A CASE STUDY OF PRINCIPAL ENGAGEMENT, TEACHERS' SELF-REFLECTIONS, AND STUDENT MATHEMATICS ACHIEVEMENT IN A TITLE I SCHOOL

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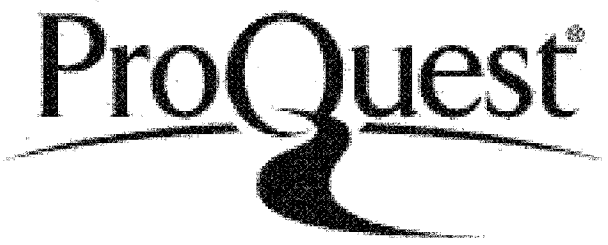

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DEDICATION

I dedicate this body of work to my loving, supportive husband, Rodney Maxwell Lemons. Without your patience, and your support with "keeping me on task" this dissertation could not have happened. Thank you for loving me through the madness. To my three sons, Christopher, Jordan, and Jeremiah, I thank you for always believing in me and encouraging me. Your unconditional love makes me who I am. To my beautiful mother, Annie R. Burton, you are the wind beneath my wings! Thank you for believing in me and always telling me that "I can"!

Above all, I thank my Lord and Savior, Jesus Christ, for walking with me along this journey and for carrying me when I felt like I couldn't go on...where would I be without You?

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ABSTRACT

CHANDRA D. LEMONS
A CASE STUDY OF PRINCIPAL ENGAGEMENT, TEACHERS' SELF-REFLECTIONS, AND STUDENT MATHEMATICS ACHIEVEMENT IN A TITLE I SCHOOL
Under the direction of OLIVIA M. BOGGS, ED.D.

This single site qualitative study examined the issue of low student achievement in mathematics in the state of Georgia using data from the Criterion Referenced Competency Test (CRCT), the Georgia High School Graduation Test, SAT scores, ACT scores and scores from the National Assessment of Educational Progress (NAEP). The purpose of the study was to examine the extent to which principal engagement with teachers impacted how teachers self-reflect on their instructional practices to make changes that led to student achievement in mathematics. A case study analysis of a suburban, metropolitan Title I elementary school was used.

One overarching and four supporting research questions guided the study: How do Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices? The supporting questions were: (a) how do principals actively engage teachers in conversations concerning instruction; (b) to what extent do teachers' conversations with principals lead to self-reflection on their instructional practices; (c) in what ways do teacher reflections guide instructional practices and (d) what types of conversations occur between principals and teachers that cause teachers to change their instructional practices.

The researcher conducted five semi-structured, open-ended one-one one Interviews, one focus group interview and observed a professional learning community session. The participants included teachers and the principal of the school, in order to explore each perspective, and to understand the impact of teacher and principal engagement that leads to teacher reflection to increase achievement. Findings were generated through eight themes that were identified through data analysis: (a) feedback to teachers, (b) support for teachers, (c) student achievement, (d) honest dialogue, (e) teacher accountability, (f) reflective practice, (g) collaborative conversations, and (h) formal one-on-one conversations.

The results of the study indicate that conversations between teachers and the principal do lead to teacher reflection resulting in teachers making changes in their instructional practices. The study concluded that conversations between principals and teachers must be honest where teachers are accountable for student achievement, and students in all communities must be taught at the highest level in order for achievement to occur.

CHAPTER 1

INTRODUCTION TO THE STUDY

During the launch of the "Effective Schools Movement" (Brandt, 1989; Edmonds, 1979; Lezotte 1984) 12 key factors emerged from the literature as particularly significant. Of the 12, the following five focused on the involvement of the teacher in the instructional setting: (a) consistency among teachers; (b) intellectually challenging teaching; (c) maximum communication between teachers and students; (d) involvement of teachers; and (e) a work centered-environment. Most recent research supports an insignificant direct effect of school principals on student success. The research supports a significant indirect impact of leadership on student achievement by the way a school is managed, resources distributed and used, school climate, and professional learning initiatives (Witziers, Bosker, & Krüger, 2003). Changes in our political climate have required a shift in focus for principals from meeting the needs of adults in the school to student learning; this modification requires a change in thought and action (Wise & Jacobo, 2010).

The research study investigated the relationship of principal engagement with teachers and teachers' self-reflective practices that led to student achievement in mathematics in a Title I school. The study was structured around five chapters: Introduction, Literature Review, Methodology, Results and a Discussion of the Findings.

Chapter 1 provides an overview of the study and discusses the problem statement, the purpose of the investigation, research questions, theoretical framework, procedures,

and significance of the study. It also includes the definition of terms, limitations, delimitations and the significance of the study. Chapter 2 reviewed relevant literature and research on effective principal leadership, principal engagement with teachers and the effect on student achievement, teachers' reflective practices, and socio-cultural theory. Chapter 3 explained the specific procedures and research methodology. Chapter 4 presented the results for the findings based on data collected and chapter 5 summarized the research and discussed the researcher's major findings as related to the literature review. The final chapter also provided implications of the study and made recommendations for future research.

