process

- Develop a shared vision for data use
- Collaboration and teamwork
- Identify and manage data and design data displays
- Develop models for the inquiry process
- Provide professional development
- Monitor the progress

Presentation and Handout (Day 1, Session 4)

Determining Causes and Solution at School

Group Assignment

On the chart paper:

- Create a visual display that identifies and describes causes at the school for not using data
- Solutions or strategies that will support data use
- Post completed chart paper on the wall

Break

20 minutes

Presentation and Handout (Day 1, Session 5)

Gallery Walk

- Each group will rotate clockwise around the room to each display until they have visited each chart
- Groups will discuss each display looking for similarities and differences
- Groups may add additional content to any of the chart as they rotate
- Once your have completed the walk return to your original seat

Gallery Walk

Gallery Walk Reflection

Discuss within your group the following:

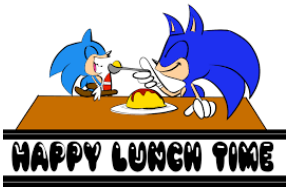
- What did you learn from the walk?
- Were there common causes and solutions shared by all groups?
- How does this help you with building your capacity as a data leader?
- Each group will share out to the whole group

Data Driven Decision

- View the video on data driven decision making
- Discuss in your group how the video relates to your teaching and using data.

https://www.youtube.com/watch?v=L3eO8gYmWCc

Lunch



1 hour

A.4. School Data We Use (Day 1, Session 7)

School Data We Use

Data We Use	Data We Can Use	How Can We Identify Causes and Solutions	What We Should Think About?	Steps We Can Take

https://www.youtube.com/watch?v=umRkkutvJgM

Presentation and Handout (Day 1, Session 8)

Last Thoughts Reflections…

"

A challenge is an opportunity to succeed"

Evaluation, Day 1

Building Teacher Data Capacity

Training Evaluation 3-3-1

Title of Training_____ .____

Date_____ Facilitator/Presenter_____

Thank you taking the time to complete this evaluation. Please leave it with the Trainer upon leaving the training. Your honest and thoughtful feedback is used for planning future trainings.

3	Things I Learned Today …
2	Things I Found Interesting …
1	Question I Still Have …

Please complete the evaluation for today. You may leave the evaluation at the center of the table or give it to the presenter. Thank you for your support and participation.

Exit Ticket
Questions/Comment

If you could change one thing from today's session what would it be and why?

Day 2: Understanding PARCC and Instructional Implications

Time	Topic	Method
8:00 – 8:30	Introduction and overview	Presentation/handouts Icebreaker
8:30 – 10:00	Data analysis worksheet	Internet: access classroom data from the district's online data warehouse Handout
10:00 – 10:20	Data Trends and Patterns	Presentation Group discussion
10:20 – 10:40	Break	
10:40 – 12:00	PARCC Resource Activity	Presentation Handout Video clip: What do the PARCC result mean?
12:00 – 1:00	Lunch	
1:00 – 1:30	Exploring PARCC tutorial	Internet PARCC tutorial independently
1:30 – 2:30	Analyzing Scored PARCC released test items and Implications	Online PARCC site or hard copies of released items Handout
2:30 – 3:00	Written reflection	Reflecting on our learning

Day 2 Workshop	
Participants: Elementary Teachers	
Setting: Elementary School	
Topic: Partnership Assessment of Readiness for College and Careers (PARCC) and Instructional Implications	
Purpose	• To understand the implications for PARCC and Instruction
Learning Objectives	• Use data to adjust instruction to support student achievement
Outcome	• Analyze PARCC Task Type items to determine instructional implications for student achievement • Access the online testing preparation platform to gain knowledge of various tools and resources for student readiness. • Analyze the various PARCC resources and its instructional implication. • Gain a deeper understanding of the new PARCC tools and information. • Analyze scored PARCC released items.
Time Required	420 minutes-7 hours
Material	• Assessment Tool • Data Analysis Worksheet • Analyzing Scored 2016 Release Items Worksheet • Computer with internet (set of assessment data as backup) • Graphic Organizer • Markers, Chart paper, tape • Sticky note for “Parking Lot” • Scissors • Index cards 5x7 • Journals

Activities	Introduction and Overview: • Facilitators are introduced. Objectives and outcomes are stated for day 2. Review of Day 1. • Icebreaker: Participants are paired and stand back to back. One person has the template of a shape and gives only verbal directions to the partner to draw an exact copy of the shape of the template. Partners then compare the shape with the one drawn. Pair discusses the experience with each other. Then shares out to the whole group. Do not show the shape until after the debriefing.	8:00 – 8:30 Session 1
	Data Analysis Independent activity: • Using the Internet access classroom data. Complete Data Analysis Worksheet https://youtu.be/_Z_-xwFuu38	8:30 – 10:00 Session 2
	Data Trends and Patters Presentation Group Discussion: • What trends did you identify from your data? What patterns emerged? What accounts for these trends and patterns?	10:00 – 10:20 Session 3
	• Break	10:20 – 10:40
Group Discussion	PARCC Resource Activity • Counting Off Group: • Count off by 4's • Based on the number the table group will be assigned a PARCC Resource to start • Each group will spend time exploring the site They should discuss the	10:40 – 12:00 Session 4

	tools, resources, instructional support and then chart responses • Review and chart the assigned resources: • How does PARCC resources support instruction? • How does the resource help develop students conceptual • understanding to prepare them for PARCC? • Group 1: PARCC Practice Tests https://parcc.pearson.com/practice-tests/math/ • Group 2: PARCC Test Design Documents (Claims Structure, • Task Types, Test Blueprint) PARCC Test Design Documents (http://www.parcconline.org/ assessments/test-design/mathematics/math-test-specifications-documents0 • Group 3: PARCC Tutorials (Equation • Editor, TestNav) https://parcc.pearson.com/tutorial/ • Group 4: Performance Level Descriptors, Evidence Statement Tables (http://www.parcconline.org/ assessments/test-design/mathematics/math-performance-level-descriptors) • Each group will post their chart on the wall	
	• Lunch	12:00 – 1:00
	Independent Activity • Each participant will access • PARCC tutorial and explore the features of the tutorial	1:00 – 1:30 Session 5

