EXPLORING THE USE OF DATA BY PRINCIPALS AND TEACHERS IN THE SCHOOL IMPROVEMENT PLANNING PROCESS TO INCREASE STUDENT ACHIEVEMENT

by

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ABSTRACT

DOROTHY ANN HAYES. Exploring the use of data by principals and teachers in the school improvement planning process to increase student achievement (Under the direction of DR. DAVID M. DUNAWAY).

State mandates require data-driven decision-making in each step of the school improvement planning process. Evaluation of the improvement efforts is measured by student performance on annual standardized tests. The recent expansion of a statewide data system provides access to real time data by principals, teachers, parents and students. This case study explores the use of data by principals and teachers in the school improvement planning process to increase student achievement. This study examines principal and teacher perceptions of data use, data use practices and influences on data use practices. Findings from the study indicate a strong influence of district expectations and school principals on teacher's perceptions of the school improvement planning process. While access to a variety of data supports improvement efforts, the expectations for principals and teachers to collect and analyze data throughout the school year is promoting a climate of hyper-accountability.

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CHAPTER 1: INTRODUCTION

The increasing demands for accountability in public education have sparked a renewed focus on the use of data to inform decisions and practices in schools. School improvement planning policies and guidelines emphasize the importance of using data to guide daily practices in schools and classrooms to support student achievement. Despite recent efforts to improve data systems designed to increase educator access to data, several challenges limit the capacity of schools to use data informed decision making (DIDM) in the school improvement planning process to support student achievement.

Although findings from the Wallace Foundation (2010) suggest school leaders impact student achievement through teacher motivation and working conditions they also indicate that the most common data use practices by districts and principals have limited influence on student achievement. In the same study, researchers found that differences in data use in elementary schools explain a significant amount of variation in student achievement (Louis, Leithwood, Wahlstrom, & Anderson, 2010). Based on the findings of elementary schools and the limited research on the relationship between data use practices in individual schools and student achievement, a need for additional research exists.

Recognizing challenges of limited access to useful data at the school and classroom levels, federal educational reform efforts in the Race to the Top (2009) are focused on the development and implementation of state data systems to increase access to real time data for principals and teachers. Supporting administrator and teacher access and use of data, previous studies recognize the need for strengthening

educators' data literacy (National Forum on Educational Statistics, 2012). State and local level educational agencies are encouraged to provide professional development purposefully designed to strengthen the knowledge and skills of the principals and teachers, expected to use the data in their daily practices (U.S. Department of Education, 2010). Similarly, providing opportunities for interaction and communication involving central office staff, principals and teachers around the use of data to inform decisions and practices, is essential for school improvement (Means, Padilla, DeBarger, & Bakia, 2009).

While research indicates district data use practices have a considerable influence on principals' data use, school principals often process data in isolation. Despite the suggested team approach for data use and school improvement planning, fewer principals collaborate with district staff and teachers in processing data at the school level (Louis, et al., 2010).

Review of previous research on the use of data in the school improvement process reveals challenges associated with access to useful data. In addition to the necessary skills to collect and analyze data, user roles defined by technology based data systems can limit access. Despite efforts to develop and implement statewide data systems, discrepancies exist among districts and schools regarding the implementation and operation of the systems (U.S. Department of Education, 2010).

Herman and Gribbons (2001) identified peripheral challenges related to administrator and teacher data literacy that influence the capacity for interpretation and subsequent use of data in decision-making. Researchers suggest common misconceptions related to standardized test data used for administrator and teacher evaluation are

nurturing a negative perception and promoting a general distrust of data in education. Means et al. (2009) suggest providing ongoing, job-embedded professional development to establish and strengthen data literacy skills and promote collective efficacy around the use of data for school improvement. Herman and Gribbons (2010) indicate professional development focused on data literacy is often limited to central office staff rather than principals and teachers. Aligned with these findings, Herman and Gribbons identify organizational factors that can serve as supports or inhibitors on the use of data in schools and classrooms. For example, district resources and time are necessary to promote a culture of effective data use in schools.

Each day, individual schools collect copious amounts of data that they are required to enter into statewide data systems. State mandates spell out clear expectations for schools to use data in a systematic procedure of evidence-based decision-making. Despite the mandates, a discrepancy exists between policy and practice resulting in a black box around data use practices. To observe data use practices and the potential influence on student achievement, we must explore the use of data in the school setting.

The purpose of this study is to examine the way principals and teachers at three traditional public schools located in a North Carolina school district, use data, in the school improvement planning process with a goal of increasing student academic performance. The following questions will guide the research study: In three traditional public, K-8 schools in a district, located in the northwestern region of North Carolina:

1. What are principals' perceptions regarding the use of data in school improvement planning to increase student academic performance?

2. What are teachers' perceptions regarding the use of data in school improvement planning to increase student academic performance?

3. How are principals using data in school improvement planning to increase student academic performance?

4. How are teachers using data in school improvement planning to increase student academic achievement?

5. Do principals' perceptions of data influence their use of data in school improvement planning to increase student academic performance?

6. Do teacher perceptions of data influence their use of data in school improvement planning to increase student achievement?

Building on previous research, this study examined administrator and teacher perceptions of data, data use practices and explore relationships that might exist between perceptions and practices in the process of school improvement planning focused on increasing student achievement on standardized tests. Findings from this research can be used to identify practices for data use in the school improvement process. Results from the research can inform decisions related to professional development for educators in data literacy. Providing appropriate organizational support for principals and teachers for using data to inform decisions and guide practices, can promote the organizational efficacy necessary to sustain continuous improvement in schools.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

This literature review examines previous research related to the use of data by principals and teachers in the school improvement planning process to support student achievement. Increasing demands for accountability have increased expectations for the use of data informed decision-making (DIDM) in schools and classrooms.

The literature review focuses on DIDM models related to school improvement as well as practices and challenges related to the access, interpretation and use of data in various aspects of school improvement. Supporting the selection of literature, overarching themes are aligned with the theoretical models of Senge (2006) and Wheatly (1996) about the role of data in organizational improvement. Examples from research are presented to illustrate the current climate in education related to the use of data in school improvement practices focused on increasing student achievement.

The first section provides an overview of organizational improvement models adopted by educational agencies for school improvement practices specifically related to increasing student achievement. Since this study focuses on practices and perceptions of North Carolina administrators and teachers, statutes and policies from North Carolina are presented as part of the review of literature. Rather than limiting the applicability of this research, given the almost universally accepted role of school improvement plans, the results of this study can reasonably be generalized beyond North Carolina. Dunaway (2012) noted the ubiquitous nature of school improvement plans when he wrote:

> Based on the review of the literature, most states either require or strongly suggest that all schools have some improvement plan in place. For example, the state of Nevada uses its Student Achievement Gap Elimination (SAGE) process to guide Title I schools in improvement through the federal requirements of NCLB. The Nevada Department of Education [NDOE] (2008) suggested the SAGE school improvement process as an important resource for all Nevada schools. Best practices support (National Staff Development Council 2001), and districts and schools are recognizing that a continuous improvement model of strategic planning is critical to achieving the learning for all expectations
> (Knoff, 2007; pp. 158-159).

Findings from previous studies related to data access, data systems designed to support educator use of data in daily practices will provide insight into challenges, and initiatives, intended to support the effective use of data for school improvement. The next section examines previous research related to the types of data in education, the roles of data users and changes in data use practices for school improvement. The following section of the literature review presents findings from previous research on factors that influence the users' perceptions of data in school improvement. Recognizing common challenges and barriers related to the use of data informed decision making (DIDM) in the school improvement planning process to support student achievement, the final section illustrates gaps in current research that demonstrate a need for further studies in these areas.

Organizational Improvement

Similar to DIDM, Data Driven Decision Making (DDDM) is an organizational improvement practice that educational organizations have adopted. DDDM utilizes data as the primary force for change whereas DIDM considers the context and source of the data.

DDDM [Data Driven Decision Making] in education are modeled on successful

practices from industry and manufacturing, such as Total Quality Management, Organizational Learning, and Continuous Improvement, which emphasize that organizational improvement is enhanced by responsiveness to various types of data, including input data such as material costs, process data such as production rates, outcome data such as defect rates, and satisfaction data including employee and customer opinions (e.g., Deming, 1986; Juran, 1988; Senge, 1990). (Marsh, Pane & Hamilton, 2006; p.2)

School improvement practices reflect established, organizational improvement models developed by Senge (2006) and Wheatly (1996) which illustrate implications for practice in educational organizations. For the purpose of this study, this section focuses specifically, on data informed decision-making (DIDM) in organizational improvement models.

As an organization, education is comprised of three levels that define standards and mandates for accountability. Operating under the national, state and local level expectations, schools provide services to meet the needs of students. As a system, education functions along a continuum of public service driven by societal, economic, and political influences. Collectively, these factors serve as the catalyst for the constant ebb and flow of demand for accountability initiatives.

As a system, the structure and function of the local education agency influence the capacity and the overall effectiveness of improvement efforts (U.S. Department of Education, Office of Planning, Evaluation and Policy Development, 2010). Data serve as evidence for constructing shared goals and monitoring progress. Establishing a shared vision of improvement is essential for growth. In *Schools that Learn*, Senge (2000) describes the importance of building the individual's awareness and group capabilities to support growth and progress of the organization towards a common goal. Dialogue and interaction shape the relationship between people and systems through the process of

change and improvement. Making sense of data and information requires communication that allows individuals to process the experience and acquire meaning (Wheatley, 2006). Senge (1990) defines five attributes of learning organizations, which include personal mastery, shared vision, mental models, team learning, and systems thinking. Aligned with the process of change, learning, and improvement, perceptions of individuals and groups shape the organization's capacity for transformation.

Similar to the process of organizational learning, acceptance of change by individuals and groups within an organization influence the collective potential for progress. Loucks-Horsley (1996) describes group acceptance through the concerns-based adoption model (CBAM). As a systems thinking process, the sequence of change begins with the individual processing which enables sharing ideas through discourse and modeling for articulation to teams and eventually, systems.

Education is governed by federal, state and local governmental agencies that are organized in predictable and typical ways. Non-educational organizational models of learning and change acceptance reflected in the conceptual framework of DIDM and school improvement statutes and policies, direct and inform education as an organization. Legislatures define expectations through general statutes often requiring the use of data to guide school improvement (NCGS §115C-105.27.b). Statutes are then translated into policies by the agencies given the authority to implement the legislative mandates. For the purpose and context of this study, the North Carolina school improvement statutes, policies, and practices are examined in the next section.

Data in North Carolina School Improvement Policies

The increased role of data at the school level is evidenced by recent changes in

state mandated policies related to the school improvement planning process. Focusing on the purpose and context of this study, North Carolina School Improvement Planning policies focusing on DIDM, will be addressed in the next section.

The North Carolina General Assembly statutes define specific expectations for the collection and use of data in the school improvement process. In addition to collecting data generated by the school, North Carolina emphasizes the importance of obtaining data from individuals and groups who represent the perceptions of the entire school community. Regarding the use of data in the school improvement plan, the North Carolina statute mandates each component of the planning sequence is data driven.

§ 115C-105.27.a-b Development and approval of school improvement plans.

(a) In order to improve student performance, each school shall develop a school improvement plan that takes into consideration the annual performance goal for that school that is set by the State Board under G.S. 115C-105.35 and the goals set out in the mission statement for the public schools adopted by the State Board of Education. The principal of each school, representatives of the assistant principals, instructional personnel, instructional support personnel, and teacher assistants assigned to the school building, and parents of children enrolled in the school shall constitute a school improvement team to develop a school improvement plan to improve student performance. Representatives of the assistant principals, instructional personnel, instructional support personnel, and teacher assistants shall be elected by their respective groups by secret ballot. Unless the local board of education has adopted an election policy, parents shall be elected by parents of children enrolled in the school in an election conducted by the parent and teacher organization of the school or, if none exists, by the largest organization of parents formed for this purpose. Parents serving on school improvement teams shall reflect the racial and socioeconomic composition of the students enrolled in that school and shall not be members of the building-level staff. Parental involvement is a critical component of school success and positive student achievement; therefore, it is the intent of the General Assembly that parents, along with teachers, have a substantial role in developing school improvement plans. To this end, school improvement team meetings shall be held at a convenient time to assure substantial parent participation.

(b) All school improvement plans shall be, to the greatest extent possible, data- driven. School improvement teams shall use the Education Value Added Assessment System (EVAAS) or a compatible and comparable system approved by the State Board of Education, to analyze student data to identify root causes for

problems, to determine actions to address them, and to appropriately place students in courses such as Algebra I. School improvement plans shall contain clear, unambiguous targets, explicit indicators and actual measures, and expeditious time frames for meeting the measurement standards (NCGA, 115C-105.27.a-b).

Research and best practices emphasize the inclusion of all stakeholders in design and development of school improvement plans, as reflected in the statute of the North Carolina General Assembly as quoted above. Providing opportunities for teachers, staff members, students, parents and community members to participate in the school improvement planning process ideally, creates a school improvement plan that reflects the diverse views of the entire school community. Built on the organizational improvement process, school improvement is a continuous cycle which requires communication and collaboration among the team members as representatives of the school community (NCREL, 2000; Picciano, A., 2006).

To inform the team members, data can provide insight into the school culture and community. Incremental collection and analysis of data illustrate the dynamics of the school community, enabling individuals and groups to understand the changes that have occurred and created the present status. This overall picture is essential for school improvement planning, as stakeholders must anticipate and plan for future events based on data, not opinions or perceptions. Assessing changes within the school community, researchers suggest using incremental surveys as a tool to ensure data reflect the current school community (NCREL, 2000; Gallagher, Bagin & Kindred, 2003). Aligning areas identified for improvement with specific data metrics will promote authentic progress monitoring and evaluation of results.

Like organizational learning models presented by Senge and Wheatley, the

school improvement process promotes dialogue within the school community and facilitates a deeper understanding of the school's needs. Similarly, organizational improvement models recognize the importance of collecting and using data from multiple sources to guide and inform the school improvement (Marsh et al., 2006; Picciano, 2006).

While recent adoption of new standards and testing requirements have increased society's awareness of educational improvement efforts, an extensive history exists around reform in education. In 2002, No Child Left Behind (NCLB), the reauthorization of the Elementary Secondary Education Act of 1965, called for the collection, analysis, and use of student achievement data to improve school outcomes. Subsequently, the demand for accountability and evidence has sparked a renewed focus on data informed decision-making (DIDM) and evaluation to improve schools.

In response to demands for accountability, evidence-based decision-making is observable in practices at each level of the educational organization. In the classroom, teachers gather assessment data to monitor student progress. Grade level teams review performance data from standardized tests to evaluate the pacing of instruction. At the school level, improvement goals are based on a variety of information ranging from community and staff surveys to student test scores, attendance and discipline data. Local education agencies collect a variety of district level data as evidence of compliance and progress as required for federal and state program funding (Marsh et al., 2006; NCREL, 2000; Gallagher, Bagin & Kindred, 2003; NCES, 2010).

The increased demand for DIDM in the school improvement planning process to increase student achievement has sparked a growing concern about access to data by principals and teachers. In response to the demand for greater access, data systems are being developed and implemented. The next section examines data access challenges and data systems initiatives.

Data Systems

Advances in communication technology have increased society's access to data from a variety of sources. Educational organizations are developing data systems that integrate sources of data and provide access to users.

"Discrepancies in the quality and functionality of district level data systems limit the capacity for local level educators to access, analyze and use data to inform decisions for school improvement" (U.S. Department of Education, 2010, p.1).

According to Means et al. (2007), since 2002, the federal government has provided funding to improve state level, student data systems. Adoption of student data systems enables districts to transition from limited student information systems that provide access to necessary information such as attendance, class schedules and grades. Focusing on the context of this study, this section examines research related to (1) student data systems 2) school level data access by administrators and teachers, (3) instructional management systems, and (4) assessment systems.

Student data systems include a range of products designed to store educational data for classrooms, schools, districts and states. The majority of student information systems include primary school data such as attendance, grades, test scores and information about federal program participation. Under

NCLB (2002), the U.S. Department of Education for the purpose of accountability defined student subgroups: Students with Disabilities (SWD), Economically Disadvantaged (ED) and English Language Learners (ELL). Annual measureable objectives (AMOs) are set for the academic performance as percent proficient per subgroup (see Table 1).

Table 1. Annual Measureable Objectives for Selected Subgroups and Tests in Grades 3-8

Subgroups	2014-2015	
	Reading	Math
Students with Disabilities	30.3%	30.0%
Economically Disadvantaged Students	42.9%	42.1%
Limited English Proficient	27.6%	34.0%

Note. Adapted from http://www.ncpublicschools.org/docs/accountability/reporting/amao/targettables1213.pdf

With the emphasis on learner groups, some comprehensive data systems integrate instruction resources and tools to support differentiated instruction based on assessment data. Instructional management systems provide access to standards-based lesson planning tools, assessment resources and additional tools to promote communication and collaboration. Assessment systems help organize and analyze data from interim assessments (U.S. Department of Education, *Use of Educational Data at the Local Level*, 2010, p.1). A recent report from the United Stated Department of Education suggests that using data for continuous improvement requires access to real time data for decision making at the district, school and classroom levels (U.S. Department of Education, 2010).

In 2007, a National Educational Technology Trends Study (NETTS) survey on data systems was conducted with 427 public school districts in the United States.

Reviewing the results indicate 99% (n=423) of school districts reported having a student information system but only 74% (n=316) had a student data system. Researchers describe several limitations of most district data systems including the lack of integration capabilities, operational difficulties, and limited data sources. Additionally, researchers found that most of the district systems do not provide instructional tools, which are linked with the data (Means, et al., 2009).

Schmoker (2009) described the importance of using a variety of data to improve instructional practices in schools. While annual test results can serve as one indicator of authentic learning, additional data sources are necessary to connect instructional practice with student outcomes. A report published by the Data Quality Campaign (DQC) (2012), suggests the use of formative assessment data in the classroom by teachers has a positive impact on instruction and student learning. Among other enhancements, the improved state and district level student data systems are being designed to increase administrator and teacher access to benchmark data and longitudinal data for individual students who are currently enrolled (Data Quality Campaign, 2008).

