BUILDING CAPACITY AMONG ELEMENTARY TEACHERS USING DATA

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The use of data-driven decision making processes has created a new sense of awareness among school administrators and teachers throughout the country. Data from frequent formative assessments assists teachers in providing meaningful instruction based upon the strengths and weaknesses of the student. In the process of acquiring data, administrators are developing methods to encourage collaboration and the use of researched instructional strategies.

The purpose of this study is to combine research related to data collection, the use of data, building capacity among faculty groups, and sustainability of academic programs. This literature presented throughout the study is intended to illuminate connections between the requirements No Child Left Behind and a renewed sense of urgency among administrators and teachers to utilize the best possible instructional methods to address the needs of all students. It is the assumption of this researcher that as teachers become more focused on the needs of their students by carefully examining data through a structured format, student achievement will improve. Pedagogy will also improve as teachers research instructional strategies related to student deficiencies.

This study attempts to use quantitative research methodology to measure changes in teacher attitudes as they disaggregate student data to refine and improve instructional methods. Bernhardt's system of data analysis provides the foundation for which the teachers create lessons based upon student need.

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ACKNOWLEDGEMENTS

It is with endless love that I dedicate this dissertation to my family. Amy, without your unwavering support and constant encouragement I have been able to not only complete this dissertation, but have also been able to pursue my dreams in education and in every aspect of my life. You are the reason that I am what I am today and because of this and reasons to numerous to mention here, I will always love you. Ethan, Abby, and Hannah, my pursuit of a doctoral degree was to prove to the three of you that if you want something in life, anything is possible with hard work and unwavering perseverance. Never give up on your dreams and never listen to the doubters in life that become obstacles to your goals. To my mother, Lou Ann Dolde, whose constant words of loving encouragement and financial support that has provided my education for my profession and my life.

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1.0   INTRODUCTION

"Quality teaching requires strong professional learning communities. Collegial interchange, not isolation, must become the norm for teachers. Communities of learning can not longer be considered utopian; they must become the building blocks that establish a new foundation for America's schools."
 - National Commission on Teaching, 2003, p.17

This study will examine how using a structured system of data analysis contributes to improved instruction and capacity building among staff members of a single elementary school. According to Schmoker (2006), "…the single greatest determinant of learning is not socioeconomic factors or funding levels. It is instruction."

This project attempts to provide a framework for data analysis and a change in the attitudes of teachers as they become more confident in using data to create powerful learning experiences for their students.

The foundation for the system of the data analysis system found in *Data Analysis for Continuous School Improvement* (Bernhardt, 2004), clearly outlines the need to use data for instructional decision making. Bernhardt develops the relationship of data and learning pointing out that, "Data provide power to make good decisions, work intelligently, work effectively and efficiently, change things in better ways, know the impact of our hard work and how it benefits children, and help us prepare for the future."

The data gathering process utilized throughout this study was meant to develop the Bernhardt (2004) model of exploring meaningful school data to address the needs of the students

and the teachers of an elementary school. This project has contributed a great deal to the understanding of data usage with the various formative measures that students of this school. Since the inception of this process data exploration has become an accepted building routine. The building principal, and study researcher, began to notice the need measure and harness the factors that contribute to the growth of a teacher. Through the use of data and the reliance on colleagues to assist in the education of all children in the school, teachers at this elementary school have improved pedagogy and as a result student scores on the Pennsylvania State System of Assessment (PSSA) have improved.

As the building principal, in cooperation with a supportive school superintendent, the primary researcher has attempted to bridge the gap between theory and practice. The principal, as have most school administrators throughout the United States, has been charged with the duty of increasing test scores and ensuring academic growth of all students under at this elementary school. The method that has been chosen is to encourage teachers to know the strengths and weaknesses of their students by analyzing results of both formative and summative assessments, tightly aligning curriculum with Pennsylvania Assessment Anchors, and minimizing or eliminating factors that may be providing unwanted barriers to both instruction and learning.

The primary research question providing the foundation for this study is how does using data change how teachers meet the needs of their students while at the same time build capacity among the entire learning community? The intention is to use a systematic data discovery system in which teachers engage in four individual and four collaborative data disaggregation tasks to not only expose teachers to the data, but also measure the effect that exploring data has on instruction and learning. By providing teachers with an accompanying survey that is given strategically at three different times throughout the duration of the study, the researcher may be

able to define the effects that the data discovery format may have upon capacity building among teachers at this elementary school.

THE SIGNIFICANCE

This study is being written from the perspective of a fourth year principal that has required numerous changes that included more uniformity in curriculum, increased collaboration among staff members, and a more researched-based approach to instruction. Three years ago scores in fifth grade reading and mathematics at this elementary school dropped from approximately 70 percent of the students scoring in the proficient range on the state exam to 50 percent. The principal, the teachers, and the students were significantly underachieving. The school then experienced a great deal of change in an effort to address the strengths and weaknesses of every student and to stay a step ahead of accountability, while meeting the Adequate Yearly Progress (AYP) guidelines as established through No Child Left Behind (NCLB) legislation. The desire to improve scores inspired a greater sense of urgency for all stakeholders to learn more about data and to use data resources in a more powerful way to advance instructional practice.

The phrase data driven decision-making is frequently used by teachers and administrators without a clear plan of using data to significantly impact the academic abilities of students. It seemed that at this school data was collected in abundance, and the more it was collected the more ambiguous the numbers became. In an ever increasing results-driven era, the use of data to either support or refute academic programs may be crucial to academic success. Noyce, Perda, and Traver (2000) outline the importance for effective uses of data:

> "Regardless of whether the effort is small or large, the school district can become more informed and confident about the progress and impact of program policy and methods. With that

knowledge and confidence, administrators, teachers, and stakeholders can respond proactively, rather than reactively, to the demands for accountability."

The Pennsylvania Department of Education (PDE) encourages schools to use data through the Getting Results (PDE, 2004) framework that includes three phases of data-driven dialogue.   PDE recommends examining data through predicting, observing, and making inferences about data. This study requires participants to actively become proficient in all three aspects suggested by the PDE. A shift from basing decisions on a "gut feeling" and "just knowing from all of my experience in working with fourth graders", has evolved into more factual practice based on regularly collected data related to student abilities and deficiencies. The focus of this project is to demonstrate the connection of periodic assessments with improved instruction and meaningful learning.

Each step of the study process involves teachers researching student classroom reading data. Teachers from basic abilities in data disaggregation to the most adept at using data found the tasks relatively simple to follow. It is important to also recognize that teachers have had a variety of trainings explaining how to compile the data. A secondary purpose of the study was to

have the teachers work in collaboration with a partner to assist in determining how best to incorporate test scores into fundamentally sound reading lessons. It is the belief of this researcher that developing a classroom based upon evidenced-based practices does not occur by providing scores without a framework for investigation. The process that accompanies this study has been developed to heighten awareness of student abilities and to create powerful reading lessons that meet the needs of each student. Although formal training had not been conducted in regards to the steps involved in completing the requirements of the study, tasks are rather simple to complete and the researcher was available on a daily basis to provide further explanation or training as needed.

There are numerous benefits to the site school in which this study takes place. A research project that uses data and the process of data disaggregation to build capacity among staff may enhance the collegial working environment where teachers see themselves as part of a team rather than working independently. Elmore (2005), points out that whether we accept standards-based reform or not, there should be a connection between policy and practice. Most other fields of study involve a core base of knowledge from which professionals operate. Professionalism can be enhanced through judgment derived from the core knowledge base that is utilized and implemented among professionals in the field. Teachers have grown accustomed to working independently of the other teachers in a school and as a result student achievement can sometimes be highly dependent on teacher placement. While professional judgment is the hallmark of education, independent professional judgment can result in ambiguity in pedagogy. Many times, students in different classrooms receive an unequal education. The remedy of the results oriented system of accountability may be found in a structured system of data analysis.

Talbert and Mclaughlin (1994), distinguish professions from occupations by focusing on a core base of knowledge shared among a common practice in which there is a great deal of collaboration to provide the best services to the client. Teachers that have become accustomed to working in isolation are being forced to collaborate as a result of increased accountability and the need to understand and use data to improve student achievement. Time constraints, especially in schools where widespread changes have occurred have created an incentive for teaching professionals to share resources and openly discuss student data.

Another benefit that this study may provide is that improving the quality of teaching, will improve the academic performance of the student. Haycock and Huang (2001) report that the best teachers in the school have six times more of a positive effect than a poor teacher has on his or her students. Closely inspecting student abilities through data, sharing concerns and ideas with colleagues, and creating lessons that directly address the needs of each student will make both teaching and learning more meaningful.

A further benefit inherent in a study of this nature, is the possibility of an informed parent population. Data collected by teachers are shared with parents immediately following an assessment. Using the components of the study will assist in conversations with parents about student progress in reading. Teachers will become diagnosticians for student reading concerns, and parents may become more confident that reading concerns are being addressed and will be remediated.

This study will also provide valuable information to the building principal concerning the future direction for curriculum, assessment, and overall professional development of staff members. When scrutinizing data trends, student scores may make student abilities more apparent to all stakeholders and these data trends may be attributable to gaps in the curriculum.

Pacing guides and curriculum maps may be adjusted as a result of information obtained as teachers delve into data. Curriculum mapping can be used to foster changes in curriculum and changes in professional practices (Jacobs, 1997). A more consistent curriculum based upon data can create an environment where students can realize higher levels of achievement. As Jerald (2003), points out a common curriculum tied to valid assessments may provide measurements of progress in the midst of accountability. In order to accurately test the standards as established by state departments of education, it may be necessary to teach curriculum content established by the state. Shepard (2003) states, "Ideally, there should be no special teaching to the test, only teaching to the content standards represented by the test". This may be easier said than done due to the high stakes for teachers and schools. However skill groups based upon data from student summative and formative assessments may improve performance on state level testing. Higher accountability has altered the epistemological practices, but Shepard's point cuts to the heart of educational change in which the teacher transforms from a seemingly independent contractor into an integral part of an instructional team attempting to improve student achievement through a collaborative effort where partners engage in meaningful conversations using data.

Matching local curriculum to state guidelines can become a tedious process, but a necessary element of the new system of accountability. Curricular changes can seem overwhelming as teachers attempt to make connections between what is being taught and the requirements as outlined through the state and federal governments. However, without a more structured curricular map, some teachers may deviate from the goals of the system and teach more heavily in the areas of teacher interest. As Elmore (2001) points out, variability in instruction results in variability in results. NCLB is driving schools to create a more uniformed pedagogical structure across classrooms where student individual differences can be addressed

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through a more consistent program, and therefore may produce more consistent results. Using data may remove the guesswork from instruction.

The building assessments and calendars for these assessments must also be evaluated to plot future diagnostic measures and a vision that coincides with NCLB mandates. NCLB regulations have created a culture in which assessments have become a way of life in many schools in an effort to eliminate the element of surprise during the external testing process. As a result of NCLB legislation, data driven decision making has taken on new meaning. Prior to NCLB legislation, assessments in many cases required rote memorization rather than transferable skills that could be utilized in other academic disciplines and utilized beyond the confines of school. A seamless integration of assessment and instruction can promote a positive learning experience for students. Bernauer, et al. (1997), suggests that if assessments do not match the learning expectations, classroom and school curriculum may become fragmented. Schools with specific assessment programs possess the ability to utilize data to address areas of concern rather than the pre-NCLB unified instruction to the entire group. Corrective feedback to remediate individual student deficiencies, while also withdrawing help when the student has mastered a skill is an important component of the instructional assessment (Parris, 1991). Understanding the individual student's ability and using achievement data may improve the instructional performance of all children. Accountability in 2005, may translate into utilization of data to focus instruction to better meet the needs of the individual student.

Assessments and manageable data systems will encouraged the teachers to become more analytical about their practice. Sheppard (1995) describes how changes in assessment and instructional practice occur as teacher-clinicians gather information and act upon that information, which in turn blurs the lines between curriculum and assessment. Frequent,

systematic assessment can be used as a means to analyze student progress while monitoring whether or not the instructional program is achieving its desired goal. The building and district administrators could use information from the surveys and data gathering instruments to establish the nexus between student needs, teacher needs, and the vision for the school district. Professional development with on-going implications for change that meets the needs of the students based upon instructional practice and meaningful assessment measures will improve the academic growth of the students of this school.

2.0   LITERATURE REVIEW

An elementary school faculty serving nearly 700 students in third grade through sixth grade is making a concentrated effort to create a locally developed system for data analysis. There are approximately 70 faculty and staff members that are required to use data in a structured and meaningful way for the sole goal of improving student achievement. The purpose of this study is to connect the use of data with capacity building and sustained organizational improvement. The principal, and primary researcher of this study, has created situations in which teachers have become comfortable talking about data through the lens of student achievement. Faculty meetings occur on a weekly basis so that the employees can examine data and the programs intended to improve student achievement. Demographic information of the student population and school process data including the organizational structure and routines of the school system are discussed frequently to determine the programmatic effectiveness. The principle behind the discovery and discussion of data is to celebrate accomplishments in both instruction and learning, while at the same time critically examining factors that may or may not be contributing to sustained student achievement.

This study is not meant to highlight the importance of using data to make Adequate Yearly Progress (AYP), but rather to discuss the current state of educational reform and how locally developed data analysis systems can become a viable method of building a professional learning community among the teaching staff in any school system. A professional learning

community, as defined by Dufour, (2004) is, "…composed of collaborative teams whose members work interdependently to achieve common goals" (p.3).

Chapter two of this study provides a review of the research in the areas of school change, capacity building, and the development of professional learning communities (Dufour, 2003) in schools. A brief vignette is presented to demonstrate the need for a focused examination of school data, as well as to provide an example of the power of collaboration. *Getting Results: Leading for Learning* (Fagbayi, 2003), as outlined by the Pennsylvania Department of Education, is also described to develop the conceptual framework of the study. Change, capacity building, and sustainability through a professional learning community may have the most success if schools can exist where quality teaching, quality leadership, and the artful use of infrastructure converge to form the Continuous Learning Ethic among the faculty (Fagbayi, 2003).

Collecting data and discussing informed instructional decisions may best be defined as engaging in "action research". Koshy (2005) defines action research as, "…an enquiry, undertaken with rigor and understanding so as to constantly refine practice; the emerging evidence-based outcomes will then contribute to the researching practitioner's continuing professional development" (p.1) The list below was developed to more closely examine factors that may indeed be exacerbating issues related to inadequate student performance.

The literature survey presented in this chapter is intended to develop the four key points listed below which are in total, the premise of this study:

> 1. Data may be best utilized at the beginning, middle, and end of the capacity building process.
>
> 2. Once the data has illuminated an issue, the data should no longer be the focal point of investigation. The issue should take precedence over the

need to acquire an over abundance of data in discovering barriers to student achievement.

3. The use of a data system may provide a structure that continually raises the bar of professionalism, and increases collegial dialogue among faculty members.

4. A systematic approach to an issue should include vertical and horizontal inspection of data which may lead to sustainable momentum in both student achievement and capacity building among staff.

This is the first year of using a structured data analysis system at this intermediate elementary school. During this brief time teachers have made many interesting discoveries concerning teaching practices, instructional delivery, and assessment through an agreed upon framework for collegial dialogue. The goal of much team level discussion is to discover the root causes of student performance problems. A conscious effort to expose and confront data related to student achievement and the development of remediation plans are being created with a greater sense of urgency. Addressing issues connected to the data is part of a professional obligation to help all students by targeting specific areas of weakness. Teachers have come to realize that the structural component of the traditional school day and the typical approach to instructional design may indeed be creating barriers to high academic achievement. The goal for this analysis is to develop an overall picture of the work that is being done at the school by the principal, the faculty, the staff, and most importantly the students.

Administrators, faculty members, and staff have readily adopted the assumption that the academic abilities of a student cannot be measured adequately by a single assessment. Multiple measures are constantly being used and analyzed to determine the best learning environment for all students at the school. Basing success solely on the results of the state assessment could be

misleading. Also, quick measures of reading and math abilities may indeed contribute to a limited understanding of student ability. Using local building wide assignments, DIBELS, the state examination, and various classroom measures may more accurately demonstrate the true ability of the students.

Teachers have been exposed to an abundance of educational research that has provided a foundation for understanding the local situation in reference to longitudinal studies of best practices in instructional delivery and how students learn best. The primary authors' works used throughout this study are recognized leaders in the fields of educational change, data analysis, capacity building, and sustainability of school programs.