	(https://parcc.pearson.com/ tutorial)	
	Group Activity: Analyzing Scored PARCC released items, 2016 and Implications • Count off by 6s • Each group will explore the released task listed by their number and complete the "PARCC Scored Task Release Items" • Analyze the sample scored student responses and rubric and respond to the following questions • How does the scoring rubric help instruction/PARCC preparation? • How does seeing the scored anchor papers help with instruction/PARCC preparations? • How do the tools assist students in their conceptual understanding? • Group 1: Number Pattern-Grade 3 Item 31 • Group 2: Zora's Reasoning-Grade 3 Item 32 • Group 3: Using Properties of Operations-Grade 4, Item 26 • Group 4: Mixed Number to Fraction-Grade 4, Item 27 • Group 5: Leftover Soup-Grade 5, Item 22 • Group 6: Total Distance Ran-Grade 5, Item 25 Think About and Implications • Each group will share their findings to whole group	1:30 – 2:30 Session 6
	Reflective Writing • Compare analyzing data independently to working in a group? • How can you apply what you learned today in your instructional practice? • Has your opinion of using data changed or stayed the same? Exit Ticket: • If you could change one thing from today's session what would it be and why? • Participants respond on an index card.	2:30 – 3:00 Session 7

Facilitator/Presenter notes for day 2: PARCC and Instructional Implications

Welcome back participants to the second day of the PD. Explain today's session will help them to build their capacity as data leaders as they identify data trends and patterns, explore resources to support them in understanding data and its implication on teaching, and on the third and final day, an action plan to support school improvement at their school setting.

Notes for facilitator/presenter session 1-7:

- Review and remind group of the norms posted from the day before.
- Likewise, the slide presentations are simply a guide for the activities for the day.
- Review and organize the materials for each session, ensuring all materials indicated on the slides are available and accessible.
- Check audio equipment prior to the session and download video clips onto computer or USB thumb or flash drive.
- Ask for all assessments and exit tickets placed on the center table.
- Interact and engage with participants to show passion and connect with participants
- Presentation slide shows are found for sessions 1-7 in the appendix on the following pages:
    - Session 1:
    - Session 2: Data analysis worksheet, page
    - Session 3: Data trends and patterns, page
    - Session 4: Understanding PARCC results, page
    - Session 5: Exploring PARCC tutorial, page
    - Session 6: Analyzing Scored PARCC released test items and implications, page

- Session 7: Closing: Written reflection and exit ticket, page

Data-Driven Teacher

Understanding PARCC and Instructional Implications

Ice-Breaker

- Select a partner
- Stand back to back
- One partner of the pair takes the copy of the shape template (in the envelope)
- The next partner takes the blank sheet and a pencil
- The partner with the template gives only verbal directions to draw the shape
- The partner with the paper and pencil draws an exact duplicate of the shape
- After you are done, compare the shape provided with what was drawn

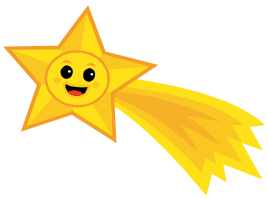
Debrief

- How was it like to give directions?
- What was it like to receive directions?
- What was it like not being allowed to ask questions?
- Why are the pictures different, when each pair had the same shape template?
- Do you think people communicate differently?
- Do you think people receive or perceive the instructions the same??
- How does this reflect to people at your school?

A 6. Back-to-Back (Day 2, Session 1)

BACK to BACK

Back-to-Back



What's Your Knowledge of the **PARCC**? What are the **implications** for student learning?

Learning Outcomes:

Participants will:

- Analyze PARCC Task Type items to determine instructional implications for student achievement
- Access the online testing preparation platform to gain knowledge of various tools and resources for student readiness
- Analyze the various PARCC resources and its instructional implication
- Gain a deeper understanding of the new PARCC tools and information
- Analyze scored PARCC released items

Some questions we have are great but would take us off the subject and distract us. We put them in the parking lot so that we don't lose them and can address them at a later time.

Presentation and Handout (Day 2, Session 2)

A. Data Analysis Worksheet (Day 2, Session 2)

Data Analysis Worksheet
Hope Valley Elementary School

Data Collection

Grade Level: _____ Date: _____

Name of Assessment	# Students Taking Assessment	# or % Students Scoring Advanced	# or % Students Scoring Proficient	# or % Students Scoring Basic	# or % Students Scoring Below Basic	Notes

Student Target

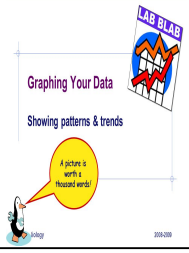
Students Scoring Advanced	Students Scoring Proficient	Students Scoring Below Basic or At Risk

Analyze Strength/Needs – Identify Skills/Standards/Indicators Most Missed By:

Benchmark Students	Strategic and Intensive Students	Strengths Skills/Indicators	Needs Skills/Indicators

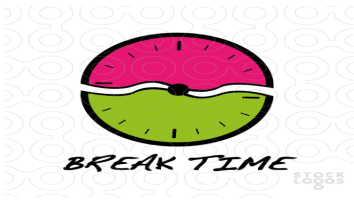
Presentation and Handout (Day 2, Session 3)

Data Trends and Patterns



- What trends did you identify from your data?
- What patterns emerged?
- What accounts for these trends and patterns?
- What are the implications for instructions?

Break

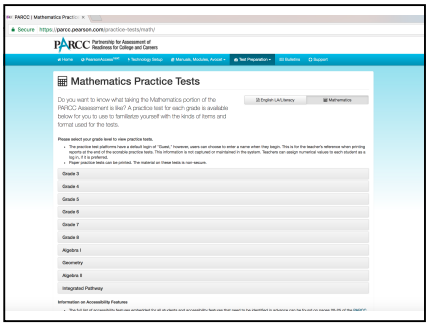


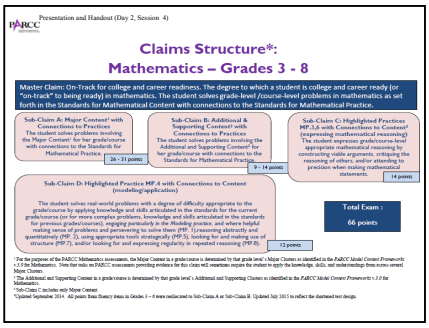
20 minutes

Presentation (Day 2, Session 4)

PARCC RESOURCE ACTIVITY

- Group 1: PARCC Practice tests https://parcc.pearson.com/practice-tests/math/
- Group 2: PARCC Test Design Documents (Claims structure, Task Types, Test blueprint) http://parcc-assessment.org/assessments/test-design/mathematics/math-test-specifications-document
- Group 3: PARCC Tutorials (Equation Editor, TestNav0 (https://parcc.pearson.com/tutorial/)
- Group 4: PARCC Performance Level Descriptors, Evidence Statement Tables (http://parcc-assessment.org/search?q=performance+level)





Presentation and Handout (Day 2, Session 4)

Claims Structure*: Mathematics – Grades 3 - 8

Master Claim: On-Track for college and career readiness. The degree to which a student is college and career ready (or "on-track" to being ready) in mathematics. The student solves grade-level /course-level problems in mathematics as set forth in the Standards for Mathematical Content with connections to the Standards for Mathematical Practice.