Despite efforts towards increasing access to a variety of data, principal and teacher access to data and use of data is often limited to demographic data and the results of standardized tests from previous years' cohorts. While improvements have occurred in student data systems, recent studies indicate data accessed by school level users is still limited. According to Means et al. (2009), 55% (n=215) of teachers surveyed had access to data through a data system. Of those teachers who had access to

a data system, only 41% (n=170) of the teachers had access to assessment data for their current students.

In spite of recent effort to increase administrator and teacher access to student data, challenges continue to limit the use of data for school improvement and supporting student achievement. Given adequate access, challenges to the effective use of data for school improvement still exist at the district and school levels. In the next section, research related to the types of data and practices for using data for school are examined.

Types of Data in Schools

As suggested in previous research, school improvement plans should incorporate a variety of data to assess the needs and evaluate the progress of students (NCREL, 2000). While most data fit within one of these categories on a broader scale, multiple subsets yield an authentic assessment of the school (Bernhardt, 2004).

Student achievement data. NCREL (2000) categorize educational data into four groups including performance, demographic, program and perceptional. In the performance category, NCREL includes results of annual tests, which are used for the purpose of accountability, periodic assessment data from interim district/school level tests as well as data from ongoing classroom assessment that are used to monitor student progress and inform instructional plans. NCREL researchers describe two types of demographic data. *Static data* includes ethnicity, gender, economic status, special groups Exceptional Children (EC) and English Language Learners (ELL). Dynamic data contains information about student attendance and school suspensions. Additional demographic data related to program participation includes descriptive information and

enrollment data for specialized academics and extracurricular programs. NCREL (2000) defines the fourth category of data as perceptional data that includes responses from school community surveys about strengths of the school and areas that need improvement.

State level assessment data. Standardized test scores provide evidence of student performance outcomes and progress based on predicted scores. State and district level leaders use standardized test data as evidence for accountability mandates. School level leaders and teachers use assessment data to measure and evaluate student progress.

> "Systematically collected evidence available and collected by most schools revolves around student achievement. In some schools, this consists almost entirely of externally mandated test data gathered toward the end of the school year." (Wallace Foundation, 2010, p.182) State assessments have limited use because they are designed to sample broad domains of student knowledge. They are administered once a year and can be used as broad indicators of the school's effectiveness… Although these assessments can provide valuable information about the district's general success, they are not helpful when evaluating student progress, and they do not provide useful data during the school year. (NCREL, 2000, p.9)

While the standardization of state level assessments increases the validity and reliability of the resulting data, an annual collection of student achievement data limits the usability for guiding instructional practices. While standardized test results provide valuable information, additional data enable teachers to evaluate students' progress and make decisions/changes during the year.

School and classroom level data. Classroom level assessment data enables teachers to inform instructional plans and allows students to evaluate their progress (NCREL, 2000). **"**[Data use at the school and classroom levels can be mutually

supportive with data driven decision-making at the district level. Depka (2006) suggests classroom, school and district level data be used to define common goals. Similarly, progress monitoring and analysis of school and classroom level data promote a collective culture for continuous improvement within the district.

NCREL (2000) researchers identified positive influence using data to inform decisions can have on student achievement. NCREL also suggest educators have limited experience with using data in a systematic way to inform instruction. NCREL researchers identify four types of data used to inform both administrative and instructional decisions with the overall goal of increasing student achievement.

The four types of data suggested by NCREL include 1) student achievement, (2) demographics, (3) programs and (4) perceptions. Emphasizing the importance of collaboration and reflection, the writers suggest establishing a leadership team that includes individuals representing the various school and community perspectives. This model supports the importance of collaboration for school improvement which also aligns with the learning organization theory (Senge, 2006, Reeves, 2004). The model presented by NCREL suggests using perception data to identify areas for improvement during the need assessment process. Recognizing the importance of individual and group perceptions offers further support for strengthening the collective efficacy of the school (Bandura, 1993, Reeves, 2004). Moving away from the narrow use of summative student achievement data to inform decisions, school districts are looking for alternative methods of analyzing student achievement data to guide instruction. Examining the progress of individual students can facilitate the dialogue between principals and teachers. A successful example of data driven instruction based on model implemented

in a Montgomery County Maryland middle school. Faced with the possibility of state mandated sanctions, the principal and teachers looked for an alternative solution. Identifying challenges among subgroups and individual students based on predicted scores, teachers began to associate actual students with the data. The data narrowing process provided an ongoing, personalized approach to improvement throughout the year (Heath, Heath & Bedford, 2007). Understanding one's role in school improvement, principals and teachers need to recognize and understand the connections between classroom instruction and student learning. Serving as facilitators in the process, school administrators can increase their role as an instructional leader by modeling the practices for teachers.

Previous studies describe the positive impact of teacher leadership can have on student achievement. Providing opportunities for teachers to take on ownership of school improvement can serve as a catalyst for motivating others. Although the principal maintains the role of leader at the school level, accountability mandates have increased the need for shared leadership and subsequent ownership of student achievement (Glickman, Gordon, & Ross-Gordon, 2004).

Researchers describe challenges associated with the validity and reliability of classroom level data that limits the use beyond the classroom and individual teacher. Herman and Gribbons (2001) found the majority of assessment data was unique to individual classrooms and therefore, not comparable to the school. They found limited evidence of a systematic assessment plan that would yield data for comparison. To support a purposeful process for obtaining authentic evidence, a report published by NCREL (2000) suggests using the following questions to guide

the collection of student achievement data:

- What evidence can we collect about our students' learning?
- What evidence do we have that shows the knowledge, skills, and understandings our students have achieved?
- Which data indicate the degree to which our students show the conceptual understandings and generalizations in our standards?
- What evidence shows which students are meeting or exceeding our achievement expectations and which are not?
- What do we know about how each individual student learns? (p.10)

When integrated with instruction seamlessly, assessment data can play a key role in the learning process; providing evidence to guide students and teachers to the next step in the learning process (William & Black, 2004; Popham, 2008). *"*But even if teachers are implementing a variety of assessment methods, these assessment options are meaningless unless their results are used to make decisions for improving student achievement" (NCREL, 2000, p.10).

Given the vast amounts of data produced and collected in schools, it is still up to the administrators and educators to use data to identify problems and potential solutions (Spillane, 2012). The next section examines changes in the ways in which data are collected for school improvement to increase student achievement.

Use of Data

The Wallace Foundation (2010) described changes in the role of data in schools and the ways in which data are used in schools. Previously, data were utilized in the school improvement process to identify problems with a little focus on identifying strategies to address the problem or follow up with evaluation. Similarly, Means et al.

(2007) suggest moving towards using data to inform daily practice in the classroom and integrated with an ongoing school improvement process. The result is an increased focus on the use of data to inform and modify instructional practices to improve learning.

In spite of the increased expectations for data use in the school improvement planning process, current research offers limited insight into the actual practices that are intended to promote student achievement. In a report published by The National Forum on Education Statistics, researchers describe changes in the use of data (see Table 2).

Table 2. Changes in Data Use

Data Use	Description	Examples of practice
Intuition	Based on experience, educators recognize anecdotal data	Observing individual students and student groups to characterize performance
Compliance	Use data to determine if organizational requirements have been met	Evidence required for funding streams
Accountability	Reporting results of performance metrics as required	Proficiency of student groups on standardized tests
Decision Making	Using data to inform conclusions	Operational, instructional, policy
Evaluation	Using data to assess the results of choices and actions	Rely on data to evaluate the effectiveness of a reading program
Informing action	Changing behavior based on what the data suggest	Implementing interventions based on trends and outcomes identified through data

Note. Adapted from *The National Forum on Education Statistics* (2012, p.2)

The changes described by the National Forum on Educational Statistics in Table 2, illustrate the changes leading up to the era of accountability and moving towards data informed decision-making. The following sections examine data use

around accountability and the influence on the school improvement planning process to support student achievement.

Data for compliance. Like the National Forum on Education Statistics (2012) report, data use for compliance occurred in response to federal funding requirements. Introduced in 1965, ESEA addressed concerns and issues around funding, poverty, and access to education for all students. ESEA required (compliance) data as evidence for the use of Title I funding. Since the initial in 1965, ESEA reauthorizations have resulted in additional federal funding programs to address discrepancies in services and access for student groups. The additional funding programs prompted demands for evidence and accountability.

Data for accountability. In 1983, *A Nation at Risk* published by the National Commission on Excellence in Education sparked a renewed focus on educational reform. Reflecting the hierarchal organizational structure that focused on teachers and students, new mandates were handed down from state policy makers including credit requirements for graduation and a minimum number of attendance days in the school calendar.

Additional mandates from the state level agencies included new requirements for teacher preparation programs, professional teaching licensure and continuing education credits for practicing educators. Despite these changes, research provided limited evidence of improvement in the 1990s, which brought about another shift in reform efforts. Broadening the focus beyond the teachers and students, additional variables such as school governance and organizational culture were examined as influential factors in improvement efforts. Student populations

with varying needs, inconsistent services, and learning environments within districts and schools indicated a need for increased local decision-making.

The top-down organizational structure of education limits the available opportunities for involving teachers in making decisions (Dunaway, Ausband & Kim, 2009). Increasing leadership roles for teachers requires improving preparation programs and licensing requirements, addressing recruitment and retention and responsibility for instructional practices and results. Based on these findings, state policy makers accepted varying levels of directed autonomy that granted greater access for local decision-making (Kowalski, Lasley & Mahoney, 2008).

Data for driving decisions. In a report published by RAND, *Data Driven Decision Making in Education*, Means, Pane, and Padilla categorize data used for making decisions in education as input, process, outcome and satisfaction (2006). The most commonly used data in schools is achievement data from standardized test scores. In the RAND report, researchers also found that some schools are using projected student growth data obtained from Value Added Models (VAM) systems. In the same report, researchers found that some schools use data from locally developed tests and progress reports received from online programs. In the same report, researchers also found that some schools use demographic data such as student attendance, mobility, and graduation rates (Marsh et al., 2006).

Previous research suggests the role of data in current educational reform efforts is moving away from anecdotal evidence, personal preference, and historical precedent (NCES, 2012; Herman & Gribbons, 2001). Affording local education agencies with decision-making power and data increased expectations for evidence of compliance, accountability, and evaluation. Recent reform efforts typically require data collection to

demonstrate the decision-making and evaluation processes for progress and improvement. According to Herman and Gribbons (2001), societal demands for increased accountability drive policies with "heavy stakes attached." (p.3)

Data for driving practice. Current reform efforts emphasize the importance of using data to drive decisions and inform practice. In addition to academic performance, recent mandates recognize the importance of individual student progress. These changes are reflected in the emphasis on monitoring students' current ability levels. Based on the individual student data, schools are expected to select and provide the appropriate resources and instruction. Also, schools are expected to measure student progress and evaluate the effectiveness of the instructional practices (Herman & Gribbons, 2001).

Data for program evaluation. Changes in accountability mandates reflect tighter connections between budgeting, the effectiveness of instruction, resources, and programs that underlie the school improvement planning process. Primary data provide evidence of program participation documenting the number of students, types of services and amount of time. "Evaluation of programs compares the predicted and observed results about a shared set of objectives and goals for individuals and groups of students" (Herman & Gribbons, 2001, p. 111). Increased local decision-making and accountability requirements have increased the role and importance of communication and data at each level of the organization (U.S. Department of Education, 2010).

Student achievement data can provide evidence of academic performance; however, district and school populations are diverse and dynamic in nature. Using student demographic data to provide context for accurate interpretation will be examined

in the next section.

Student demographics. Understanding who the students are provides a framework for understanding performance. Reflecting the increased emphasis on the progress of individual students, the collection and use of demographic data can provide valuable information that helps educators understand the individual students and groups within the school community (NCREL, 2000). Student demographic data can provide insight into the school community. Considering trends and patterns over time can be used to anticipate needs and guide decisions regarding resources and scheduling. NCREL (2000) suggests integrating demographic data including students' socioeconomic status, ethnicity, gender, and exceptionalities. Additionally, data related to behavior, attendance would define the context for interpretation.

The National Forum on Education Statistics (2012) suggests collecting and using data that are readily available in schools (see Table 3).

Table 3. Types of Available Data in Schools

Enrollment data
College and career readiness data
Teacher data
Program data
Transportation data

Note. Adapted from *National Forum on Educational Statistics* (2012, p.4)

Integration of Data Types

Limited research exists on the procedures and actual practices of data use at the school level. Herman and Gribbons (2001) suggest integration of large scale assessment data (ACT, SAT, etc…) with classroom and demographic data is limited. Previous research suggests coursework in data collection, analysis and interpretation do not provide adequate preparation for teachers.

In 2001, Herman & Gribbons conducted a case study which examined two schools in California found a variety of data are stored in an electronic database including demographic, program participation (subgroups) and scores from state and district tests. At one school, a variety of classroom level data were collected from assignments, quizzes, and tests, none of the data were stored electronically or included in student records. Even though decisions were made based on the data, there was limited evidence of any systematic process. The other school in the case study also collected classroom data that was analyzed and discussed in meetings. Even though the school described discussion and analysis of the data, researchers found limited evidence of the actual process or records of the data. Previous studies conducted by the Educational Research Service suggest the use of multiple sources of data is common among higher performing districts (Depka, E., 2006).

In addition to data access, in order to use data to inform decisions made during the school improvement process, educators need data literacy skills to understand and use the data for decision-making. The next section examines issues related to data literacy among educators.

Data Literacy and Perceptions

Research published by the National Forum of Educational Statistics (2012) recognizes discrepancies in educators' knowledge and analysis skills to use data to inform their daily practices. Acknowledging the gap in data literacy, the National Forum on Education Statistics (2012) distinguishes data experts from data users. "…[D]ata users need to have the knowledge, skills, and abilities necessary to identify, access, understand, analyze, interpret, and use education data as appropriate to perform

their respective duties in a school, district office, or state education agency" (National Forum on Educational Statistics, 2012, p.2).

Understanding data is essential for setting goals and monitoring progress towards improvement. The growth process is guided by "Shared data based goals" (Depka, E., 2006). Establishing common understanding supports consistent perceptions needed to work towards shared goals within an organization. Increased emphasis on a systematic collection of data does not automatically result in data based decision-making practices for school improvement or increased student achievement. "… [T]here are important conditions to be met or thresholds to be surpassed before such data use matters" (Wallace Foundation, 2010, p.180).

The Wallace Foundation (2010) report presented the following findings related to the use of data by school principals:

- District data-use practices have a substantial influence on principals' data-use practices.
- Most principals have and use considerable amounts of evidence about the status of individual students and their student populations.
- Very few administrators have systematically collected evidence about the school and classroom conditions that would need to change for the achievement to improve.
- A slim majority of principals processes their data in collaboration with their staffs and call on district staff members and others with special expertise to help them with data analysis and use.
- When schools are considered in the aggregate, typical approaches to data use by districts and principals have no measurable influence on student achievement whereas, variations in data use, specifically in elementary schools, explain a significant amount of variation in student achievement.
- Leaders in high data-use schools have clear purposes for analyzing data. They engage their staff collectively in data analysis, build internal capacity for this

work, and use data to solve problems, not simply to identify them.

- Principals can play a key role in establishing the purposes and expectations for data use. They can provide structured opportunities (collegial groups and time for data use), sessions for data-use training and assistance, access to expertise, and follow-up actions.

- Where principals do not make data use a priority — where they do not mobilize expertise to support data use and create, working conditions to facilitate data use in instructional decision-making teachers are not likely to do it on their own. (p. 179)

A variety of factors influence data uses within the educational organization. In the next section, common factors, which affect data to use in education including barriers and supports for data use, are addressed.

Influences on Data Use

Researchers with the Wallace Foundation (2010) describe three broad factors that act as barriers and supports for data use which include the organization, the data and the users. In this model, policy serves as the catalyst that drives the overall DIDM process.

Organizational support is essential for effective data driven decision-making. Building upon previous studies, the Wallace Foundation examines the potential of the district office in supporting school reform and improvement. The researchers note the limited amount of information from previous research regarding specific models or practices that have proven to be an efficient way to central office support (MacIver & Farley, 2003).

A previous study by Means et al. (2009) identified six prerequisites and supports for DIDM:

- State, district, and school data systems

- Leadership for educational improvement and the use of data
- Tools for generating actionable data
- Social structures and time set aside for analyzing and interpreting data
- Professional development and technical support for data interpretation
- Tools for acting on data (p.31)

Data as a barrier. Schmoker (2009) recognized the potential for data itself, to serve as a barrier to DIDM for school improvement. He also suggests data can promote complacency when misused and misinterpreted. In a previous study, classroom observations conducted in a school deemed as high performing by the state found limited evidence of innovative, hands-on minds-on learning tasks. Interviews with teachers indicate the use of test prep programs were the only variable that changed. Instructional practices remained the same and continued to do so, given the stamp of approval by the high state rating. Schmoker (2009) wrote, "The data itself created a ceiling on instructional improvement" (p.3).

Data access. Described previously, researchers recognize potential barriers to data access and use. To address these challenges, researchers suggest using statewide systems to support capacity and promote access to information for all educators (Wayman, 2005). Overwhelmed by the collection and use of data from the wide variety of sources that are available for school improvement, some researchers suggest focusing on simpler forms of data. In *Making School Improvement Part of Daily Practice* (2004), a report published by the Annenberg Foundation, researchers suggest identifying data that already exists in the school to support the authenticity of

the improvement planning process. The Annenberg researchers suggest "…[I]ncorporating data such as student work samples, professional development plans, lesson plans, test scores, attendance rates and suspension rates to connect school improvement with the school's day to day routines" (p.15).

Data quality. Researchers describe data quality as a sub-factor of data as a potential barrier to DIDM. The increased demands for data based evidence in educational reform have prompted the development of statewide longitudinal data systems to increase access to valid, reliable data for educational organizations. As noted previously, the Data Quality Campaign (DQC) is an organization that focuses connecting systems from different K-12 and higher education agencies within the state of North Carolina. In 2009, every state agreed to implement the America's Competes:10 Essential Elements (DQC, 2009) for statewide longitudinal data system:

- Unique statewide student identifier
- Student level enrollment, demographic, program participation
- Ability to match individual students' test records from year to year to measure academic growth
- Information on untested students
- Teacher identifier system with ability to match teachers to students
- Student level transcript information including courses completed and grades earned
- Student level college readiness test scores
- Student level graduation and dropout data
- Ability to match student records between the pre-K-12 and post-secondary systems

- State data audit system assessing data quality, validity, and reliability (p.17)

Presented by DQC, the *Individual State At-a-Glance 2012 Progress Report*, North Carolina had implemented the ten elements. According to the report, North Carolina is working on two additional state actions: linking education agencies and ensuring that data can be accessed, analyzed and used by all stakeholders.