Table 1 Resources

Author	Year	Title	Implications for this study
Bernhardt, V.	2004	Data Analysis for Continuous School Improvement	Bernhardt's system of data analysis combined all aspects of the local situation that forms the foundation of all data discussion at the school. Demographics, perceptions, student learning, and school processes data provided excellent insight into the inter-workings of the school.
Blankstein, A.	2004	Failure is Not an Option: Six principles that Guide Student Achievement in High Performing Schools	Blankstein outlined principles for continuous school improvement. Principle #4, Using Data to Guide Decision Making, outlined how data should and can be utilized to effectively create an environment for learning for not only the students, but also for teachers. Blankstein suggested ways to use data to target student needs.
Burello, L., Hoffman, L. Murray, L	2005	School Leaders Building Capacity From Within	The authors clearly outlined methods in which students from three different school districts made dramatic academic improvements by beginning with improved instructional practices. Student achievement improved when the school systems focused on the teachers rather than the students.
Burrello, L., Lashley, C, Beatty, E.	2001	Educating All Students Together: How School Leaders Create Unified Systems	Burrello, Lashley, and Beatty carefully examined the creation of learner-centered environments where curriculum changes according to student need.
Collins, J.	2001	Good To Great	Collins discussed the importance of a consistent plan focused clearly on a desired outcome. Leadership is crucial to consistency and leadership is not just at the top of an organization.

Author	Year	Title	Implications for this study
Creighton, T.	2005	Leading from Below the Surface	Evidence-Based decision making also requires teachers to investigate, collaborate, and practice based upon factual evidence from formative assessments. Creighton continuously pointed out the important of looking at underlying factors that may or may not be producing the desired outcome for school and individual student change.
Creighton, T	2001	Schools and Data: The Educator's Guide for Using Data to Improve Decision Making	In Schools and Data, Creigton reinforced the concept that using data in schools can be most effectively used at the classroom level rather than just by the administrators. Creighton stressed the importance of using data to make informed individual student decisions, informed classroom decisions, and informed school and district decisions.
DuFour, R. Eaker & DuFour, R.	2005	On Common Ground	Dufour, Eaker, and DuFour used On Common Ground to combine the thoughts of many prominent educational leaders currently writing and researching educational change, data in education, and the importance of professional dialogue to improve student achievement. Authors within the book include Barth, Fullan, Glickman, Hirsh, Lezzotte, Marzano, Reeves, Schmoker, Sparks, Stiggins, and many other respected educational writers.
DuFour, R., DuFour, R., Eaker, R., Karhanek	2004	Whatever It Takes: How Professional Learning Communities Respond When Kids Don't Learn	In Whatever It Takes the authors used practical and inspiring stories of how schools have changed to meet the demands of federal legislation by using the teacher experts within a school system and the resources available to inspire all teachers to make needed improvements in individual classrooms.
Earl & Katz	2006	Leading Schools in a Data-Rich World: Harnessing Data for School Improvement	Earl and Katz used this study to explain the importance of data and keeping it in perspective when making decisions regarding student academics.
Fagbayi, M.	2003	Leading for Learning	Written through the Pennsylvania Department of Education for the purpose of assisting schools that failed to meet Adequate Yearly Progress, Fagbayi provided insight on changing student achievement by improving instructional leadership and improved teacher practices.
Fullan, M.	2003	Change Forces with a Vengeance	Fullan described the importance of organizational change and how the system and the governmental mandates affected the intellectual development of the individual student. Fullan suggested that in order to change the system, you must change the context from which the system operates. Systems are difficult to manage and reforms provide the basis on which a school system arrives at it final destination.
Fullan, M.	2005	Leadership and Sustainability	Fullan provided a great deal of research describing schools that have made improvements and have been able to maintain momentum based upon the use of data. This book outlined how sustainable change occurs as a result of improvements made at all levels of the school environment.

Author	Year	Title	Implications for this study
Holcomb, E.	2004	Getting Excited About Data: Combining People, Passion, and Proof to Maximize Student Achievement	Holcomb discussed the importance of using data to close the achievement gap by developing data teams to overcome barriers to individual student achievement.
Koshy, V.	2005	Action Research for Improving Practice: A Practical Guide	Koshy outlined a process for reviewing literature, developing an action plan, facilitating a plan, and reviewing and modifying work being done at the school.
Lambert, L.	1998	Building Leadership Capacity in Schools	Lambert developed several compelling stories that illustrate the importance of developing leaders in all aspects of the school. The premise of this work is that all individuals within the school are obligated to take a more active role in the leadership of a school building.
Popham, W.J.	2003	Test Better, Teach Better: The Instructional Role of Assessment	Popham discussed assessments from both the formative and summative perspectives and attempted to make meaningful connections between testing and teaching.
Sagor, R.	2005	The Action Research Guidebook: A Four-Step Process for Educators and School Teams	Sagor promoted a triangulated plan of action research and the use of data to discover how a school is currently operating, identifying target goals, and developing a strong plan to meet or move in the direction of the targeted goals.
Schlechty, P.	2002	Working on the Work: An Action Plan for Teachers, Principals, and Superintendents	Schools will improve if teachers are providing engaging and meaningful instruction. In this study, meaningful and engaging instruction may be a result of careful examination of data, collaboration among teachers, and data driven instructional strategies that evidence effectiveness.

The principal of this particular school has utilized a variety of resources to confront the demands of the local situation. Teachers are required to discuss data and link student scores to instructional techniques. They are also obligated to share pedagogical approaches that have or have not been productive in similar classroom situations in an effort to meet the needs of every child in the school. Teachers are continuously reminded of the importance of professional dialogue and encouraged to focus discussion on data. Teachers are developing an understanding that the effectiveness of the school rests in the hands of each teacher and the student centered lessons that they create. The development and implementation of a professional learning community may assist in addressing the needs of the individual student, the requirements of No Child Left Behind (NCLB), and the sustained academic growth of all students in the school.

The Story

"No matter what I do, my students see every assignment as a race. Students took a ten question computation quiz and missed many of the ten problems because of not carefully looking at the sign used in the problems", was the comment from a 30 year teacher veteran at a grade level team meeting. The six other third grade team teachers concurred with this statement during their weekly team meeting. Data from a brief computation assessment, along with data from a more broad local nine weeks assessment, and results from the state 4-Sight exam confirm this teacher's frustration related to carelessness by some third grade students. The faculty group identified the problem, and with pre-established ground rules for data discussion, decided to shift their focus from discussing the problem to seeking solutions that would encourage the development of more detail oriented students. Discussion focused primarily on contributing factors to the problem of carelessness by third grade students (March, 2006).

At the time of this writing, the teachers are beginning to develop strategies for unpacking an issue in order to focus on the smaller components of the larger grade level or school wide concerns. One teacher began to develop a chart to document discussion related to the carelessness of some third grade students. The chart was created to keep conversation focused directly on the issue of improved student performance by encouraging diligence to details. The chart below documents how teachers have searched for a clearer understanding of the importance of using data as the starting, middle, and ending points of discussion. Data leads to numerous questions about the process of the school day, inherent qualities of individual students, and the attitude that families have in regard to the value of their child's education.

Table 2 School-Wide Issues

PROBLEM	PROCESS	STUDENT	TEACHER	SOLUTIONS
Students attempting to be the "first done", may be failing to pay close attention to details, especially in math class. Can data be gathered to differentiate whether or not speed is positively or negatively affecting student achievement? Teachers came to the realization that in order to truly determine if speed and carelessness are related, teachers agreed to bring the computation quiz and identify the number of problems missed because of careless mistakes.	Where in our school day are students encouraged to move quickly and use pacing as part of the assessment? What occurs when the student finishes a task? Is the work immediately turned in? Is the work collected from all students at the same time? Is the student permitted to do what he or she wants (read for pleasure, games, etc.)? Logistically, what comes after the assignment (When you are finished you can get in line for lunch, recess, the restroom, a special, etc.)? Is there something that the students want to do and therefore rush through the assignment? Have the students been encouraged to go quickly by teachers, parents, or "racing" other students in the past?	What are the strategies that students are using on a consistent basis (highlighters, circling mathematical operations signs, going back and checking over work)? Has an overabundance of testing encouraged students to become careless in their efforts to be more careful? How does the student react when they are told that whatever is not finished in class is homework? Does the student work for completion or work for accuracy while in class?	What does the teacher do when the students are being assessed? Is the teacher looking at student responses and reminding the students to read carefully, follow directions, and look for details? Is the in-class assessment a "teachable moment" or is it a way of punishing the student for carelessness? How are we using the assessments as teaching tools? Are we accepting work that is substandard? How are we teaching test-taking strategies?	At the time of this writing, the team was searching developing answers to the questions to the left of this column. The team will also use the solutions as the searching point for the next school year.

Coming to the conclusion that third grade students lack the self-discipline needed to take their time and carefully understand the directions related to the task at hand is not an acceptable solution to the problem.

Teachers decided to analyze the problem, while periodically checking results of building-wide assessments. The analysis started with one simple question that was discussed by the group, "Carelessness may be a problem in more than one classroom. Is there something in the

process of the school day that may be contributing to a culture of carelessness among our students?" Many contributing factors were discussed:

1. The hurried nature to cover all third grade Pennsylvania State Eligible Content and curriculum. As students are working with a greater sense of urgency from the time they enter the building until they leave at the end of the day, this may or may not be a contributing factor to carelessness.
2. Lack of detail may or may not be a result of time restraints possibly causing an inability to provide in-depth instruction.
3. Does speed on local assessment measures affect the placement of students in various reading and math programs?

At the primary center in this school district, which encompasses grades one and two, students participate in timed DIBELS testing which measures fluency and comprehension of early readers. DIBELS testing continues at Acadia and students are keenly aware of the grade level expected words per minute goals for the fall, winter, and spring assessments. Students are racing against the clock to demonstrate fluency with limited errors.

A great deal of the discussion focused on the primary school's use of "Fast Math", developed by Otter Creek, in which students are timed daily on their understanding of math facts for a single minute. The number of problems that the student is expected to accurately complete varies depending upon a benchmark assessment that is given throughout the school year. Some students are required to complete 40 problems in a single minute, others less. However, reaching the individual goal is a stretch for all students. The challenge of mastering math facts in a single minute may or may not be positively affecting the students. It appears at the time of this discussion to be too early to decide the effects of the program. Addition, subtraction, multiplication, and division worksheets are labeled A-Z. In order for students to move from letter A to letter B, the individual goal must be met. Some parents question whether the test is assessing a student's understanding of the math concepts or the student's ability to write fast or

both. Other critics of the programs say that it is holding students back from multiplication or division simply because of the student's inability to write fast. Regardless of the concerns the students are getting the message loud and clear, speed is important. Proponents of the fast math program would suggest that automaticity is imperative for future mathematical understanding (Crawford, 2000). The issues related to carelessness cannot solely be confined to DIBELS and fast math. However, teachers will conduct further investigations to determine if assessments may be contributing to a culture of speed rather than accuracy, and whether or not those that are finishing quickly are the students that are most careless.

Using this information gained through the school process discussion, teachers began to examine the data to determine the progress being made by the fast math program. Although the discussion lacked factual evidence from data, teachers continued to discuss structural components of the Acadia school day and contributing factors to carelessness. Data may or may not clarify the discussion which was based primarily upon teacher intuition.

2.1   DATA FOR DISCUSSION

The increasing use of data in schools may contribute to the development of school wide capacity building among faculty and staff members. School districts throughout the United States are making data collection a priority, but what is the next step in data discovery? Schools may not be able to make sustainable improvement in student achievement if the approach to data is not consistently evaluated. If data are presented using a systematic approach where teachers are provided a framework for understanding and reflecting on current practices, capacity building among staff and collegial dialogue may occur (Depka 2006). Schools have collected data and

haphazardly attempted to apply results to improve individual classroom practices (Earl & Katz 2006; DuFour, Eaker, & DuFour, 2005). The driving force for many professional learning communities is that student achievement is a result of quality teaching and sustained improvement.   Data may be the connection needed between instruction and learning which results in improved student achievement.

Schools that continually fail to meet the requirements of the NCLB accountability system are mandated to make wholesale structural and organizational change. Building a school wide capacity for change is not a result of individual classroom change, but rather a result of collaborative effort in which professional dialogue is embedded in the culture of the school. Improved building wide student achievement may be the result of collaboration which may refine teaching practices. Stakeholders in the educational process would concur that improved instructional practice teaching may result in improved student achievement (Popham, 2003). The principal of this school is attempting to create an environment of collaboration and capacity building by teams and individual teachers working together to improve pedagogy. Data can influence conversation and instructional practices in schools. This building administrator is attempting to enhance collaboration by creating situations that systematically require collegial dialogue.

2.2   THE CONTINUOUS LEARNING ETHIC

Teachers have had the opportunity to discuss the strengths and weaknesses of the NCLB accountability system, but have been given limited amounts of time to develop a system that attempts to keep pace with accountability measures. Given that student achievement may be the

single most important factor in today's accountability system, school administrators are obligated to improve pedagogy by developing the abilities and intellectual growth of the professional staff. It is the opinion of this researcher that a systematic approach in using data will accelerate the typical incremental attainment of standards in math and reading. Presenting data in meaningful ways may increase the professionalism of the faculty members while at the same time reveal a new sense of responsibility for student achievement. One issue that coincides with the close scrutiny of data is that the more a teacher uses data and probes for answers using both formative and summative assessments, the greater the obligation of the teacher to rectify and remedy areas of student deficiency. Teachers may also develop an increased sense of urgency to meet the demands of NCLB accountability and may be more inclined to seek suggestions from colleagues.

Sagor (2000) defines action research as, "A disciplined process of inquiry conducted by and for those taking the action. The primary reason for engaging in action research is to assist the actor in improving or refining his or her actions" (p.1). Engaging in independent research combined with the foundations of a professional learning community that utilizes data and action research may positively affect sustainability in school.

Schools have enhanced quality instruction by refining pedagogy through the use of data. Fagbayi (2004) defines the context of the Continuous Learning Ethic as a professional learning community where teachers are actively engaged in using data as a springboard to identify local priorities. The contextual framework for professional learning communities focused upon the use of dialogue concerning data, capacity building, and sustainability can be framed as the intersection of Fagbayi's Continuous Learning Ethic where quality leadership intersects with quality teaching and the artful use of infrastructure as shown below:

Quality Leadership

Quality Teaching

Continuous
Learning
Ethic

Artful Use of
Infrastructure
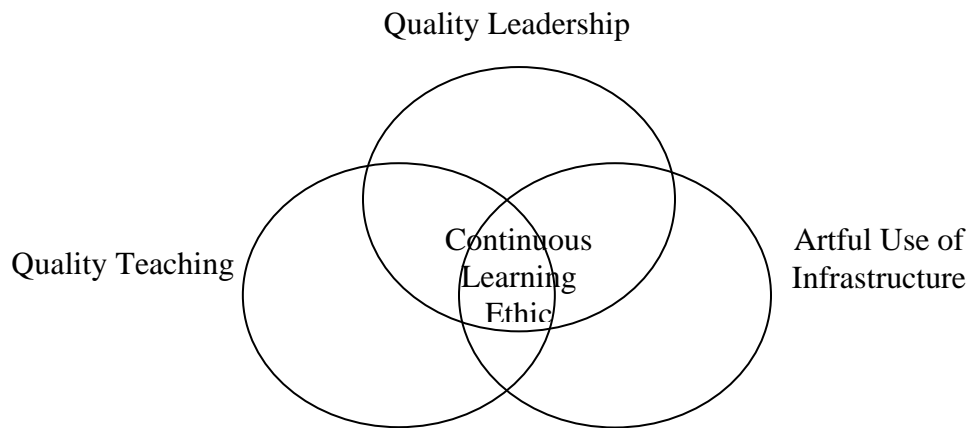
Figure 1 Continuous Learning Ethic

Teachers at this particular school, using a continuous learning ethic are examining data from the perspective of Bernhardt's (2004) system of data discovery. By utilizing local data and an organized approach to data finding, educators can become more reflective of their instructional practice. It is the intent of the school's faculty to work within the parameters of Fagbayi's (2004) Continuous Learning Ethic using Bernhardt's system of data analysis. Building a professional learning community based upon Bernhardt's four areas of data which include demographic data, perceptions data, student learning data, and school processes data provides teachers with the foundation for a focused discussion.

<div align="center">

Demographic

School Process   Where teachers can best meet the needs of all learners.   Perceptions

Student Learning

</div>
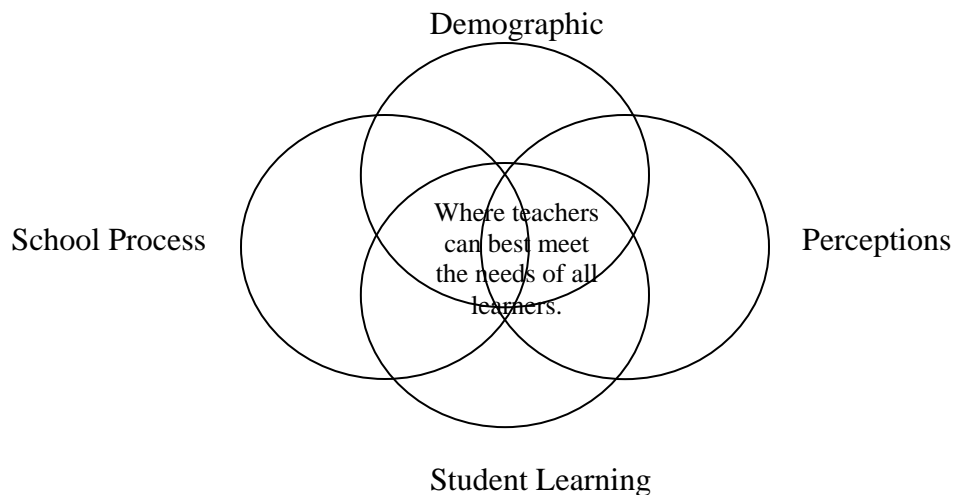
Figure 2 Bernhardt's Data Collection Model

At the center of the NCLB accountability system is an effective use of data. The development of the professional learning community based upon pointed discussion directly connected to factual evidence from data can result in improved student achievement. A quandary for many teachers and school administrators is not only how to organize data, but also how to use data in ways that are conducive for the professional growth of each staff member. Fullan (2003) stated that "an essential aspect of data discovery is to reduce teacher workload, foster increased teacher ownership, and create the capacity to manage change in a sustainable way that can lay the foundation for improved school and pupil performance in the future" (p.5).