Sub-Claim A: Major Content[1] with Connections to Practices
The student solves problems involving the Major Content[2] for her grade/course with connections to the Standards for Mathematical Practice.
28 – 31 points

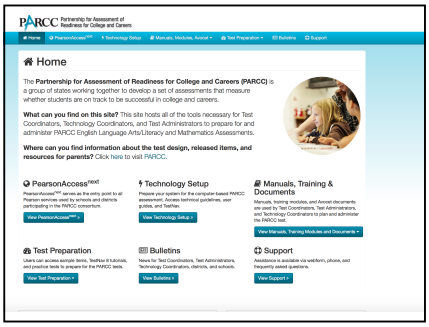
Sub-Claim B: Additional & Supporting Content[3] with Connections to Practices
The student solves problems involving the Additional and Supporting Content[3] for her grade/course with connections to the Standards for Mathematical Practice.
9 – 14 points

Sub-Claim C: Highlighted Practices MP.7,8 with Connections to Content[4] (expressing mathematical reasoning)
The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others, and/or attending to precision when making mathematical statements.
14 points

Sub-Claim D: Highlighted Practice MP.4 with Connections to Content (modeling/application)
The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them (MP. 1) reasoning abstractly and quantitatively (MP. 2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).
12 points

Total Exam : 66 points

[1] For the purposes of the PARCC Mathematics assessment, the Major Content in a grade/course is determined by that grade level's Major Clusters as identified in the *PARCC Model Content Frameworks: Mathematics*. Those that make an PARCC assessment powering evidence for this claim will sometimes require the student to apply the knowledge, skills, and understandings from across several Major Clusters.
[2] The Additional and Supporting Content in a grade/course is determined by that grade level's Additional and Supporting Clusters as identified in the *PARCC Model Content Frameworks v.3.0* for Mathematics.
*Sub-Claims C includes only Major Content.
*Updated September 2014: All points from fluency items in Grades 3 – 8 were reallocated to Sub-Claim A or Sub-Claim B. Updated July 2015 to reflect the shortened test design.



PARCC Partnership for Assessment of Readiness for College and Careers

Home | PearsonAccess^next | Technology Setup | Manuals, Modules, Annot | Test Preparation | Bulletins | Support

Home

The **Partnership for Assessment of Readiness for College and Careers (PARCC)** is a group of states working together to develop a set of assessments that measure whether students are on track to be successful in college and careers.

What can you find on this site? This site hosts all of the tools necessary for Test Coordinators, Technology Coordinators, and Test Administrators to prepare for and administer PARCC English Language Arts/Literacy and Mathematics Assessments.

Where can you find information about the test design, released items, and resources for parents? Click here to visit PARCC.

PearsonAccess^next
PearsonAccess^next serves as the entry point to all Pearson services used by schools and districts participating in the PARCC consortium.
View PearsonAccess^next »

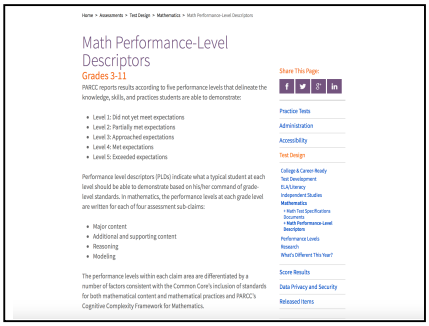
Technology Setup
Prepare your system for the computer-based PARCC assessment. Access technical guidelines, user guides, and TestNav.
View Technology Setup »

Manuals, Training & Documents
Manuals, training modules, and Annot documents are used by Test Coordinators, Test Administrators, and Technology Coordinators to plan and administer the PARCC test.
View Manuals, Training Modules and Documents »

Test Preparation
Users can access sample items, TestNav 8 tutorials, and practice tests to prepare for the PARCC tests.
View Test Preparation »

Bulletins
News for Test Coordinators, Test Administrators, Technology Coordinators, districts, and schools.
View Bulletins »

Support
Assistance is available via webform, phone, and frequently asked questions.
View Support »



Home > Assessments > Test Design > Mathematics > Math Performance-Level Descriptors

Math Performance-Level Descriptors

Grades 3-11

PARCC reports results according to five performance levels that delineate the knowledge, skills, and practices students are able to demonstrate:

- Level 1: Did not yet meet expectations
- Level 2: Partially met expectations
- Level 3: Approached expectations
- Level 4: Met expectations
- Level 5: Exceeded expectations

Performance level descriptors (PLDs) indicate what a typical student at each level should be able to demonstrate based on his/her command of grade-level standards. In mathematics, the performance levels at each grade level are written for each of four assessment sub-claims:

- Major content
- Additional and supporting content
- Reasoning
- Modeling

The performance levels within each claim area are differentiated by a number of factors consistent with the Common Core's inclusion of standards for both mathematical content and mathematical practices and PARCC's Cognitive Complexity Framework for Mathematics.

Share This Page:

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What's Different This Year?
Score Results
Data Privacy and Security
Released Items

Overview of Task Types

The PARCC assessments for mathematics will involve three primary types of tasks: Type I, II, and III.

Each task type is described on the basis of several factors, principally the purpose of the task in generating evidence for certain sub claims.

PARCC

Overview of Task Types

- The PARCC assessments for mathematics will involve three primary types of tasks: Type I, II, and III.
- Each task type is described on the basis of several factors, principally the purpose of the task in generating evidence for certain sub claims.

Task Type	Description of Task Type
I. Tasks assessing *concepts, skills and procedures*	• Balance of conceptual understanding, fluency, and application • Can involve any or all mathematical practice standards • Machine scorable including innovative, computer-based formats • Sub-claims A and B
II. Tasks assessing *expressing mathematical reasoning*	• Each task calls for written arguments / justifications, critique of reasoning, or precision in mathematical statements (MP.3, 6). • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Sub-claim C
III. Tasks assessing *modeling / applications*	• Each task calls for modeling/application in a real-world context or scenario (MP.4) • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Sub-claim D

PARCC

PARCC High Level Blueprints - Mathematics

Math item counts per form*

	Items	Grade 3	Grade 4	Grade 5	Grade 6
	Type I 1 Point	32	26	26	24
	Type I 2 Point	4	7	7	6
	Type I 4 Point	-	-	-	1
	Type II 3 Point	2	2	2	2
	Type II 4 Point	2	2	2	2
	Type III 3 Point	2	2	2	2
	Type III 6 Point	1	1	1	1
TOTAL	Type I	36	33	33	31
	Type II	4	4	4	4
	Type III	3	3	3	3

*The assessment will also include embedded field-test items which will not count towards a student's score.