Data users. Herman and Gribbons (2001) found less than adequate administrator and teacher preparation, knowledge, capacity and resources that are necessary for collecting, analyzing and using data to inform decisions or practices. In a case study, researchers describe challenges associated with a shared understanding of data related terminology (Herman & Gribbons, 2001). The National Forum on Educational Statistics (2012) explained the significance of data meaning.

> Data Meaning: Even superficially, similar terms can have very different meanings. For example, "class size" is not the same as "student/teacher ratio"; "completion rate" is not the same as "graduation rate"; and program "eligibility," "enrollment," "participation," and "completion" are not identical terms. (p.3)

Combined data barriers. Barriers to data use in education described in the previous section do not act in isolation. In a report published by the National Forum on Educational Statistics (2012), researchers describe barriers among combinations of organizations, data, and users. In the same report, the National Forum on Educational Statistics indicates limitations of data for use in decision-making.

> Data Limitations: There are logical, statistical, and common-sense limits to the appropriate use of most types of data. For example many data sets reflect counts on specific collection dates and are not necessarily representative of conditions at other times in the same school year; private school students and homeschooled students are not necessarily included in many data collections and reports; and policy choices can strongly affect data values—in some districts, for example, students may be counted as in attendance if they are present during homeroom, while other districts maintain attendance for each class period throughout the school day. (p.3)

Another overlapping barrier is the perception of data by the users, especially the leadership. A report by the Wallace Foundation (2010) describes the significant influence of the principal on teachers' data use. "These internal states have antecedents: principals' own past experiences, knowledge, and beliefs, as well as their interpretations of the consequences of their current practices for the local and wider contexts in which they find themselves" (p.181). Individuals' perceptions of data can have a significant influence on the understanding and use for school improvement decision-making for increasing student achievement. "All district stakeholders need to share the perception that data are an essential component of instructional decision making for students" (Depka, 2006, p.1- 2).

In a 2012 report, the Data Quality Campaign (DQC) addresses the need for increased data literacy for educators including pre-service teacher programs. Complying with this state action, North Carolina now requires data literacy for licensure and certification.

In spite of the current Race to the Top initiatives and reform efforts focused on promoting data use in education, numerous barriers influence the use of data for decision-making at the school level. The next section examines the importance and need for further study in data driven decision-making in school improvement to support academic achievement.

Need for and the Importance of this Study

The use of data to guide and evaluate students, teachers, principals, schools, and districts is unquestioned. However, the lack of a clearly understood definition of what

data to use and how to use it has created a chaotic atmosphere in which schools are expected to operate (Herman & Gribbons, 2001). Nowhere is this more evident than in this directive to use data in crafting school improvement plans given by the North Carolina Legislature: "All school improvement plans shall be, to the greatest extent possible, data-driven" (NCGA, 115C-105.27. b).

At once, schools are data rich and data poor. They are data-rich in the amount of data that is available, and yet data-poor in how the data is used. This study does not attempt to investigate data-effectiveness, but rather investigates how the data is used.

Before data-effectiveness can be investigated, the status of data-use must be quantified, and to date, efforts to explore how data is used in education are very limited. The Wallace Foundation (2010) reported:

Current scholarship highlights educators' increasing reliance on data use at the school and district levels. These reports often are based on case studies of one or a few sites, chosen to exemplify positive stories of data use. Studies of this sort provide insights about uses of data, organizational conditions (e.g., leadership, resources, professional trust between teachers and between teachers and administrators) conducive to data use, and ways in which data use can evolve and become more comprehensive and institutionalized in ongoing work routines over time. The innovations and activity surrounding data use are, however, quite recent; and the brief track record to date makes it difficult to be confident about the effects of data use, particularly effects on student achievement. (p.180)

Given the accountability expectations surrounding the use of data and the chaos of uncertainty of how the data is and should be used, one can ponder the effects on

teacher and principal efficacy. While this study does not examine either principal or teacher efficacy, it does recognize the importance of self-efficacy to individual and organizational success and proposes that the muddled understanding of how data is used reasonably contributes negatively and positively to the sense of efficacy of teachers, principals and schools, and, therefore, this study can be a starting place for future studies that focus specifically on the relationship of data-efficacy to individual and organizational effectiveness.

`School improvement planning as a practice is an example of an organizational routine with an overarching purpose of increasing student achievement (Spillane, 2012). In a report published by RAND (2006), researchers suggest a need for further research on the types of data that are used and the effects of DDDM on student outcomes.

Despite the North Carolina statute that requires data driven decision-making for school improvement planning, organizational and systemic factors limit access to and the subsequent use of data by administrators and teachers. School administrators have an obligation to collect a variety of data including attendance of faculty, staff and students, discipline events, classroom observations, student services, student subgroups and the use of instructional programs. Teachers are required to collect and report student attendance, discipline activities and a variety of assessment data including formative classroom assessment, district benchmarks, summative tests, and grades. Administrators and teachers are encouraged to collect data from various web based academic programs to monitor the progress of individual students and groups (National Forum on Educational Statistics, 2012).

Providing more data does not ensure data driven decision-making for school

improvement or support for student achievement. Based on the review of the literature, the development and adoption of statewide data systems is promoting the use of DIDM in various functions of K-12 schools. North Carolina statutes require schools to use a variety of data to inform school improvement planning to increase student achievement. In spite of the legal requirements and accessibility to statewide data systems, DIDM in the school improvement planning process to increase student achievement vary among districts and schools (Herman & Gribbons, 2001). Limited research exists which examines data use by principals and teachers in school improvement planning practices to support student achievement.

In the next chapter, I will explain the research method, site and participant selection as well as data collection and analysis that will be used to examine data use by principals and teachers in school improvement planning practices to support student achievement.

CHAPTER 3: METHODOLOGY

Introduction

In this chapter, I present the research method selected to examine the way principals and teachers at three traditional, public schools in North Carolina use data in the school improvement planning process with a goal to increase student achievement.

Data use in the school improvement planning process occurs as members of the school improvement team analyze data to identify areas for improvement and evaluate progress towards goals. In any team approach to the organizational improvement process, individuals bring unique experiences and knowledge to the table that facilitates the deconstruction and development of meaning. Because data use in school improvement planning focuses on a team approach, much learning occurs through the interaction, discussion and dialogue within the context of the group meetings. Applying a social constructivist framework, this study examined the individuals' perceptions and practices as well as the collective group learning that occurs during discussion and interaction. In the next section, I describe the qualitative case study research design based on observations, documents and interviews in this study (Creswell, 2003).

Research Design

Case study is appropriate for answering how and why questions focused on investigating current events within their natural setting (Farquhar, 2012; Yin, 1984). Unlike experimental strategies which include the purposeful manipulation of variables, qualitative case studies are conducted with an acknowledgement and understanding of

the context and its pre-existing variables. Yin (1981) identifies three types of case studies: exploratory, descriptive and explanatory. Descriptive case study examines how a phenomenon occurs whereas explanatory case study focuses on why a phenomenon exists. Because of the limited existing research into data use at individual schools, the proposed research is a primary examination into what the phenomenon is; therefore, exploratory case study is an appropriate approach for this study (Stake, 1995 & Yin, 1981). The purpose of this study was to gain insight into the data use process by principals and teachers in school improvement planning to support student achievement.

Case study has been frequently used to investigate a social phenomenon within its natural context. Creswell (2003) suggests the case study approach provides information and insight into the participants' practices and experiences. Case study was appropriate for this research because the phenomenon of data use was grounded in the natural context of the school environment. Case study enabled the researcher to collect a variety of data from various sources including documents, observations and interviews (Stake, 1995 & Yin, 1981). In the next section, I provide descriptions of the selected sites and the participants for this study.

Research Sites

I conducted this study in three public schools in the same district located in the northwestern region of North Carolina. All three of the selected schools served students in kindergarten through grade eight with enrollments of 250-350 students. While the researcher's access and familiarity with the schools and participants supported site selection within the district, the criteria for selecting the three sites was based on homogeneous sampling (Glesne, 2006). Each of the schools served small

outlying communities within the district. Each of the schools had a racially homogeneous, white student population. The majority of students at each school represented a lower socioeconomic level. Each of the school administrators were in their first assignment as principal. Additionally, each of the principals had been at their current school for less than five years. The homogeneity provides a unique opportunity for researching the phenomenon across three similar sites (see Table 4).

Table 4. Demographics of Selected Sites

		Student Ethnic Subgroups				
Schools	Student Enrollment FY13	Asian	Black	Hispanic	White	Two or more
AA	n=351	1% (n=4)	<1% (n=2)	2% (n=8)	93% (n=327)	3% (n=9)
BB	n=279	(n=0)	1% (n=3)	3% (n=9)	94% (n=261)	2% (n=6)
CC	n=242	(n=0)	2% (n=4)	4% (n=10)	91% (n=219)	3% (n=9)

Note. Ethnic subgroups as defined by the National Center for Educational Statistics

Initially built in 1927 and rebuilt after a flood in 1945, AA is located in the mountains in the outer edge of the county; AA is located in a rural area that is sparsely populated. Much of the land consists of Christmas tree and family owned landscaping farms. For many years, AA served the local students in grades 1-12 who lived in the remote area of the county. AA serves three hundred and fifty-one students in grades K-8. The majority of the twenty-five teachers at AA live in the community and many of them actually attended the school. Given the remote location, many of the teachers at AA also drive a bus route on the narrow roads, often covered with ice in the winter.

Built around 1930, BB School is located in the northern area of the county and

currently serves two hundred and seventy-nine students in kindergarten through grade eight. Originally, BB School served students in grades one through twelve. While the school was located in a rural setting, most of the local families worked outside of the community in surrounding towns. Unlike AA School, most of the twenty-two teachers at BB School lived in different areas of the county. While BB School was a Title I school, the percent of students (n=58%) served by the free or reduced meal program, was lower than the other sites.

Although CC School is located closer to the center of the district, individuals and families living in the small community in which it is located have fought to keep the school open. CC has nineteen teachers and two hundred and forty-two students enrolled in kindergarten through grade eight. Despite budget cuts that have forced neighboring districts to close and consolidate most of the kindergarten through grade eight schools, CC School continues to operate in spite of recent decreases in enrollment. As a Title I school, CC School had a slightly higher percent (65%) of students served by free or reduced meal programs compared to the other two sites.

Because of their small enrollment, there was one administrator at each of the schools. The Principals took on a variety of roles and dealt with unique challenges of leading smaller schools. With fewer faculty and staff allotments from the state, the principals faced obstacles such as offering exploratory classes provided at the larger schools including computers, media center, guidance, art, music and band. Due to smaller enrollments, BB School and CC School, sometimes combine students from more than one grade level into a single classroom. All three schools were designated as Title I schools because 58-65% of the students enrolled at each school participate in the

free or reduced meal programs. Title I schools qualify for federal funding based on the percent of students participating in the free or reduced meal programs. Title I funding is used to provide teachers, instructional assistants and resources.

Serving as an instructional facilitator, I worked at one of the selected schools, one day each week. I also provided coaching and support for math and science teachers at the other selected schools. In the role of instructional facilitator, I provided support and coaching for teachers. Glesne (2006) describes the attraction and potential risks when the researcher selects a site where they work. Participants' perceptions of the researcher's transitioning role between coworker and researcher might cause some confusion. Glesne also suggests interactions between researcher and coworkers can create ethical and political dilemmas during data collection. Because instructional facilitators perceived as leaders by teachers, there was potential for teacher participants to perceive me as a supervisor. Depending on the researcher's supervisory role within the organization, participants may be reluctant to have open discussions about work related topics. To control these influences the researcher can ensure confidentiality by using pseudonyms for the schools and the participants. To support a relationship with the participants, the researcher will disclose the purpose of the study to participants before and during interactions. Benefits of selecting a site where one works include gaining access, established relationships within the organization and rapport with potential participants (Glesne, 2006). Selecting your workplace as your research site allows a certain amount of ongoing access to participants as opposed to individual meetings. These repeated interactions support the continuous process necessary for interpretation

and deeper, holistic development of meaning (Ezzy, 2002).

Research Participants

Participant selection for this qualitative study followed a purposeful sampling method guided by the research questions. I invited the principal, the SIT chairperson and additional members of the SIT to participate in the study. As mentioned previously, mandates by the state of North Carolina required an election process for selecting members of the SIT by the faculty and staff. The state encouraged schools to include community members who are involved in school activities. The state mandates also require a representation of teachers, staff and parents on the SIT. While most schools had a minimum of six to eight members on the SIT, the actual numbers varied somewhat at each school.

When I began planning for the study, I requested a meeting with the district superintendent to obtain permission to conduct the study in the district then schedule a time to meet with the principal and members of the SIT at each school. During these meetings, I described the study, asked for volunteers who were willing to participate and answered any questions. I also explained that the use of pseudonyms in place of school and participant names would be used ensure confidentiality. I provided a letter of introduction, contact information and a copy of the informed consent letter for each participant. After presenting a brief review of the information and answering any questions, I provided a stamped envelope for willing participants to send their signed letters of consent.

Data Collection

Collecting data from multiple sources supports validity of the case and limits

subjectivity of the researcher (Creswell, 2003; Stake, 1995). For this study, sources of data for collection include documents, observations and interviews. Although I developed a preliminary plan for data collection (see Table 5), I understood the importance of being flexible as I scheduled meetings with individuals at different schools. To address this issue, I organized each of the data collection events within a monthly time range, including flextime if needed.

Table 5. Data Collection Plan and Estimated Timeline

Time Frame	Data Collection Events	Sites	Participants
Month 1	Interview 1	AA	Principal
			SIT Chairperson
		BB	Principal
			SIT Chairperson
		CC	Principal
			SIT Chairperson
Month 2	Observation	AA	SIT Committee
		BB	SIT Committee
		CC	SIT Committee
Month 3	Interview 2	AA	Principal
			SIT Chairperson
		BB	Principal
			SIT Chairperson
		CC	Principal
			SIT Chairperson
Month 4	Follow-up interviews as needed		

Interviews. After collecting the signed, informed consent forms, I scheduled initial interviews through email and phone calls with the Principal, S.I.T Chairperson and at least one additional S.I.T. member at each school. During the interview, I asked participants to describe general, background information including their academic background, years of experience in education, past positions and current teaching assignments. I also asked participants to describe their experience with school improvement planning and some examples of their basic data use practices as classroom

teachers. I conducted interviews at each of the school sites with the Principal, the School Improvement Team (SIT) chairperson and at least one additional member of the SIT. Initial interviews lasted approximately forty-five minutes on a date prior to observation of a SIT meeting at the school. The initial, semi-structured interview helped establish a relationship with participants, obtain basic information such as their experience in education and their perception of data use in school improvement planning. I scheduled a second, semi-structured, conversational interview with the same individuals to take place after the observation of the SIT meetings. That sequence provided opportunities for member check of data from the initial interview as well as follow up questions based on data gathered from observations of the SIT meeting. The interview protocol can be found in Appendix C. Yin (2015) describes qualitative interviewing as conversational and unstructured. Interviews support opportunity for personal interaction between the researcher and the participants.

Similarly, Creswell (2013) suggests interviews incorporating a certain level of dialogue between the researcher and the participant can limit the potential for leading the participant and subsequent subjectivity in analysis.

Documents. Collecting and analyzing data from documents enables the researcher to identify and interpret patterns, classify and categorize patterns and generalize results. For this study, sources of data for collection included documents relating to the principals and teachers' use of data for the school improvement planning process to support student achievement. I selected documents that represented data used during incremental steps in the school improvement planning process and collective

products of the process that focus on data use by principals and teachers. Creswell (2013) suggests existing documents produced in the natural setting can provide an authentic source of data. For this study, examples of collected artifacts included documents posted on school web sites such as the school improvement plans, school improvement team (SIT) meeting agendas, SIT meeting minutes, as well as guidelines posted on the district web site. As suggested by Glesne (2006), I asked for copies of materials from participants including the principal, SIT chairperson or committee member.

Observations. Observations of the SIT meetings at each school provided insight into the individual and group interactions. SIT meetings were scheduled after school once each month during the school year. Observations ranged from sixty to ninety minutes long, depending on the exact time of adjournment for the meeting at each school. The observation protocol can be found in Appendix B. Glesne (2006) describes the transition between participant and observer when conducting observations. As an observer, the researcher takes on the role and perspective of the learner. Creswell (2013) describes the risks and benefits associated with data collection from observations related to the role of the researcher transitioning between observer and participant. Creswell suggests the self-disclosure can help the researcher affirm their intentions and limit negative participant perceptions.

Glesne (2006) suggests the use of multiple data sources strengthens the validity of the study through triangulation across and between sources. Descriptions of additional strategies that will be applied to strengthen the study will be addressed after the data analysis section.

Data Analysis

Thematic analysis was used in this study. Ezzy (2002) describes thematic coding as an open-ended inquiry process that allows themes to emerge during analysis. For this exploratory case study, thematic analysis of the collected data was approached with a mindset of open-inquiry.

Ezzy (2002) describes the significance of starting analysis during the collection of data to support a consistent systematic process, integrating the researcher's reflections incrementally at each stage. During the collection and analysis process, Google Keep and Atlas-ti mobile applications were used to write memos, record reflections and new questions. The researcher used Google Voice Typing tool for the initial transcription of the interviews. The researcher conducted a secondary transcription to catch any inaccuracies. The secondary transcription also provided opportunities to add annotations, memos, questions and notes.

Analysis of collected documents, notes from observations and transcribed interviews followed a systematic coding process. Initial constant comparison of the individual data sources, facilitated with the use of a simple 2-column chart provided a common format to record phrases and identify associated codes (see Appendix D). Ezzy (2002) describes thematic analysis as an inductive process that allows themes to emerge from the data. Initially, open coding promoted emergence of unique themes and patterns from each data source. Utilizing taxonomic analysis with the Atlas-ti mobile application facilitated a secondary, axial coding process to identify relationships, similarities and differences among codes. Described by Ezzy (2002) as

selective coding, a tertiary analysis allows a central theme to emerge from the data and codes, collectively.