A Nation at Risk (National Commission on Excellence in Education, 1983), a substantial study of American schools which was sanctioned by the United States Department of Education to determine the condition of America's schools, brought in a national educational reform movement, calling for extensive change. These changes were to support schools in moving towards educational excellence (Blase & Blase, 2001). The report stated its findings as follows:

> If an unfriendly power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems, which helped make those gains possible. We have, in effect been committing acts of unthinking, unilateral educational disarmament. (National Commission on Excellence in Education, 1983 p.5)

Several studies have investigated the impact of principals on teachers' instructional practices that lead to student achievement. A study by Newmann and his colleagues (as cited in Fullan, 2007) confirmed that school capacity is achieved through the entire staff working together to improve student learning, including the principal.

The study identified five interrelated components for school capacity: (a) teachers' knowledge, skills, and dispositions; (b) professional community; (c) program coherence; (d) technical resources; and (e) principal leadership. According to Hallinger (1993), to improve organizational performance, transformational school leaders focus on the individual and collective perceptions, skills, and commitments of teachers.

Previous studies have documented the extent to which principals contribute to the *communities of learners* when they promote teacher reflection and professional growth (Blase and Blase, 1999; Walker & Slear, 2011). The 1999 study conducted by Blase & Blase showed that when teachers interacted with principals as they engaged in learning communities, the teachers reported positive changes in their instructive practices, including using various and innovative techniques and being willing to take risks. Walker and Slear (2011) found a positive relationship between principal behavior and teacher efficacy as well as high efficacy among teachers and high levels of student academic achievement. These and other studies further document the interactive roles of teachers and principals that lead to student outcomes (Reeves, 2006).

Leadership is a necessary condition for successful reform as related to the school-level, the teacher-level and the student-level (Marzano, 2003). Leithwood (1994) has offered research into transformation leadership concerning styles that stimulate organizational change. Understanding the dynamic relationship among curriculum, instruction and assessment, and the role of the principal on the impact of teacher reflection is necessary if we wish to improve the quality of teaching and learning in our schools (Sheard, 2004). Marzano (2003) lists three principle leadership characteristics that lead to effective leadership:

1. Leadership for change is most effective when carried out by a small group of educators with the principal functioning as a strong cohesive force.
2. The leadership team must operate in such a way as to provide strong guidance demonstrating respect for those not on the team.
3. Effective leadership for change is characterized by specific behaviors that enhance interpersonal relationships. (Marzano, 2003, p. 174-176)

Using prior research and the case study method of investigation, the study investigated the extent to which principal engagement with teachers led to teachers reflecting on their instructional practices; and whether these reflections impacted student achievement in the area of mathematics in a high poverty elementary school.

Statement of the Problem

Organizations such as the National Assessment of Educational Progress (2008) and The Education Trust (2010) have documented persistently low academic achievement and achievement gaps in mathematics. Students in the state of Georgia have consistent low achievement in the area of mathematics compared to student in other states. With The No Child Left Behind Act (U.S. Department of Education, 2001) and school staff, including principals, being held accountable for student achievement, there is a need for expanding the research on how principal leadership relates to the way teachers reflect on their instructional practices that will lead to changes in instruction to increase achievement. Because the way teachers teach affects the way students learn, it is critical for instructors to make adjustments to meet the needs of all learners as teacher success is defined by the success of students. (Martin & Furr, 2010).

What role a principal has in the practice of reflective teaching may influence the *extent* to which teachers reflect as well how *in depth* the reflective thoughts may be. With varying leadership styles and practices, principals must develop and find ways to support teachers being able to develop changes in their practices of teaching and learning

(Hallinger, 2003). Engaging with teachers, formally as well as informally, is a skill that principals should master in order to effect change where teachers are led to increase achievement by reflecting on what they do with students. With the beginning of transformational leadership, the promotion of group goals, supporting staff and developing human resources were a part of the change process in schools. Further, it represented a shift away from top down instructional leadership models (Hallinger, 2003).

Societal changes are putting new pressures on teachers and schools. America's classrooms are serving increasing numbers of students who are more diverse in terms of race, culture, economics and language. Students with learning disabilities, physical impairments, and limited English proficiency are increasingly being served in regular education classrooms (Hanewald, 2011). The societal conditions in which children are raised and changing family structures are impacting classrooms. More students are coming to school at risk because of poverty, inadequate nutrition, housing, health and medical care, and other adverse conditions at home. Schools are seeing more students in crisis because of violence, drug and alcohol abuse, and other threats in their homes and communities (Hanewald, 2011).

Reflective teachers constantly improve lessons, consider strategies to reach particular children, and pursue new methods in the classroom to better meet the needs of all students (Stronge, 2002). Teachers who consider themselves as reflective educators continuously practice self-evaluation and often analyze what they do to influence greater student achievement (Sheard, 2004). Through reflective practice, effective teachers

monitor their teaching to become better instructors in order to impact student achievement (Sheard, 2004).