PARCC Sample: Type I

Select (multiple choice): Students choose only one correct answer.

answer.

The value of the digit 4 in the number 42,780 is 10 times the value of the digit 4 in which number?

- A. 34,651
- B. 146,703
- C. 426,135
- D. 510,400

5.NBT.1

Multiple Select: The multiple select is similar to multiple choice; however, students must choose the correct number of correct answers.

Which equations are true?

Select the **three** correct answers.

- A. $7 \div 7 = 0$
- B. $3 \times 4 = 12$
- C. $10 \div 5 = 5$
- D. $16 \div 2 = 8$
- E. $0 \times 6 = 0$

3.OA.7

Inline Choice (drop down menus): Students select correct responses from a drop-down menu to complete mathematical or verbal statements.

4.NF.2

Which symbol belongs in each fraction comparison?

Select from the drop-down menus to correctly complete each comparison.

$\frac{3}{4}$ Choose... $\frac{9}{10}$

$\frac{4}{12}$ Choose... $\frac{3}{4}$

$\frac{9}{10}$ Choose... $\frac{4}{12}$

Drag-and-drop: Students select and move information to provide correct responses.

Which fractions complete the number sentences shown to make true comparisons?

Complete each number sentence so that it is a true comparison.

Drag and drop a fraction into each box.

4.NF.1

$\frac{20}{100}$ $\frac{6}{10}$ $\frac{1}{2}$ $\frac{2}{12}$ $\frac{2}{3}$ $\frac{40}{100}$

$\frac{2}{5} <$ ☐ $\frac{3}{5} <$ ☐

Fill-in-the-blank: Students provide a short, usually numeric, response in a provided box.

Jane bought 24 light bulbs. The light bulbs come in packs of 4.

How many packs of light bulbs did Jane buy?

Enter your answer in the space provided.

☐

3.OA.2

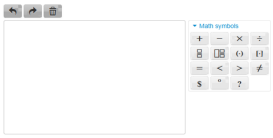
TYPE II ITEMS (Sub-claim C, Reasoning)

3.NF.2b

Mia placed point *P* on the number line.

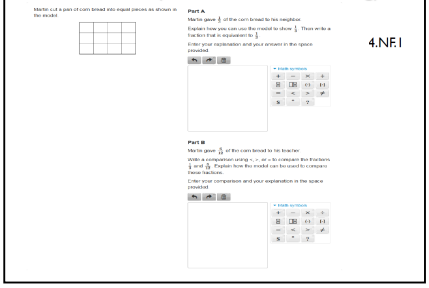
- Give the value of the number *P* as a fraction.
- What does the denominator of your fraction represent on the number line?
- What does the numerator of your fraction represent on the number line?

Enter your answer and your explanation in the space provided.



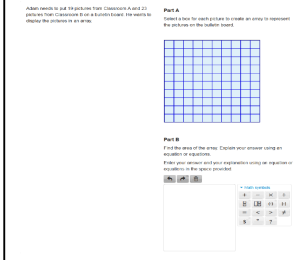
TYPE II ITEMS (Sub-claim C, Reasoning)

4.NF.1



TYPE III ITEMS (Sub-claim D, Modeling)

3.OA.8



TYPE III ITEMS (Sub-claim D, Modeling)

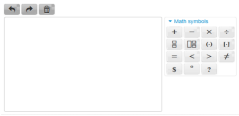
5.NF.4 and 5.NF.6

An egg farm packages 264 total cartons of eggs each month. The farm has 3 different sizes of cartons.

- The small carton holds 8 eggs, and $\frac{1}{4}$ of the total cartons are small.
- The medium carton holds 12 eggs, and $\frac{2}{3}$ of the total cartons are medium.
- The large carton holds 18 eggs, and the rest of the total cartons are large.

Determine how many of each size of carton is needed each month. Then determine how many eggs are needed to fill the 264 cartons. Show your work or explain your answers.

Enter your answers and your work or explanations in the space provided.



Presentation (Day 2, Session 5)

PARCC Tutorial

Each participant will access PARCC tutorial and explore the features of the tutorial to understand the tools and features of PARCC support.

https://parcc.pearson.com/tutorial

- What are some key features?
- How will you prepare students to use these tools and features?
- What are some wonders and "aah" tools/features?

Presentation (Day 2, Session 6)

Analyzing PARCC Scored Items, 2016

- Analyze the sample scored student responses and rubric, then respond to the following questions:
- How does the scoring rubric help instruction/PARCC preparation?
- How does seeing the scored anchor papers help with instruction/PARCC preparations?
- How do the tools assist students in their conceptual understanding?

PARCC Released Test Items (Math, 2016)

- Group 1: Number Pattern-Grade 3 Item 31
- Group 2: Zora's Reasoning-***Grade 3 Item 32***
- Group 3: Using Properties of Operations-***Grade 4, Item 26***
- Group 4: Mixed Number to Fraction-***Grade 4, Item 27***
- Group 5: Leftover Soup-***Grade 5, Item 22***
- Group 6: Total Distance Ran-***Grade 5, Item 25***

A.8. Analyzing Scored 2016 Release Items (Day 2, Session 6)

Analyzing Scored 2016 Release Items

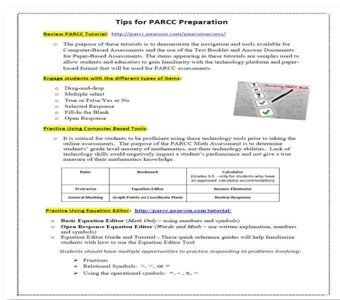
	How does the scoring rubric help instruction/PARCC preparation?	How does using the scored anchor papers help instruction/PARCC preparations?	How do the tools assist students in their conceptual understanding?	WoW Moments
Number Pattern (Grade 3)				
Zora's Reasoning (Grade 3)				
Using Properties of Operations (Grade 4)				
Mixed Number to Fractions (Grade 4)				
Leftover Soup (Grade 5)				
Total Distance Ran (Grade 5)				

Think About

- What surprised you about the data?
- How can you apply what you learned today in your instructional practice?
- What are some of your concerns?
- How will you address these in your classroom or school?

Implications for PARCC Next Steps…???

- Rigorous Lessons/Tasks
- Question types and varied formats
- Application – Literacy across all content areas
- PARCC Platform:
  - Practice Test
  - Sample Tasks – scoring, student work
  - Tutorial
  - Sample Items
  - Equation Editor and tools
  - Paper and Pencil



Tips for PARCC Preparation

Review PARCC Tutorial: http://parcc.pearson.com/pearsonaccess/

- The purpose of these tutorials is to demonstrate the navigation and tools available for Computer-Based Assessments and the use of the Test Booklet and Answer Documents for Paper-Based Assessments. The items appearing in these tutorials are samples used to allow students and educators to gain familiarity with the technology platform and paper-based format that will be used for PARCC assessments.