Strategies to Strengthen Quality of Data Collection and Analysis

Multiple strategies were adopted in order to strengthen the trustworthiness of findings from this study. Member checking or respondent validation will be used to review collected interview data with participants to ensure accuracy and prevent misinterpretation of the collected data (Ezzy, 2002).

Limitations associated with case study research are often associated with the small number of participants. Because case studies usually involve a smaller sample size, this can influence the potential for generalizability of the findings. Because the purpose of this study was to explore a phenomenon of data use, the benefits of case study outweigh the potential negatives. Working with fewer participants allowed the researcher to conduct on site observations. The data collected from the observations provided thick, rich, detailed descriptions of the interactions and the environment in which the events take place. Conducting in person interviews with multiple participants provided opportunity for semi-structured, conversational interviews specific to the participants in their natural setting. Collection of data from multiple sources including document analysis, interviews and observations provided insight into individual understanding, practices and interactions. Analysis of data from multiple sources and sites facilitated comparison across sites and participants, thereby providing opportunity for triangulation of data to strengthen the findings. The homogeneous sampling of multiple sites and including participants from each of the sites provided opportunities for collecting more data. Utilizing a variety of data collection methods from various

sources also worked together to support the transferability of the study.

Ethical Considerations

The researcher's ethical considerations for the participants guided the confidentiality of all participants with the use of pseudonyms. While approval and support from the superintendent was necessary to again access to sites and participants, the hierarchal relationship between district leadership, school principals and classroom teachers could have resulted in a professional dilemma for principals and teachers as participants in the study. To address these concerns, the researcher emphasized voluntary participation and ensured the confidentiality of the identity of an individual who decided not to participate.

Prior to the initial interview, I provided a general description of the questions for the individual participants to review. Before the interview began, I ensured the confidentiality of the data collected as well as the anonymity of the participants. To strengthen the relationship and trust with the participants, I described the importance of obtaining honest, open responses for the purpose of the study. With that in mind, I informed the participants that they could decline to answer any part(s) of a question during the interviews if they did not feel comfortable doing so. I also informed the participants they would have an opportunity to review and approve the transcriptions of their responses before they were included in the study.

All electronic formatted data collected was stored online through password protection files. All printed data was stored at the home of the researcher in secured files accessible only by the researcher. Only those individuals associated with the study were granted access to collected data as deemed appropriate for the purpose of the

study. If the researcher shared the results of the study with other professionals, all possible measures to ensure the confidentiality of the sites and participants were taken.

Subjectivity Statement

Glesne (2006) describes social constructivism paradigm as an interpretivist, acknowledging the subjectivity of the researcher in constructing their perceptions. Within the social constructivist paradigm, Glesne (2006) describes researcher reflexivity as an essential practice of critical reflection on the intersection of researcher, participants, environment and the phenomenon. As a researcher, I was aware of the potential for subjectivity in decision-making and data analysis based on previously established relationships with the participants (Glesne, 2006). As a colleague of the participants, I had a shared interest in the focus of this study that might have created a potential bias. To limit the influence of bias on objectiveness and accurate interpretation, reflexive practices were utilized during the study. Glesne (2006) describes the significance of self-awareness and understanding of the researcher's roles as researcher and learner to maintain objectivity. Reflexivity through note taking, reflection and discussion will support objectivity during decision-making and interpretation (Creswell, 2013).

I began teaching in 1995 as No Child Left Behind was introduced as a model of accountability for public education. As a classroom teacher, I gained experience teaching a variety of subject areas and grade levels in Florida and North Carolina. After completing my Master of Arts in Curriculum and Instruction, I obtained a position as a curriculum Instructional Specialist working with district level directors, high school administrators and teachers. Working in that multifaceted capacity, I recognized the

significant role of data played in decision-making at the district and school levels. In that role, I recognized a need for supported teachers' use of data in guiding instructional decisions in the classroom focused on increase student achievement.

During the study, I served as an instructional facilitator in the district where the proposed study took place. In addition to serving as the middle grades science specialist, supporting all of the 6-8 science teachers in the district, I was assigned to work at a middle school and one of the K-8 schools that has been selected as a site for the study. I worked closely with school administrators and classroom teachers. Based on the positive results I have experienced working with administrators and teachers to help them gain a better understanding of data, I considered data use to be an important component in all aspects of educational decision-making. Used effectively, data acts as a catalyst for professional empowerment for both the individual educator and the school.

In my role as a professional, I have developed greater interests in data use at the school level, particularly in the collective, group environment of school improvement planning to increase student achievement. Providing professional development for educators as adult learners, I have come to recognize the fact that each individual brings a unique set of experiences, skills and knowledge. Aligned with the social constructivist framework, I value opportunities for ongoing, collective learning of adults in the school environment. I was aware of the potential influence of my assumptions as I collect, interpret and analyze data. As I transitioned into the role of researcher, I was cognizant of my assumptions to limit the potential influence of my own subjectivity.

CHAPTER 4: FINDINGS

Overview of the Data Analysis

The purpose of this study was to explore the perceptions and use of data by principals and teachers in the school improvement planning process with the goal of increasing student achievement. I used the following questions to guide the research study:

1. What are principals' perceptions regarding the use of data in school improvement planning to increase student academic achievement?

2. What are teachers' perceptions relating to the use of data in school improvement planning to increase student academic achievement?

3. How are principals using data in school improvement planning to increase student academic achievement?

4. How are teachers using data in school improvement planning to increase student academic achievement?

5. Do principals' perceptions of data influence their use of data in school improvement planning to increase student academic achievement?

6. Do teachers' perceptions of data influence their use of data in school improvement planning to increase student achievement?

To explore these phenomena, I collected data through interviews, observations and documents from three schools with students in kindergarten through grade eight, all located within the same district. The participants in the study included school principals, teachers, instructional facilitators and a guidance counselor. In addition to their roles within each school, the participants represented different levels of experience in education each of the participants had less than five years of experience in their role as members of the School Improvement Team.

Analysis of each data source started with an initial open coding process through which I labeled phenomena, determined categories, and identified criteria to classify categories from which themes emerged. Analysis of data from interviews, observations and documents illustrated commonalities and unique attributes of the individual participants.

Case 1: AA School

AA School: School Context. Initially built in 1927 and rebuilt after a flood in 1945, AA School is in the mountains on the outer edge of the county. AA School is in a rural area that is sparsely populated. Much of the land consists of Christmas tree and family owned landscaping farms. For many years, AA School served the local students in grades one through twelve who lived in the remote area of the county. In 2016, AA School serves three hundred and fifty-six students in kindergarten through grade eight.

Many of the twenty-four teachers at AA School live in the community, and many of them attended the school. Given the remote location, many of the teachers at AA School also drive a bus route on the narrow roads, often covered with ice in the winter.

Student enrollment at AA School decreased from 437 in 2006 to 356 students in 2016. In 2016, the average class size for kindergarten at AA School was twenty-two, whereas the state average was nineteen. In 2016, the average class size for fifth grade was nineteen, which was below the state average of twenty-one.

Table 6. AA School: Student Enrollment and Teachers

Year	Enrollment	Teachers
2016	356	24
2015	339	22
2014	345	21

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing student enrollment and assigned teacher numbers]. Retrieved from: https://ncreportcards.ondemand.sas.com

While the enrollment at AA School has decreased over the past few years, the ethnic diversity of the student population has changed. AA School had a slight increase in the number of Hispanic students as well as students representing two or more races.

Table 7. AA School Enrollment by Race/Ethnicity 2014-2015 School Year

	American Indian/Alaskan	Asian/Pacific Islander	Black	Hispanic	White	Two or More Races
Students	1	2	3	18	313	7

Note. National Center for Education Statistics (2016). [Interactive charts showing the number of students by race/ethnicity]. Retrieved from: https://nces.ed.gov/ccd/schoolsearch/school_detail.asp?Search=1&SchoolID=370058000222&ID=370058000222

In 2016, 71% of teachers at AA School had an average of 10 or more years of teaching experience whereas the state had 49% of teachers with an average of 10 or more years of experience. Between 2014 and 2015, 100% of teachers at AA School received ratings of proficient or higher on each of the evaluation standards. The percent of

teachers exceeding expected growth as measured by the North Carolina value-added model on standardized tests, increased from 0% in 2013 to 23.5% in 2015.

Table 8. AA School: Educator Effectiveness- Standard 6 Academic Success

Year	Exceeds Expected Growth	Meets Expected Growth	Does Not Meet Expected Growth
2015	23.5%	70.6%	5.9%
2014	18.2%	81.8%	0%
2013	0%	90.0%	10.0%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts of teacher effectiveness ratings by *percent* per category]. Retrieved from: https://ncreportcards.ondemand.sas.com

Between 2014 and 2016, AA School academic achievement as measured by percent proficiency on the state end of grade tests was greater than the state and district averages. Student performance in reading decreased from 74% in 2014 to 66.1% in 2016. During that same time, student performance in math increased from 67.1% in 2014 to 70.5% in 2016.

Table 9. AA School: Academic Achievement

Year	Math (Gr.3-8)			Reading (Gr. 3-8)		
	School	District	State	School	District	State
2016	70.5	51.9	54.7	66.1	59.8	56.9
2015	66.7	49.6	52.2	67.6	58.6	56.3
2014	67.1	49.4	51.0	74.0	60.7	56.3

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing academic achievement percent per performance level]. Retrieved from: https://ncreportcards.ondemand.sas.com

AA School: School Improvement Plan

On the School Improvement Plan from AA School, seven school improvement team members including the principal, one teacher representative from kindergarten through second grade, one teacher representative from third through fifth grades and one teacher representative from sixth through eighth grades. At AA School, members of the School Improvement Team also included one associate staff representative, one exploratory department teacher representative as well as one parent representative.

Table 10. AA School: School Improvement Team Members

Name	School Role	Committee Position/ Group Representation
Charles	Principal	Administration
Teacher 1	Teacher, Grade 1	Grades k-2
Jennifer	Teacher, Grades 4 and 5	Grades 3-5
Teacher 7	Teacher, Grade 7	Grades 6-8
Teacher X	Physical Education teacher	Exploratory classes
Assistant	Teacher Assistant	Associate staff
Parent 1	Parent of student	Parents

In the first section of the School Improvement Plan from AA School, the School Improvement team describe school strengths. In this section, AA School used results from the end-of-grade state standardized tests and end-of-year data for students in kindergarten through second grade from mCLASS/ Text Reading Comprehension (TRC), which is the state's literacy assessment program for students in kindergarten through fifth grades. In the second section, the School Improvement Plan included

information about the school's progress towards meeting targets as measured by federal annual measurable objectives. AA School also summarized results from the North Carolina teacher working conditions survey.

The third section of the plan asked schools to identify additional data needed to develop an improvement plan. AA School noted the need for data measuring math skills in kindergarten, first and second grade since students do not test in math by the state until grade three. The other sections of the plan did not refer to a need for additional math data.

Table 11. AA School: Summary of 2014-2016 School Improvement Plan

Goals	Data used to develop goals
Increase percent of proficient k-2 students by 3% annually as measured by Text Reading Comprehension (TRC) end of year assessment reaching 80% by 2016.	Proficiency on TRC end of year assessment
Increase student proficiency in math for grades 3-8 by 8.7% by 2015 and by an additional 4.6% by 2016 to meet AMO for the white subgroup in Math.	Proficiency on Math end of grade tests in grades 3-8
Increase student attendance rates by at least 1% annually.	Daily student attendance rates

AA School: North Carolina Teacher Working Conditions Survey

Analysis of the results of the 2016 North Carolina Teacher Working Conditions Survey (NCTWCS) for AA School revealed differences from the state level average in ratings on items related to the use of data for school improvement planning to increase

student achievement (see Table 12). Regarding the election of members of the School Improvement Team, a greater percent of teachers from AA School (48%) agreed as compared to the state average (29%). A higher percent of teachers from AA School (21%) strongly agreed that state assessment data are available in time to impact instructional practices compared to the state (13%). Similarly, a higher percent of teachers from AA School (31%) strongly agreed that local assessment data are available in time to impact instructional practices compared to the state average (19%).

Table 12. AA School: Selected Data from 2016 N.C. Teacher Working Conditions Survey

Items	Strongly Agree or Agree (average %)	
	School	State
The school elects members of the School Improvement Team	48%	29%
Parents/guardians are influential decision makers in this school	27%	18%
Describe role in school improvement planning as *large*	59%	39%
Spend an average of 3-10 hours each week using assessment results	21%	20%
State assessment data are available in time to impact instructional practices	21%	13%
Table 12. AA School Selected Data from 2016 N.C. Teacher Working Conditions Survey *(continued*)		
Local assessment data are available in time to impact instructional practices	31%	19%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing results of NCTWCS]. Retrieved from: https://ncreportcards.ondemand.sas.com

AA School Participant Background: Charles, AA School Principal

Charles was in his early forties. While he grew up in the southwestern United States, he completed undergraduate education at a state university in North Carolina. Charles participated in competitive sports throughout college, which influenced his career choice to become a teacher. He began his teaching career as a physical education, and health teacher in a position shared between two elementary schools. After a year, Charles accepted a position teaching high school physical education and health. He taught and coached a variety of sports at that school for sixteen years. After completing his Masters in School Administration, he served as an assistant principal for a semester at the high school where he had taught previously. The following year, a district interview team selected Charles from several applicants to serve as principal at AA School. He accepted the position and made a quick mid-year transition. Charles had served as principal of AA School for three and a half years. Charles was the father of three children ranging in age from eleven to nineteen. His youngest son attended sixth grade at AA School. As the father of a student with a specific learning disability, Charles was a strong advocate for all learners. During his time as a teacher at the high school level, Charles served as a student mentor and supported students who were at-risk for dropping out of school. He had an authentic passion and excitement for education.

Based on his experiences as a physical education teacher Charles described the teacher perception of the School Improvement Team as focused only on the core academic classes. He said,

The coaches and teachers in the P.E. department and even the teachers in the other exploratory departments had the perception that the School Improvement Team was only concerned with the core academic departments and the tested subjects since those were the only areas addressed in the goals of the School Improvement Plan.

Expanding on the disconnection that existed in the high school between teachers of different disciplines, Charles said,

Since our subject areas weren't tested with an End of Course exams, we often felt excluded from major decisions that impacted the school. As a principal, that is one reason I always try my best to involve all departments in decision-making at AA School.

In addition to parent participation, Charles indicated faculty and staff input was an essential component of the decision-making process. Charles said,

For the School Improvement Team meetings at AA School, I use a very similar format that I used as an assistant principal at West High School. As an encore person for West High School and then as an assistant principal I had the same type of role on the team. Obviously, as an administrator, I was helping to actually facilitate the discussions more than when I was a teacher or assistant principal.

The physical layout of AA school consisted of the main building with three halls.

A second building, connected by a covered walkway contained the gym, music classrooms, and cafeteria. Drawing on his experience as a Physical Education teacher and the isolation of non-academic classes from core classrooms, Charles said,

I really try to involve the exploratory teachers in decisions we make for the school. Based on my own experience as a physical education teacher, I know that they can feel left out and not as important as the core teachers.

Striving to promote a more cohesive school community, Charles described changes he made to the location of classes from where they had been previously to increase collaboration. Charles said he decided to rearrange the classrooms, to pair them by grade level along the three long hallways. Charles explained how the

proximity of classrooms in the main building facilitated frequent interaction between teachers across grade levels. He said the collaboration across grade levels was a strength of the school that led him to transfer his youngest son from the neighboring district where he lived. His youngest son was in sixth grade at AA School.

Describing his role as a parent in the schools where his children attended, he said he had never served as a parent on a School Improvement Team. Charles said,

> As a coach and now as a principal, I am usually not home at the times the meetings are scheduled at my kid's schools. When our kids were in elementary school, my wife was involved in the Parent-Teacher Association and other events, but I don't think she was ever officially on the School Improvement Team. Since my daughter is in high school, there aren't as many meetings. More of the meetings at the high school focused on advanced placement or honors courses and college planning.

After serving as the Principal at AA School for two years, Charles decided to transfer his youngest son from an elementary school in the neighboring district where he lives to AA School. At AA School, Charles' son was in regular sixth-grade classes. One day a week his son was pulled out to meet one on one with the exceptional children's teacher for academic support. Charles said,

> As a parent, I was concerned that he was not progressing as much as he could. I completely understand that he is easily distracted. He is like me in so many ways. I had such a hard time in school. My wife and I just felt like he wasn't getting what he needed to be successful.

Charles also described his concern about how his son would do on the end of grade exams. He described his perception of test data based on his experiences as a parent and principal. Knowing the potential implications and importance of high-stakes standardized test data on a student's placement in classes and opportunities throughout school, Charles said,

> Before this year, my son took the Extend II exams instead of the regular End of

Grade exams. Now that the state has done away with those he will take the same tests as the other kids. I am worried about how he will do compared to the other students. I want him to be challenged to do the best he can. Sometimes I worry that he will be labeled because of a test score and not have the same opportunities as other students.

In the next section, I present data obtained through interviews with Charles organized around the research questions. I categorized the findings by themes which emerged during the analysis of data.

AA School: Perception of Data Use in School Improvement Planning- Charles, School Principal

Analysis of data from interviews with Charles revealed two themes. The first theme, know learners as individuals, parallels with his student-centered focus as an educational leader. The second theme, school as a community, corresponds with his intention to gain active participation of all individuals for school improvement efforts.

Know Learners as Individuals. Personal and professional experiences have influenced Charles' perception of school improvement and his role as a school principal. As a parent of a child with a learning disability, Charles understands the role of collecting and using data to meet the needs of individual learners. As a school principal, he understands the importance of continuous improvement in the school and academic growth of the individual students.

School as Community. Charles' perception of data use in school improvement planning process is evidenced by his desire to involve members from each facet of the school community to obtain authentic data in the form of stakeholder feedback. As the school leader, Charles described his role on the School Improvement Team as a facilitator. He emphasized the ongoing challenge of trying to increase parent involvement and making sure there was equal representation from each area of the

school on the School Improvement Team. Charles stated, "My role is to ensure that we have a representation of all members." Noting an informal compartmentalization within AA School, Charles described challenges of obtaining adequate representation of the school community on the School Improvement Team.