Solid basic skills, critical thinking, lifelong learning, and technological literacy have become the new keys to productivity in our knowledge-based society. In this new century, almost every child who matriculates through America's schools will need to attend college or participate in some specialized training throughout his or her lifetime in order to navigate rapidly changing economic conditions. No longer can we educate only a select few to high standards. Our schools should be safe havens of learning that help all children reach high standards and acquire problem-solving skills. According to Goodlad (as cited in Fullan, 2007, p. 176) "learning appears to be enhanced when students understand what is expected of them, get recognition for their work, learn quickly about their errors, and receive guidance in improving their performance".

With more people having to "think for a living," instructional practices are changing as well. New knowledge about how children develop and learn is transforming school organization and the roles of the people in these re-organized schools. Mastery of the basics, inquiry, collaboration, and responsibility are the new hallmarks of effective education (Holden & Rada, 2011). New and veteran teachers alike must develop new knowledge and skills to respond to these demands (2011). One new skill that teachers could learn that may impact increased achievement is reflective practice. As well, principals finding meaningful ways to engage with teachers could impact the instructional decisions of teachers in order to increase achievement.

Research Questions

The proposed study addressed the amount and quality of research concerning the conversations where the principal engaged teachers that potentially led to teachers reflecting on their instruction to increase student achievement. The findings have added to the limited literature on this topic. This body of research investigated how conversations that involve principal engagement with teachers and how teachers reflect on their instructional practices to make changes impacted student achievement in mathematics in a high poverty school. The study was guided by one overarching research question and several supporting questions.

Overarching Research Question

How do Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices?

Supporting Questions

1. How do principals actively engage teachers in conversations concerning instruction?
2. To what extent do teachers' conversations with principals lead to self-reflection on their instructional practices?
3. In what ways do teacher reflections guide instructional practices?
4. What types of conversations occur between principals and teachers that cause teachers to change their instructional practices?

The thoughts and skills of leaders are visible in actions, structures and processes that enhance or hinder change that strengthen the link between leader behaviors and success in applying change (Gilley, McMillan & Gilley, 2009). This change may include the actions of teachers as they reflect on their instructional practices that lead to increased student achievement. Principal leadership as related to the impact on teacher reflection, how teachers perceive their reflective behavior on instructional practices and how these practices impact instructional decisions served as the rationale for this qualitative body of research.

Theoretical Framework

The basic premise of socio-cultural learning theory is that cognitive processes develop through participating in shared problem-solving interactions (Knapp, 2008). According to Vygotsky (1978), reaching a person within their *Zone of Proximal Development* (ZPD) is important. ZPD is defined as the area in close proximity to current practice and/or knowledge, where the person is most likely to learn (1978). Vygotsky believed that learning occurs not through individual knowledge, but through engagement with others, that learners construct meaning through social interactions and also by this same process create habits of mind for the culture of their work environment (Wertsch, 1996). By engaging in critical conversations with teachers concerning instructional practices, principals are able to provide the guidance necessary for instructional changes. Learning involves change and this social construction of meaning is how change occurs (Wise & Jacobo, 2010). Learning theories research in school systems have made steps toward identifying characteristics of schools that can guide and foster change such as common vision, collaborative culture and shared decision-making,

strong leadership and capacity across stakeholders (Coffin & Leithwood, 2000; Leithwood, Leonard, & Sharrat, 1998; and Marks & Printy, 2002). Socio-cultural theories offer learning as a social construct suggesting that learning moves from the individual's heads (Simon, 1991) to components of participation in social means of participation, interaction, and activity (Engestrom, 1999; Lave & Wenger, 1991 Rogoff, 1994). This school of thought makes important connections between professional development through social learning and how organizations learn and change (Gallucci, 2007).

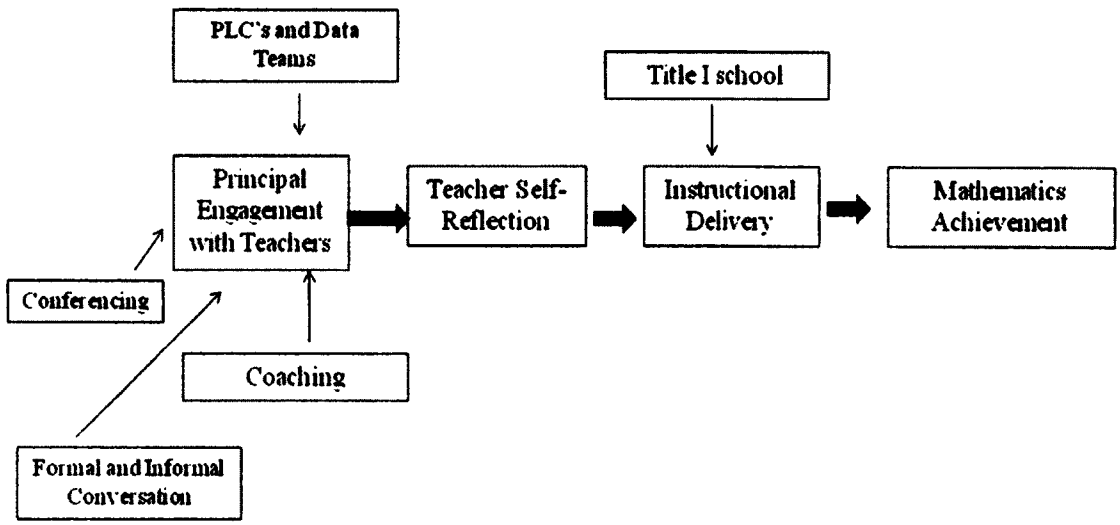
Gallucci (2007) determined that learning processes of the organization develop through the participation of individuals and groups of individuals in both public and private activity. Public activity was described as participation in professional development supported or created by school leaders and the discussions that occurred in this setting. Private participation was described as independent reading away from the group. The study suggested that learning is frequently personal, such as what individuals already know, and is seen as separate from what is done alone or together to support learning.