Engage students with the different types of items:

- Drag-and-drop
- Multiple select
- True or False/Yes or No
- Selected Response
- Fill-In the Blank
- Open Response

Practice Using Computer Based Tools:

- It is critical for students to be proficient using these technology tools prior to taking the online assessments. The purpose of the PARCC Math Assessment is to determine student's' grade level mastery of mathematics, not their technology abilities. Lack of technology skills could negatively impact a student's performance and not give a true measure of their mathematics knowledge.

Ruler	Bookmark	Calculator (Grades 3-5 - only for students who have an approved calculator accommodation)
Protractor	Equation Editor	Answer Eliminator
General Masking	Graph Points on Coordinate Plane	Review Response

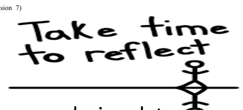
Practice Using Equation Editor: http://parcc.pearson.com/tutorial/

- **Basic Equation Editor** (*Math Only* – using numbers and symbols)
- **Open Response Equation Editor** (*Words and Math* – use written explanation, numbers and symbols)
- Equation Editor Guide and Tutorial - These quick reference guides will help familiarize students with how to use the Equation Editor Tool

Students should have multiple opportunities to practice responding to problems involving:

- Fractions
- Relational Symbols: >, <, or =
- Using the operational symbols: +, - , x, ÷

Presentation (Day 2, Session 7)



- Compare analyzing data independently to working in a group?
- How can you apply what you learned today in your instructional practice?
- Has your opinion of using data changed or stayed the same?

A. 9. Evaluation Form (Day 2, Session 7).

Data-Driven Teacher

Evaluation Form

Name of training: _____ Date: _____

Facilitator/Presenter_____

1. **Compare analyzing data independently to working in a group?**

2. **How can you apply what you learned today in your instructional practice?**

3. **Has your opinion of using data changed or stayed the same?**

Thank you.

Exit Ticket

On an index card please respond to the following question:

If you could change one thing from today's session what would it be and why?

Thank you.

Day 3: Data Drive Teacher: Building Teacher Data Capacity

Time	Topic	Method
8:00 – 8:30	Introduction and overview	Presentation Ice breaker
8:30 – 9:00	A Matter of Graphing	Graphing a line plot
9:00 – 10:10	PARCC practice test	Make a book Test-taking, PARCC practice test-computer based Whole group discussion
10:10 – 10:30	Break	
10:30 – 12:00	Complete an Action Plan	Video "Action Step" Develop a plan
12:00 – 1:00	Lunch	On your own
1:00 – 1:30	Charting the Course	Group Activity: Create a chart
1:30 – 2:00	The First Five	Table talk and worksheet
2:00 – 2: 45	Summative Evaluation	Self-assessment: Ten question questionnaire
2:45 – 3:00	Closing the circle	Share out: Participants share: "I am a data leader…"

Day 3 Workshop	
Participants: Elementary Teachers	
Setting: Elementary School	
Topic: Data-Driven Teacher: Building Teacher Data Capacity	
Purpose	• Build data capacity across all grade levels K–6
Learning Objectives	• To build teacher capacity as data leaders
Outcome	• Provide structure to help support leadership in using data • Provide resources in assessment to support instruction in making decisions • Demonstrate use of data strategies to complete an action plan
Time Required	470 minutes-7 hours
Material	• Line Plot • First Five Worksheet • Computer with internet • Graphic Organizer • Markers, Chart paper, tape • Sticky note for “Parking Lot” • Action Plan Worksheet • Index cards • Scissors • Journals

Activities	Introduction and Overview: Facilitators are introduced. Objectives and outcomes are stated for day 3. Ice Breaker: Get to Know Me Activity • Participants are paired. Each participant writes five different questions to ask each other. • Each provides answers to the questions • Ask for volunteers to share out their responses of their partner.	8:00 – 8:30 Session 1
	Independent Activity: A Matter of Graphing • Each table will have a copy of three line plots • Participants will work independently to complete the line plots. • They will select one to share with the whole group. Directions: • Each line plot will be given a title that relates to you • On the graph circle an x that would represent something about you • Write a rationale for each title given and a description for what the circled x says about you. Graphing Group Activity: Table group discussion • How did the activity help to establish or build a data community? • How did it help to establish a safe learning environment? • Did it promote data talk? How was this accomplished? • How was reasoning promoted during the instructional process? (ex. lesson planning, assessments, delivery of instruction)	8:30 – 9:00 Session 2
	Independent Activity • Participants will go to the PARCC website. They will take the PARCC Practice Test-Computer Based (https://parcc.pearson.com/practice-tests/math) • Participants will select a grade level and take the practice test. http://www.parcconline.org/assessments/practice-tests • Practice test will familiarize teachers with the types of test items and formats used.	9:00 – 10:10 Session 3

	• Break	10:10 – 10:30
	Independent Activity • Show video "Action Step" (https://www.youtube.com/watch?v=kpN4RCGnK6c • Discuss the video and key points. Participants will use information to help them complete their action plan • Complete the Action Plan	10:30 – 12:00 Session 4
	Lunch	12:00 – 1:00
	Group Activity: Charting the Course • Participants create poster using chart paper to answer the following questions • How will you share what you learned with teachers in your building? • How can I apply what I learned from this training in my instructional practice? • How has your opinion of using data changes?	1:00 – 1:30 Session 5
	Independence Activity • Complete the First Five worksheet for the first five things to do to support data-based decision-making process at hour school • Share your "First Five" with the group and discuss what it means to you.	1:30 – 2:00 Session 6
	Summative Evaluation	2:00 – 2:40 Session 7
	Closing the circle • Participants share out by completing the sentence: "I am a data leader…" • Thank the participants for their support and attendance.	2:40 – 3:00 Session 7

Facilitator/Presenter Notes Day 3: Data-Drive Teacher: Building Teacher Data Capacity

Welcome and greet the participants for the third and final day of the 3-day PD on building their data capacity. This module is "Data-Driven Teacher: Building Teacher Data Capacity." The notes for the third day are specific to the third day and focuses more on discussions and completing an action plan. Additional guidance and support may require the presenter/facilitator to circulate the room more than in previous sessions and assist participants individually as needed and help pair participants with others who want to collaborate.

The following notes, guidelines, and times are sequence in order as each preceding session set the foundation for the following session. The role of a facilitator will provide guidance as needed.

Session 1-2: Welcome and introduction of participants - setting the theme. In the two sessions, participants will participate in activities that they can use with their students. Participants engage in data discourse to help promote confidence in using data and making data decisions.