Many schools collect an abundance of data but lack the capacity to use it effectively for student improvement. Blankstein (2004) explains that, "Information from achievement data is ideally the foundation of constructive, collective decisions regarding issues such as goals, curricular emphases, unit plans, programs or policies, and planning for prevention and

intervention systems. Blankstein (2004) pointed out that data use in schools can serve three important purposes, "With good data, teachers can tell which groups of teachers can (1) determine whether their students are learning more or achieving at a higher level than they did in the past, (2) compare their outcomes with those of other teachers, and (3) evaluate whether existing curriculum and instruction adequately prepare students to demonstrate proficiency" (p.142). At times, there appears to be discord between the reason for collecting data and the way data is used to make instructional decisions. "Knowing where students stand in relation to future content, both as a group and as individuals, is one of a teacher's most valuable tools in planning appropriate and engaging instruction" (Popham 2003, p.10).

The goals for this particular school concerning data discovery and continuous school improvement are as follows:

1. To improve student achievement in both reading and mathematics and the use of those skills in all disciplines.

2. To create a focused staff development program based upon trends in classrooms, grade levels, and throughout the school.

3. To determine the best method of utilizing school resources in order to have a positive impact on the academic and emotional needs of the students.

2.3 LOCAL DATA SYSTEMS

It is unfortunate while many teachers are inundated with numerous pieces of data, they receive little training in data analysis. What is even more troubling for the teacher is the fact that outside data analysis systems rarely meet the immediate needs of the students within schools. Local assessment measures may be used more effectively if the system of data discovery were created

locally by the teachers and administrators within the school system. Popham (2003) described the importance of using a teacher's understanding of students' knowledge, abilities, and attitudes to inform instructional decisions. Using local data results and developing a local system of analysis rather than a state or corporate developed system allows a school system to work within the parameters of the state and federal guidelines, while at the same time addressing real situations that occur on a daily basis in the classrooms.

Recently, much has been written explaining the process of data collection and the need to disaggregate results in a usable form. However, few studies make the connection between the effects of data-driven decisions and building capacity among a professional learning community. Data usage in schools may allow teachers to share areas of expertise related to curriculum, teacher-student interactions, and how best to utilize the organizational structure of the school day. Creighton (2005) pointed out that NCLB has placed a heavy emphasis on principals making data-based decisions, however effective change may be the result of teachers assuming shared leadership in which discussions focus on local variables that inhibit or improve student achievement. Using the Leading for Learning framework and using the Continuous Learning Ethic (Fagbayi 2004), student achievement data can be linked to capacity building among faculty members and sustainability of programs.

A great deal of pressure has been placed upon the classroom teacher to conform to the accountability system. Failure to meet (AYP) results in a series of escalating consequences. An in depth use of state and local accountability systems will include summaries of student learning, instructional practice, and measures of assessment (DuFour, Eaker, & DuFour 2005). In order to proactively address concerns related to NCLB consequences, a concentration on teacher collaboration could be one approach used to overcome the recognized barriers to higher student

achievement. Not only have federal and state mandates forced teachers to conform, but also local infrastructure may be a contributing factor to a school meeting accountability benchmarks. For example, traditional building schedules designed for the convenience of the staff and the overall building structure may also restrict the academic attainment of a child. By examining data from multiple perspectives, professional learning communities may indeed be able to come closer or meet state and federal mandate of leaving no child behind.

2.4   A SYSTEM OF DATA ANALYSIS

Bernhardt (2004) suggested that data for use in schools can be divided into four broad categories: "First, demographic data that looks to uncover more effective methods of dealing with factors once thought to be out of the control of the school; second, perception data meant to closely examine the thoughts of all stakeholders including those viewing the academic and social programs in the school; third, student achievement data which uses data to triangulate information among curriculum, instruction, and assessment; finally, school process data meant to examine the logistics of the school day and how best to use data to make informed decisions concerning the engrained programs that have been created to best meet the demands of time, tradition, and the master schedule rather than best meeting the needs of the students" (p.16).

The school personnel highlighted at the beginning of this chapter base the direction for the educational program on a regular battery of building wide formative assessments. The use of formative assessments at the elementary level may assist in providing individualized instruction to meet the needs of the student, as well as help meet the accountability requirements attached to NCLB. Schmoker (2002) pointed to the importance of

exposing teachers, early in the school year, to data and having teachers develop measurable goals for instruction and learning to best meet the needs of the students. Having teachers develop measurable goals for instruction and learning can be driven by a focused approach on collected data. There may be an inherent connection between capacity building among the instructional staff and the proper use of data in

schools.

In *Good to Great* (2001) Jim Collins provided evidence that in "great" organizations, there was a commitment to studying data to make informed decisions. It is the opinion of this researcher that the use of data to make decisions concerning student academic programming may be one of the keys to accelerating and realizing improved student achievement. Effective uses of data can be incorporated into instructional planning and can be an essential element in discussion among professional staff. Orchestrated conversation that occurs by leadership/data teams with a focus on determining learner strengths and weaknesses, as well as teacher strengths and weaknesses provides teachers with opportunities for collaboration.

Analyzing data in a systematic manner that has been developed and implemented at the local level could lead to sustainable momentum. By establishing a data discovery system that allows teachers to view data in a non-threatening, collaborative environment, faculty members may engage in action research to improve student academic achievement. Creighton (2005) suggested that a regular and intentional "look below the surface" may indeed explain the disconnection between teaching and learning. Uncovering the discrepancy reflected in student results may encourage teaching professionals to closely examine instructional practice, engage in focused conversations with colleagues, and address the needs of individual students. Once data has been retrieved, teachers and administrators can make fact-based decisions that address

learner needs, while at the same time collaborating with one another to find the best instructional practices. Educators who are given the time, resources, and the responsibility to make professional judgments based upon evidence in the data may be more inclined to take ownership in the learning of the students through visualizing connections between instruction and student achievement.

2.5   DATA TO ASSIST COLLABORATION

Working in a collegial environment and analyzing data may build capacity among faculty members. Creighton (2005) defines collaboration, "…as an entity that produces something that individuals or organizations could not produce alone. Collaboration takes a long time; it cannot be developed quickly. It involves building trust and confidence, and that takes time". Lambert (1998) reaffirmed Creighton's perspective by pointing out that capacity building in schools requires the collaboration of each individual and involves professionals learning together through discussion. Time constraints and the amount of curriculum being taught in schools require teachers to develop professional relationships with colleagues in order to best meet the needs of students. Barth (2002) concluded that, "… the relationships between adults in a school have a dramatic effect on the culture of the building and on student achievement" (p.8). Development of an organized system of data analysis may focus conversations and the efforts of professionalism of staff. Utilizing data in a structured system of investigation provides a framework for professional growth among those involved.

Encouraging collaboration by using action research to solve problems and pool resources directly connected to data could lead to a more collegial environment where learning becomes

the focal point for the teachers. Creighton (2005) proposed that a locally developed data discovery framework may more accurately address disparities in the teaching and learning domains. A system of data analysis can be created with the intention of changing or improving the culture of the building and thereby focusing instruction. As the data begins to permeate every aspect of instruction, teachers may become more effective in practice and more willing to pursue adopted classroom, grade-level, and building wide initiatives.

Lambert (2005) defined the term leadership capacity as "…an organizational concept meaning broad-based, skillful participation in the work of leadership that leads to lasting school improvement". Data provides the framework for effective action research and creates a structure for discussion focused on local and state assessments. A teacher acting primarily on instinct in the classroom has been replaced by data-driven instruction based upon frequent local assessments. While teacher intuition remains an important element of classroom instruction, teacher behavior should be based upon the best available data.

Lee and Smith (1996) provided a compelling argument that schools with stronger professional learning communities seemingly produce higher student achievement scores. Professional learning communities work more efficiently as data drives discussion and teaching (DuFour, Dufour, Eaker, and Karhanek 2004). Leadership capacity among teachers is a concept that is gaining momentum as distributive leadership in schools begins to emerge. Teachers may be more productive and effective if they take ownership in the processes of schooling through collaborative discussion and distributive leadership. Fullan (2003) described the importance of teacher ownership by stating that "…people who work in schools do not pay attention to the connection between how they organize and manage themselves and how they take care or their

own and their students' learning". Collaboration during faculty meetings can facilitate connections between teaching and learning.

Youngs and King (2002, p.646) outlined four major components that characterize a professional community:

1. Shared goals for student learning
2. Meaningful collaboration among faculty members
3. In-depth inquiry into assumptions, evidence, and alternative solutions to
   problems
4. Opportunities for teachers to exert influence over their work

Meaningful collaboration among teachers and administrators can be focused on the key components of action research. Elliot (1991) and Koshy (2006) each developed a system of action research that identifies the problem, examines the facts connected to the problem, develops numerous action steps, implements the plan, and restarts the process to refine practice that can be best utilized by teachers that effectively address the data. Bransford, Brown and Cocking (1999) suggested that, "High-powered learning environments which are intensively learner-centered, knowledge-centered and assessment-centered require great capacities and commitment from the entire teaching force and its leadership, and thus will require different strategies from the ones currently employed to address literacy and numeracy." Developing a systematic approach for continuous improvement that acknowledges the use of data from student assessment through an action research process in a reflective manner may strengthen curriculum, instructional delivery, and student understanding. Blankstein (2004) states that "Teachers use data from classroom assessments to tailor day-to-day instructional planning… to evaluate whether they should go back and reteach a concept or skill"(Pg 154).

Principals have the ability to place teachers into a situation which requires meaningful collaboration. Data usage is the starting point for collaboration. Earl and Katz (2006) describe

the importance and magnitude of data by stating that, "…data can and should be a compelling force in improving schools" (pg 1). Training teachers how to best utilize data in many schools may be a missing ingredient to effective school change. A locally designed system that directly incorporates curriculum, formative and summative assessments, technology and software available, and the vision of the district may create a system of meaningful collaboration.

2.6   SHARED GOALS

Teachers have not been traditionally exposed to the benefits of collaboration. However, with the impetus of NCLB legislation teachers must view the education of the students beyond their single classroom in a new light. A systematic approach of providing teachers with not only the opportunities to share, but also the tools that spark meaningful dialogue may affect student learning and may change the building's climate. Shared goals for learning among a teaching staff may need to be mandated by the building administrator and the leadership/data team in the initial stages of development. Dialogue, at times, may need to be contrived to foster an atmosphere of teamwork. Collaboration implies the need to be open to sharing with other teachers and receptive to the opinions and strategies used by colleagues in order to address the challenges of educating students (Creighton 2005).

A principal's vision can provide the foundation on which a professional learning environment exists. Shared goals may begin to take root as teachers face the realities of improved or enhanced student progress. As individual teachers and professional learning communities begin to realize the benefits of using data and how the data may illustrate the need for change, the more obligated the teacher is to address deficiencies. Shared goals among

colleagues who are working for the benefit of all students and are open to share effective teaching practices may alleviate some of the stress associated with accountability. The onus for student progress becomes a shared responsibility among all members of the faculty and staff. A team of teachers working in a professional learning community, may encourage collective responsibility rather than individual responsibility.

Since there are no mandates in the state of Pennsylvania concerning the use of data until the school district has reached mandatory improvement status, most individual schools currently have the choice to use or not use data to effect change that best meets the demands of the local situation. However, all teachers and administrators have the opportunity to create a local system of data analysis based upon the assessments that are utilized as part of the local instructional program. Having the opportunity and ability to discuss meaningful methods of dealing with data may lead to building capacity among all school personnel. Thinking critically about the best methods in overcoming student deficiencies based upon data may lead to more comprehensive discussion about teaching practice.

Bernhardt (2004) stressed the need for a sequential system of data analysis by stating, "A comprehensive step-by-step process to examine data and understand that it helps those who have not done this kind of work before to see where they are going all along the way" (p.13). Instructional strategies, logistical aspects of the school day, effective uses of time, and numerous unforeseen issues may be identified and altered through the collective input from the staff.

Studying data inevitably leads to dispute. An essential element of data analysis is to examine different views and perspectives related to a particular topic of action research. Internal conflict is certain to arise, especially when the data is not congruent with teacher perception. The leadership team may recognize that the data speaks more about learning than about the

intended goals of the program. Group members may reach a point where it becomes necessary to willingly participate in significant debates. Building group capacity is difficult because it involves working together in new ways (Fullan 2005). However, if teachers are given the time to discuss and create a local system of data discovery, their vested interest in disaggregated results may build capacity and lead to sustainable outcomes in increased student achievement.

Ongoing opportunities to refine practice based upon the professional judgment of the staff where school leaders are concerned with cultivating capacity may strengthen the professional obligation that the staff members have with each other and for the students. Fullan (2005) suggested that building capacity should be a visible and widely known agenda of the building administrator. Developing shared responsibility among staff should be an ongoing process. Leadership may be shared by staff members based upon areas of individual expertise. Teachers within a professional learning community take turns speaking with colleagues concerning a topic of individual preference. Data-driven decision making may develop as a system for learning from colleagues based upon the successes and failures of students are viewed through data from a variety of cumulative measures. Effective discussion may be more likely to occur if capacity building among teachers occurs. A staff that is willing to share and learn from each other may have a positive effect on student achievement. School leaders may develop capacity in staff by establishing a system of inquiry where teachers are supported with a framework of discovery that is specific to the local situation and is flexible enough to adapt to the demands of a particular issue. A discovery framework provides a foundation on which teachers can base informed decisions that compliment the purpose of increased student achievement.

2.7   EFFECTIVE SCHOOL LEADERSHIP

Professional learning communities do not occur by chance, but rather are a direct result of a concerted leadership effort to create an environment in which expectations are raised to meet the needs of the students. Fullan (2005) stated, "Building capacity, which involves policies, strategies, resources, and actions designed to increase people's collective power to move the system forward (schools, districts, states). Building capacity involves developing new knowledge, skills, and competencies; and new shared identity and motivation to work together for greater change" (p.55). Leaders face the challenge of altering the ways that teachers examine data and reflect upon practice. Principals realize that teachers may be apprehensive about scrutinizing student achievement data and sharing that data with others. However, as teachers move from assessment for learning to assessment of learning (Stiggins, 2001), teachers may begin to internalize the need to view data as a method to assist students. Some teachers may need to be constantly be reassured of the reason for examining student progress. Leaders may need to begin cautiously and carefully utilizing student centered vocabulary to gain teacher acceptance.

Using data as a bridge to create a learning environment among the faculty and staff addresses the need to effectively utilize data to make school wide continuous improvement. By monitoring student results and sharing associated research, a school leader is able to demonstrate the connections between research, instruction, and student achievement. Teachers may come to understand that pinpointing an issue may provide the teacher with more time to plan for meaningful change.

Leading in a data rich learning environment involves delving deep into the issues that become apparent through the examination of data. The schedule and numerous other procedural

elements of the school routine can be rearranged to more accurately address student achievement through the lens of data discovery. Leaders in schools may develop strategies so that teachers are encouraged to discuss and resolve difficult instructional and curricular issues. The requirement of meeting the Adequate Yearly Progress thresholds have encouraged teachers to become more cognizant of the need to share instructional resources with colleagues. Burrello, Hoffman, and Murray (2005) stated that, "...the advancing school builds upon its successes— each success creates a platform for yet another stretch, another success. This creates momentum and energy that translates into long-lasting success" (pg.34). Many leaders that institute a school improvement process understand that data can create momentum and sustainability in programs.

An action research plan, even if driven by data, rarely improves the capacity and instructional practice of teachers without active teacher participation. Earl and Katz (2006) believe that, "School leaders have little chance of using data unless the school as a whole is also committed to being a community, routinely challenging exiting beliefs and practices, using data to make sense of their environment and to think about their future" (page 20).