All learning occurs inside the heads of humans; whereas an organization learns by the learning of its members or by adding new members who have knowledge not previously held by the organization (Simon, 1991). Internal learning, the transmission of information from one individual member to another or groups of members within the organization is important for schools to increase knowledge that will lead to increased achievement (Simon, 1991). By engaging with other teachers, instructional coaches and

principals, teachers learn to master the reflective process that may lead to changes in instructional delivery to increase achievement.

Conceptual Framework

The conceptual framework explains the researcher's beliefs regarding how the variables interact and the outcome of these relationships. *Figure 1.* provides a visual representation of the researcher's conceptual framework.



C. Lemons

Figure 1. Impact of conversations between principals and teachers on students' mathematics achievement. Teachers reflect on their instruction and make adjustments in the instructional delivery. Conversations can be collaborative or one-on-one through conferences, data teams, Professional Learning Communities (PLC), or coaching.

Purpose of the Study

The purpose of this study was to investigate the extent to which principal engagement with teachers impacted how teachers self-reflected on their instructional

practices that led to changes in their instruction to increase student achievement in mathematics. Principal engagement can take on the forms of collaboration with teachers in teams, informal discussions throughout the school day, one-on-one conferencing before and after an evaluation, or through the process of coaching.

With high stakes testing and accountability of schools being required to meet state and national standards of Adequate Yearly Progress (AYP), principals are faced with finding ways to meet this mandate which continues to increase each year. In the state of Georgia, schools at the elementary level must make AYP in three areas, reading/ELA, mathematics, and attendance. For the 2012 school year, schools must make progress in the area of science which will replace the indicator for attendance. According to data for the 2009-2010 school year from the Governor's Office of Student Achievement (GOSA, 2011), 89% of students in grade five met or exceeded standards on Georgia's Criterion Referenced Competency Test (CRCT). Mathematics scores for grades three and five have continued to increase in Georgia over a period of time as demonstrated in Tables 1 and 2 but continue to decrease as students matriculate through high school as demonstrated in Table 3.

Table 1

*Third Grade-Georgia Criterion-Referenced Competency Tests (CRCT): Comparison for All Students in Math-Percentage Meeting and Exceeding Standards**

School Year	2008-09	2009-10	2010-11
Math CRCT Percentage	76%	79%	81%

(*Source: GOSA, 2011)

Table 2

*Fifth Grade-Georgia Criterion-Referenced Competency Tests (CRCT): Comparison for All Students in Math-Percentage Meeting and Exceeding Standards**

School Year	2008-09	2009-10	2010-11
Math CRCT Percentage	87%	89%	92%

(*Source: GOSA, 2011)

Table 3

*Pass Rate for End of Course Tests for Algebra and Geometry in Georgia High Schools**

School Year	2007-08	2008-09	2009-10
Algebra	56%	40%	37%
Geometry	62%	49%	41%

No data available for these courses in 2010/11 as course requirements changed to Math I and II. (Source: GOSA, 2011)

Among the 18 urban districts that participated in the 2009 mathematics assessment administered through the National Assessment of Educational Progress (NAEP), scores for both fourth and eighth graders in 10 districts were lower than the scores for public school students attending schools in large cities overall. In comparison to the average scores in 2009 for large cities in the nation, Atlanta, Baltimore City,

Chicago, Cleveland, Detroit, the District of Columbia, Fresno, Los Angeles, Milwaukee, and Philadelphia had lower scores at both grades (NAEP, 2009).

Blase and Blase (1999) used the practice of principals talking with teachers to promote reflection as one of the themes in a study to determine how teachers perceived the instructional leadership of principals. The study found that principals who talked with teachers during instructional conferences, as well as in other settings, for the purpose of encouraging them to become aware of and to reflect on their learning and professional practices, were perceived to be effective by the teachers. According to a study conducted by Marks and Printy (2003), shared instructional leadership is a concept that is inclusive and is compatible with competent and empowered teachers. The principal invests teachers with resources and instructional support (2003).

However, little research to date supports how *principal leadership* guides the practice of teachers reflecting on instructional practices which could transform the way teachers teach and in turn impact the achievement of students. Siens and Ebmeier (1996) found that removed from the classroom, principals can only influence student achievement indirectly by working through the teaching staff. In a study conducted by Wilen (1990), it was argued that class discussions (conversations) that are educative, *reflective*, and structured promote critical thinking, engage students in social interaction, and let them take responsibility for their own learning.