Session 3: PARCC practice test – a test-taking scenario activity. The slide to the session is a snapshot of the practice assessment site platform and includes a link to mathematic practice site. There is no need for username or password, a login default of "Guest," is used. A practice test for each grade level 3-8 is available for participants to familiarize themselves with the type of test items and format used in the assessment. Encourage participants to not only take their grade level practice test, but try other grade

levels. It is important for participants to be fully engaged in the experience setup a "mock" testing environment. Participants will spend the first 25 minutes uninterrupted, this involve no talking and sharing during this time frame. After the mock "testing time" participants may engage in discussions and collaborations. In order for participants to share and provide input about PARRC and the implications for instructions they will engage in whole group discussion.

Session 4: Complete an action plan – video and practice. In this session, participants will complete an individual action plan for use in their practice. The video will provide information and guidance on the purpose and elements of an action plan. This is the core of the decision-making process, as participants will have to use the information and resources to plan instructional outcomes based on data. Participants may collaborate on completing this activity and are encouraged to discuss the plan using data talking points and references. This activity will help to build confidence, collegiality, and teacher data capacity as data leaders.

Session 5: Charting the course. Participants have already completed the action plan and made decisions based on data. The next step in the process is promoting a data culture at their school and being data leader. Participants will work in groups to create a visual graphic aid of to share the information from the workshop with other colleagues, the implications for instruction, and examples of the view of using data.

Session 6: The first five. This activity helps participants to narrow the focus of implementation by listing the first five items with specific actions to be taken as they

head back to their school. The emphasis should not be creating a perfect plan, but on developing a working plan as an instructional tool.

Session 7: This entire session will be dedicated for capturing summative assessment data for the PD. Participants will respond to a nine-item questionnaire Likert survey and write four narrative responses.

Session 8: Closing the circle. The facilitator/presenter will take time to examine and reflect on the 3 days of training on building teachers' data capacity and data decision making process. Reflection comments will review on the (PD) key points, success, light heartedness moments, insights, and struggles. Thank everyone for attending and for participating. Then open the floor for participants to share their experience and make comments about the PD. After participants have share, do a quick circle around room where each participant will read and complete the sentence "I am a data leader..." After all participants have completed the sentence, thank them again and wish them well. Display the last and final slide of the PD.

- Session 1: Welcome and Introduction
- Session 2: A Matter of Graphing, page
- Session 3: PARCC practice test, page
- Session 4: Complete an action plan, page
- Session 5: Charting a Course, page,
- Session 6: The First Five, page
- Session 7: Summative Evaluation, page
- Session 8: Closing the circle, page

Presentation (Day 3, Session 1)

Data-Driven Teacher: Building Teacher Data Capacity

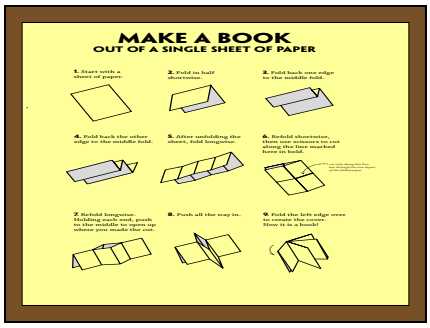
Charting a Course-Planning for Implementation

What do I need to know?

Outcomes

Participants will:

- provide structure to help support leadership in using data
- provide resources in assessment to support instruction in making decisions
- demonstrate use of data strategies to complete an action plan

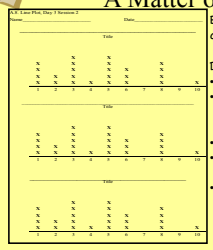


Get to Know Me Activity

- Find a partner.
- Each of you will write five different questions to ask each other.
- Next, you will ask each other the questions and answers the questions.
- Ask for volunteers to share out their questions and responses of their partner.

Presentation (Day 3, Session 2)

A Matter of Graphing



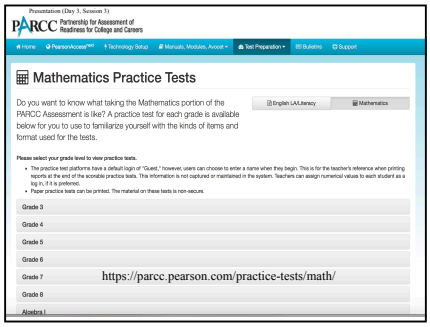
Each participant will complete a line plot.

Directions:

- Give each line plot a ***title.***
- ***Circle*** the ***Xs*** that would represent something about you.
- ***Write*** a rationale for each
- ***Share*** your graph with your group.
- ***Be prepared*** to share out to the group.

ready, set, math talk!

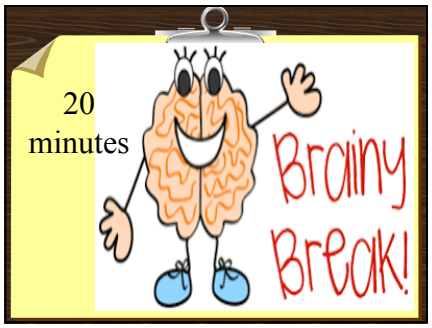
- How did this activity help to establish or build a data community?
- How did it help to establish a safe learning environment?
- Did it promote data talk?
- How was this accomplished?
- How was reasoning promoted during the discussion?
- How can you use this activity to support data learning at your school?

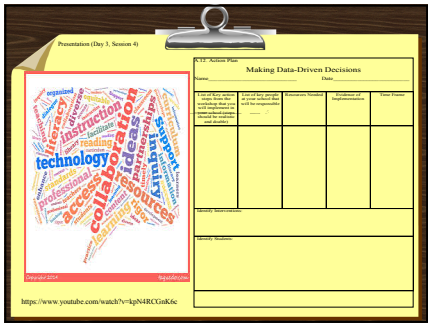


ready, set, math talk!

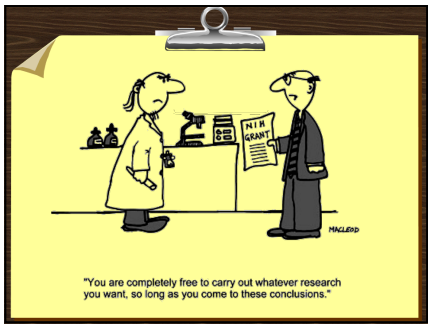
PARCC Mathematics Practice Tests

- How was the experience?
- Was this activity helpful to you? How so?
- Do you think it is important for students to take the PARCC practice test? Why?
- What are some ways to help prepare students for the assessments?
- What are the implications for instruction?


20
minutes
Brainy
Break!