> I make sure there is at least one school improvement team member representing each grade level range including kindergarten through grade two, grades three through five, six through eight as well as other departments of the school such as the exploratory teachers of physical education and music.

According to Charles, parent participation and feedback were an important component in the school's decision-making process. Additionally, Charles stated that when the efforts to increase parent involvement yielded limited results, the process was frustrating for administrators and teachers. Charles said,

> I want to get more parents involved with the School Improvement Team and decisions we make that impact the school as a whole. They come here to volunteer in classrooms or to watch their kids play sports, but we can't get them to come to school improvement meetings.

Charles noted that limited input from parents had a negative influence on the administrator and teacher's perceptions of the school improvement planning process. Charles believed that without active participation from parent stakeholders, the School Improvement Plan was perceived to be more of a formality than a solid action plan.

Charles perception of data use in school improvement planning illustrates his dedication to individual learners and active involvement of the school as a community in the process of continuous improvement.

AA School: Data Use in School Improvement Planning: Charles, School Principal

During the analysis of data from interviews with Charles, three themes emerged. The first theme, continuous growth, corresponds with Charles' active role in school improvement. The second theme, the school community is analogous with his desire to connect individuals from all facets of the school. The third theme, school data use, illustrates Charles' commitment to supporting data use across the school.

Continuous growth. Charles described the challenges of meeting the needs of individual learners and making progress towards meeting the district level expectations. While the district emphasized the importance of performance or the percent of students on grade level, the state also evaluates progress students made on tests based on predicted growth. Charles described the importance of understanding student growth. He said,

> The district is really focused on performance. I understand that, and I know that performance is important, but some students like my son might not ever make a level 4. They might get a level two, and that is great especially if they are only predicted to make a level one.

The discussion about his son demonstrated Charles' student-centered focus. Charles' firsthand experiences had a strong influence on his decisions as a school leader. Charles supported teachers' efforts to increase student achievement while promoting the success of individual learners. Knowing individual students was a recurring theme evidenced during the interviews with Charles. His passion and excitement demonstrated his role as a strong advocate for the students at AA School.

School community. Focusing on school improvement as a holistic effort to meet the needs of all learners, Charles, "The purpose of the School Improvement Plan is

obviously to get a total picture of where the school is and make decisions on the future of our school."

Charles described benefits of the smaller school including the smaller faculty size that allowed him to stay abreast of what is going on in the classrooms. Charles described practices he adopted to stay connected with teachers and students in each classroom that might not be possible at a larger school. Charles said,

> With such a small school, I make daily classroom visits. During those visits, I can observe the way teachers are using data in their classrooms every day. Some teachers have data walls and data notebooks for each student. Some teachers hold one on one conferences. Those take place at different grade levels to increase student achievement.

School data use. In addition to data utilized in the individual classrooms, Charles described how the School Improvement Team uses data. When asked about the types of data used by the School Improvement Team, Charles described various assessment programs purchased by the district and schools that provided student academic performance data throughout the year. He said, "Data is driving all decisions we make in every classroom and on the School Improvement Plan." Charles said,

> At this school and probably any small school, everyone, as far as all of the faculty members, has served as a PLC rep[resentative] for the School Improvement Team. Knowing that level of involvement makes you feel good in that capacity as far as their roles and participation.

Again, Charles noted the importance of providing opportunities for all stakeholders to give input and be actively involved in the decision-making process. Themes evidenced during data analysis of Charles interviews included continuous growth, school as a community and school data use.

AA School: Influence of Perception on Principal's Data Use in School

Improvement Planning: Charles, School Principal

During analysis of data from interviews with Charles, two themes emerged related to the influence of perception on data use. The first theme, district expectations, correlates with the significant influence of mandates and initiatives handed down to school principals. The second theme, data as a tool, coincides with Charles' positive perception of data as a school leader.

District Expectations. At AA School, student enrollment data was a constant reminder of funding, budgets, and allotments. Knowing the significant impact that student enrollment has on the budget, Charles described methods he used to track daily changes in student enrollment each week. The enrollment and attendance data were displayed prominently on a large screen monitor outside of the entrance to the front office. Based on results of the AdvancEd survey data parents were not aware of opportunities to get involved despite efforts made by a school administrator to communicate and advertise events. During the School Improvement Team meeting, Charles displayed graphs tracking parent attendance data from various events that demonstrated low involvement. Charles said, "Maintaining the balance for teacher buy-in requires you to make sure everyone provided input and that each person's input is considered." Charles described his use of data as comparing predicted scores from Star and iReady programs with End of Grade test results.

Data as a Tool. The number of students participating in the free or reduced meal programs along with enrollment data is used to determine allotments from Title I funding for each school. Title I funds can be used to provide resources and materials to support academic programs. During the School Improvement Team meeting, Charles

reminded teachers of the availability of Title I funds for the year, noting a decrease in the amount for the third consecutive year. Charles began the School Improvement Team meeting by displaying the meeting agenda. The first point he presented for discussion was the need for a more efficient process to solicit feedback from stakeholders and a means to increase parent involvement in school improvement planning. Charles displayed a list of methods used to improve communication and announce the School Improvement Team meetings including announcements on the school website, printed flyers and invitations to the Parent Teacher Organization meetings and Blackboard, which is an automated messaging system. Charles said,

> After we had gotten the updated contact database through Power School, we started using the Alert Now message system to announce meetings and events. We also used Alert Now to get feedback from parents on the School Improvement Plan by telling them when the meetings were scheduled and the new plan was due.

Despite the increased efforts, Charles shared results of the new Title I parent survey that indicated less than half of the respondents were aware of School Improvement Team meetings and other opportunities for parent and community involvement. Charles also displayed the results from a recent survey conducted for accreditation; parents indicated a need for increased communication.

Charles experiences with using data as a tool to meet the needs of individual learners are juxtaposed with using data to meet requirements from the state and district expectations. The resulting dichotomy has an adverse impact on perception and use of data.

AA School: Participant Background: Jennifer, Fourth and Fifth Grade Teacher

Jennifer was in her late thirties. Like most teachers at the school, she grew up in the small community near AA School. After high school, Jennifer worked as a teacher assistant at AA School and attended a state university completing a bachelor's degree in elementary education. After graduation, she accepted a position at AA School as a fourth- grade teacher. Jennifer taught students in the fourth and fifth grade.

AA School: Perception of Data Use in School Improvement Planning: Jennifer, Teacher

Analysis of Jennifer's interview data produced two themes related to her perception of data use in the school improvement planning process. The first theme, testing and assessment, was analogous with her perception of data sources. The second theme, academic potential, corresponded with Jennifer's focus on individual student success.

Testing and Assessment. Jennifer's perception of data use in school improvement planning was primarily limited to the end of grade test results and student performance data from programs. When asked what types of data the School Improvement Team used in the School Improvement Plan, Jennifer referred to EOG test results as well as "Star and iReady" programs. She used such data to identify those who would be "struggling students" at the beginning of a new academic year. Jennifer said, "We meet with teachers from the grade level that the students are coming from to find out who might be struggling the most."

Academic Potential. Jennifer's perception of the School Improvement Team reflected a narrow scope of individual perspective rather than the whole school

community. Jennifer said, "I see the School Improvement Team as a way for teachers to voice our concerns from our grade level. What we need in fifth grade is very different from what they need in the kindergarten classes or even in eighth grade."

Jennifer's perception of data use in the School Improvement Plan focused on a one-time practice of writing the plan rather than an ongoing improvement process. Jennifer said, "We use test scores from the previous year to figure out where we need to improve. We also use the end of grade test scores to create goals that we need to work on."

AA School: Data Use in School Improvement Planning: Jennifer

While Jennifer data use in school improvement planning was somewhat limited, she described using data frequently in the classroom. Jennifer said,

> I use data every day. Whether it is a test, quiz or even a homework assignment, I used to think of data as only including End of Grade tests, but now I realize we get data from everything we do every day.

When asked what types of data teachers use in the School Improvement Plan, Jennifer said,

> I know that we look at the end of grade test results, but I am not sure… aybe they look at data from programs like Star and iReady too. I think he goes through some other types of data before we actually meet.

Describing the use of data across other grade levels, Jennifer said, "We meet with teachers from the grade level that the students are coming from to find out who might be struggling the most."

When I asked Jennifer how often she uses data, she said, "I use data every day in my classroom to help my students. I use test scores, grades and we get scores from

mCLASS progress monitoring every ten or twenty days depending on the student's level." Even though Jennifer described using data frequently as a teacher, a gap exists between data use at the classroom level for increasing student achievement and data use at the school level for school improvement planning.

AA School: Influence of Perception on Teacher's Data Use in School Improvement Planning: Jennifer, Fourth and Fifth Grade Teacher

Teacher data use. Jennifer described a desire to access a variety of data to help her students. When asked to explain how using data can increase student achievement, Jennifer said,

> I can use data to make sure my students are on track, academically. I use data from EVAAS to see where my students were in other grade levels and where they are supposed to be. Then I compare that to how they are doing on the tests we take in class.

Classroom data use. Even though Jennifer used data to make instructional decisions, she focused only on the students enrolled in her classes. Even as a member of the School Improvement Team, Jennifer did not mention reviewing or using data from the school level.

While Jennifer described concerns about meeting expectations and requirements for data collection and use, she also acknowledged the usefulness of data as an instructional planning tool.

AA School: School Improvement Team Meeting Observation

The School Improvement Team meetings at AA School took place after school hours in a computer lab. Based on observations of the School Improvement Team meeting, the analysis of data and use for increasing student achievement was not evident. The majority of the School Improvement Team meeting agenda items focused

on policies and procedures. In spite of Jennifer's frequent use of data at the classroom level, there was little discussion about student academic performance or student test data at the school level.

During the School Improvement Team meeting, Charles presented attendance data from the previous school improvement meetings. Even though parents and community members are invited and encouraged to attend each of the School Improvement Team meetings throughout the year, the participation by parents who were not school employees, was small. On average, less than 5% of parents attended meetings. During the School Improvement Team Meeting, several teachers suggested parent's work schedules and transportation issues prevented them from attending the meetings. While teachers discussed challenges related to getting parents involved with school improvement, the majority of comments and questions from faculty and staff members who were also parents of students represented more employee related issues rather than issues from the parents' perspectives. The teachers who were parents of students at the school did not mention how simple it was for them to attend events because they were already at the school. For example, a fifth-grade teacher said, "Parents seem to get to all the games and sports events, but they won't come to the other meetings." A first-grade teacher said, "I have trouble getting them here for parent conferences." A sixth-grade teacher said, "Every time I try to call one parent, the number is disconnected. The student is absent all the time, but I can't contact the parents if they don't have a working phone." Several teachers nodded in agreement and shared similar situations they encountered.

Overall, the discussion was not productive in developing ideas or a new goal to increase parent participation in the School Improvement Team.

Teacher's misconceptions about funding changed the teacher's perceptions and trust of data. Requests and suggestions for using Title I funds indicated teachers' misconception that Title I funding is same year to year and that each school receives the same amount. For example, two teachers from first grade said other schools within the district had used Title I funds to hire an additional teacher assistant. Since the amount of Title I funding received by each school is determined by enrollment, schools with a larger enrollment have more flexibility with funding. Title I funding received by AA School is not enough to cover the salary and benefits of an additional teacher assistant. Decreases in the enrollment and reductions in state allocations force the schools to modify schedules to accommodate the number of students and classes.

Charles understands that increases in enrollment might result in an additional classroom teacher allotment by the district. Each year, class sizes vary across grade levels. If enrollment decreases in one grade level by as few as five students, it would be difficult to justify keeping two teachers for that grade instead of creating one larger class. During the meeting, Charles described anticipated changes in Title I funds that would result in a decrease from the previous year. He reminded the group Title I funding is intended to promote equal resources for all students. Charles told the group of the goals of the School Improvement Plan. He said, "One goal we based on mCLASS data was to target students' literacy skills in kindergarten and first grade." A kindergarten teacher said," If we could use some of the funds for an assistant in kindergarten, we could help them get better prepared for first grade."

During the AA School Improvement Team meeting, teachers from kindergarten and first grade said they were not able to provide individualized attention because of increased class sizes. Teachers' perceptions of what the appropriate class size for each grade level varies between the lower and upper-grade levels. A kindergarten teacher asked if her class size would be above the limit set by the state. Charles explained those limits are an average for the district.

At AA School, teachers' comments and questions reflected a limited understanding of the purpose of Title I funds and intended use student academic achievement data. For example, one kindergarten teacher asked if students' test scores decreased would the school receive additional funding. Charles said,

> Since the funds are limited, we would only have enough to pay for a part-time assistant. Using the funds for kindergarten might help prepare them for the next grade, but it would only benefit the kindergarten students. I know it is not much money, but we really need to figure out a way to benefit all students.

Teacher participants acknowledged a need for the School Improvement Team but described challenges such as difficulty in finding active, willing representatives and prioritizing a broad range of problems with limited resources. For example, a second-grade teacher at AA School said, "Technology I want for my grade level is very different from what the teachers in the middle grades want."

Demonstrating his student-centered focus, Charles asked teachers to think about some suggestions that would be beneficial to all students. Teachers based most of the suggestions on anticipated funding changes and decreased resources rather than academic performance data. When Charles presented options for the next year's daily schedule, several teachers described how the changes might have an adverse impact on

students.

One second grade teacher said, “The younger students are tired after lunch, so it is harder for us to do reading and math late in the afternoon.” A first-grade teacher described “the demands and time needed to assist five-year-old students at lunch” with tasks such as standing in line, paying for their meals, and opening milk cartons. At AA School, a teacher from grade eight expressed a desire to offer more opportunities for students to practice technology skills for high school. A teacher from grade three said the schedule does not allow enough time for reading remediation that is essential to meet the state mandate for students to read on grade level by the end of third grade. The majority of the discussion focused on reductions to funding, anticipated reductions in teacher allotments, increases in class size and decreased resources. A decline in student enrollment prompted proposed schedule changes. While the School Improvement Team was designed to identify school level strengths and areas for improvement, most of the School Improvement Team member’s comments focused on grade level needs. Moreover, many of the teacher’s perceptions of data are somewhat narrow and based on their classroom level perspective rather than the class or school level.

Discussions illustrated common misconceptions about how the state used data to determine allotments and funding for school budgets. While increases in overall enrollment mean larger class sizes, more students might have provided financing for an additional teacher. During the meeting, teachers discussed the number of new students enrolled in their classes during the year. While growth in enrollment was perceived to be positive, making the decision as to which grade level the teacher was assigned was difficult. Assigning an additional teacher to a lower grade level might prepare students

before they enter the crucial third-grade year when state testing begins. Assigning an extra teacher to a grade level that had a higher percent of lower ability level students that would decrease the class size, enabling the teacher to provide more individualized instruction.

Teachers' narrow scope of understanding about school data influenced their perceptions and objectivity necessary to make school-wide decisions. The tough decisions related to allocations and staffing involve more than assigning the additional teacher to the grade level that has the largest enrollment. The complex nature and significant impact of decisions on students reinforce the importance of data-based decision-making.

Table 13. AA School Themes

Research Topics	Charles, Principal	Jennifer, 4th & 5th-grade teacher
Perception of data use in School Improvement Planning	Know learners as individuals School as a community	Students as individuals Academic potential
Data use in school improvement planning	Continuous growth School community School data use	Teacher data use Classroom data use
Influence of perception on data use in school improvement planning	District expectations Data as a tool	District requirements School level data use

Case 2: BB School

BB School: School Context

BB School was first built in 1926 and rebuilt at the current location in 1946. BB School is in a rural area on the outskirts of the county. Initially, BB School served students in first through twelfth grade with the last class graduating in 1966. Since that time, BB School enrolled students in kindergarten through eighth grade. Most of the families in the small community work in neighboring towns. Most the families with students enrolled at BB School have lived in the local area for several generations.

Over the past several years, student enrollment at BB School decreased from 373 students in 2007 to 227 students in 2013. In 2007, there were 27 teachers assigned to BB School. The number declined to 18 teachers by 2013 to BB School. In 2016, the average class size for Kindergarten was 25, which was above the state average of 19. In 2016, the average class size for fifth grade was 21 which was equal to the state average.

Table 14. BB School Student Enrollment and Teachers

Year	Student Enrollment	Teachers
2016	259	17
2015	275	17
2014	281	18

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing student enrollment and assigned teacher numbers]. Retrieved from: https://ncreportcards.ondemand.sas.com

While the enrollment at BB School has decreased during the past few years, ethnicities represented within the student population have remained constant with the majority (94%) of students representing the white subgroup.

Table 15. BB School Enrollment by Race/Ethnicity 2014-2015 School Year

	American Indian/ Alaskan	Black	Hispanic	White	Two or More Races
Students	0	2	8	258	4

Note. National Center for Educational Statistics (2016). [Interactive charts showing student enrollment and assigned teacher numbers]. Retrieved from: https://nces.ed.gov/ccd/schoolsearch/school_detail.asp?Search=1&SchoolID=370058000222&ID=370058000222

In 2016, 61% of teachers at BB School had 10 or more average years of teaching experience which was lower than the state average 49%. Between 2014-2015, 100% received ratings of proficient or higher on each of the evaluation standards. The percent of teachers exceeding expected growth as measured by the North Carolina value-added model on standardized tests, decreased from 25% in 2013 to 15.4% in 2015.

Table 16. BB School Educator Effectiveness: Standard 6 Academic Success

Year	Exceeds Expected Growth	Meets Expected Growth	Does Not Meet Expected Growth
2015	15.4%	61.5%	23.1%
2014	22.2%	67.7%	11.1%
2013	25%	50%	25%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts of teacher effectiveness ratings by percent per category]. Retrieved from: https://ncreportcards.ondemand.sas.com

In 2014, BB School academic achievement as measured by percent proficiency on the state end of grade tests in reading and math was lower than the state and district

averages. In 2015 and 2016, BB School academic achievement as measured by percent proficiency on the state end of grade tests was greater than the state and district averages. Student performance in reading increased from 58.1% in 2014 to 63.3% in 2016. During that same time, student performance in math increased from 48.8% in 2014 to 52.5% in 2016.