2.8   BUILDING CAPACITY THROUGH DATA DISCOVERY

Katz, Sutherland, and Earl (2002) supported a structured environment of data discovery by describing a system that intentionally is designed to build capacities among teachers, while at the same time delineating how data discovery should become an ongoing process. Building a

teaching staff which collectively develops habits of inquiry, Earl and Katz (2006, p.18) explained that the "habits of mind" can be placed into three broad categories:

1. Values of deep understanding
2. A tolerance for ambiguity
3. A wide range of perspectives which pose a higher level of understanding.

During the initial stages of data discovery, teachers at the elementary school mentioned throughout this chapter uncovered some important information regarding the depth at which students are comprehending and retaining math information. On the 2005 state assessment, there were 12 possible points to be earned on the open-ended math section. There were a total of 173 enrolled students in the fifth grade. Only one student out of the 173 earned all of the 12 points possible. In fact, 27 of the highest achieving math students at the school earned less than 5 points of the possible 12 on the open-ended section. There were three accelerated math classrooms in which approximately 80 students had quickly mastered the fifth grade content and were working through the main concepts of the sixth grade planned course. The remaining four classrooms of fifth grade students were not in the accelerated program. A great deal of discussion and debate ensued as teachers examined the data and sought to understand possible reasons why high achieving students did not attain high levels on this portion of the local assessment. Teachers reflected upon instructional strategies that were used on a grade level basis. Teachers also received data from the fourth grade concerning the methods of instruction used as part of the typical daily lesson. Teachers developed an action plan and worked within the confines of the daily schedule to create a skills group that specifically provided specific instruction in the open-ended math responses.

Another interesting aspect of the fifth grade mathematics data was a closer examination of local assessment results. All students are given local assessments at the end of each grading

period to chart the students' incremental growth. Of the three current accelerated math groups, the ability levels of groups 1 and 2 are slightly superior to those in the third group. The third group, however, outperformed groups one and two consistently throughout this school year. All three teachers shared resources, instructional strategies and lesson plans. Presumably, all three classrooms were taught the same curriculum. Groups 1 and 2, moved at a more rapid pace through the curriculum than group 3. The fifth grade staff consisting of seven teachers became obsessed with determining why the highest achieving students were not scoring superior to the other accelerated student group. After a great deal of discussion and an examination of data, teachers summarized that the retention of information was an issue that needed to be addressed.

At this school, teachers have developed local assessments that measure state "Assessment Anchors". The local tests are based upon grade level curriculum maps that outline mathematics and reading content on a week by week basis. The local assessment is specific to the skills found on the fifth grade state assessment. Student achievement data revealed that students in the two highest math groups were not using procedures for solving problems that they had learned several weeks prior to the local examination. A collegial discussion on how to best address the issue of moving math information from the short-term memory to the long-term memory unfolded as teachers examined scores on state and local assessments. Teachers also carefully reviewed the sequence of the mathematics curriculum. The discussion that followed appeared to develop a sense of urgency in addressing issues related student achievement on the mathematics examination which led to further inspection of the data, local assessments, local and state curriculum, and the logistical elements of the school day.

Teachers may be more willing to become active participants in the action research process if they establish a system that objectively addresses an issue that has become apparent

through exposure to data. As teachers are provided the opportunity to share instructional strategies and improved methods of overcoming student deficiency, teachers may become more inclined to self assess and reflect upon pedagogy. Examples like the one mentioned above may not have been apparent to the teachers of the fifth grade had data analysis not been conducted as a collaborative effort to address real school concerns. Blankstein (2004) stated that working collaboratively is important in dealing with problems that emerge through the process of action research, "…one of the most powerful and effective ways of working with data is to provide teachers with the opportunity to meet in grade-level or departmental teams and analyze student work together, with all faculty members sharing equally in the responsibility for success" (p.130). Collaboration may provide the conditions that enable teachers to make connections between the results from an examination of data and sharing of instructional practice. Teachers may become more willing to share what has or has not proved effective in individual classrooms with their colleagues.

Lambert (1995) pointed to reciprocity as being a crucial factor in the development of capacity among educational professionals. She implied that action research must become faculty habit and that time and resources should be made available in order to make effective instructional decisions. Meetings among staff members at the elementary school mentioned throughout this study are instituted with an agenda that lists objectives that are to be met at the end of the collegial discussion. A continuous stream of meaningful information has been provided to the teachers during the school year. Data is the starting point of most grade level meetings. Data is provided to the teachers to clarify district and building goals, as well as to provide reciprocity among staff. Data is used as a resource to engage teachers in meaningful dialogue during the action research process. "Continual exposure to data helps to build a district

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and school culture that values the use of reliable, complete information to guide decisions and solve problems" (Sargent & Shively 2004, p.2). Teachers have the opportunity to collaborate, to discover the individual strengths and weaknesses of students and to discover widespread trends of all student data within the classroom, grade level, school, and district. Data can be the starting point for meaningful discussion and refined instructional practices.

Collaborative planning and discussion based upon data may lead to more reflection by the instructional staff. Corregan (2001) implied that collaboration occurs when an entity produces something collectively that cannot be produced alone. He states, "Collaboration takes a long time; it cannot be developed overnight. It involves building trust and confidence, and that takes time" (p.45). Meetings among school staff and grade level teachers using factual evidence can keep discussion on a professional level. Trust may begin to develop over time as teachers come to understand that teachers within the building can be resources to facilitate all students achieving proficiency.

2.9   IN-DEPTH INQUIRY

Collaboration during team meetings and the use of data for inquiry-based decisions comes from frequent and meaningful formative assessment. Popham (2003) discussed the importance of an assessment system that provides information to alter instructional practice, "…if you use any sort of less-formal en route assessments, perhaps you'll find that your students have mastered some content standards more rapidly than you'd anticipated, thus enabling you to move on to your next high-priority standard and, ultimately, give instructional attention to other important standards that did not make your initial cut" (p.35-36). The goal of an inquiry-based school is to make

informed decisions concerning the future of individual students within the classroom based upon what the student presently can and cannot do. Assessment for learning as defined by Stiggins (2001) involved an in-depth look at student results to chart a path for future programming. "The keys to assessment for learning are consistency, timeliness, and differentiation" (Reeves 2005, p. 53).

Change at the building level may be a result of utilizing the fundamentals of action research which include inquiry designed to understand a specific school wide, grade wide, or individual classroom issue. Using formative assessment to continuously produce data on an ongoing basis provides information for action planning (Black, Harrison, Lee, Marshall & William, 2003; Stiggins, 2001). On-going examination of data to continuously monitoring student progress can provide useful insight into the direction of the academic program of a school. Blankstein (2004) stated, "Information from achievement data is ideally the foundation of constructive, collective decisions regarding issues such as goals, curricular emphases, unit plans, programs or policies, and planning for prevention and intervention systems" (p.144). Maintaining focus and purpose through curriculum mapping and formative assessments developed that measure the connections between instruction and student achievement are an integral part of data discovery at this elementary school. The goal of using data in schools is to diagnose student deficiencies and remediate the area of weakness so that all students are able to perform better on the state system of assessment. Popham (2004) stated that, "…if we don't know which content standards have been successfully promoted, then teachers can't tell whether particular parts of their instructional programs have been effective or ineffective" (p.32).

To some teachers, data is a necessary evil on the way to more productivity by both teachers and students. What school personnel does with data and the change that occurs as a

result of data discovery connect to school leadership style and the professional climate of the teaching staff. Fullan (2005, p.56) stated that assessment for learning is the key to higher student achievement. He also described the importance of a system of assessing, analyzing, and planning courses of action:

- Accessing/gathering data on student learning
- Disaggregating data for more detailed understanding
- Developing action plans based on the previous two points in order, to make improvements

- Being able to articulate and discuss performance with parents and external groups

Fullan went on to claim that, "When schools and school systems increase their collective capacity to engage in ongoing assessment for learning, they achieve major improvements" (p.56). Many of the items listed in Fullan's plan may be contributing factors to the development of school wide capacity building.

An essential part of the research plan that follows in this study is to bridge between local needs with state requirements and global research. Research related to a particular local school issue can be a vehicle to connect the teachers with the researchers to mould and apply the theory into the reality of improved instruction and learning. "With a rigorous method of scrutiny, schools are able to evaluate what is or is not affecting student learning and with that information schools can alter practice and develop plans for continuous improvement" (Sargent & Shively 2004, p.3). A global view of a local problem may shed light on one or more of the barriers to change. School leaders attempting to build capacity among the teachers can provide a solid foundation of improvement by combining the questions that become apparent through the use of data from state and local assessments with answers found in the literature on the topic from a broader context. "If schools are to provide learning environments that are meaningful and

engaging, educators must continually reflect on the quality of school systems and focus their efforts to make them better. District and school leaders are guided by a clear vision focused on student learning and a well-defined mission statement aimed at high-quality learning environments and optimum student achievement" (Sargent & Shively 2004, p.23).

2.10   SUMMARY

We have never known more about our student population than we do today. Accountability measures have encouraged school systems to provide evidence that student achievement is increasing. Improved instructional strategies and a focus on a refinement of pedagogy not only provides meaning to instruction, but also provides depth to it. The more focused the teacher can be on individual strengths and weaknesses, the better the results in student achievement. As teachers use action research techniques, an inherent reliance on colleagues many times becomes a professional habit. The qualitative study that follows is presented in case study format. The examples that follow will attempt to answer the research questions outlined at the beginning of chapter two.

3.0   METHODOLOGY

This chapter outlines the research methodology, the data collection procedures, and the data analysis used in this study. The research questions, the research design, the survey approach, a summary of the participants, a description of the context, and a definition of the terms are presented. The purpose of this study is to examine connections between using data for instructional decision making and building capacity among elementary teachers. The extent to which program sustainability occurs through an organized system of data analysis will also be addressed.

3.1   OBJECTIVES AND RESEARCH QUESTIONS

A single overarching question was developed to address the primary purpose of this research study, while three secondary questions provided a framework for the research:

How does using data change how teachers meet the needs of their students while at the same time build capacity among the learning community?

1. What strategies can be used to develop a community of learners to assist in improving student achievement?

2. To what extent does using a framework of data disaggregation result in teachers becoming more reflective about practice assist in building capacity among teachers throughout an elementary school?

3. To what intent do the results of formative assessments refine instructional practice and create sustainable professional growth of faculty?

3.2   THE RESEARCH DESIGN

This study uses Bernhardt's (2003) methodology for data analysis to evaluate changes in student achievement during an eight-week period.   The researcher, who is also the building principal, developed a plan of analysis that will encourage the faculty of a Pennsylvania elementary school to provide direct instruction for individual student learning deficiencies. This study included a teacher survey (given a total of three times), four individual tasks, and four collaborative tasks. The study was used to provide individual teachers with an opportunity to carefully examine their own data, share with others, and finally engage in discussion to illuminate how a data-based decision making model could create a need for teachers to interact in ways in which they had not done before. For the purposes of this study, a quasi-experimental design with a convenience sample using analysis of covariance with repeated measures for statistical analysis was implemented.

A quantitative, experimental research methodology was chosen to test the hypothesis of a possible cause-and-effect relationship between careful inspection of student achievement data, instructional planning, and capacity building among a group of elementary school teachers. The researcher used an organized data disaggregation system with 16 teachers in order to illuminate ties that existed between data, instruction, and professional growth of teachers. A quantitative methodology best demonstrated connections to the researcher's definition of capacity building.

While school leadership and capacity building are elusive qualities, they are necessary to improve student achievement. Encouraging teachers to be self-directed learners and problem

solvers through the use of data may best be described through a quasi-experimental design where teachers were randomly assigned to a grade level partner in order to complete the collaborative tasks. The researcher used a cross-sectional survey for the predetermined teacher population. Also, a series of self-designed tasks was used to develop a comprehensive understanding of the evolution of a teacher that creates lessons based on instinct while moving toward creating lessons based upon quantifiable reasoning. Like many other topics in educational research, capacity building within an individual is difficult to quantify. However, the research design selected for this study attempted to measure capacity among teachers with numeric differences that existed as teachers participated in the process.

Teacher leadership, or increased capacity, may affect whether or not schools are able to meet the demands of state and federal accountability mandates. In order to exceed these accountability measures, the building principal has designed a data system that requires teachers to internalize the use of data to increase student achievement. The system is meant to induce change among teachers who will develop ownership for their student data and feel a sense of obligation to act on the results. Therefore, in order to make the data more meaningful for the teachers, it was necessary to view student achievement scores through the lens of instructional practices and professional dialogue with colleagues to improve practices that meet the needs of individual students. It is the intent of the principal to refine pedagogy to differentiate instruction based upon data and to identify the needs of each student in the classroom.

The researcher was interested in observing how teachers used data to address the needs of the students and in determining if the comfort level of using data increases in teachers as they engage in dialogue about the process of data analysis. The problem was shaped by student achievement results, the questions that are raised between partners come as a result of the need

for improved instructional techniques, and the end product that is desired is a professional learning community in which colleagues openly discuss improved pedagogy.

3.3   SURVEY RESEARCH

The Teacher Data Survey will be given three times throughout the 8-week duration of the study. The first survey will be given to provide the study with baseline data prior to beginning any of the individual tasks. The survey will be issued a second time following the four individual tasks in order to determine the professional growth of the teachers. Teachers that chose to continue in the study will then participate in a series of four collaborative tasks. At the completion of these tasks teachers will complete the survey for the third and final time to measure changes in professional behavior and attitudes after working with a colleague.

Data disaggregation in this study requires that participating teachers begin by completing a survey to measure understanding and a comfort level in dealing with student achievement data. The survey was designed with the specific purpose of determining how data is used when planning, implementing, and evaluating a lesson. Survey research was the most logical research methodology because it allows this researcher to collect information from the target population of 16 teachers using a quasi-experimental design. However, the primary limitation of survey methodology is that this study's results rely heavily upon the honesty of the respondents. The survey was developed to maintain the interest of the teachers and provide meaning to the objectives of this research. Understanding that the length of the survey can be crucial to its success, each participant was required to respond to 25 questions.

The cross-sectional design used in this study allowed the researcher to measure attitudes and the effects of the data measurements on the teachers and their approach toward using data in planning a reading lesson. The cross-sectional measure appeared to be the best methodology for this eight-week study. All participants were asked to respond within a given time period and were required to submit the survey before they were given the next task. The survey used a closed format in which most questions have four choices. These choices measured the attitudes and knowledge concerning the use of data in this elementary school, and the closed-ended measure allowed the researcher to assign a numeric value to each response for analysis. Coded responses provided some uniformity that may be applicable in elementary schools with similar demographics. Using SPSS software allowed the researcher to construct a clear representation of connections between the use of data and the development of teacher leadership behavior in the classroom and throughout the school.

Clarity was of utmost importance in developing the Teacher Data Survey to ensure that all questions provided similar meaning to all participants. Words used throughout the survey were closely scrutinized by the researcher, the district superintendent, and the district school psychologist. Terminology that would likely be misinterpreted was removed from the survey and all participants were provided with a "Definition of Terms" to further ensure that ambiguity would be absent as surveys were completed. Special consideration was given to make sure that questions were not leading in any way and that questions were organized in logical sequence. The first two questions are demographic in nature and are meant to delineate levels of experience. The remaining 23 questions within the survey were knowledge-based, attitudinal questions to determine how much the teachers knew about disaggregating data and how they

used that knowledge for instructional purposes to improve student performance. The survey was

used to describe teacher attitudes toward the chosen process of disaggregating student data.

SPSS version 15 was used in the analysis. All 25 questions on the Teacher Data Survey were coded with an assigned point value and were disaggregated by SPSS. A frequency polygon was created for each group's (control and treatment) scores. The polygons was utilized to determine if the measures provided evidence that matched tendencies between using data for instructional decision making and the building of teacher leadership capacity. Any extreme scores were considered, but were later eliminated. Median scores provided the best measure of accuracy for the purposes of this study.

The principal investigator solicited the assistance of the building secretaries to administer the Teacher Data Survey three times during the study. The surveys were numerically coded to respect the participant's privacy and willingness to answer freely. The primary researcher did not engage in conversation with the participants in the study. As stated earlier, SPSS software was the primary tool for data analysis and the researcher provides the readers of the study with a brief narrative to illuminate meaning behind statistical responses.

3.4   PARTICIPANTS

The subjects participating in this study were selected at random as all 28 grade level core curriculum teachers were given the opportunity to participate. Pseudonyms were used throughout the duration of the study to protect the respondents and to uncover accurate emotions with regard to the development of teacher leadership practices through the use of data. The study participants are listed below. All participants were recruited to participate at a building faculty

meeting in which all 28 teachers were present. The primary researcher described the procedures

that were used throughout the study. Teachers were assured that their identity will remain

confidential and under lock and key for the duration of the study and at least five years after its

completion. Students will not participate in the study and there are no special subject

populations other than the fact that all participants are elementary school teachers in grades three

through sixth.