Presentation (Day 3, Session 4)
Making Data-Driven Decisions
technology
collaboration
ideas
resources
https://www.youtube.com/watch?v=kpN4RCGnK6c


Time for Lunch
1 hour



Presentation (Day 3, Session 5)

Charting the Course

- How will you share what you learned with teachers in your building?
- How can I apply what I learned from this training in my instructional practice?
- How has your opinion of using data changed? Provide some examples.

Presentation (Day 3, Session 6)

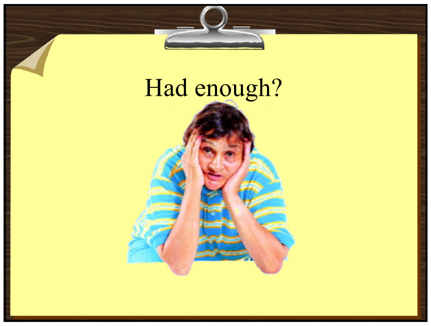
The First Five

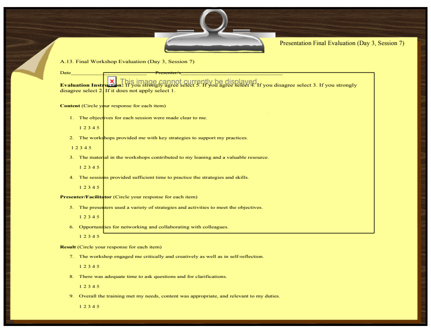
AA: First Five, Day 3, Session 6

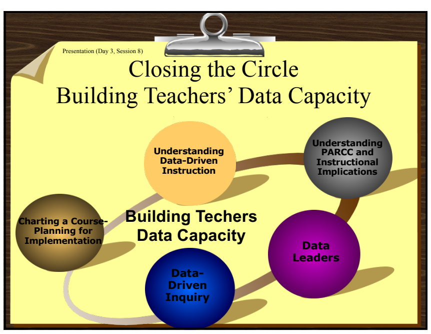
The First Five

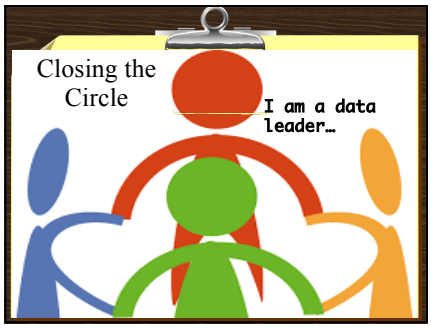
What are the first 5 things as a data leader you will do to support use of data for data-based decisions for effective instruction?

Item	Actions to be Taken
1.	
2.	
3.	
4.	
5.	
Additional Notes	


Had enough?


Presentation Final Evaluation (Day 3, Session 7)
A.13. Final Workshop Evaluation (Day 3, Session 7)
Date______________________ Presenter/s______________________________
This image cannot currently be displayed.
Evaluation Instruction: If you strongly agree select 5. If you agree select 4. If you disagree select 3. If you strongly disagree select 2. If it does not apply select 1.
Content (Circle your response for each item)
1. The objectives for each session were made clear to me.
1 2 3 4 5
2. The workshops provided me with key strategies to support my practices.
1 2 3 4 5
3. The material in the workshops contributed to my leaning and a valuable resource.
1 2 3 4 5
4. The sessions provided sufficient time to practice the strategies and skills.
1 2 3 4 5
Presenter/Facilitator (Circle your response for each item)
5. The presenters used a variety of strategies and activities to meet the objectives.
1 2 3 4 5
6. Opportunities for networking and collaborating with colleagues.
1 2 3 4 5
Result (Circle your response for each item)
7. The workshop engaged me critically and creatively as well as in self-reflection.
1 2 3 4 5
8. There was adequate time to ask questions and for clarifications.
1 2 3 4 5
9. Overall the training met my needs, content was appropriate, and relevant to my duties.
1 2 3 4 5


Presentation (Day 3, Session 8)
Closing the Circle
Building Teachers' Data Capacity
Understanding Data-Driven Instruction
Understanding PARCC and Instructional Implications
Charting a Course-Planning for Implementation
Building Techers Data Capacity
Data Leaders
Data-Driven Inquiry


Closing the Circle
I am a data leader…


Kiitos
Xièxie
Спасибо
Merci
Tak
Obrigado
Matondo
Terima Kasih
Chokrane
Dziękuje
Dankie
Gracias
Grazie
Thank You
Mahalo
Arigatô
Tak
Хвала
Toda
Takk
Misaotra
Kiitos
Grazie
Danke
Hvala
Dank Je
Sagolun
Merci
Efharistó
Köszönöm

A.3. Video Capture Sheet, (Day 1 Session 3)

Your Name: _____

Topic: _____

What I saw	What I heard	Questions I have
Notes		

A.4. School Data We Use (Day 1, Session 7)

School Data We Use				
Data We Use	Data We Can Use	How Can We Identify Causes and Solutions	What We Should Think About?	Steps We Can Take

A.5. Training Evaluation 3-2-1 (Day 1 Session 8)

Building Teacher Data Capacity

Training Evaluation 3-2-1

Title of Training_____-_____

Date_____ Facilitator/Presenter_____

Thank you taking the time to complete this evaluation. Please leave it with the Trainer upon leaving the training. Your honest and thoughtful feedback is used for planning future trainings.

3	Things I Learned Today …
2	Things I Found Interesting …
1	Questions I Still Have …

A.6. Back-to-Back (Day 2, Session 1)

Back-to-Back

A. 7. Data Analysis Worksheet (Day 2, Session 2)

Data Analysis Worksheet

Hope Valley Elementary School

Data Collection

Grade Level: _____ Date: _____

Name of Assessment	# Students Taking Assessment	# or % Students Scoring Advanced	# or % Students Scoring Proficient	# or % Students Scoring Basic	# or % Students Scoring Below Basic	Notes

Student Target

Students Scoring Advanced	Students Scoring Proficient	Students Scoring Below Basic or At Risk

Analyze Strength/Needs – Identify Skills/Standards/Indicators Most Missed By:

Benchmark Students	Strategic and Intensive Students	Strengths Skills/Indicators	Needs Skills/Indicators

A.8. Analyzing Scored 2016 Release Items (Day 2, Session 6)

Analyzing Scored 2016 Release Items

	How does the scoring rubric help instruction/PARCC preparation?	How does seeing the scored anchor papers help instruction/PARCC preparations?	How do the tools assist students in their conceptual understanding?	WoW Moments
Number Pattern (Grade 3)				
Zora's Reasoning (Grade 3)				
Using Properties of Operations (Grade 4)				
Mixed Number to Fractions (Grade 4)				
Leftover Soup (Grade 5)				
Total Distance Ran (Grade 5)				