Table 17. BB School Academic Achievement

	Math (Gr.3-8)			Reading (Gr. 3-8)		
Year	School	District	State	School	District	State
2016	52.5	51.9	54.7	63.3	59.8	56.9
2015	52.4	49.6	52.2	57.1	58.6	56.3
2014	48.8	49.4	51.0	58.1	60.7	56.3

Note. SAS Interactive School Report Card (2016). [Interactive charts of teacher effectiveness ratings by percent per category]. Retrieved from: https://ncreportcards.ondemand.sas.com

BB School: School Improvement Plan

On the School Improvement Plan from BB School, seven school improvement team members including the principal, one teacher representative from kindergarten through first grade, on teacher representative from second through third grades, one teacher representative from fourth through fifth grades and one teacher representative from sixth through eighth grades. Members of the School Improvement Team at BB School also included one support staff representative, one specialty class teacher representative as well as one parent representative.

Table 18. BB School: School Improvement Team Members

Name	Position at BB School	Committee Position
Brad	Principal	Administration
Betty	Teacher, Grade 1	Grades k-1
Teacher 2	Teacher, Grade 2	Grades 2-3
Teacher 4	Teacher, Grade 4	Grades 4-5
Teacher 6	Teacher, Grade 7	Grades 6-8
Teacher X	Physical education teacher	Specialty class rep
Assistant	Teacher Assistant	Support staff rep
Parent 1	Parent of student	Parent

In the first section of the BB School Improvement Plan template, the School Improvement team identified and described school strengths. In this section, BB School presented changes in percent proficient from end-of-grade state standardized tests in reading, math, and science. In this section, the team also described the percent of Annual Measurable Objectives met for the school's student subgroups. In this section, the BB School Improvement Plan included information about the school's attendance rate compared with the district. BB School also described changes in the results of the North Carolina teacher working conditions survey between 2012 and 2014. The second section of the BB School Improvement Plan asked the team to describe areas for improvement. In this section, BB School presented data related to subgroup performance in math and reading for specific grade levels. In this section, BB School also exhibited decreases in the percent of students who are proficient by grade level as

measured by the state literacy assessment for kindergarten through third grade.

The third section of the plan asked schools to identify additional data needed to develop an improvement plan. BB School noted the need for data measuring student math skills in kindergarten, first and second grade since students do not test in math by the state until grade three.

Table 19. BB School: Summary of 2014-2016 School Improvement Plan

Goals	Data used to develop goals
Increase reading proficiency in grades 3,4, and five by at least 10% in ‘14-‘15, ‘15-‘16 and ‘16-‘17 to meet Annual Measurable Objectives by all subgroups.	Percent proficient in reading on end of grade tests in grades 3, 4 and 5
Increase math proficiency in grades 3,4 and five by at least 10% in ‘14-‘15, ‘15-‘16 and ‘16-‘17 to meet Annual Measurable Objectives by all subgroups.	Percent proficient in math on end of grade tests in grades 3, 4 and 5
Increase Text Reading Comprehension (TRC) proficiency in kindergarten through third grade by 5%	Percent proficient on Text Reading Comprehension (TRC)
Increase instructional time for teachers with limited interruptions	Percent proficient in all grade levels on end of grade tests

BB School: North Carolina Teacher Working Conditions Survey

I analyzed the results of the 2016 North Carolina teacher working conditions survey for BB School. Comparing the results from BB School respondents to the state on the 2016 North Carolina teacher working conditions survey, revealed similarities and differences on items related to the use of data for school improvement planning to increase student achievement.

BB School (34%) was greater than the state average (21%) for teachers who spend an average of 5-10 hours each week on individual planning time. Based on results of the NCTWCS, 16% of teachers from BB School spent 3-10 hours each week using assessment results which were similar to the state (20%).

When asked if parents/guardians are influential decision makers in this school, state average (18%) for strongly agree was lower than teachers from BB School (42%). A greater percent of teachers from BB School (71%) described their role in school improvement planning as large which was higher than the state average (39%). When asked if school improvement team members are elected, a greater percent of teachers from BB School (75%) agreed compared to the state (29%). A Higher percent of teachers from BB School (79%) agreed that school leadership facilitates using data to improve student learning which was greater than the state average (45%). A higher percent of teachers from BB School (67%) agreed that the School Improvement Team provides effective leadership at this school compared to the state average (28%). When asked if professional development offerings are data driven, a greater percent of teachers from BB School (64%) agreed compared to the state (22%). When asked if state assessment data are available in time to impact instructional practices a greater percent of teachers from BB School (21%) agreed compared to the state average (13%). When asked if local assessment data are available in time to impact instructional practices a greater percent of teachers from BB School (42%) agreed compared to the state (19%).

Table 20. BB School: Selected Data from 2016 N.C. Teacher Working Conditions Survey

Items	Strongly Agree or Agree (average %)	
	School	State
The school elects members of the School Improvement Team	75%	29%
Parents/guardians are influential decision makers in this school	42%	18%
Describe role in school improvement planning as large	71%	39%
Spend an average of 3-10 hours each week using assessment results	16%	20%
State assessment data are available in time to impact instructional practices	21%	13%
Local assessment data are available in time to impact instructional practices	42%	19%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing results of NCTWCS]. Retrieved from: https://ncreportcards.ondemand.sas.com

BB School Participant Background: Brad, School Principal

Brad was in his late thirties. He had completed three and half years as principal at BB School. His career in education began as a middle grades classroom exceptional children's teacher. Brad described how the teaching practices for exceptional children have changed over the years. When he started teaching, students stayed in his classroom for all subjects except physical education. He said, "That was back when they call it a BD teacher. So I dealt with the behavioral students." Over the next three years, he transitioned into the role of an inclusion teacher where he taught exceptional children in

a regular education classroom with teachers in different subject areas. After three years, he worked as a district level specialist with the Exceptional Children Department at the high school level. Before obtaining the position of principal at BB School, Brad served as an assistant principal at a high school in a neighboring district.

Brad explained how his experience provided a solid foundation for his role as a school leader. Brad said, "My experiences in education and my work with exceptional children, have helped me understand the importance of collaboration with district staff, teachers, and parents.

BB School: Perception of Data Use in School Improvement Planning: Brad, School Principal

During the analysis of data collected through interviews with Brad, several themes emerged including expectations for leadership, adequate representation and following procedures. Expectations for leadership illustrates the concerns and responsibility of school principals in meeting demands of the district in following state and federal requirements. Adequate representation reflects the challenges Brad associated with ensuring each member of a smaller school can voice concerns and collaborate on improvement efforts. Following procedures characterizes the constant demand to detail that is necessary to ensure legal requirements are satisfied.

Expectations for Leadership. Brad's perception of data use in school improvement planning focused on the state mandates as well as the requirements and timelines set by the district. Brad described some of the general aspects of the state mandates for the School Improvement Team and the School Improvement Plan such as

electing members and involving all stakeholders. Brad described his role on the School Improvement Team as a facilitator. Brad said he "…facilitates meetings and works with the Chair." Brad explained the importance of ongoing communication among team members in deciding what data to use in the School Improvement Plan. Brad concluded,

> I feel like the School Improvement Plan should drive our decisions. I feel like it's a working document that should be reflected upon and referred to as we make decisions each month. As things change throughout the year, we might need to modify our strategies.

Adequate Representation. Based on the need for ongoing communication, Brad described the importance of making sure the School Improvement Team included adequate representation to make school-level decisions. Brad said he made sure the team included representatives from each grade level range, student support services, exploratory teachers of art, physical education and music, support staff and parent representatives.

Brad's experiences with school improvement planning at other schools, helped guide his practices. Leadership skills of individual members promote the overall function of the School Improvement Team. Brad said,

> School improvement teams [members] are designated, representatives. They should be able to show leadership skills and be willing to represent their colleagues. I feel that they are the representatives that we bounce ideas off of...They are the *voice* of the staff."

Following Procedures. Brad's perception of data use in school improvement planning was negatively impacted by challenges he faced to meet state mandates and district timelines with the limitations a smaller school placed on the School Improvement Team. He said,

> With a smaller school and fewer faculty members, most people have served on the School Improvement Team multiple times over the years. The same is true for the parent representatives. It's usually the same ones each year. Unfortunately, I think being on the School Improvement Team is sometimes more of an obligation than a privilege.

Brad said requiring people to serve on multiple committees made it hard to distinguish the School Improvement Team from other committees, He said, "The School Improvement Plan is so important because it helps us focus on the student's needs…academically, as well as the needs of the overall school."

Themes related to principal's perception of data use in school improvement planning included following procedures and district guidelines. Because of the smaller school size, challenges exist for school leaders trying to promote teacher leadership and ensure adequate representation for decision-making in the school improvement planning process.

BB School: Data Use in School Improvement Planning: Brad, School Principal

Brad identified a variety of data sources that were available for BB School to use.

He described several assessment programs purchased with school funds that provided student academic performance data throughout the year. Brad said that while the district purchased some of the programs, others were recommended by the district for schools to purchase using school funds. When asked how data was used in the school improvement planning process to increase student achievement, Brad said,

> We create our goals based on EOG test results. That's probably the first thing we do is to go back and look at the results, and we see where our proficiency level was and use that to project where our greatest needs are.

Brad said, "I think when we have our MTSS (Multi-Tiered System of Support) meetings, the communication is the best source of data." Focused on the

value of anecdotal data, Brad said, “I think the teacher can tell us about the insight of a student way better than what the program tells us.”

Brad described changes in the school improvement planning process. Brad said, “I think I focus on regular procedures and policies and things that might not have an impact on curriculum so I think the process itself would be better if I were maybe a little more choosy or picky about what was being discussed.” Brad said, “There's a fine line between making my decisions versus making a school-wide decision.” Brad said, "All decisions need to have input, but when the rubber meets the road; Ultimately there are some calls that need to be just made.”

From recurring patterns, themes emerged regarding the use of data in school improvement planning including using programs to obtain data, the value of anecdotal data, the process of collecting data and the process of using data.

BB School: Influence of Perception on Principal’s Data Use: Brad, School Principal

During the analysis of data from Brad’s interviews, two themes emerged that were related to the influence of perception on data use. The first theme, district expectations, illustrated the demand of keeping up with constantly changing mandates from the state level to the districts and schools. The second theme, school leadership and professional growth correlates with Brad’s desire to advance in his role as an educational leader.

District Expectations. Brad described his use of data as an important part of his job as school principal. Brad said, “Knowing the data...absences, discipline, enrollment, is essential to stay on top of what is going on in the school.” He acknowledged how district level leaders influence his use of data through stated

expectations and practices. Brad said,

> The district is very data-driven with everything they do. Because of that, they expect us to be aware of all the data for our schools. At all of our principal meetings, we go over data, and we each keep spreadsheets to track student progress for our school.

School Leadership and Professional Growth. Brad identified increased expectations and requirements by the state that involve the collection and reporting of data. He said,

> I am using data way more than I ever did as a teacher. I always had to know data for my E.C. students, but that was mainly just individual students. Always knew data was important but I just never realized how helpful it could be. Since our district expects us to use it, that has helped me learn how to use it.

Although Brad faced challenges in meeting state and district requirements for the School Improvement Team, he noted some positive results. Brad said, "This is the first year in which the k-8 schools created shared spreadsheets to record data and track students' progress throughout the year."

BB School: Participant Background: Betty, First Grade Teacher

Betty was in her late twenties. She had taught at BB School for six years. She grew up in the local area and attended one of the smaller schools from kindergarten through eighth grade. After graduating from high school, Betty attended a state university located in a neighboring county where she completed a degree in elementary education.

During her undergraduate program, Betty completed her student teaching at schools in the district of BB School. During the first three years of teaching, Betty taught classes of kindergarten students. During her fourth year at BB School, Betty taught a combined class that included students from kindergarten and first grade. During

the current school year, Betty taught first grade. Betty described her passion for teaching and helping students succeed. She said,

> I enjoy teaching at a k-8 school. I love seeing the students I have taught as they move up to the next grade level. I know how important it is for me to prepare them so they can be successful.

BB School: Perception of Data Use in School Improvement Planning: Betty, First Grade Teacher

During analysis of data from interviews with Betty, two themes emerged including teacher leadership and expectations. The first theme, teacher leadership reflects Betty's motivation to increase her professional capacity. The second theme, expectations, demonstrates conflicts which exist for teachers in facing multifaceted challenges presented by students, parents, colleagues and the principal.

Teacher Leadership. Betty served as a representative on the School Improvement Team each year she taught at BB School. During the most recent year, she was asked to act as the School Improvement Team Chairperson. Betty thought to serve as the School Improvement Team chairperson to be a leadership opportunity. She said,

> ...as the chairperson, I proofed a lot of documents and things before they are handed out or displayed to the group if the Principal is for some reason, not here I act as the leader in our meeting. If there's some reason to vote on something, I work as the tiebreaker in those situations.

Expectations. Betty's perception of data use in school improvement planning focused on the procedural aspects and requirements. Betty suggested the biggest challenges faced by the School Improvement Team focused on resources and time. She suggested changes might enable the School Improvement Team to concentrate more on using data. Betty said,

> Most of the things that I would change would be things that are really

> out of our control. Time issues... Um, it's hard at a K-8 school for us to get everyone together even on the scheduled meeting days because people are pulled here and there. I feel like our school does a really good job with the planning process and with our school Improvement team but time is always an issue in our school.

BB School: Data Use in School Improvement Planning: Betty, First Grade Teacher

Two themes emerged from analysis of Jennifer's interview data related to data use in school improvement planning to increase student achievement. The first theme, data from programs was pervasive theme evidenced by the significant reliance on programs to produce and analyze data. The second theme, collaboration with colleagues, represents challenges associated with transitioning to the role of leader in the classroom to a role of school level leadership as the Chairperson of the School Improvement Team.

Data from Programs. Betty described data used by the School Improvement Team. She said, "We're using our iReady data then Star math and reading for a lot of our discussion comes from mClass though the majority of our discussion during the meetings." Betty described different sources of data used by the School Improvement Team at various times of the year, Betty said,

> Yes, I know being on schedule with those things is important. We have to follow our calendars and make sure that we've got a date where they need to be and then also the other benchmarks with star and with already we also have to turn those the end, and I've spoken more from a k[indergarten] standpoint. At [grade] 3... I don't know...they have certain programs and things that they use, and they have to do benchmarks.

Collaboration with Colleagues. Although Betty described discussing student achievement data with other teachers, she did not outline a process for analyzing or using the data in school improvement planning. Most of the data use she described was limited to classroom level data from assessment programs and classroom performance.

While Betty mentioned vertical alignment, most of the actual data use she described was limited to the students enrolled in her grade level.

BB School: Influence of Perception on Teacher's Data Use in School Improvement Planning: Betty, First Grade Teacher

Regarding the effect of perception on data use, one theme that emerged from the analysis of Betty's interview data was school level versus classroom level data use. This theme represented the propensity of teachers to use data at the classroom level. Familiarity and use of school-level data were limited to what was selected and presented by the school Principal.

School Level Versus Classroom Level Data Use. During the interview, Betty described data she uses as a teacher more interchangeably with the data utilized by the School Improvement Team. Her perception of data use in school improvement planning was somewhat limited to her perspective as a teacher of an individual grade level. As a first-grade teacher, Betty said, "I know that in kindergarten, first and second grade, we use iReady and mClass, but I am not sure what is required for the upper-grade levels." Speaking from the perspective of the classroom teacher, Betty said, "We talk with the previous teachers to see what they used and to find out what worked best with certain students."

BB School: School Improvement Team Meeting Observation

The School Improvement Team meeting at BB School took place after school hours in the media center. Several of the teachers and staff members who attended the meeting played a dual role as parent representatives. While the Principal led the meeting, Betty, serving as the Chairperson, facilitated discussion and asked for input

from the team members.

Most of the items on the agenda focused on issues from the current school year such as future events requests for classroom needs and discipline concerns. The Principal presented the most recent student attendance data and results of the Title I survey from parents. The team members discussed possible changes for the next school year that might increase parent involvement.

The third-grade teacher asked when she would know how many spaces would be available for the upcoming summer reading program. Using the same literacy program in kindergarten through fifth grade enabled teachers from different grade levels to discuss student progress and anticipate needs for third-grade students. Teachers from fourth and fifth grade discussed the progress made by individual students at the end of preceding grades. In spite of the discussion between classes, the focus on school-wide data was limited.

Table 21. BB School Themes

Research Topics	Brad, Principal	Betty, Teacher
Perception of data use in School Improvement Planning	Expectations for leadership Adequate representation Following procedures	Teacher leadership Expectations
Data use in school improvement planning	Using programs to obtain data Value of anecdotal data Process of collecting data Process of using data	Data from programs Collaboration with colleagues
Influence of perception on data use in school improvement planning	Influence of district expectations School Leadership Professional growth	School level versus classroom level data use

Case 3: CC School
CC School: School Context

CC School opened in the early 1940's. Initially, CC School served students in first through twelfth grade with the last class graduating in the early 1970s. Since that time, CC School enrolled students in kindergarten through eighth grade. Most of the families in the small community work in neighboring towns. Most of the families with students enrolled at CC School have lived in the local area for several generations.

Over the past several years, student enrollment at CC School decreased from 223

students in 2006 to 206 students in 2009. In 2012, enrollment increased to 232 but dropped to 193 by 2016. In 2007, 16 teachers were assigned to CC School. The number declined to 14 teachers by 2013 to CC School. In 2016, the average class size for Kindergarten was 15, which was above the state average of 19. In 2016, the average class size for fifth grade was 20 which was equal to the state average.

Table 22. CC School Student Enrollment and Teachers

Year	Enrollment	Teachers
2016	193	14
2015	209	15
2014	226	16

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing student enrollment and assigned teacher numbers]. Retrieved from: https://ncreportcards.ondemand.sas.com

While the enrollment at CC School has decreased during the past few years, the ethnicities represented within the student population has remained constant with the majority (94%) of students representing the white subgroup.

Table 23. CC School Enrollment by Race/Ethnicity 2014-2015 School Year

	American Indian/ Alaskan	Black	Hispanic	White	Two or More Races
Students	0	3	6	204	5

Note. National Center for Educational Statistics (2016). Retrieved from: https://nces.ed.gov/ccd/schoolsearch/school_detail.asp?Search=1&SchoolID=370058000222&ID=370058000222

In 2016, 43% of teachers at CC School had 10 or more average years of teaching experience which was lower than the state average 49%. Between 2014-2015, 90% received ratings of proficient or higher on each of the evaluation standards. The percent of teachers exceeding expected growth as measured by the North Carolina value-added model on standardized tests, increased from 0% in 2013 to 10% in 2015.