Preliminary Literature Review

A review of literature surrounding the impact of school leadership on student learning by Leithwood, Seashore-Louis, Anderson and Wahlstrom (2004) found that successful leaders engaged in three sets of central practices:

1. Establishing directions (shared vision and group goals, high performance expectations);
2. Developing people (individual support, intellectual/emotional stimulation, modeling);
3. Revamping the organization (collaborative cultures and structures, building productive relations with parents and the community. (Leithwood et al., 2004 p. 20)

Researchers conducting studies in the domains of change implementation, school effectiveness, school improvement, and program improvement found that the skillful leadership of school principals was a key contributing factor to successful change, school improvement and school effectiveness (Hallinger, 2003). Progressive leadership requires the school leader to look beyond short term gains (e.g., an increase in standardized test scores) and focus on conditions that will ensure not only steady gains in achievement that are prolonged, but on circumstances that will improve teaching and learning for sustainable results (Glatthorn, 2000). Encouraging teachers as learners who engage in collaborative problem solving, meaningful professional learning and shared decision making that affect instructional practices, are all goals of progressive leadership (Barth, 1990). Bryk and Schneider (as cited in Fullan, 2007, p. 161) found that principals are crucial for shaping trust in schools which dramatically influences, directly and indirectly, the effectiveness of schools.

In the framework of instructional leadership, the focus is primarily a function of the school's principal where leadership is centered on the direct supervision of curriculum and instruction. This characteristic was mainly present in schools that were in poor, urban areas where the 'effective schools' literature was prevalent (Hallinger, 2003).

There are similarities in the research literature on instructional leadership. Instructional leadership was generally originated to be the central role of the elementary

school principal (Leithwood & Montgomery, 1982) as it was birthed out of the effective schools movement that emerged from the research of Edmonds (Edmonds, 1979). Instructional leaders were perceived to be solid leaders (Edmonds, 1979; Hallinger & Murphy, 1986). Principals considered to be instructional leaders are deep in curriculum and instruction and are not afraid to work with teachers to improve teaching and learning (Cuban, 1988; Hallinger & Murphy, 1986). Goal-orientation and improving student outcomes where the mission is more focused than many of their peers are characteristics of instructional leaders according to Hallinger (2003). Instructional leaders were seen as builders of culture where creating an 'academic press' that fostered high expectation and standards for students and teachers was the norm (Mortimore, 1993; Purkey & Smith, 1983).

Hallinger's (2000) model proposed three dimensions of the instructional leadership construct: (a) defining the school's mission; (b) managing the instructional program; and (c) promoting a positive school-learning climate. Framing and communicating the school's goals comprise the first dimension. Managing the instructional program and focusing on the coordination and control of instruction and curriculum make up the second dimension. The third dimension consists of protecting instructional time, promoting professional development, maintaining high visibility, providing incentives for teachers, and providing incentives for learning. The responsibility of the instructional leader is to assure the alignment of the school's standards and practices with its mission and to foster a climate that supports teaching and learning (Hallinger, 2003).

Teachers are often encouraged to reflect on and improve their practice through a process of inquiry. Research suggests that engaging in school-based inquiry is a practice that is necessary as a function of teaching. Inquiry and reflection are expected of teachers as part of their professional learning, development and growth (Sheard, 2004). To do this responsibly, teachers need to have both professional expertise that qualify them to engage in the ability to apply skills and the professional authority to participate meaningfully in decisions about the framework in which they will perform as professionals (Sheard, 2004).

Teachers often reflect on their instructional practices by collaboratively discussing student work to identify ways that instructional practices can be fine-tuned to improve student outcomes (Dufour, Eaker, Karhanek, & Dufour 2004). Teachers who reflect as a team promote a reinforcement of good teaching practices or identify areas of improvement needed in instructional delivery (Dufour et al., 2004). In many schools, teachers are developing a collaborative practice of teaching which includes coaching, reflection, investigation of data, study teams, and explorations to solve problems (Dufour et al., 2004). Principal involvement in this reflective, collaborative effort may come in the form of seeing a need for professional learning to support the needs of teachers, encouraging teachers to visit other classrooms and visiting teachers in other schools (Dufour et al., 2004). Professional learning that is characterized by teachers' abilities to choose the topics they want to learn more of and the chance to work collaboratively with their colleagues may lead to changes in instructional behavior (Nieto, 2009).

Principal leadership that involved talking with teachers to promote reflection through making suggestions, giving feedback, modeling, using inquiry, soliciting advice

and opinions and giving praise have a positive impact on motivation, satisfaction, self-esteem, value, sense of security and feelings of support by teachers (Blasé & Blase, 1999). By making suggestions that were purposeful, appropriate, and nonthreatening, in formal and informal settings, principals gave teachers choices, encouraged risk taking, recognized teachers' strengths and helped maintain a focus on improving instruction (Blase & Blase, 2000). Feedback focused on behavior that was observed in the classroom, was specific and was communicated in a caring and interested manner by the principal (Blase & Blase, 2000). Drucker (1999) found that organizational leaders strongly influence the work environment through routine interpersonal interactions. Creating conditions in schools that promote dialogue, interaction and collaboration makes a difference in retaining good teachers (Nieto, 2009).