A. 9. Evaluation Form (Day 2, Session 7).

Data-Driven Teacher

Evaluation Form

Name of training: _____ Date: _____

Facilitator/Presenter_____

1. **Compare analyzing data independently to working in a group?**

2. **How can you apply what you learned today in your instructional practice?**

3. **Has your opinion of using data changed or stayed the same?**

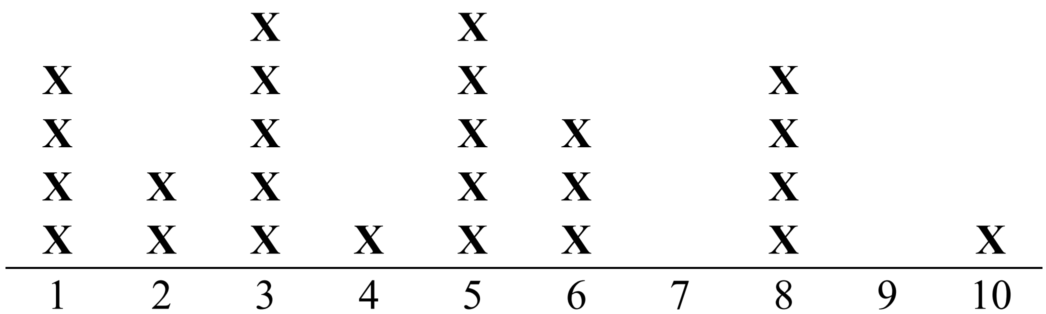
Thank you.

A. 10. Line Plot (Day 3, Session 2)

Name____________________________ Date____________________________

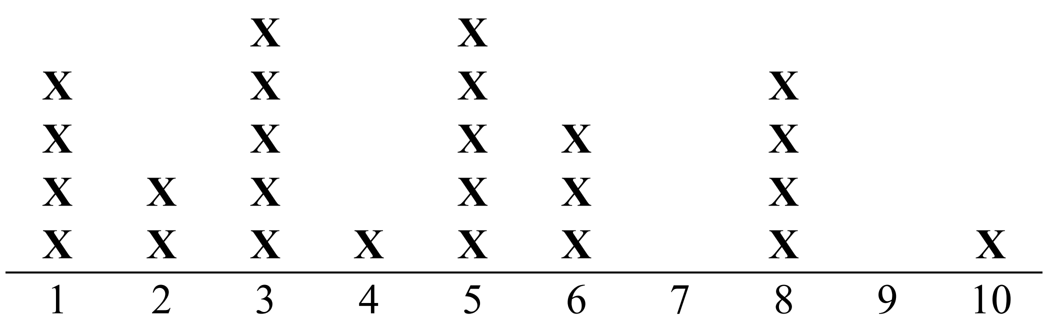
____

Title



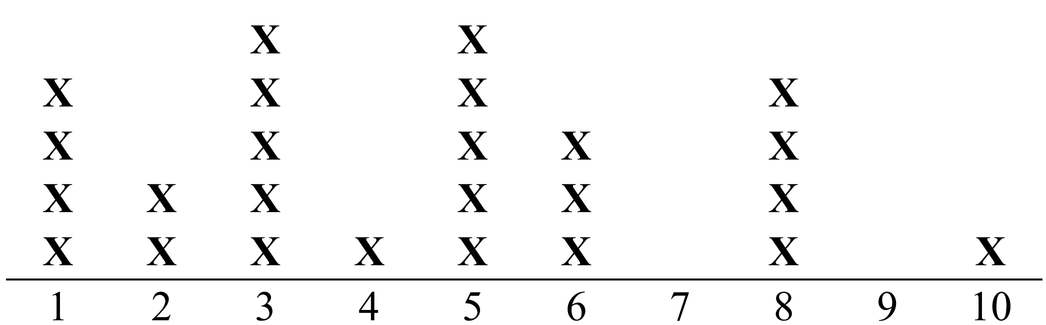
____

Title



____

Title



A.11. Action Plan (Day 3, Session 4)

Making Data-Driven Decisions

Name_____ Date_____

List of Key action steps from the workshop that you will implement in your school (steps should be realistic and doable)	List of key people at your school that will be responsible	Resources Needed	Evidence of Implementation	Time Frame
Identify Interventions:				
Identify Students:				

A.9. First Five (Day 3, Session 6)

The First Five

What are the first 5 things as a data leader you will do to support use of data for data-based decisions for effective instruction?

Item	Actions to be Taken
1.	
2.	
3.	
4.	
5.	
Additional Notes	

A.13. Final Workshop Evaluation (Day 3, Session 7)

Date_____ Presenter/s_____

Evaluation Instruction: If you strongly agree select 5. If you agree select 4. If you disagree select 3. If you strongly disagree select 2. If it does not apply select 1.

Content (Circle your response for each item)

1. The objectives for each session were made clear to me.

   1 2 3 4 5

2. The workshops provided me with key strategies to support my practices.

   1 2 3 4 5

3. The material in the workshops contributed to my leaning and a valuable resource.

   1 2 3 4 5

4. The sessions provided sufficient time to practice the strategies and skills.

   1 2 3 4 5

Presenter/Facilitator (Circle your response for each item)

5. The presenters used a variety of strategies and activities to meet the objectives.

   1 2 3 4 5

6. Opportunities for networking and collaborating with colleagues.

   1 2 3 4 5

Result (Circle your response for each item)

7. The workshop engaged me critically and creatively as well as in self-reflection.

   1 2 3 4 5

8. There was adequate time to ask questions and for clarifications.

   1 2 3 4 5

9. Overall the training met my needs, content was appropriate, and relevant to my duties.

   1 2 3 4 5

Feedback (Written response)

10. What was most and least useful to you during the 3-day professional development workshop?

11. What as some challenges to you as a data leader and how will you overcome them?

12. Has your opinion of using data changed? If, so in what ways?

13. What are some recommendations for improving the training?

14. Additional Comments/Feedback

Appendix B: Interview Questions

1. How do you assess students' performance?
2. What type of data do you collect? The school?
3. How is the data used by you and the school? Can you provide examples of how you use the data and how the school uses the data?
4. How often are you expected to use data?
5. Have you encountered any challenges with using data in your instructional practice?
6. Did these challenges affect your desire to use data, if it does, explain in what ways?
7. Describe the most common barriers and challenges that you face when you use data?
8. What kind of support do you receive from your school with using data?
9. How useful and meaningful is the support to you?
10. How could the support be enhanced to make it useful and meaningful?
11. How do you feel about the support that is provided to you?
12. How has the support influence your attitude in wanting to use data?
13. Do you have any additional comments about your data experiences at HVE?