Table 24. CC School Educator Effectiveness: Standard 6 Academic Success

Year	Exceeds Expected Growth	Meets Expected Growth	Does Not Meet Expected Growth
2015	10%	40%	50%
2014	0%	57.1%	42.9%
2013	0%	60%	40%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts of teacher effectiveness ratings by percent per category]. Retrieved from: https://ncreportcards.ondemand.sas.com

In 2014, CC School academic achievement as measured by percent proficiency on the state end of grade tests in reading and math was higher than the state and district averages. In 2015 and 2016, CC School academic achievement as measured by percent proficiency on the state end of grade tests in reading was greater than the state and district averages. Student performance in reading decreased from 65.4% in 2014 to 61.2% in 2016. During that same time, student performance in math fell from 50.9% in 2014 to 46.5% in 2016.

Table 25. CC School Academic Achievement

Year	Math (Gr.3-8)			Reading (Gr. 3-8)		
	School	District	State	School	District	State
2016	46.5	51.9	54.7	61.2	59.8	56.9
2015	44.9	49.6	52.2	65.4	58.6	56.3
2014	50.9	49.4	51.0	65.4	60.7	56.3

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing the results of the end of grade tests]. Retrieved from: https://ncreportcards.ondemand.sas.com

CC School: School Improvement Plan

On the School Improvement Plan from CC School, nine school improvement team members including the principal, two teacher representatives from elementary grades, two teacher representatives from middle grades, one teacher from electives, one guidance counselor, one teacher assistant and one parent.

Table 26. CC School: School Improvement Team Members

Name	Position at CC School	Committee Position
Cathy	Principal	Administration
Teacher K	Teacher, Kindergarten	Teacher Representative Elementary Grades
Teacher 5	Teacher, Grade 5	Teacher Representative Elementary Grades
Teacher 6	Teacher, Grade 6	Teacher Representative Middle Grades
Teacher 8	Teacher, Grade 8	Teacher Representative, Middle Grades
Teacher X	Physical education teacher	Teacher Representative Electives

Table 26. CC School: School Improvement Team Members (continued)

Matthew	Guidance Counselor	Instructional Support Representative
Assistant	Teacher Assistant	Teacher Assistant Representative
Parent 1	Parent of student	Parent

The first section of the CC School Improvement Plan template asked the School Improvement team to identify and describe school strengths. In this section, CC School presented changes in percent proficient from end-of-grade state standardized tests in reading, math, and science. In this section, the plan also described strategies that had been implemented to support student achievement such as individual student data notebooks.

On the CC School Improvement Plan, the team presented some results from the 2014 North Carolina teacher working conditions survey such as 88% of teachers believed that data is used to improve student learning. The second section of the CC School Improvement Plan asked the team to describe areas for improvement. In this section, CC School presented data related to student performance in math for specific grade levels. Another area identified for improvement was Annual Measurable Objectives in reading and math for students representing the white and economically disadvantaged subgroups.

The third section of the plan asked schools to identify additional data needed to develop an improvement plan. While CC School Improvement Plan stated that an adequate amount of data was available, there was a need for further review of data throughout the year.

Table 27. CC School: Summary of 2014-2016 School Improvement Plan

School Improvement Plan Goals	Data used to develop goals
Meet the Reading AMO target of the white subgroup by the end of 2015-2016 by growing 22 percentage points with 17 percentage points growth in 2014-2015 and five percentage points in 2015-2016	Percent proficiency in reading on end of grade tests in grades 3-8
Meet the Math AMO target of the white subgroup by the end of 2015-2016 by growing 30 percentage points with 25 percentage points growth in 2014-2015	Percent proficient in math on end of grade tests in grades 3-8

Table 27. CC School- Summary of 2014-2016 School Improvement Plan *(continued*)

Continue increasing use of differentiation and engaging strategies in daily lessons	100% of the staff receives differentiation strategies
Increase k-3 Text Reading Comprehension (TRC) proficiency levels by 5% over two years	Text Reading Comprehension (TRC) proficiency levels

CC School: N.C. Teacher Working Conditions Survey

I analyzed the results of the 2016 North Carolina teacher working conditions survey for CC School. Comparing the results from CC school respondents to the state on the 2016 North Carolina teacher working conditions survey, revealed similarities and differences on items related to the use of data for school improvement planning to increase student achievement.

The percent of teachers from CC School (26%) was slightly higher than the state (21%) for spending an average of 5-10 hours each week on individual planning time. Based on results of the NCTWCS, 27% of teachers from CC School spent 3-10 hours

each week using assessment results which were higher than the state (20%).

Regarding the role of parents/guardians as influential decision makers in this school, the percent of teachers from CC School who strongly agreed (20%) was higher than the state average (18%). Regarding the teacher's role in school improvement planning, the percent of teachers from CC School indicated having a "large role" (70%) was greater than the state average (39%). Similarly, the percent of CC School teachers indicated that school improvement team members are elected (85%) were significantly greater than the state average (29%).

In response to school leadership facilitates using data to improve student learning, the percent of teachers from CC School (81%) was greater than the state average (45%). A higher percent of teachers from CC School (48%) agreed that the School Improvement Team provides effective leadership at this school compared to the state average (28%).

When asked if professional development offerings are data driven, a greater percent of teachers from CC School (52%) agreed compared to the state (22%). When asked if state assessment data are available in time to impact instructional practices a greater percent of teachers from CC School (20%) agreed compared to the state average (13%). When asked if local assessment data are available in time to impact instructional practices a greater percent of teachers from CC School (40%) agreed compared to the state (19%).

Table 28. CC School: Selected Data from 2016 N.C. Teacher Working Conditions Survey

Survey Items	Strongly Agree or Agree (average %)	
	School	State
The school elects members of the School Improvement Team	85%	29%
Parents/guardians are influential decision makers in this school	42%	18%
Describe role in school improvement planning as large	71%	39%
Spend an average of 3-10 hours each week using assessment results	27%	20%
State assessment data are available in time to impact instructional practices	21%	13%
Local assessment data are available in time to impact instructional practices	40%	19%

Note. SAS NC School Report Card Visual Analytics Viewer (2016). [Interactive charts showing results of NCTWCS]. Retrieved from: https://ncreportcards.ondemand.sas.com

CC School Participant Background- Cathy, School Principal

Cathy was in her early forties. Transitioning from a job with a local bank to the local school system she attended as a student, Cathy began her career in education through an alternative licensure route. Cathy said,

> I entered education by lateral entry from the business and finance sector. I was a business and marketing teacher for four years, then lead curriculum and instructional assistant principal at a high school. The past four years I have served as the principal and instructional leader at a pre-kindergarten through grade eight school, totaling twelve years in education.

CC School: Perception of Data Use in School Improvement Planning: Cathy, School Principal

During analysis of interview data, one theme emerged related to the Principal's perception of data use in school improvement planning. The theme, requirements and procedures, correlates with Cathy's focused attention on meeting the expectations handed down by the school district.

Requirements and Procedures. Describing her role on the School Improvement Team, Cathy said,

> I am one of the leaders of school Improvement team by scheduling the meeting time, creating the agenda, soliciting feedback from teachers, students, and stakeholders for agenda items, and implementing the suggested opportunities from School Improvement Team members. It is also my responsibility to solicit any agenda items from all stakeholders, to schedule the meetings as well as inform all stakeholders of when meetings will take place to make sure that the meetings are listed on any of our outgoing information whether it's our website, Facebook, Blackboard text messages, emails, etc.

Cathy demonstrated an ongoing effort to address current issues that were communicated by members of the school community. Cathy said, "The purpose of the School Improvement Plan is to include any items of opportunity to improve the school from all levels of stakeholders to make the school a better place for students."

When asked to describe the process for selecting members of the School Improvement Team, Cathy said, "I make sure that we are voting for members and following the law in terms of seeking the input from all of the stakeholders." Cathy's response illustrated another facet of the Principal's role on the School Improvement Team as the one who ensured the School Improvement Team followed state-mandated procedures. Cathy recognized the importance of obtaining input from all teachers to

make decisions that affect the whole school. Cathy said,

> Depending on the specific issue we are trying to address, sometimes it is difficult to get feedback on a school-wide issues. Teachers in kindergarten and teachers in grade eight usually have very different perspectives and opinions of what is important.

CC School: Data Use in School Improvement Planning: Cathy, School Principal

Regarding the Principal's data use in school improvement planning, two themes developed during analysis of interview data. The themes which included community and stakeholder input demonstrate Cathy's persistence in communication within the school and the local community.

Community. When asked about the types of data used by the School Improvement Team, Cathy said, "The common sources of data that others use, we use as well, such as benchmark scores, progress monitoring, school growth reports, EOG results, and attendance." Cathy also described collecting data from surveys and personal observations that she used to identify safety issues at the school. Cathy said,

> The data that we use on School Improvement Team to improve student academic achievement is all inclusive. We look at safety pieces of the school. One of the last agenda items that we just worked on was completely revamping the parking lot and pick up/drop off. We also look at test scores and growth. I always go over the school report card and any surveys as well as parent night information with school improvement team members before scheduling and finalizing any of those important dates just to make sure that all stakeholders can be there without too many conflicts. We also review the results from surveys.

Stakeholder Feedback. Cathy described specific programs that provide information she drew from to inform the School Improvement Team. Some items were discussed in the School Improvement Team meetings whereas others would be incorporated into the School Improvement Plan. Cathy said,

> The data that school improvement team uses to determine priorities in the school comes from various sources. For example, the parking lot concerns came from parents informally speaking to administration and teachers about ideas of how to make pickup and drop off safer.

Cathy also noted the importance of obtaining feedback from faculty members before meeting with the School Improvement Team. She said, "We ask for lists of agenda items on each faculty meetings plus/delta." Adding the items to the agenda, demonstrated her consideration of the needs of the whole school community.

Cathy also identified sources which provide data that can be used to track the academic progress of students. Cathy said,

> The common sources that others use, we use as well such as benchmark scores, progress monitoring, school growth reports, EOG results, attendance, etc. These sources which generate their online reports including mClass, PowerSchool, NCDPI Accountability, EVAAS, iReady, Study Island, STAR Reading universal screener.

CC School: Influence of Perception on Principal's Data Use in School Improvement Planning: Cathy, School Principal

One theme emerged during the analysis of data, which were related to the effect of perception on the Principal's data use in school improvement planning. The themes, which included keeping up with the district and new state mandates, reflect the hierarchal organization and challenges of working in isolation as the school Principal.

Keeping up with the District and New State Mandates. Describing how her use of data has changed over the years, Cathy said,

> I would describe changes in how I currently use data from how I used it at other schools as both similar and different. At the high-school, we created data walls and kept them updated as a school-wide focus on where we are and where we are going. At the high school, this data included graduation rate, attendance, EOC scores, and growth. At the Prek-8 level, we use the same data; however, it is very personal, so a wall doesn't need to be created as there is only one teacher

> per grade level. We discuss the data at each PLC (Professional Learning Community) meeting weekly, MTSS meetings, as well as faculty and school improvement meetings monthly.
>
> Cathy described the primary reasons she uses data. She said,
>
> > Keeping up with new programs and state mandates for such a wide grade range results in additional district meetings and state initiated training sessions. I also make sure that we are voting for members and following the law in terms of seeking the input from all of the stakeholders.

CC School Participant Background: Matthew, School Guidance Counselor

Matthew was in his late forties. He entered the field of education after a career in the private sector. Initially, he taught computer skills classes at the middle school level in a neighboring district. After a few years, Matthew decided to transition into a position as a guidance counselor at CC School. In this role, Matthew said he felt like he was able to make a difference in the lives of many students. He had served as guidance counselor at CC School for twenty-two years.

CC School: Perception of Data Use in School Improvement Planning: Matthew, School Guidance Counselor

One theme related to teacher's perception of data use in school improvement planning process developed during analysis of data. The first part of the theme, requirements, illustrates the focus on forms and legalities intertwined in the job duties of the school guidance counselor. The second component of the theme, procedures, relates to the common perception of school improvement as more of a procedure than an ongoing process.

Requirements and Procedures. Matthew said, "School Improvement Team coordinator and although I don't have the title of the chairperson, I help the principal with the leg work." Describing the purpose of the School Improvement Team, Matthew said,

> The purpose, in my vision, is that of we will look at our data and try to develop a plan to figure out where our weaknesses are and then figure out which weaknesses need to be worked on and try to develop plans to work on these weaknesses.

Describing his role on the School Improvement Team, Matthew labeled himself "…a student advocate…Trying to bring the student perspective from what I see and hear from students at the school."

CC School: Data Use in School Improvement Planning: Matthew, School Guidance Counselor

Themes related to the use of data in school improvement planning which emerged during analysis of data from interviews with Matthew. The themes, student voice and advocate, serve as evidence of Matthew's commitment to students and their families. Integrated with student voice, advocate, and demonstrates Matthew's passion for supporting all members of the school community including students, parents, teachers and staff.

Student Voice and Advocate. Matthew uses a variety of data in his role as a guidance counselor. He works in close collaboration with the social worker, psychologist, and teachers to provide appropriate support for students. Describing the ongoing challenge of keeping kids in school through high school graduation, Matthew said,

> We always talk with the high-school guidance counselors to find out which of our students dropped out and which ones made it through to graduation. Here,

we look at retentions from previous grades to decide if students might be at risk.

Matthew also described how teachers use data at CC School. He said,

> Most of the teachers still just use their own records, but we are going to start asking them to record data on the shared sheets next year. Vertical planning would help teachers know where the students are when they start the new school year. Most of the teachers still just use their records, but we are going to start asking them to record data on the shared sheets next year.

CC School: Influence of Perception on Teacher's Data Use in School Improvement Planning: Matthew, School Guidance Counselor

Themes related to the influence of perception on data use in the school improvement planning process that emerged during the analysis of Matthew's interview data included school community and relationships. School community illustrates Matthew's focus on promoting a sense of community within the school. The second theme, relationships, correlates with Matthew's passion and dedication to providing support for students from kindergarten through eighth grade.

School Community and Relationships. Matthew mentioned that most teachers use data because it is expected or required. He expressed a need for more collaboration across grade levels and involvement with the School Improvement Team. He said,

> If we could get teachers to talk more and look at the data from year to year, they would recognize trends and patterns. That might help them figure out what works best with some of the students who are struggling the most year after year. Teachers should want to participate on the School Improvement Team to communicate their needs. Teachers look through the reports for their students, but they usually don't compare them with data from other programs or end of grade test results.

Table 29. CC School Themes

Research Topics	Cathy, Principal	Matthew, Guidance Counselor
Perception of data use in School Improvement Planning	Required Process Procedures	Requirements Procedures
Data use in school improvement planning	Community Stakeholder Input	Student Voice Advocacy
Influence of perception on data use in school improvement planning	Keeping up with the district New state mandates	School community Relationships

Cross-Case Analysis

Several overarching themes emerged during the data analysis. During the interviews, each of the principals noted the challenge of obtaining representation from parents at the School Improvement Team meetings. Charles and Brad describe multiple attempts at extending the opportunity invitation to parents to participate on the School Improvement Team. For example, Charles described methods ranging from posting announcements on the school website, sending out automated voice mail through telephone calls and making flyers that are printed and sent home with the students many times throughout the year. Brad described using similar methods that yielded "limited results." Cathy said it was "difficult to get parents to participate, especially when there is any conflict with a sporting event." Each of the schools was located in a tightly-knit

community with different priorities established by generations of families over time.

Serving as the leader at the schools, principals face challenges to meet evolving federal and state mandates related to school improvement efforts. Budgets and teacher allotments vary year to year with fluctuations in student enrollment. Administration and faculty members encounter changes in academic programs and testing requirements.

While improvements in online information and data systems provide a vast amount of data, faculty members expressed difficulty in transitioning from established routines. None of the School Improvement Plans described reviewing results from previous school improvement plans or evaluating progress made toward the last goals. Although limited transition of the student populations at the schools serving students in kindergarten through grade eight schools provided opportunities to track the progress of student groups over time, none of the plans referred to the use of longitudinal data.

During the School Improvement Team meetings observed at each of the sites, similar patterns surfaced. At each of the schools, the procedural issues rather than the productive use of data for the School Improvement Plan. While some teachers at AA School described a need for additional time for instruction, there was a limited conversation about how the procedural changes might benefit academics or student achievement. Rather than looking at the school about schedule changes during the School Improvement Team meeting demonstrated the narrow scope of teachers understanding of data evidenced during the interviews. Overall, the meeting agendas at each school focused on issues and concerns impacting procedures of the current school year.

Differences among the schools were observed during the School Improvement

Team meetings. Even though each of the school's teams reviewed various forms of data during the meetings the School Improvement Team meeting, AA School was the only one to mention student performance data. The teachers briefly discussed individual students at risk for retention. Since student performance on end of grade tests is a determining factor promotion and retention of students, this instance provided an opportunity to examine vertical data across grade levels. In spite of this, the discussion was limited to clarifying requirements for the state mandated third-grade reading assessment.

While the meetings at each school included the review of data, none of the schools discussed data specifically addressed in the School Improvement Plan. While attendance data was considered at AA School and BB School, there was no discussion of progress towards meeting the real goals of the School Improvement Plans related to student attendance. Even though CC School discussed safety issues and concerns, there was no connection to the School Improvement Plan goals.

Regarding the use of data in the school improvement planning process with a goal to increase student achievement, similarities and differences exist. All of the participants said they experienced an increase in the presence of data in their schools in the form of data wall displays, teacher, and student data notebooks, and data tracking forms.