Table 3 Participants

Teacher	Sex	Grade Level	Years of Experience
002	F	3	15
004	F	3	32
005	F	3	1
009	F	4	8
010	F	4	12
011	F	4	24.5
012	F	4	32
013	F	4	18
014	F	4	1
017	M	5	32
018	F	5	1
020	F	5	6
021	M	5	32
023	F	6	6
024	F	6	18
025	M	6	8
026	F	6	2
028	M	6	10

All teachers in the study are Caucasian, four of the participants are male and 12 are

female. The sample was not specially selected, but rather was the result of the characteristics of

the employees at this particular school.   A random selection process was implemented as any

teacher that would have liked to participate had an opportunity to do so. Each participant was

given a random assignment number which was arbitrarily assigned to maintain anonymity.

These assignments occurred prior to the beginning of the study and were assigned to the treatment and control groups prior to the beginning of the research.

The treatment group was given a series of four additional tasks to complete with an assigned colleague. Tasks were designed to encourage participants to closely examine overall instructional deficiencies through the examination of student performance data using both their own student scores and those from their partner's roster in specific areas on formative assessments. At the conclusion of the four collaborative tasks, participants were surveyed for the third and final time to determine the effect that the collaboration process had on the professional growth of the teachers in the treatment group as compared to those in the control group. All teachers were asked to participate in the study with the exception of learning support teachers, the speech and language teacher, the reading coach, and the guidance counselor. These teachers were excluded due to the logistics of partner work and a lack of in-depth data available for disaggregation purposes.

Studies have been conducted to describe the use of data for instructional purposes (Bettesworth, 2006; Bruner 2005; Bishop 2005; Holcomb 2004). There have also been numerous studies that address building leadership capacity among teachers (Morelon, 2006; Booth, 2006; Remley, 2005), however there has been little written on the combination of using data and improving leadership capacity among teachers. This study aims to combine both data-based decision making and building capacity to improve lessons and student achievement.

3.5   CONTEXT

This study is limited to building capacity and sustainable programs using data in one particular elementary school. The limitations exist due to the sample size of participating teachers. It is not to be assumed that this framework of data analysis and the system of paired instructional lesson study would apply in all school settings. Rather this is the approach that one elementary principal chose to undertake as a method to more actively engage professional staff in productive decision making.

The pseudonym of Acadia Elementary will be used throughout this study to maintain anonymity of the school, students, and teacher participants.   Acadia is a grades 3-6 primarily middle class elementary school in rural Pennsylvania. For the 2006-2007 school year the student population is approximately 700 students which is composed of 99.5% white students. Approximately 27% of the students at Acadia are economically disadvantaged which is lower than the state average of 34.1%.   A subgroup of between 40 and 50 economically disadvantaged students exist at each of the four grade levels.

The attendance rate for the 2005-2006 school year was 95.9%. The student per teacher ratio is 20:1. The school is located in a rural town in which the median income in 2005 was $64,440, and median home value was $85,687.

Acadia Elementary has 28 fulltime regular education teachers, 3.5 learning support teachers, one speech and language support teacher, a part time English Language Learner (ELL) teacher, one gifted support teacher, one and a half music teachers, one art teacher, one physical education teacher, and nearly 10 instructional aides. Acadia was recently placed on the state warning list (initial stage for state intervention) due to poor student results in the special education subgroup. A private college is located across the street from Acadia and the teachers

frequently supervise field experience and student teachers from three area colleges or universities.

The 2005-2006 school year was the first year for the Pennsylvania State System of Assessment (PSSA) to be given in all grades 3-8. The PSSA is used to measure student progress in attaining proficiency in state standards in the areas of mathematics and reading. The participation rate for students at Acadia for both mathematics and reading was 99.4%. Although all grade levels at Acadia were tested, only third and fifth grade scores counted in 2006 for the Adequate Yearly Progress (AYP) scores in Pennsylvania.

In the 2005-2006 school year, the school's average scaled score was 1400 in mathematics for third grade students and 1420 for fifth grade mathematics. The third grade reading average scaled score for the state of Pennsylvania was 1330. The state average for fifth grade reading was 1310. At Acadia, 94 % third graders scored within the proficient or advanced categories on the mathematics exam. In reading, 78% scored within proficient or advanced categories. In fifth grade mathematics, 84% of the Acadia students were either proficient or advanced, while 68% of the students were either proficient or advanced in reading.

3.6   TASKS

Using the Bernhardt model of data discovery for improved student achievement, multiple measures of data analysis were implemented, including a comprehensive review of demographics, school perceptions, student learning, and school process data (Bernhardt, 2004, p.21). The individual tasks in this study included four measures that require teachers to list student first names and achievement on the state assessment, Success for All 4-Sight quarterly

assessments, in-house curriculum-based assessments, classroom letter grades, program participation, socio-economic status, attendance, and gender.   The framework required the participants to determine poor readers on their roster to determine individual deficiencies. Teachers were then given up-to-date research and guidance from the reading coach regarding instructional strategies that directly address the needs of their students. Instructional goals will be discussed and created to demonstrate connections between the needs of the students and the objectives of the lessons.

The first task, entitled Demographic Data Analysis, required the participants to list their bottom ten readers and the whether they are or are not currently receiving support in addition to regular classroom instruction. It should be noted that the selection of the bottom ten readers by the teacher was based upon scores from the measures listed above. Participants had the opportunity to determine if attendance has adversely affected student performance. After also examining gender biases and cooperative grouping configurations, participants had the opportunity to list strategies that have been utilized to overcome limited supplemental support, attendance issues, and gender differences that are present in the classroom. Task one was meant to provide the participants with a foundation for data disaggregation. Teachers began to speculate and gain an understanding of how demographic data can influence student achievement. Demographic information was used by the participants in the study to analyze how well the school personnel were serving the needs of the students based upon factors that may be inhibiting improved student achievement. In order to truly understand if the school personnel are meeting the needs of the student population, demographic disaggregation is necessary (Bernhardt, 2004).

The Student Achievement Analysis document is the second task which also required each participant to list the bottom ten readers and chart all of the formative and summative testing measures that students participated in throughout the school year. Teachers were asked to list the scores and then compare and project the student results on the various formative measures. Teachers were also asked to list action steps next to each of the bottom ten readers to remediate individual student weaknesses. The purpose of this instrument was to connect student achievement with methods for improved instructional practices. The Student Achievement Analysis is at the heart of the study in that it is meant to provide the participants with insight on how effective their teaching was and which work methods were most effective for their students. The measures that teachers used for the most part were criterion-referenced tests that allow comparison of student scores on various measures and relationships that may exist between achievement results and specific learning objectives.

The third individual task of School Process Data Analysis required that teachers evaluate programs that are part of the school routine. This task is an open-ended task that solicits teacher feelings toward the daily schedule, standards-based curriculum, state testing skill groups, the Title I program, special education programs and services, and remedial services such as after-school tutoring, morning computer time, summer school etc. This task is meant to encourage the teacher to think about how the school process is either helping or hindering student achievement. Throughout the task, the teacher is obligated to consider daily classroom procedures in relation to the previous two tasks. Teachers may be able to verbalize congruence between student achievement, participation in school programs, scheduling, and any other factors that may be assisting or hindering the whole development of the student.

The fourth and final individual task was the Individual Perceptions Data Analysis. This instrument required that the respondent reflect upon progress and setbacks that their students have experienced throughout the school year in regard to academic achievement. Teachers were to describe the connections between instructional practices and how they related to the formative and summative measures of assessment that were required of all students in the school.

Participants were asked specific questions concerning the dynamics of working with a partner on an on-going basis. Participants were also questioned about their confidence level in diagnosing student deficiencies through the use of data analysis and their ability to plan a lesson based on the needs of their students. Participants had the opportunity to verbalize their feelings regarding their own individual professional growth. The intent of the study was to determine the value of the partnering in both improving student achievement and helping classroom teachers become staff leaders in instruction. All participants were required to sign a waiver for participation, while being assured that their identity will remain anonymous.

After the surveys were compiled, they were put into a table categorized by information that supports the development of a community of professional learning, capacity building among faculty members, and the importance of building a foundation to promote a sustainable framework for continuously improving student achievement. The survey was used to determine whether feelings, emotions, and information gathered can be applied in future situations in helping teachers develop capacity building characteristics. Information relative to the hypothesis was scrutinized to determine if using data for instructional decision making does indeed promote capacity building characteristics among the elementary teachers participating in the study.

Each task described above focused on how profession learning communities may emerge as a result of the use of structured data analysis instruments. The information documented

explicitly explained the connections that demonstrated how teachers develop as diagnostic professionals and how they shared their professional growth. The tasks that have been devised are meant to engage teachers in activities that would be common among a community of learners describing how collaboration, debate, and becoming more skilled in pedagogy influence an individual's professional growth. The results of observations and interviews through fieldwork and written surveys provided the stories that illustrated the underpinnings of teacher capacity building.

3.7   DEFINITION OF TERMS

Achievement Gap- At Acadia, the term achievement gap describes socio-economically
      achievement gap between economically disadvantaged students in comparison to the rest
      student population.

Capacity Building- describes a teacher's ability to internalize the need to utilize research
      within the profession, engaging in necessary dialogue with colleagues, assuming
      professional responsibility in sharing with colleagues, leading initiatives that improve the
      academic achievement of all students at Acadia.

Continuous Learning Ethic- The continuous learning ethic exists at the convergence of
      quality leadership, quality teaching, and the artful use of infrastructure. In reference to
      the use of data, Fagbayi (2004) defines the context of the Continuous Learning Ethic as a

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professional learning community where teachers are actively engaged in using data as a

springboard to identify local priorities.

Evidenced-Based Decision Making- research-based strategies that attempt to tie theory to

action. For the purposes of this study, evidenced-based decision-making will come from

the National Reading Panel, federal and state departments of education, and leading

journals in education.

Professional Learning Communities- A professional learning community, as defined by

Dufour, (2004) is, "…composed of collaborative teams whose members work

interdependently to achieve common goals" (p.3).

Student-Centered Lessons- Lessons based upon research that cater to the individual needs

of the students. Designing lessons that specifically are meant to remediate student

deficiencies are at the heart of this study.

Sustainability- is the term used throughout the study to describe the desire that teachers

possess predicated upon continuous research, while creating and delivering plans and

programs on an on-going basis. The goal of the principal is to make using data to

develop lessons a daily process to encourage dialogue and become a habit for all teaching

professionals.

3.8   LIMITATIONS

This study represents the attitudes and experiences of 18 elementary teachers at a moderately sized elementary school in Pennsylvania. While this study provided information about attitudes concerning using data and the process created by the primary researcher, results are particular to this school and the participants of this study. While the process of data disaggregation and the results of the data questionnaire may resonate with teachers working under similar conditions, study results may not be generalized to other schools- especially those that are not already actively engaged in utilizing data for instructional and professional development planning. Behavior of teachers, many times, is indicative of the environment in which they teach.

Not all 28 regular education teachers at Acadia participated in the study: therefore views expressed through the teacher questionaire may not be completely representative of the all teachers at the school.

Also, the number of options that were given to respond to each question on the Teacher Data Survey limited the opinions of the teachers, which may have caused a skewed look at the attitudes of teachers in the study.

4.0   STUDY FINDINGS

Previous chapters of research outlined and introduced the issues of productive use of data and capacity building among staff members. The reviewed literature in chapter two summarized information pertinent to the data and capacity building variables of the study. The purpose of this chapter is to present findings from the Teacher Data Survey analyzing change among individual teachers throughout the duration of the study. Analysis of the questions and hypotheses that are topics of concern follow the itemized summary for each question.

Chapter four outlines the results and analysis of the 25-question survey that was given three times in an effort to measure the changing teacher attitudes toward data and use of data in planning and delivering instruction. Presenting disaggregated data is meant to shed light on the primary research question: Does using data in a systematic manner improve instruction and learning while at the same time build capacity among the teaching staff of Acadia Elementary? Additionally, questions related to sustainability, instructional technique, and efficacy of school wide initiatives are also addressed.

This study commenced utilizing pre/post format prior to the beginning of the four individual tasks, as well as at the end of the four collaborative tasks. Eighteen of the twenty-eight (64%) grade level teachers agreed to participate. All teachers completed one task per week for a total of eight consecutive weeks. All teachers had equal opportunity to participate in all levels of the study, and teachers could withdraw their participation at anytime. All teachers were

given the opportunity to end their participation at the conclusion of the individual tasks, however all chose to remain in the study as active participants.

The study findings discussed throughout chapter four highlight themes that emerged as teachers participated in gathering and organizing student data from school wide formative and summative measures. The data gathered by the researcher was collected with the intention of documenting the professional development of faculty at one elementary school.

4.1   DESCRIPTIVE ANALYSIS OF SURVEY QUESTIONS

Formulating the questions based upon a four-point Likert scale, the survey responses were ranked in ascending order with one representing strongly disagree and four representing a strong agreement to the statement. The range of responses are listed below:

1. Strongly Disagree

2. Disagree

3. Agree

4. Strongly Agree

Also, several questions surveyed the frequency of actions by the participants. A six-point scale provided the participants with choices that provided insight on the use of data in the classroom. By examining frequency the researcher was able to formulate assumptions regarding efficacy and capacity building of those taking part in the study. Responses for frequency type questions were also listed in ascending order and are listed below:

1. Never

2. Once a school year

3. Once a semester

4. Quarterly

5. Weekly

6. Daily

The sample size (N=18) represented more than 60% of the staff at Acadia Elementary. The sample size was determined by the practical constraints of the school. While all 28 grade level teachers were given the opportunity to participate, 18 voluntarily enlisted in part in the study. This study was not conducted in a manner to establish validity. The study is exploratory in nature to determine a correlation between using a systematic approach to data discovery and building capacity in elementary teachers. Capacity building is a rather complex concept that is difficult to measure directly. The researcher attempted to develop casual relationships between working independently and collaboratively to determine the professional growth of a teacher. The convenience sample was conducted due to the need for availability of participants. Although there are more desirable measures, a convenience sample was the most appropriate for this exploratory study of teacher attitudes in one school building. The researcher recognizes this as a study limitation and would not recommend that the results from this study be used to generalize connections between data and capacity building among teachers. Further study would be necessary to provide both validity and reliability of the results.

As has been stated earlier, a quasi-experimental design with a convenience sample using analysis of covariance with repeated measures for statistical analysis was implemented. ANCOVA was utilized to examine the differences within each participant in the study from the baseline survey, to the post-individual task survey, to the post-collaborative task survey. The

survey examined the individual attitudes of the teachers participating in the study. The F value listed below in Table 4 measures the change in participant attitude and is used to determine whether or not the tasks had an impact on using the data for instructional purposes. All teachers were given a pretest to provide baseline data. Analysis of covariance was completed in an effort to minimize the effects of the independent variables of this study. The independent variables of experience levels of each participant, prior knowledge and comfort level in using data in their classrooms, and all other external factors that may influence the attitude of the teacher on each question of the surveys. Discrepancy that exists between teachers that are adept in using data for instructional decision-making and those teachers that were either unable or unsure of what to do with formative and summative assessment data was minimized through ANCOVA. As is commonly accepted in educational research, .05 is used to determine whether or not the individual or collaborative tasks effected how teachers use data for instructional purposes.

The twenty-five questions were randomly distributed throughout the survey. Data was sorted using numerous parameters to identify the growth of teacher capacity. Also, a change in comfort level in using data resources for creating and delivering quality instruction was analyzed. Because of the demographics of the school employees, comparisons by gender were not appropriate. In many of the responses, the mean represented the data well. Most of the scores clustered close to the mean, with the exception of questions related to time and training. However, answers from baseline data (survey A) resembled responses found at the conclusion of the tasks (survey C). With such a small sample size, it was difficult to recognize a marked change in behavior of the teachers. A more varied response resulted in a larger standard deviation. Questions related to time and training result in varied responses throughout the study, indicating that meeting with staff was and is not occurring on a scheduled basis.

Table 4 Tests of Within-Subjects Effects

Survey Question	F	Significance
1. I have been teaching for:	x	x
2. I have been teaching at the current grade level for:	x	x
3. Using data for instructional decisions has provided me with useful insight about my students.	1.608	.215
4. I have changed instructional methods as a result of using student data.	.095	.910
5. I plan my reading lessons using individual student scores from formative assessments.	.869	.429
6. I have had sufficient training in analyzing data from frequent formative assessments.	1.323	.280
7. The amount of time that I spend conferencing with my colleagues in regards to data and lesson design is:	1.248	.300
8. By closely examining a colleague's formative assessment results in reading, I could diagnose those student deficiencies and provide suggestions lesson design.	1.195	.315
9. The amount of time that I share instructional resources with colleagues is:	.296	.746
10. I have taken time to explain materials when I have shared resources with a colleague.	1.097	.345
11. I discuss data with my colleagues.	1.178	.320
12. I feel comfortable sharing student scores from formative measures with my colleagues.	3.778	.033
13. I discuss data with my students.	4.225	.023
14. I feel comfortable sharing student scores from formative measures with my students.	.791	.462
15. I feel comfortable sharing student scores from formative measures with the parents of my students.	.239	.788
16. I discuss data with the parents of my students.	2.700	.082
17. I am able to use student data to improve instructional practices?	1.863	.171
18. Data has made teaching more difficult.	1.000	.378
19. Student formative assessment scores should be the primary indicator of student skill level.	.925	.406
20. Student assessment scores are an appropriate indicator of student skill level.	1.676	.202
21. Effective use of data by the teacher improves student achievement.	2.326	.113
22. Using data for instructional decision-making will produce higher student	1.640	.209

Survey Question	F	Significance
achievement.		
23. Using data for instructional decision-making will make me a better teacher.	.895	.418
24. I make instructional decisions in my classroom based upon student data derived from formative assessments.	1.483	.241
25. Quality instruction is measured by student achievement results on formative assessments.	2.663	.084

The tables listed below each question list the measure of variability for answers to each of the 25 questions. Both the mean and the standard deviation are reported to indicate how adequately the mean score is in reflecting the dependent variable of teacher attitudes toward the tasks and understanding of the connections between interpreting data and improving classroom instruction. Below the Descriptive Statistics table, a frequency polygon is presented. The primary purpose of listing frequency is to note the marked change on many of the questions between those participants whose attitudes started at a somewhat favorable position when looking at the covariate to a more positive attitude toward the usefulness of using data, engaging in conversations related to data, and becoming more efficient in practice as a result of using data.