Teachers often spend time independently assessing instructional practices, management concerns, content knowledge and lesson preparation. This can lead to a feeling of isolation for inexperienced teachers or those who are experiencing challenges in the classroom or school setting (Dufour et al., 2004). Cognitive coaching can be an effective strategy to support teachers who are experiencing feelings of isolation and disconnect (Costa & Garmston, 1991). Costa and Garmston (1991) contend that enlightened, skillful colleagues can significantly enhance a teacher's cognitive processes and therefore the teacher's perceptions and decisions. Cognitive coaching is a model used for supervision or peer coaching that is not evaluative, but serves to support teachers (Costa & Garmston, 1991). Principals can encourage classrooms that are learning-centered and effective where students are active participants in their learning. The teacher can then focus on instructional planning (Martin & Furr, 2010).

Effective principals who acquire certain leadership skills may play a role in developing teachers who would benefit from the support of cognitive coaching through principal-teacher talks and formal as well as informal observation leading to changes in instructional practices which could increase student achievement (Wise & Jacobo, 2010).

Significance of the Study

In a study by Leithwood and Jantzi (1999) it was found that information collection and decision making were variables for school success. The study determined that these variables could include the nature and quality of information collected for decision making in the school, the ways in which members of the school use that information, and how they are involved in decisions. The study confirmed the importance of consistent conversations between principals and teachers surrounding student achievement for changes in instructional delivery to occur.

Reflection by teachers can come in many forms such as examining and discussing student work to revise instruction and assessment; disaggregating data to assess and measure student learning; as well as having formal and informal conversations with administrators. Schools benefit when information for decision making is regularly collected from a range of sources and widely available to school members for decisions (Leithwood and Jantzi, 1999). In a review of professional learning communities, McLaughlin and Talbert (2006) found that effective principals influence teacher commitment and support for collaboration. As there is not a significant amount of literature to support the impact of principal engagement with teachers on teacher reflection that will lead to changes in instruction to increase achievement, this study added to the current knowledge base of available information. It could also serve to

assist current and aspiring principals in understanding the impact of such relationships on student achievement and teacher success.

As a school leader, it is important to find effective strategies, supported by sound research that will lead to student and teacher success. Understanding that there is little research supporting a significant, direct impact of principal leadership on student success, the intent was to find ways to support principals to become more effective, by finding ways to engage teachers, causing teachers to reflect on what *they* do that will lead to student achievement.

Procedures

The study investigated how the conversations between principal and teachers impacted teacher reflection that led to changes in instruction to increase student achievement in mathematics. Since little is known about the direct effect of principals on teacher reflection and how this effect guides the instructional practices of teachers to increase student achievement, a case study of one suburban elementary, Title I school was conducted. Case study research is a qualitative approach in which the investigator explores a bounded system (a *case*) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information observations, interviews), and reports a case description and case-based themes (Creswell, 2007).

Permission to conduct the study was sought and received from the Mercer University Institutional Review Board and superintendents in two selected public school

districts in a suburban, metropolitan area. Once permission was granted, several mid-sized Title I elementary schools that embraced collaboration amongst staff were contacted for participation in the study.

The selection of the school to study was based on the following criteria: (a) the teachers engaged in conversations with the principal concerning student achievement; (b) Professional Learning Communities existed within the school; (c) the school continued to show improvement in CRCT mathematics scores; and (d) the school is considered high poverty by state and federal standards.

Data sources for the study were from the Georgia Governor's Office of Student Achievement, the Georgia Department of Education, and the results from interviews and observations of the selected school staff. The data for CRCT mathematics scores came from the Georgia Governor's Office of Student Achievement.

The researcher collected data through the processes of observations and semi-structured one-on-one and a focus group interviews. Demographic information for the school was gathered for the purpose of understanding the dynamics of the community surrounding the school as well as the dynamics within the school. This assisted the researcher in understanding the needs of the students within the school and how those needs formed the basis of instruction. Interviewing teachers who taught mathematics and the principal, in a one-on-one setting and through a focus group that included teachers, led the investigator in determining how teachers reflected on their instructional practices, and how the leadership of the principal influenced teacher reflection. The study also included investigating how teachers changed their instructional practices that led to increased student achievement once the reflection process had occurred.

This study was conducted using the single site case study approach of an elementary school, Happy Elementary, that is considered Title I, and is located within a suburban, metropolitan school district. Observations of when the principal engaged in conversations with teachers concerning instructional practices, teachers collaborating in team settings with the principal, that led to adjusting their instructional practices, along with one-on-one interviews and a focus group interview with teacher participants and the principal were the primary sources of data collection. Teachers were observed while having conversations with other teachers, with the principal and while collaborating within teams during the Professional Learning Community process. Field notes from observations from the researcher as observer were collected and researcher bias was noted through journal entries. Data collected were then coded using themes where the data were placed into a narrative of the findings.