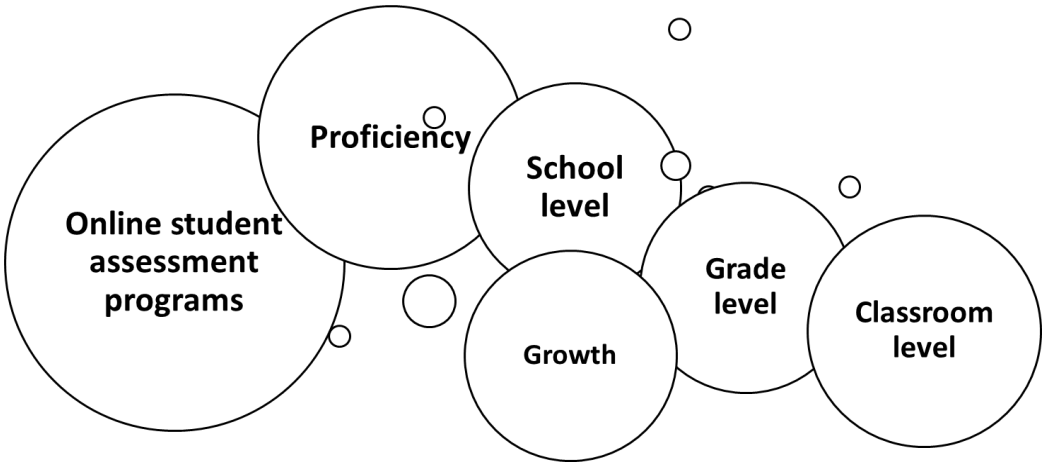

Figure 1. Principal and teacher perceptions of data use in the school improvement planning process- Visual representation of themes from data analyses.

Analyses of the data produced limited evidence about how the increased presence of data had influenced daily instructional practices. Participants described greater access to different types of data in recent years. The majority of data sources outlined by teacher participants were limited to results produced by student assessment programs.

Additionally, principals described accessing and using student data related to program participation, attendance, and discipline in addition to academic performance. Principals were more aware of school level data, but they were not sure how to use the data to increase student achievement.

Analyses of data indicate a need to move beyond obtaining data from assessment programs to using the data to inform decisions. An even greater need exists in using data to evaluate efforts and modify practices. Analyses suggested an overarching need for increased data literacy for principals and teachers.

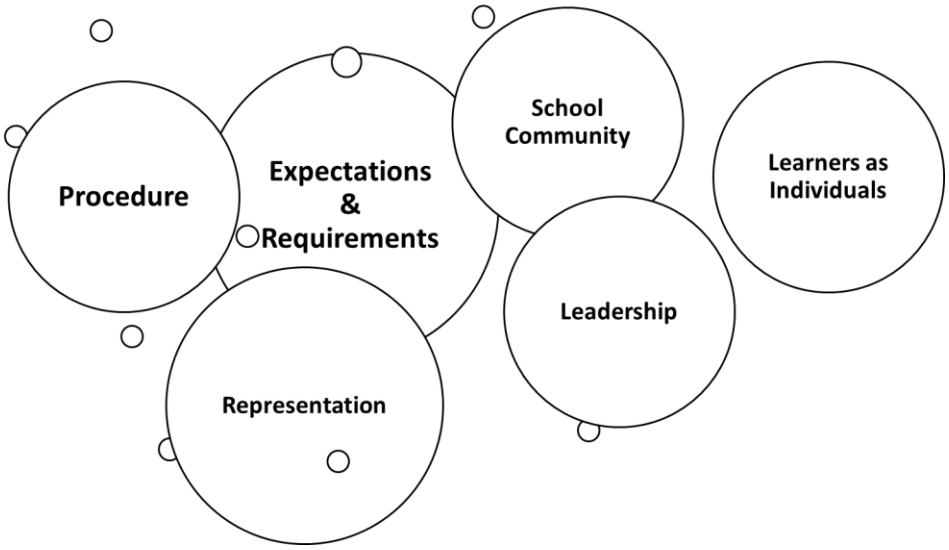

Figure 2. Principal and Teacher Data Use-Visual representation of themes from data analyses.

Regarding the influence of principal and teacher perceptions of the school improvement planning process on their use of data with a goal to increase student achievement, patterns indicated similarities across the selected sites. Analyses of the data suggested isolation serves as a limiting factor for the inquiry process necessary for the use of data. Data use in isolation at the classroom level by teachers limits the inquiry process necessary for authentic data-driven decision-making in the school improvement planning process. Similarly, principals' data use in isolation at the school level limits the investigation process necessary for authentic data-driven decision-making in the school improvement planning process. Data reported in the School Improvement Plan justified areas identified for improvement, but inconsistent use of multiple lines of evidence limits the validity. Furthermore, analyses of the collected data found limited evidence of data used for progress monitoring or evaluation of efforts toward meeting the stated goals.

While state mandates provided clear expectations for the use of data in the school

improvement planning process with a goal to increase student achievement, expectations for progress monitoring and evaluation of results are less evident.

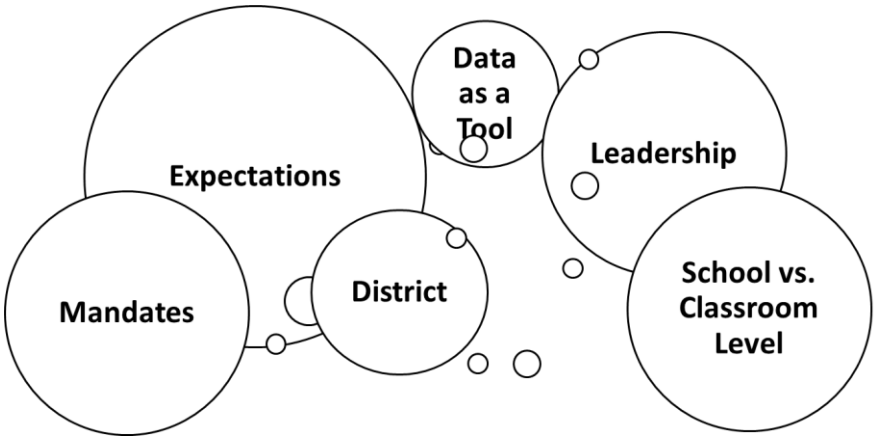

Figure 3. Influence of perception on Principal and teacher data use in school improvement planning- Visual representation of themes from data analyses.

Each of the school principals acknowledged a need for more district supported training on using the online assessment programs. The Principals and teachers expressed a need for professional development so they could use the online assessment programs effectively. Although the participants said they had access to more data, they did not fully understand the reports and data analysis features available in the programs.

Similarly, most of teacher participants expressed a desire to gain a better understanding of the school improvement planning process. While the School Improvement Team is legally required to represent views of the school community, many of the participants said they thought the purpose of the School Improvement Team was to meet state and district mandates. This negative perception impacts the sincerity of the School Improvement Team members and the school improvement planning process.

Key findings from the study included the following:

1) Observed similarities between principal's and teachers' perceptions indicated potential power of the Principal's perception and influence as the school leader on the school within the context of the school improvement planning process.

2) Personal and professional backgrounds influenced the principal's and teachers' perceptions and practices.

3) The Principal's and teacher's perceptions of state mandates and district expectations was a pervasive theme throughout the study.

4) Principal and teacher understanding of data was essential for using the data effectively.

5) Valuing the decision-making opportunities provided by the school improvement planning process is critical for impacting student academic achievement.

Summary

Overall, gaps existed between the school improvement planning process and connections with everyday practices. There was a need for increased communication about the purpose and process of school improvement planning. While some misunderstandings about the school improvement planning process were attributed to the transition of administration and faculty and staff, there remained a need for increased communication.

Teacher's use of data at the classroom and grade levels was not aligned with the School Improvement Plan goals. Despite the purpose of the School Improvement Team,

data use at the school level occurs in isolation from the faculty and staff. There was limited evidence of any systematic process for collecting and analyzing data to increase student achievement. Subsequently, data use practices varied across classrooms and grade levels.

Discrepancies in the school Principals' perceptions and the teachers' perceptions of the purpose of the school improvement planning process limit the consistent use of data across the classroom and school levels to increase student achievement.

CHAPTER 5: CONCLUSIONS, FINDINGS, AND IMPLICATIONS

This chapter presents a summary of findings organized into four sections. The first section presents a general overview of the study including the purpose, research questions, and methodology. The second section presents the findings structured around the themes that emerged during the data analysis. The third section presents implications for data use in school improvement planning practice, and the final section offers recommendations for further research.

Framework for the Study

North Carolina General Statute §115C-105.27 requires all public schools in the state to construct school improvement plans focused on measurable goals to increase student achievement. Recommended practices follow organizational improvement models and incorporate data-driven decision-making as presented in Chapter Two.

Despite the requirements, educational organizations attempt to follow the basic tenets of growth models, but internal and external organizational factors influence the process and data use practices. To examine this phenomenon, data were collected through document analysis, interviews and observations in three schools serving students in kindergarten through grade eight. This study focused on research questions exploring data use in school improvement planning to increase student academic performance

1. What are principals' perceptions regarding the use of data in school improvement planning?
2. What are teachers' perceptions regarding the use of data in school

improvement planning?

3. How are principals and teachers using data in school improvement planning?
4. How are teachers using data in school improvement planning?
5. Do principals' perceptions of data influence their use of data in school improvement planning?
6. Do teacher perceptions of data influence their use of data in school improvement planning?

In the next section, the study looks at findings organized around themes that emerged from the analysis of data.

Findings

> North Carolina General Statute §115C-105.27 requires that:
> All school improvement plans shall be to the greatest extent possible data-driven. School Improvement teams shall use the Educational Value-Added Assessment System (EVAAS) or a compatible and comparable system approved by the State Board of Education to (i) analyze student data and identify root causes for problems, (ii) determine actions to address them, and (iii) appropriately place students and courses such as Algebra I. School improvement plans shall contain clear, unambiguous targets, explicit indicators, and actual measures, and expeditious timeframes for meeting the measurement standards. (§115C-105.27. b)

Although schools' increased access to data systems and mandates for data use in academic planning and decisions, school principal and teacher perceptions differ regarding the requirements for the role of data utilized in the school improvement planning process. Research presented by Dunaway, Kim & Szad (2012) found differences exist between the perceptions of school principals and teachers. Most school administrators reported monitoring progress towards school improvement plan goals and the adjusting the goals accordingly. Conversely, most teachers said while

they tracked progress the goals were not adjusted. The same study indicated discrepancies in the perceptions of school principals and educators about the frequency of progress monitoring. Implementation of the Multi-Tiered System of Support (MTSS) provides a structured protocol for data-use to increase student achievement. Embedded into organizational routines, the MTSS model requires frequent meetings that involve the majority of faculty members at each school. Implementation of the MTSS model has bridged the gap in perceptions of principals and teachers regarding the frequency of progress monitoring.

Mandates, Standardization and Evaluation

This section presents findings organized around themes that emerged from the analysis of data. The first group of themes that emerged during data collection and analysis was mandates, standardization, and evaluation. The second group of themes focuses on the organizational effects on data use specifically, value-added evaluation models, data systems, and programs.

Bernhardt (2004) found that peoples' perceptions of the authenticity of the data affect their use of the data. For this study, three primary factors influence principals' and teachers' perception of the authenticity of the data they are required by statute to use. For principals, it is the time-driven mandates and data-driven accountability models to which they must adhere. For teachers, it is the effects of a value-added evaluation model on their self- efficacy. These factors influence the perception authenticity of the data and subsequent trust in the data.

Each of these components is essential to effective data- driven decision-making and school improvement. The value-added teacher evaluation model is intertwined with high-

stakes testing, resulting in the negative perception of the data within the school community. Increasing the knowledge of principals and educators about the purpose of accountability and federal and state testing requirements can build acceptance of the resulting data.

Establishing a shared understanding of the goals is essential for individual and collective motivation in the organizational improvement process. Gaining a better understanding of expectations for students at each grade level, teachers can build a stronger foundation and develop goals which will be consistent with the expectations of students' progress at the next grade level. Vertical alignment is especially needed to support improvement efforts in the k-8 school setting.

Organizational Effects

Value-added assessment models. With the recent inclusion of data for students from kindergarten through grade two in the Education Value-Added Assessment System (EVAAS), more teachers are gaining a better understanding of high-stakes testing and the significant role of vertical alignment in school improvement and academic achievement. While the EVAAS model has distributed ownership of student learning and evaluation of academic progress, a gap still exists between the primary and upper-grade levels regarding assessment and the resulting data. This effect mirrors the layers of the organization which often operate in isolation. Increased communication and establishment of common goals between levels within the organization will increase understanding and trust in the data obtained at each level. Isolationism promotes distrust of the data and subsequently, a reluctance to use the data.

Data systems. While statewide data systems have experienced challenges of increased demand for capacity, they nonetheless provide greater access to real-time assessment data and customizable options for reporting. The ability to design a report gives an opportunity for educators to evaluate the data that are available and select the most appropriate sources about the desired outcomes. Common data use in schools focuses on a variety of online software and subscription assessment programs.

Constraints of the online assessment programs purchased by the state, district or individual schools limit capacity for data use. For teachers and administrators to collect and use the data, they must have a better understanding of the data itself and the intended purpose for the data. Currently, the collection and use of data are driven more by the software companies rather than the goals of the School Improvement Plan. Adoption of the Common Core State Standards resulted in an influx of digital learning products that no longer had to align with individual state standards. The competition between companies and their products on the educational organization has had a significant impact on data use in schools.

Programs. Advances in digital learning tools have provided benefits such as accessing individualized assessment data driven by computer adaptive assessment software. While these products can be great tools in the school improvement, many principals and teachers are overwhelmed with the expectations for using multiple assessment programs. It is essential for school administrators and educators to understand the appropriate use of each program and the resulting data. Additionally, understanding the vertical alignment of individual content areas and the benchmark skills which serve as milestones within each grade level will enable educators to use data

effectively to monitor progress towards school improvement goals related to student achievement

Recommendations for Practice

Reflecting the changes in the population and school community, the use of data for school improvement must be part of a dynamic process. Marsh, Pane, and Hamilton (2006) present a model of DDDM that illustrates a data use model that schools can use as a framework to establish a routine. Data are obtained from multiple sources and categorized as input, output, procedural and perceptual. These data serve as pieces of information that are transferred into knowledge from which actionable decisions are made. "These decisions generally fall into two categories: decisions that entail using data to inform, identify, or clarify (e.g., identifying goals or needs) and those that entail using data to act (e.g., changing curriculum, reallocating resources)." Research presented by Marsh, Pane, and Hamilton (2006) also describes the multi-faceted process of data use in education.

> Data-Driven Decision-Making in education refers to teachers, principals, and administrators systematically collecting and analyzing various types of data, including input, process, outcome and satisfaction data, to guide a range of decisions to help improve the success of students and schools.

Results of this study suggest personal and professional backgrounds influenced the principal's and teachers' perceptions and practices. A major finding from this study was the need for principals and teachers to understand the data to use it effectively in the decision-making process. As a motivator or inhibitor, organizational leadership has the greatest influence on data use in school improvement planning to increase student achievement (New, 2016). By establishing policies, modeling effective data-use practices

and providing support through professional development, district leadership sets the expectations for data use at the school-level in educational organizations. One major finding from this study was the observed similarities between principal's and teachers' perceptions. These patterns indicated potential power of the Principal's perception and influence as the school leader on the school within the context of the school improvement planning process. Continuous improvement models adopted by educational organizations still share the same tenets of the learning organization as presented by Senge in *Schools that Learn* (2000).

> Learning organizations are organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.

A major finding from this study was the importance of valuing the decision-making opportunities provided by the school improvement planning process. This mindset is critical for utilizing the vast amount of available data to impact student academic achievement.

Recommendations for Future Research

This study explored the use of data by principals and teachers in the school improvement planning process to increase student achievement. Based on the multiple factors which this study found to influence Data-Driven Decision-Making (DDDM), further research in the following areas would be beneficial.

- Examine professional development models focused on supporting DDDM practices and the influence on routine data use in the school improvement planning process.

- Examine relationships between district level support and DDDM practices at the school and classroom levels to identify effective components.

- Compare DDDM practices at lower-performing and higher-performing schools over time to determine effective components about the unique needs of schools.

- Apply a structured protocol for data use in the school improvement planning process focused on increasing student achievement in order to limit the influence of potential variables.

- Examine the principal and teacher perceptions of data use and the influence on student achievement over time.

Summary

Organizational improvement models have formed the foundation for educational reform efforts. The findings of this study illustrate the significant presence of data in the school and classroom settings. Furthermore, the results of this study demonstrate the potential impact data-driven decision-making has on school improvement and student achievement. The convergence of technological advances and societal demands has increased access to real-time data. Subsequently, the expectations for evidence-based practices in education will continue to grow

In 2015, Every Student Succeeds Act (ESSA) replaced NCLB that was enacted in

2002. The ESSA continues to emphasize standardized testing as a major component of the educational reform. Expectations for data-driven decision-making in education will continue to expand in all areas of reform efforts. The School Improvement Team will be a central unit for collecting and analyzing data to identify areas for improvement.

Evidence-based decision-making requires systematic approach starting with the initial inquiry phase and leading to evaluation. Educational organizations will build capacity by investing in the necessary resources and support for principals and teachers to increase student achievement.

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APPENDIX A: INITIAL INTERVIEW PROTOCOL

Date: _____ Start Time: _____

Participant: _____

Site: _____

Background Information:

1. Describe your current position at this school.
2. How long have you served in that position at this school?
3. Describe any previous positions in education.

SIT

4. Describe your current role on the SIT.
5. Have you served on the SIT at this school before?
6. Have you served on the SIT at other schools ?
7. Have you served on the SIT in a different role (parent, community member)?
8. Describe what you see as the purpose of the SIT and the SIP?
9. Describe your responsibilities as a member of the SIT.
10. Describe anything you would change about the SIT to make it work better.

Data Use:

11. What types of data do you use in the classroom level?
12. What types of data do you use at the grade level?
13. What types of data do you use at the school level?
14. How do you collect/ access the data?
15. How and/or why do you use the data?
16. Are there any changes that you think should be made to improve the SIT

at your school?

17. Do you have any additional comments, ideas or thoughts to share?

APPENDIX B: OBSERVATION PROTOCOL 1

Scheduled Date:		**Scheduled Start Time:**	
Site:		**Location of meeting:**	
Actual date	Actual start time:		
Number present:			
Members	Role	Present (Y/N)	Notes
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Sketch of Seating Arrangement:			

APPENDIX C: OBSERVATION PROTOCOL 2

Speaker #	Comments/ Responses	Observations & Notes

APPENDIX D: CONSTANT COMPARISON DATA ANALYSIS CHART

Source: Document/ Interview/Observation Date of collection: Site: 1/2/3 Participant #	
Phrases	Codes