Questions one and two do not have the analysis format that can be found in questions 3-25 because of the nature of the questions. The demographic information gleaned from these questions provide context for teacher responses and are summarized in Table 3 of this study. The remainder of the questions on the survey can be categorized into knowledge questions, experience or behavior questions, and opinion questions.

Question #1. I have been teaching for:

0-5 years   6-10 years   11-15 years   16-20 years   21 or more years

Question #2. I have been teaching at the current grade level for:

0-5 years   6-10 years   11-15 years   16-20 years   21 or more years

3. Using data for instructional decisions has provided me with useful insight about my students.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 5 Uses of Data for Instructional Decisions

	Mean	Std. Deviation	N
USEFUL INSIGHT	3.3333	.48507	18
USEFUL INSIGHT	3.1111	.67640	18
USEFUL INSIGHT	3.4444	.51131	18

Table 6 Frequency of Uses of Data for Instructional Decisions

Question #3- Useful Insight	Survey A	Survey B	Survey C
Strongly Disagree		1	
Disagree			
Agree	12	13	10
Strongly Agree	6	4	8

With the exception of one outlier in survey two, 18 teachers either agree or agree strongly that data is important in order to get an accurate picture of student abilities. When looking at responses prior to engaging in any of the activities (survey #1), responses were relatively close in that teacher agree that data has at least the potential of illuminating student abilities in reading. A slight change in response on survey two may be attributed to not clearly having an accurate definition of how data provides useful insight of student abilities. Once participants completed the individual tasks and were surveyed (survey #2), one teacher strongly disagreed while two less teachers remained in the strongly agree category.

There appeared at the beginning of the study to be a belief among the teaching staff that an understanding of data and the use of data to make instructional decisions existed. However,

as the study progressed it appeared as if teachers had not fully had the opportunity to reflect deeply upon the numbers and develop an understanding of how best to utilize student data results. The first four individual tasks may have enlightened the teachers on what they believed to be their understanding of data uses in the classrooms. Prior to the study teachers had only been given student achievement scores without a systematic plan for evidence-based lesson design.

4. I have changed instructional methods as a result of using student data.

| Strongly Disagree | Disagree | Agree | Strongly Agree |

Table 7 Changes in Instructional Methods

	Mean	Std. Deviation	N
TEACHING CHANGES	3.2222	.54832	18
TEACHING CHANGES	3.1667	.38348	18
TEACHING CHANGES	3.2222	.54832	18

Table 8 Frequency for Changes in Instructional Methods

Question #4- Teaching Changes	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	1		1
Agree	12	15	12
Strongly Agree	5	3	5

During the study, the focus at Acadia Elementary has been to refine pedagogy to reflect evidence-based models of "best practices". As results above demonstrate, teachers do agree that using data has changed their approach to instruction. Examining survey points from the baseline, the post-individual task survey, and the post collaborative task survey did not illustrate a significant change in attitude concerning using data for instruction. The consensus among the

participants, based upon the response to question 4 with the exception one outlier, is that they have altered instruction since they have received formative data results.

5. I plan my reading lessons using individual student scores from formative assessments.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 9 Plan from Formative Measures

	Mean	Std. Deviation	N
PLAN USING DATA	3.0556	.63914	18
PLAN USING DATA	3.2222	.54832	18
PLAN USING DATA	3.1667	.51450	18

Table 10 Frequency for Planning from Formative Measures

Question #5- Plan Using Data	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	3	1	1
Agree	11	12	13
Strongly Agree	4	5	4

Teachers have received approximately nine hours of professional development during the 2005-2006 school year regarding reading strategies from the National Reading Panel. Also, the building level reading coach has worked diligently at creating resources for reading instruction that could be universally applied using a variety of fictional and nonfictional reading resources. Teachers were then assigned the task of combing through formative assessment results and directly connecting strategies with data to either justify or negate the usefulness of the strategy.

Both the individual tasks and the collaborative tasks specifically require teachers to evaluate lessons and plan according to the results of building wide formative assessments. Results above progressively indicate minor changes in attitudes may be a result of a year of

professional growth during which administration explained the significance of using evidence-based strategies.

6. I have had sufficient training in analyzing data from frequent formative assessments.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 11 Training for Analyzing Data

	Mean	Std. Deviation	N
TRAINING	2.8333	.61835	18
TRAINING	2.7778	.64676	18
TRAINING	3.0000	.84017	18

Table 12 Frequency for Training for Analyzing Data

Question #6-Training	Survey A	Survey B	Survey C
Strongly Disagree		1	1
Disagree	5	3	3
Agree	11	13	9
Strongly Agree	2	1	5

The data from the three protocols reveal that more training is needed on how best to analyze student data. It appears from all three measures that teachers were not adequately satisfied with the amount of training. Also, it may be surmised that as the participants were exposed to the individual and collaborative tasks their understanding of data analysis may have changed and more training may be necessary. As the mean score and standard deviation indicate not all teachers believe that training has been adequately prepared the participants for tasks related to disaggregated formative assessment measures. The ambiguity that exists may be a result of where each participant resides on the continuum of understanding the use of formative assessments and the training needed to significantly impact instruction.

7. The amount of time that I spend conferencing with my colleagues in regards to data and lesson design is:

                    Never   Once a School Year   Once a semester   Quarterly   Weekly   Daily

Table 13 Conferencing with Colleagues

	Mean	Std. Deviation	N
CONFERENCING W COLLEAGUES	4.5000	.78591	18
CONFERENCING W COLLEAGUES	4.7222	.66911	18
CONFERENCING W COLLEAGUES	4.7222	.75190	18

Table 14 Frequency for Conferencing with Colleagues

Question #7- Conference w/ Colleagues	Survey A	Survey B	Survey C
Never			
Once a School Year			
Once a Semester	1		
Quarterly	9	7	8
Weekly	6	9	7
Daily	2	2	3

Responses to question seven illuminate the lack of a structured plan that promotes sharing and discussion of scores with colleagues. There is limited time available for teachers to examine and assist in either horizontal or vertical planning teams in using data for professional discussion with peers. Most participants discuss data at least quarterly and many discuss data on a weekly basis with the exception of the once each semester outlier in survey A. Scheduled weekly grade level meetings usually have an agenda other than data discussions; therefore most of the time spent discussing data occurs during times other than scheduled meeting times. Discussion with colleagues concerning data and lesson design occurs primarily during impromptu occurrences.

8. By closely examining a colleague's formative assessment results in reading, I could diagnose those student deficiencies and provide suggestions for lesson design.

<div align="center">Strongly Disagree   Disagree   Agree   Strongly Agree</div>

Table 15 Diagnosing Student Deficiencies

	Mean	Std. Deviation	N
DIAGNOSE DEFICIENCIES	3.0556	.72536	18
DIAGNOSE DEFICIENCIES	2.8889	.58298	18
DIAGNOSE DEFICIENCIES	3.1111	.83235	18

Table 16 Frequency for Diagnosing Student Deficiencies

Question #8- Diagnose Deficiencies	Survey A	Survey B	Survey C
Strongly Disagree	3	1	1
Disagree	12	1	2
Agree	2	15	9
Strongly Agree	1	1	6

Responses to question eight expose the attitude toward the changing culture at Acadia Elementary. Collaboration and the thought of working with a partner to explicitly explain how students are performing can be quite intimidating to some teachers. If teachers have internalized the notion that student academic performance is a result of quality teacher, sharing student scores could be an ominous task. Scores on survey A reveal initial apprehension that some teachers may have experienced in relation to the thought of openly discussing student performance. However, after completing all four individual tasks, participants reveal a sense of confidence in being able to assist colleagues by showing their scores to their partner and also examining scores from other classes to diagnose and prescribe proper instructional methods. By survey C, participants had completed the collaborative tasks and responded confidently that collaboration may improve instruction. It is interesting to note that the 12 participants disagreed or lacked

confidence in sharing and discussing student achievement with their partner. However, as the study progressed teacher confidence improved. Moving from 12 teachers disagreeing to 15 agreeing with the thought of collaboration may be demonstrating the progression of capacity building that this study aims to measure. Also, of equal importance is the six teachers that at the conclusion of the collaborative tasks strongly agreed that they could diagnose and discuss student data with a partner.

9. The amount of time that I share instructional resources with colleagues is:

Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

Table 17 Sharing Resources with Colleagues

	Mean	Std. Deviation	N
SHARING RESOURCES	4.7222	1.01782	18
SHARING RESOURCES	4.8333	.70711	18
SHARING RESOURCES	4.8333	.61835	18

Table 18 Frequency for Sharing Resources with Colleagues

Question #9- Sharing Resources	Survey A	Survey B	Survey C
Never			
Once a School Year			
Once a Semester	2		
Quarterly	6	6	5
Weekly	5	9	11
Daily	5	3	2

The increasing demands of No Child Left Behind mandates and the requirement of 100% proficiency by 2014 has forced teachers to seek out proven instructional resources. Teachers that have become accustomed to working in isolation are being asked to collaborate as a result of increased accountability. Time constraints, especially in schools where widespread changes have occurred, have created an incentive for teaching professionals to share resources. The types

of instructional resources being used at Acadia are changing from reliance on textbooks to more skills based resources. By the conclusion of this eight week study, the teachers that reported sharing instructional resources more than doubled. This reporter would suggest that sharing resources is a component of capacity building and demonstrates a response to the increased pressure to address the needs of all students.

10. I have taken time to explain materials when I have shared resources with a colleague.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 19 Explanation of Instructional Resources

	Mean	Std. Deviation	N
EXPLAINING MATERIALS TO COLLEAGUES	3.2222	.54832	18
EXPLAINING MATERIALS TO COLLEAGUES	3.3333	.48507	18
EXPLAINING MATERIALS TO COLLEAGUES	3.4444	.51131	18

Table 20 Frequency fr the Explanation of Instructional Resources

Question #10- Explaining Materials	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	1		
Agree	12	12	10
Strongly Agree	5	6	8

Teachers reported in all three surveys that when they do share resources when they are engaging in conversation related to the implementation of the materials. Constructive collaboration of staff members focused on specific instructional strategies that address specific needs of students provides the foundation for this study. Creating opportunities for teachers to openly discuss what works or what doesn't work in their classrooms is crucial to capacity

building among staff members. Explicit discussions among staff about what students are to learn

combining pacing guides, curriculum maps, and instructional resources are the building blocks

necessary for professional learning communities where individual capacity building may occur.

Based upon the responses above, teachers have shared resources and understand the importance

of discussing resources with colleagues. Participating in this study had no marked changes in

their attitudes toward sharing.

11. I discuss data with my colleagues.

Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

Table 21 Discussing Data with Colleagues

	Mean	Std. Deviation	N
DISCUSSING DATA	4.3889	1.03690	18
DISCUSSING DATA	4.6667	.84017	18
DISCUSSING DATA	4.4444	.61570	18

Table 22 Frequency for Discussing Data with Colleagues

Question #11- Discussing Data	Survey A	Survey B	Survey C
Never			
Once a School Year			
Once a Semester	4	1	
Quarterly	6	7	11
Weekly	5	7	6
Daily	3	3	1

Measuring the frequency at which students are discussing data is important if Acadia

Elementary is going to address student deficiencies in a timely manner. As the study progressed

teachers demonstrated an understanding of the need to discuss data on a more regular basis. The

most sizable change came in the quarterly response category. The researcher would suggest that

quarterly number changed primarily because at the participants were completing survey C

precisely at the same time as midterm reports were being sent home to parents. Discussing

student scores with other teachers appears to occur more frequently throughout the school during

these report card periods.

12. I feel comfortable sharing student scores from formative measures with my colleagues.

<div align="center">Strongly Disagree   Disagree   Agree   Strongly Agree</div>

Table 23 Comfort Level in Sharing Data with Colleagues

	Mean	Std. Deviation	N
STUDENT SCORES W COLLEAGUES	3.2778	.57451	18
STUDENT SCORES W COLLEAGUES	3.2778	.57451	18
STUDENT SCORES W COLLEAGUES	3.6111	.60768	18

Table 24 Frequency for Comfort Level in Sharing Data with Colleagues

Question #12- Student Scores w/ Colleagues	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	1	1	1
Agree	11	11	5
Strongly Agree	6	6	12

Unlike question nine surveying the frequency of time sharing, question 12 seeks to

uncover participant attitudes in openly discussing classroom data. Those teachers that strongly

agreed that they do feel comfortable sharing data with colleagues doubled from surveys A and B

to survey C. The researcher believes this to be evidence that the four collaborative tasks did

have a positive effect on the participants. Following the structured system created for this study

appears to have increased the comfort level of the participants. By giving the participants' tasks

to completed that required conversation related to student performance, pedagogy, and quality

assessments positively improved the attitudes to discussing data with colleagues.

13. I discuss data with my students.

Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

Table 25 Discussing Data with Students

	Mean	Std. Deviation	N
DISCUSS DATA W STUDENTS	4.7222	.82644	18
DISCUSS DATA W STUDENTS	4.6667	.84017	18
DISCUSS DATA W STUDENTS	5.0556	.93760	18

Table 26 Frequency for Discussing Data with Students

Question #13- Discuss Data W/ Students	Survey A	Survey B	Survey C
Never			
Once a School Year			
Once a Semester			1
Quarterly	9	10	4
Weekly	5	4	6
Daily	4	4	7

There was a slight difference between survey A and survey B results in regards to how often

teachers engage in discussion with students about data. However after the collaborative

component of the study, participants responded to survey C with an increased amount of

discussion about data with their students. More frequent assessments and a fairly manageable

data system appear to have encouraged the Acadia teachers to become more analytical about

their practice. Frequent, systematic assessments have been used as a means to analyze student

progress while monitoring whether or not the instructional program is achieving its desired goal.

Students at this elementary school are skill-assessed during each grading period. Students are grouped based upon the grade level assessments that have been created by skills which have been mapped according to state grade level standards. Individual results from these assessments are used to form instructional groups. Thirty to 45 minutes each day is devoted to these "PSSA Groups". So as not to be misconstrued with tracking, it is important to understand that groups are based upon the need to remediate skill deficiencies. High and low level ability students with the same areas of weakness are often in the same PSSA Group (homogenously grouped by skill and heterogeneously grouped by ability). By matching curriculum to state content and then assessing progress, teachers have become more aware of the skills that a student has mastered and which skills may be in need of remediation. Discussion with students about data has become part of the instructional program. The occurrence of teacher-student discussion about using data had increased slightly from the beginning to the end of the study.

14. I feel comfortable sharing student scores from formative measures with my students.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 27 Sharing Scores with Students

	Mean	Std. Deviation	N
SHARING SCORES W STUDENTS	3.4444	.61570	18
SHARING SCORES W STUDENTS	3.4444	.51131	18
SHARING SCORES W STUDENTS	3.5556	.51131	18

Table 28 Frequency for Sharing Scores with Students

Question #14- Sharing Scores W/ Students	Survey A	Survey B	Survey C

Strongly Disagree			
Disagree	1		
Agree	8	10	8
Strongly Agree	9	8	10

Question 14 was used to determine the comfort level in discussing formative assessment measures with their students. The teachers have received a moderate amount of professional development concerning how best to speak with students about individual test results. The principal of the building has encouraged teachers to engage in one-on-one conversations with students to explain individual strengths and weaknesses. Specific time is not allotted for these discussions. Teachers are adept at using non-instructional time (recess, transitional time, independent in-class work time, etc.) to discuss data related reading comprehension, reading and mathematical fluency, and mastery of various components of state standards in reading and mathematics. Results of this question indicate that participants feel reasonably confident in discussing data with students. There was not a marked change in responses from Survey A to Survey C. This may be attributable to this being a part of the action plan for the school. Also, the principal models this behavior as he has "PSSA Pow-Wows" with students. By using benchmark data to determine which students are realistically close reaching a level of proficiency in reading or mathematics. As the principal conducts daily walkthroughs, students are pulled to discuss how close they may be to earning a proficient score on the spring stat exam. Discussing data with a student is expected of the teachers and students are to be able to identify their own strengths and weaknesses.