The main purpose of an interview is for the researcher to find out what is in and on someone else's mind (Patton, 2002). The principal was interviewed, using semi-formal interview questions, to determine how her leadership has directed the self-reflecting practices of her teacher participants. Semi-formal interview questions were used to conduct individual interviews as well as a group interview with teacher participants to determine how conversations with the principal have guided their reflection practices and how those conversations have led to them making changes in their instruction to impact student achievement in mathematics. Participants were teachers who taught mathematics and the principal at Happy Elementary School.

In order to gain access into the selected the school, the principal of the school was the first contact to discuss the possibility of designing a research study involving her

school. Once the principal agreed to be the school of choice, the researcher then followed all school system related protocols, policies and procedures surrounding obtaining permission to conduct research once IRB approval had been issued.

Confidentially has been maintained throughout the study by not using the name of the school, or the name of the administrator and teachers within the school, who agreed to be involved in the research. Collected data has been stored in a locked file cabinet located in the office of the researcher for three years. After the three years have expired, the data will be destroyed.

Credibility and trustworthiness have been determined by comparing the themes in data collected through interviews and observations. Follow up interviews were conducted with each interview participant to assure the trustworthiness of the data.

Limitations

One limitation of this study was that researcher bias could have entered into the research from a professional as well as personal level being that the researcher is a school administrator. Researcher bias was noted in the researcher's journal. A second limitation was the possible failure of those being observed and interviewed to be honest in their actions and responses during the study. A third limitation was the time constraint involving the observation and interview processes of the study as the school site was involved in preparing to take the Criterion Referenced Competency Test (CRCT) .

Delimitations

A delimitation of the study was that because only one elementary school was used as the site for the research, the findings may or may not be transferable to other elementary, middle and high schools. In addition, the data collected involved only one

school in a large, suburban school district in a metropolitan area that is considered Title I and may not be transferable to schools not in these categories.

Definition of Terms

The following definitions provide an understanding of the terms used in this study. *Reflection* is the practice where individuals critically evaluate their work methods and processes with the aim of improvement. *Reflective Practice* is the act of thinking productively and with the intention of improving one's work. *Reflective dialogue* is the discussion between individuals on their reflective practices (Sheard, 2004). *Adequate Yearly Progress*, or *AYP*, is a measure of year-to-year student achievement on statewide assessments for public schools (GOSA, 2011).

Summary

When transformation occurs within a school, all stakeholders have a collective sense of collaboration and responsibility centered on student learning. Active involvement in the learning process is promoted by teachers and principals. Communication is open and consistent and community feedback is welcomed. Teacher leadership becomes evident and students feel that their voices are heard. Ongoing professional development aligned with student learning needs is evident. Teachers become motivated to collaborate for improvement through professional learning communities, and all stakeholders feel a sense of importance within the school setting.

Public schools in the United States have been given the responsibility of achievement for all students, no matter their background. Students must demonstrate proficiency on challenging academic achievement standards. Under NCLB, all public schools in Georgia must meet Adequate Yearly Progress which holds them accountable

for student achievement as measured by the Criterion Referenced Competency Test (CRCT) at the elementary and middle school levels. The accountability measures of NCLB hold principals and teachers accountable for the ability of all students to demonstrate mastery of the curriculum by meeting or exceeding standards at 100% by the year 2014.

Research performed on improving schools demonstrates the importance of high quality principals who have the ability to facilitate effective teaching and learning within the overall mission of improving student achievement serving as school leaders. The chapter that follows presents a more detailed review of literature to support the basis of this study, the relationship of principal engagement with teachers and teachers' self-reflections.

CHAPTER 2

REVIEW OF RELATED LITERATURE

One question that continues to plague America's schools is whether or not leadership matters in student achievement. Research supports an indirect impact of school leadership on student achievement. Hallinger and Heck (1996a) conducted an in-depth review of the empirical research that spanned 15 years (1980-1995) on the relationship between the principal's role and school effectiveness. Clearly recognizing that principals have an impact on teachers, students, and learning, the researchers proclaimed that because of the complexity of the relationship, the nature and degree of this effect is not easily measured (Hallinger, 2000).

However, the most theoretically and empirically strong models that have been used to study leadership effects suggest that effective principal leadership is linked directly to student learning via the principal's impact on internal school processes (Johnson, Livingston, Schwartz, & Slate, 2000). The internal processes range from (a) school policies and norms regarding academic expectations; (b) school mission; (c) student opportunities to learn; (d) instructional organization; and (e) academic learning time (Johnson et al., 2000).

Blase and Kirby (1992) emphasized the following factors associated with strong school leadership which have often been considered as conditions of an effective school: initiative, confidence, tolerance for ambiguity, analytic abilities, resourcefulness, vision,

democratic-participatory style, listening, problem-centeredness, openness, time management skills, high expectations, knowledge of curriculum, and ability to allocate resources effectively.