15. I feel comfortable sharing student scores from formative measures with the parents of my students.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 29 Sharing Scores with Parents

	Mean	Std. Deviation	N
SHARING SCORES W PARENTS	3.4444	.61570	18
SHARING SCORES W PARENTS	3.4444	.51131	18
SHARING SCORES W PARENTS	3.5000	.51450	18

Table 30 Frequency for Sharing Scores with Parents

Question #15- Sharing Scores W/ Parents	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	1		
Agree	8	10	9
Strongly Agree	9	8	9

The summary for question 15 will follow question 16.

16. I discuss data with the parents of my students.

Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

Table 31 Discussing Data and Formative Assessments with Parents

	Mean	Std. Deviation	N
FORMATIVE ASSESSMENTS W PARENTS	3.4444	.92178	18
FORMATIVE ASSESSMENTS W PARENTS	3.6111	.91644	18
FORMATIVE ASSESSMENTS W PARENTS	3.8333	.98518	18

Table 32 Frequency for Discussing Data and Formative Assessment with Parents

Question #16- Formative Assessments w/ Parents	Survey A	Survey B	Survey C
Never			
Once a School Year	2	1	1
Once a Semester	9	9	6
Quarterly	4	4	7
Weekly	3	4	3
Daily			1

Questions 15 and 16 have been combined because question 15 asks about the comfort level in discussing data with parents while question 16 asks how often discussions occur. Along with discussing data with students, there is an expectation for informing parents about their child's progress throughout the school year. Results of all formative and summative assessments are either sent home with the students or are mailed home. Parents are expected to review assessment scores with their child and sign various reports to indicate that they are aware of assessment results. Conferences are conducted in both the fall and the spring and teachers use individual student data to provide the foundation for discussion. Teachers also use this time to describe how future instruction will remediate individual student deficiencies. Also, a majority of the teachers often contact parents via email and the phone to discuss student grades and school-wide tests. There were no considerable differences between Survey A, Survey B, or Survey C. It is not surprising to this researcher that teachers feel a certain level of comfort in discussing data with parents, because it is a part of the accepted culture in the community.

There is an expectation that teachers will keep the parents informed of student progress. Teachers at Acadia have worked diligently to partner with parents to help all students succeed. It is also important to note the school district uses an online gradebook, lesson plans and planned courses are posted on the internet, and a homework hotline is updated daily so that parents can hear the assignments. Each student has an assignment book that is not only used to record

assignments, but also often is used as a communication log between the teacher and the parents. As has been stated earlier, all assessment measures are sent home immediately after they are scored for the parents information. The principal holds monthly parent meetings to explain how to read the data that is being sent home and how best to talk to their children about the assessments.

Table 32 indicates a moderate change in how often data is discussed with parents. With all of the means of communication with parents mentioned above, teachers may be indirectly contacting parents on a daily basis through the computer, the phone, or through the assignment book. Parents are being kept up-to-date on what their child has scored on in-class assessments as well as more formal assessments.

17. I am able to use student data to improve instructional practices?

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 33 Ability to Use Data to Change Practice

	Mean	Std. Deviation	N
DATA FOR INSTRUCTION	3.1667	.38348	18
DATA FOR INSTRUCTION	3.1667	.61835	18
DATA FOR INSTRUCTION	3.3889	.50163	18

Table 34 Frequency for the Ability to Use Data to Change Practice

Question #17- Data For Instruction	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree		2	
Agree	15	11	11
Strongly Agree	3	5	7

It is difficult for the researcher to analyze the results of this survey question. Being the building principal brings an increased level of bias to the responses found in Table 34. A significant amount of discussion at grade level meetings and building wide professional development has been used to express the importance of using data to make informed instructional decisions. Teachers know that they are to be developing lessons based upon how teachers are scoring on assessments. However, as question six indicated, teachers are not in full agreement concerning the amount of training needed to significantly impact instruction. Teachers know that they are supposed to be using data to improve daily practice, but may not yet know how link pedagogy to the achievement data. By Survey C all teachers either agreed or strongly agreed that they are able to use data to improve instruction, however through observation in the Acadia classrooms more professional development is necessary.

18. Data has made teaching more difficult.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 35 Data Making Teaching More Difficult

	Mean	Std. Deviation	N
DATA MAKING TEACHING DIFFICULT	2.2222	.73208	18
DATA MAKING TEACHING DIFFICULT	2.0000	.68599	18
DATA MAKING TEACHING DIFFICULT	2.1667	.70711	18

Table 36 Frequency for Data Making Teaching More Difficult

Question #18- Data Making Teaching Difficult	Survey A	Survey B	Survey C
Strongly Disagree	2	4	2
Disagree	11	10	12
Agree	4	4	3
Strongly Agree	1		1

The majority of participants do not believe that using data for instruction has made teaching more difficult. The standard deviation indicates a somewhat polarized response. It is somewhat surprising that more participants did not respond in the agree or strongly agree categories. The teachers do not share the perspective of the building principal that data has indeed made instruction increasingly more difficult. In the opinion of this researcher, knowing the strengths and weaknesses of each student in the class based upon formative and summative measures and knowing that future assessments will measure growth in those particular areas does, , add numerous complexities to teaching in the elementary classroom.

The professional development plan for the school for the 2006-2007 school year is to match reading strategies to the individual needs of the students in each classroom. Strategies are determined based upon scores from DIBELS, 4-Sight Benchmark Assessments, Developmental Reading Assessments, local state formatted assessments, and various in-class assessments. Analyzing results from these assessments and determining the most appropriate method for remediation is challenging for teachers. However, the culture of the building is to use assessment for instructional advantages to provide the most appropriate learning environment for the students.

Teachers have also been acclimated to the nuances of differentiated instruction and the methodology of a guided reading approach. As with any instructional methodology some teachers are more adept at teaching to individual students than others, teachers are working from a renewed sense of urgency and are not spending time on skills that have already been learned. Pacing guides have been arranged for rigorous instruction, and in order to meet the spring testing window for the PSSA teachers must provide instruction where it is most needed.

It may be the perception of the participants that providing instruction where it is most needed is teaching smarter and that it has made instructional planning easier rather than more difficult. More research is needed to determine why such a discrepancy exists.

19. Student formative assessment scores should be the primary indicator of student skill level.

Strongly Disagree Disagree Agree Strongly Agree

Table 37 Formative Assessment Measures Indicative of Student Progress

	Mean	Std. Deviation	N
ASSESSMENT AS THE PRIMARY INDICATOR	2.5556	.61570	18
ASSESSMENT AS THE PRIMARY INDICATOR	2.7778	.54832	18
ASSESSMENT AS THE PRIMARY INDICATOR	2.6111	.50163	18

Table 38 Frequency for Formative Assessment Measures Indicative of Student Progress

Question #19-Assessment as the Primary Indicator	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	9	5	7
Agree	8	12	11
Strongly Agree	1	1	

The summary for question 19 will follow question 22.

20. Student assessment scores are an appropriate indicator of student skill level.

Strongly Disagree Disagree Agree Strongly Agree

Table 39 Formative Measure as Indicators of Student Skill Level

	Mean	Std. Deviation	N
DATA AS A TRUE INDICATOR	2.7222	.57451	18
DATA AS A TRUE INDICATOR	2.9444	.41618	18
DATA AS A TRUE INDICATOR	3.0000	.48507	18

Table 40 Frequency for Formative Measures as Indicators of Student Skill Level

Question #20- Data as a True Indicator	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	6	2	2
Agree	11	15	14
Strongly Agree	1	1	2

The summary for question 20 will follow question 22.

21. Effective use of data by the teacher improves student achievement.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 41 Data Improves Teaching

	Mean	Std. Deviation	N
DATA IMPROVES TEACHING	3.1667	.38348	18
DATA IMPROVES TEACHING	3.1111	.32338	18
DATA IMPROVES TEACHING	3.3333	.48507	18

Table 42 Frequency for Data Improving Teaching

Question #21- Data Improves Teaching	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree			
Agree	15	16	12
Strongly Agree	3	2	6

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The summary for question 21 will follow question 22

22. Using data for instructional decision-making will produce higher student achievement on summative measures.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 43 Data Producing Higher Summative Results

	Mean	Std. Deviation	N
USING DATA WILL IMPROVE ACHIEVEMENT	3.0000	.48507	18
USING DATA WILL IMPROVE ACHIEVEMENT	3.1111	.32338	18
USING DATA WILL IMPROVE ACHIEVEMENT	3.2778	.46089	18

Table 44 Frequency for Data Producing Higher Summative Results

Question #22- Data Will Improve Achievement	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	2		
Agree	14	16	13
Strongly Agree	2	2	5

Responses for questions 19, 20, 21, and 22 remained somewhat stagnate throughout the study. As observed in question 19 (Table 38), 61% believe that student formative assessment should be the primary indicator of student skill level, while 39% did not. Many teachers throughout the building remain resolute in their belief that student achievement can not be measured by a paper and pencil test. Balancing between the amounts of data that are distributed to teachers about the progress of their students and the education of the whole child is challenge to all stakeholders in the educational process. Teachers constantly remind the building principal to not reduce educational decisions to solely data and test results.

Formative assessments may provide the starting point at clearly understanding the student, but knowing why the student is struggling involves at clear understanding of reading strategies and various intervention and the school remediation programs. Recognizing the learning problems, attempting to develop instructional techniques that best meet the child's needs, and assessing student growth are starting points for the teachers. Response to Intervention groups, the Instructional Support Team, Title I, and Learning Support may also provide important information about student abilities.

The data utilized at Acadia is solely restricted to reading and mathematics. Teachers and parents perceive all courses as contributing to student achievement. Science, social studies, English, health, physical education, art, and music all contribute toward improving student achievement. Teachers and parents express concern about the overwhelming focus on reading and math mandate by both the state and federal governments.

The most significant change in teacher responses to question 21 was the eight teachers disagreeing with use of data improving student achievement to just two after completing all eight study tasks. Responses to questions 22 indicated more teachers strongly agreeing with the possibility of students scoring higher on assessments as a result of more informed instructional decision-making.

23. Using data for instructional decision-making will make me a better teacher.

       Strongly Disagree   Disagree   Agree   Strongly Agree

Table 45 Improving Instructional Practice Through the Use of Data

	Mean	Std. Deviation	N
DATA WILL IMPROVE INDIVIDUAL PRACTICE	3.1111	.47140	18
DATA WILL IMPROVE INDIVIDUAL PRACTICE	3.1111	.32338	18
DATA WILL IMPROVE INDIVIDUAL PRACTICE	3.2778	.46089	18

Table 46 Frequency for Improving Instructional Practice Through the Use of Data

Question #23- Data Will Improve Practice	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	1		
Agree	14	16	13
Strongly Agree	3	2	5

24. I alter instructional practices to meet the needs of individuals based student data derived from formative assessments.

Strongly Disagree   Disagree   Agree   Strongly Agree

Table 47 Altering Practice Based Upon Individual Student Need

	Mean	Std. Deviation	N
INDIVIDUAL MAKES DECISIONS BASED ON DATA	3.0000	.59409	18
INDIVIDUAL MAKES DECISIONS BASED ON DATA	3.2222	.54832	18
INDIVIDUAL MAKES DECISIONS BASED ON DATA	3.0556	.41618	18

Table 48 Frequency for Altering Practices Based Upon Individual Student Need

Question #24- Individual Makes Decisions Based on Data	Survey A	Survey B	Survey C
Strongly Disagree			
Disagree	3	1	1
Agree	12	12	15
Strongly Agree	3	5	2

Questions 19-22 reflect teacher attitudes concerning the connections between using data and student achievement. In questions 23 and 24 the focus shifts to the teacher's perception of his or her own skill in using data to provide better instruction. Question 23 indicates a three teacher shift from agreeing that data improves instruction to strong agreeing by the end of survey C. The responses from question 24 show the majority of teachers agreeing or strongly agreeing that instructional practices and the use of building adopted strategies has changed and that they do understand that instruction should be designed to meet the needs of the individual student.

25. Quality instruction is measured by student achievement results on formative assessments.

              Strongly Disagree   Disagree   Agree   Strongly Agree

Table 49 Measuring Instruction Based Upon Student Performance

	Mean	Std. Deviation	N
INSTRUCTION MEASURED BY STUDENT ACHIEVEMENT	2.3889	.50163	18
INSTRUCTION MEASURED BY STUDENT ACHIEVEMENT	2.6667	.84017	18
INSTRUCTION MEASURED BY STUDENT ACHIEVEMENT	2.7778	.73208	18

Table 50 Frequency for Measuring Instruction Based Upon Student Performance

Question #25-Instruction Measured by Student Achievement	Survey A	Survey B	Survey C
Strongly Disagree		1	
Disagree	11	7	7
Agree	7	7	8
Strongly Agree		3	3

Question 25 produced the most inconsistent responses throughout the study. Many teachers appear not to be willing to directly connect their instruction to student performance on formative measures. The responses to this question reflect the need for more opportunities for teachers to connect classroom instructional practices to student performance. Throughout discussions during the past school year, teachers are becoming increasingly concerned with the value-added approach being implemented throughout the state of Pennsylvania. Supporters of the value-added approach welcome the opportunity to chart individual student progress during a school year. Most proponents of tracking student progress through value-added assessments believe that students are making gains. Although some are not achieving at a level of proficiency on the state exam, they are making gains. This is especially true of learning support students.

Those participants who are not in agreement with judging teaching ability by student assessment scores believe that there are external variables that may supersede instructional performance. Parental issues, socioeconomic status, and a general feeling of apathy by students and parents present numerous challenges for the teachers. However, Marzano (2003) points out that the most important variable in student learning is the teacher. The instructional performance of the teacher has proven in many cases to override numerous barriers to learning.

Emphasis at Acadia has shifted from working isolation to improve test scores toward a more collaboration professional learning community. The building administrator has designed this study in a deliberate attempt at creating opportunities to collaborate and learn from colleagues. All 18 participants are good at many aspects of instruction and could benefit from sharing with and listening to the perspectives of their colleagues in discussions concerning improve academic performance of students. Changing working habits by creating opportunities and structure for teachers to work together and solve problems may to some make the teaching profession more rewarding. Also, working with a colleague using ongoing formative assessment measures seems like a timely approach at immediately dealing with student deficiencies.

5.0   DISCUSSION

"Sometimes the obvious answer is not the most accurate answer" (Schlechty, 2002).

The primary purpose for this researcher was to develop a more comprehensive understanding of the connections between data and capacity building among teachers. The research question that provided the foundation for this study was to determine how data could effectively be used to improve instruction, learning, and the professional growth of teachers. Through utilizing data disaggregation techniques teachers were to determine strategies for developing a community of learners, reflect more intensely on instruction and student learning, and determine the extent to which using formative assessment results refines practice and promotes sustainability.

In schools throughout the United States, administrators are attempting to comply with NCLB requirements and as a result are encouraging teachers to become more results driven. Curriculum maps, local assessments, and state preparation exams are frequently administered to chart student academic growth. The school day has become increasingly more complex for both the student and teacher. The responsibility of using and working with data to improve instruction weighs heavily upon teachers and administrators who in some cases may be untrained in transforming data into improved instruction and learning. It has been the intention of the building principal, and researcher of this study, to build both a system of data disaggregation and to build the confidence of the teachers in using student achievement data. It was also the

intention of this research to develop a data system that is able to measure sustainability for methods of improved student performance.

5.1   CONCLUSIONS

The principal of this elementary school has chosen to use data to improve instruction and learning for each classroom and each student in the building. Utilizing data to improve the quality of pedagogy and to build confidence in teachers is an ominous challenge for many in education. Because of numerous variables, using data to plan lessons can be rather complex to teachers that have previously relied upon instinct and professional judgment.   Although the assessments are common to the entire school population, the needs of each student are diverse. Therefore building capacity among teachers and creating situations where expertise can be shared among staff will most likely produce a more student-centered environment.

The purpose of the research was to have teachers examine student data and engage in meaningful conversation with colleagues to determine the best strategies for increasing learning and diagnosing learning problems among students. Individual and partner data disaggregation met the suggestion of Bernhardt's (2005) model for data analysis for productive schools. The intention of the study was to determine whether the process changed the attitudes of teachers and/or made them better diagnosticians and more open with sharing results with colleagues and making suggestions to improve instruction and learning.   This chapter aims to address the four questions presented in Chapter One as the purpose of this study.   It then provides recommendations and themes that emerged throughout the duration of the study.

The purpose of this study was to consider the effectiveness of using data to improve instruction and learning at one Pennsylvania elementary school. The questions that provided the basis of this research:

How does using data change how teachers meet the needs of their students while at the same time build capacity among the learning community?

1. What strategies can be used to develop a community of learners to assist in improving student achievement?

2. To what extent does using a framework of data disaggregation result in teachers becoming more reflective about practice assist in building capacity among teachers throughout an elementary school?

3. To what intent do the results of formative assessments refine instructional practice and create sustainable professional growth of faculty?

Responses from surveys used in the quasi-experimental design with a convenience sample utilizing analysis of covariance with repeated measures for statistical analysis was implemented. A quantitative, experimental research methodology was chosen to test the hypothesis of a possible cause-and-effect relationship between careful inspection of student achievement data, instructional planning, and capacity building among a group of elementary school teachers. Responses did not yield a significant difference in attitudes of the teachers between survey A and survey C. Although several responses approached being statistically significant, responses were generally polarized by the participants. Most responses were favorable in relation to using data as an instrument for change. Most participants also started, as evidenced in survey A, with a favorable attitude toward data. The fact that a majority of the

building teachers participated in the study allowed opportunities for teachers to engage in meaningful conversations about student learning and instructional techniques. Most teachers commented that they enjoyed working with colleagues throughout the study and described positive encounters while dialoging with their partners. The study format allowed teachers to work with one another, build a strong working rapport, and establish trust in discussing data and sensitive topics about instruction.

Although the study has reached its logical conclusion, several partner groups still exist and discussion in team level and building meetings focus on searching for evidence that student learning is occurring. Data has and will be an integral part of the daily professional development of the staff at Acadia. Teachers that have participated in the study have also become more inquisitive and interested in what building level colleagues are doing in their classrooms. Participating teachers have been noticeably more open with their student results and are openly providing suggestions to peers to improve instruction. Therefore, it is the belief of this researcher that this study did address the research questions and that the process of the study did affect the attitudes of teachers and an increased professional capacity of participating teachers. Teachers have become more reflective and are making a more conscious effort to use data as the foundation for instructional decisions.

5.2   STUDY RECOMMENDATIONS

School Recommendation 1: Develop a school wide plan for organizing and distributing data to teachers.

First, School leadership should concentrate on a proactive approach to distribute usable data and develop a plan that addresses the need for teachers to receive data in a simplified format. Continuous distribution of data results from formative and summative assessments may be counter productive to using data for instructional decision making.

Second, to further engage in distributive leadership practices, solicit the assistance of teachers that seem to have an understanding of the power of data in the classroom to become a member of the school wide data committee. A data committee may allow teachers and school staff to best determine how the entire teaching population could receive data and implement effective strategies to improve pedagogy.

Thirdly, explore resources already developed to develop the theoretical framework for using data for school wide improvement. For example, using Bernhardt's (2004) *Data Analysis for Continuous School Improvement* in a book study format with staff would allow teachers and administrators to develop a framework for data discovery. A group book study would also provide staff with an opportunity to build shared knowledge by discussing an overwhelming amount of data available for teachers.

Finally, the data committee may distribute weekly suggestions on how best to deal with data related issues in the classroom. Providing teachers with a simple way to incorporate student assessment results to an evidence-based instructional strategy may provide a springboard for further data integration. A weekly message would serve several purposes: first, linking data to the daily classroom practices would convey a message of importance to all stakeholders; second, continuously reinforcing sound data disaggregation and integration techniques will educate the staff encouraging teaching professionals to become more diagnostic in practice.

School Recommendation 2: Provide many opportunities for teacher training

Developing a professional learning community that shares a common vocabulary, a common understanding of the effects that data may have on instruction and the programs offered throughout the school, may also determine specific services that individuals may receive as a natural outcome of the data. School goals for data integration may best be reached with well-designed professional development opportunities. Using in-service days, faculty meetings, team meetings, etc. to train staff and engage in action research to address school issues may develop confidence in individual teachers.

Schools may also wish to consider providing individualized professional development for staff based upon the student achievement results. Building and district administrators may want to conference with teachers to analyze any possible trends that may indicate instructional deficiencies. As administrators learn about student achievement results from individual teachers, professional pairings could be developed to encourage dialogue between a teacher with an instructional strength and a teacher whose students are not performing at an acceptable level with a particular skill. As part of an individualized professional development plan, teachers may be encouraged to collaborate to better meet the needs of all students.

The lockstep, regimented school schedule makes change difficult. However, considering small pockets of time for teachers to collaborate around school issues that are evidenced through data, teachers can make changes to their teaching repertoire. Time is limited during the school day and contractual issues may dictate how time can be utilized before, during, and after the school day. Challenges that the teaching contract and amount of curriculum that needs to be taught may be best addressed through nontraditional means of time management. How can

instructional aides be best utilized to provide opportunities for the teachers? Can music, physical education, and art classrooms at the elementary level be structured to develop common planning time for grade level teachers to develop intentional reading programs that address specific skill deficiencies of the individual students? School officials can become more creative at creating a school system that fits academic issues of students.

School Recommendation 3: Be patient with the staff

It is crucial to begin by understanding that teachers are on different points on the data continuum. Some teachers bring a wealth of knowledge, experience, and an interest in using data for planning and evaluating lesson design. Others however have not been using data and do not feel that data should be used to determine the effectiveness of the teacher, the classroom tasks, or whether the classroom assessments truly measure what the students are supposed to learn. Developing collaborative opportunities so that teachers can work together to assist one another in how best to develop and deliver quality lessons may not be a common occurrence in most schools. Having empathy for teachers new to using student achievement data without deviating from the school organizational plan would provide reassurance that all teachers can and must effectively use data.

5.3   IMPLICATIONS FOR FUTURE RESEARCH

Studying the effects of data and how it can effectively be utilized to build capacity among teachers is important at levels of K12 education. Future research may involve studying a larger sample size in schools where teachers are new to the idea of connecting data and instruction. It

may be productive to develop a study comparing two or more schools analyzing the leadership approach to data. An interesting study would be to compare school data disaggregation plans in elementary schools from various states where guidelines and mandates for achieving NCLB requirements may be different.

Future researchers may find it helpful to use a more longitudinal approach studying changes in teacher attitudes over one or more school years. This study was conducted over a period of eight weeks. It may be more beneficial for teachers to complete more tasks over a longer period of time. The "task-a-week" approach may have been extended to allow for the completion of a single task each month.

This study concluded that the most effective change in teachers concerning data occurred during the phase in which collaboration was a requirement. Partnering teachers from the beginning of the study may be more beneficial for future research in order to obtain more than marginal gains. During the collaborative tasks, teachers were able to discuss apprehension about the use of data with another teacher who may not have shared similar concerns. The dialogue in those instances was very effective. Future research may use the collaborative aspect of this study as the starting point rather than the culminating aspect of a study. Furthermore, it may be beneficial to develop strategies to enlighten teachers on recent research that illustrates the connection between teaching ability and student achievement.

TEACHER DATA SURVEY

Directions: *Read the statements below and choose the response that best describes your thoughts.*

1. I have been teaching for:

     0-5 years   6-10 years   11-15 years   16-20 years   21 or more years

2. I have been teaching at the current grade level for:

          0-5 years   6-10 years   11-15 years   16-20 years   21 or more years

3. Using data for instructional decisions has provided me with useful insight about my students in the past.

          Strongly Disagree   Disagree   Agree   Strongly Agree

4. I have changed my teaching style as a result of using student data.

          Strongly Disagree   Disagree   Agree   Strongly Agree

5. I plan my reading lessons with individual student scores from formative assessments.

          Strongly Disagree   Disagree   Agree   Strongly Agree

6. I have had sufficient training in analyzing data from frequent formative assessments.

          Strongly Disagree   Disagree   Agree   Strongly Agree

7. The amount of time that I spend conferencing with my colleagues in regards to data and lesson design is:

        Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

8. By closely examining a colleague's formative assessment results in reading, I could diagnose student deficiencies and provide suggestions lesson design.

        Strongly Disagree   Disagree   Agree   Strongly Agree

9. The amount of time that I share instructional resources with colleagues is:

        Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

10. I have taken time to explain materials that I have shared with a colleague.

        Strongly Disagree   Disagree   Agree   Strongly Agree

11. I discuss data with my colleagues.

        Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

12. I feel comfortable sharing student scores from formative measures with my colleagues.

        Strongly Disagree   Disagree   Agree   Strongly Agree

13. I discuss data with my students.

        Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

14. I feel comfortable sharing student scores from formative measures with my students.

        Strongly Disagree   Disagree   Agree   Strongly Agree

15. I feel comfortable sharing student scores from formative measures with the parents of my students.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

16. I discuss data with the parents of my students.

          Never   Once a School Year   Once a semester   Monthly   Weekly   Daily

17. I am able to translate student data into improved instructional practices?

          Strongly Disagree   Disagree   Agree   Strongly Agree

18. Data has made teaching more difficult.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

19. Student formative assessment scores should be the primary indicator of student skill level.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

20. Student assessment scores are a true indication of student skill level.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

21. Effective use of data by the teacher improves student achievement.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

22. Using data for instructional decision-making will produce higher student achievement.

                        Strongly Disagree   Disagree   Agree   Strongly Agree

23. Using data for instructional decision-making will make me a better teacher.

  Strongly Disagree   Disagree   Agree   Strongly Agree

24. I alter instructional practices to meet the needs of individuals based student data derived from formative assessments.

  Strongly Disagree   Disagree   Agree   Strongly Agree

25. Quality instruction is measured by student achievement results on formative assessments.

  Strongly Disagree   Disagree   Agree   Strongly Agree

DEMOGRAPHIC DATA ANALYSIS

Directions: Analyze your data and label student demographic information checking the columns that apply.

1. Programs:

Student Name	Special Education	Title I	After-School Tutoring	Economically Disadvantaged
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

A.   Summarize the services that your students are receiving.   Include within your summary how you are addressing students that are not currently enrolled in a remedial program.

2. Attendance:

Student Name	Number of Days Absent	Number of Days Tardy
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

B. List three strategies used to supplement instruction for absent or tardy students.
    1.

    2.

    3.

3. Gender:

Describe male/female differences for your bottom ten readers.

4. Location and Grouping within the Room:

Describe the physical location of your bottom 10 readers in the classroom.

Describe how you group students for cooperative learning activities.

SCHOOL ACHIEVEMENT DATA ANALYSIS

Reading

1. Complete the chart below **looking only at reading scores of your bottom 10 readers**:

STUDENT NAME	PSSA 2006	KAMICO % GRAD PD 1	KAMICO % GRAD. PD 2	4-ST % BASE	4-ST % 1	4-ST % 2	REPORT CARD GRADE 1	REPORT CARD GRADE 2
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

2. Looking at the Kamico and 4-Sight columns, summarize report card scores and your interpretation of the connections or disconnections between assessments.

3. Based upon the disaggregated data from the Kamico tests and the 4-Sight tests, describe how you intend on addressing areas of concern for the lower readers in your classroom:

Student Name	Action Steps of Remediation for Each Student:
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Using the *Inventing Schools that will Meet the Challenges of NCLB* handout, speculate how instructional strategies, classroom assessments, Kamico test scores, & 4-Sight Benchmark tests may come closer together.

INDIVIDUAL TASK # 3

SCHOOL PROCESS
DATA ANALYSIS

Directions: Evaluate the programs that are part of the Acadia routine. Describe your thoughts concerning the programs listed below. When responding, use data information from individual tasks one and two to support your answers.

1. Reading blocks with stand and eligible content based curriculum.

2. PSSA Skill Groups-

3. Title I (time, entrance, and curriculum)-

4. Special Education (time, entrance, and curriculum)-

5. Remedial Services (After-School Tutoring, morning Study Island time, summer school, other).

INDIVIDUAL TASK # 4

INDIVIDUAL PERCEPTIONS
DATA ANALYSIS

Directions: Evaluate the progress and setbacks that your students have experienced throughout the first semester. Base your responses on the data collected for your bottom ten readers through student assessment as listed in tasks 1-3.

1. Write a paragraph to summarize SUCCESSES that your students have experienced in relation to the Pennsylvania Assessment Anchors and Eligible Content as exemplified through Kamico and 4-Sight assessments.

2. Write a paragraph to summarize DISAPPOINTMENTS that your students have experienced in relation to the Pennsylvania Assessment Anchors and Eligible Content as exemplified through Kamico and 4-Sight assessments.

3. Using the *Inventing Schools that Will Meet the Challenges of NCLB* activity, list strategies that may address any of the disappointments listed in question number two describing actions that could be taken.

4. What in our system and/or practices could be contributing to student deficiencies?

PARTNER SKILL ANALYSIS

1. List three skill sets, as defined through the Pennsylvania Assessment Anchors, that the students from your partner's class have experienced SUCCESS this school year (*ex. main idea, compare/contrast, etc.*).

     a.   b.   c.

2. Using your own classroom roster, list the top three areas of success that your students experienced this school year.

     a.   b.   c.

3. Compare, contrast, and summarize commonalities between both groups.

4. List three skill sets, as defined through the Pennsylvania Assessment Anchors, that the students from your partner's class DID NOT EXPERIENCE SUCCESS.

     a.   b.   c.

5. Using your own classroom roster, list the three areas of student achievement in which you are most disappointed.

a.   b.   c.

6. Compare, contrast, and summarize commonalities between both groups.

7. Discuss with your partner and list three strategies that you have used to when teaching the skills listed in question #2.

      a.   b.   c.

8. Discuss with your partner and list three strategies that may improve instruction of skills listed in question #4.

      a.   b.   c.

INSTRUCTIONAL STRATEGY CONNECTION

1. Without your partner, individually rank in order the adopted reading strategies that the two of you believe have been most effective with your students.

_____ Frayer Model Vocabulary Strategy

_____ KWL Charts

_____ Powerstrips

_____ Connection Cards

_____ Summarization

_____ Guided Repeated Reading

_____ Repeated Reading

2. Compare the rankings with your partner and circle strategies that were the top three for both of you.

Frayer Model Vocabulary Strategy

KWL Charts

Powerstrips

Connection Cards

Summarization

Guided Repeated Reading

Repeated Reading

3. Using the *Partner Skill Analysis* (Cooperative Task #1) handout as well as the *Inventing Schools that Meet the Challenges of NCLB* handout, choose and discuss strategies that would best address the primary skill deficiency of students in your reading classrooms.

Lowest Skill & Strategy Suggestion from Your Partner:

COLLABORATIVE TASK # 3

PARTNER INSTRUCTIONAL ANALYSIS

Directions: *Discuss the statements or questions with your partner and record your reflections below.*

1. Discuss ways in which data from reading can be applied across all disciplines.

2. Provide three strategies that you or your partner have tiered a lesson through differentiation based upon data from reading assessments.

3. Discuss with your partner the adopted reading strategies:

    a. **Frequency:** How often do you utilize the strategies below while teaching a reading lesson *(circle the three most often used)*?
        Frayer Model Vocabulary Strategy:

        KWL Charts

        Powerstrips

        Connection Cards

        Summarization

        Guided Repeated Reading

        Repeated Reading

b. **Comfort Level:** Discuss these strategies and how comfortable you are in designing and delivering a lesson using the following strategies *(circle the three that you feel most comfortable with)*:

Frayer Model Vocabulary Strategy:

KWL Charts

Powerstrips

Connection Cards

Summarization

Guided Repeated Reading

Repeated Reading

c. **Student Use:** Attempt to characterize student perceptions of the strategies listed below *(circle the three that your students enjoy working with the most)*:

Frayer Model Vocabulary Strategy:

KWL Charts
Powerstrips

Connection Cards

Summarization

Guided Repeated Reading

Repeated Reading

4. In strategizing with your partner, describe how you have or have not been able to connect teaching strategies and student achievement.

C<small>OLLABORATIVE</small> T<small>ASK</small> # 4

PRIORITY ACHIEVEMENT TARGETS

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Performance Targets
- Assessment Anchors/Eligible Content
- Targets are determined by what the students should know, should be able to do, and what they are expected to gain from our teaching actions.

  4 Categories of Performance Targets
  a. Cognitive- What students know
  b. Demonstrative- What students can do
  c. Behavioral- What students chose to do.
  d. Affective- How they feel about themselves and the situation that they are part of in the classroom and in the school.

Based upon Kamico Scores, in-class assessments, and teacher judgment, discuss how the students addressed the performance targets that have been established through grade level maps, reading curriculum, and Eligible Content. Be specific in defining skills that students mastered or did not master prior to the end of the school year.

Process Targets
- Techniques or strategies that are part of your teaching repertoire.
- Specific improvements that you would like to see in yourself (For example, you might want to improve your ability to conduct classroom discussions or become better at modeling problem-solving strategies).

Briefly describe two instructional strategies that you have used and believe were most effective and developmentally appropriate for your students. Also, describe areas in instructional practice that could improve if you had more effective techniques to deliver instruction.

Program Targets
- Outcomes for an entire classroom
- Dealing with the impact of programs on the group rather than individual students.

Describe two skills that based upon this year's student performance results should be an area of focus for this school. What changes would you like to see in your students as a whole by the end of the school year.

Write one action step you will use to improve instruction and learning in each of the three target areas:

Performance:

Process:

Program:

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