Communication between the school's principal and teachers is critical in improving teacher performance that will ultimately lead to student achievement and effective leaders allocate time for collaboration (Reeves, 2009). Teachers and principals must continuously interact with new ideas about their practice and collaborate to transform ideas and practices to fit into the context of the school's culture (Knapp, 2008). Whitaker (2003) recognized the value of positive relationships within a school and emphasized the crucial role that principals play when they interact daily with teachers. When administrators focus on a positive teacher work environment, teacher behavior improves, and in turn, so does student learning. Thus, achievement is increased (Whitaker, 2003). McNulty and Besser (2011) state that teachers and leaders matter in terms of the outcomes that students are getting. "It is what teachers and leaders do that matters the most" (McNulty & Besser, 2011, p. 13).

In turn, teachers must use the process of reflection to be able to understand that the learning of their students is central to achievement (Rodgers, 2002). According to Rodgers (2002), the cycle of reflective teaching rests in the teachers' abilities to slow down their thinking so that he or she can attend to *what is* rather than *what they wish was so*, and then to shift the weight of that thinking from their own teaching to the learning of students (Rodgers, 2002, p. 231).

Leadership Behaviors and Student Achievement

Principal leadership has been identified in the literature as a factor associated with highly effective schools (Edmonds, 1979). Although the literature points to the difficulty of relating principal leadership and student achievement, researchers have suggested that instructional leadership can influence what teachers do in the classrooms that will affect student achievement through promoting a strong institution of belief structures and school policies that promote an *academic push* (Short & Spencer, 1989). In an attempt to connect student perceptions of the classroom environment, principals' instructional leadership as perceived by teachers and student performance, Short and Spencer (1989) contend that in classrooms where students perceived a high level of helpfulness by teachers, the principal was perceived as being highly visible, involved in supervision and the evaluation of instruction, effective in communicating school goals and recognized student accomplishments.

With the beginning of school restructuring in North America during the 1990s, scholars and practitioners began to make popular terms such as shared leadership, teacher leadership, distributed leadership, and transformational leadership. The surfacing of these leadership models indicated a wider dissatisfaction with the instructional leadership model, which many believed focused too much on the principal as the center of expertise, power and influence (Hallinger, 2003).

Certain critical behaviors and skills are associated with principal instructional leadership and are summarized as follows: (a) managing curriculum and instruction; (b) goal setting; (c) supervising and evaluating teaching; (d) providing staff development; (e) managing resources; and (f) promoting a positive climate and expectations for success

(Daresh & Ching-Jan, 1985; Duke, 1987; Hallinger, Murphy, Weil, Mesa, & Mitman, 1983; Murphy, Weil, Hallinger, & Mitman, 1982; Stallings & Mohlman, 1981). The effective schools research focuses on the principal as the primary factor in influencing and promoting improvement in a school (Edmonds, 1979; Hallinger & Murphy, 1987).

Research on principal leadership in effective schools points to essential principal attributes that impact student achievement: (a) having a clear vision of where the school is going and communicating it to students; (b) establishing a safe, orderly environment; (c) establishing and maintaining curriculum related to school goals; (d) knowing quality instruction and working with teachers to improve instruction; and (e) monitoring school performance (Dwyer, Barnett, Filby, & Rowan, 1984; Blumberg & Greenfield, 1980; Phi Delta Kappa, 1980;).

Short & Spencer (1989) found that teachers who see their principals as strong instructional leaders have classrooms where students are highly involved in the activities of the classroom. In these settings, the students were attentive, interested, participated in discussions and attempted extra credit work, according to the authors.

Studies by Leithwood , Seashore-Louis, Anderson and Wahlstrom (2004) suggest that school leadership is second only to teaching in how student learning is impacted. Research by Robinson, Lloyd, and Rowe (2008) found that principals who are closely connected to the classroom are more likely to influence the outcomes of student learning. From this research two important themes were determined: (1) principal leadership is critical to student learning; and (2) principals influence student learning by working with or through teachers or other classroom-related factors (Robinson et al., 2008). Further, the study pointed to the idea from teachers that when principals and teachers work

collaboratively, achievement is higher (2008). Supovitz, Sirinides and May (2010) used survey data to affirm that principals who establish cultures of collaboration and trust and encourage instructional improvement, bring teachers together to engage collaborating to improve teaching and learning. The authors maintain that working together entails rich conversation, collaborative planning and giving and receiving advice (Supovitz et al., 2010).

Although a variety of conceptual models have been employed over the past 25 years of research into educational leadership, two major approaches have been in the forefront, instructional leadership and transformational leadership. Studies from the early to late 1980s were dictated by an instructional leadership concept drawn from the effective schools literature (e.g. Andrews & Soder, 1987; Edmonds, 1979; Hallinger & Murphy, 1986).

Transformational Leadership

Around 1990, researchers began to shift their attention to leadership models considered to be more consistent with growing trends in educational reform such as empowerment, shared leadership, and organizational learning. This progression of the educational leadership role has been labeled as reflecting 'second order' changes (Leithwood, 1994) as it is aimed mainly at changing the standard structure of the organization. The most frequently used model of this variety has been transformational leadership (Bass, 1985; Leithwood & Jantzi, 2000).

Transformational leadership focuses on developing the organization's ability to innovate. Rather than focusing specifically on direct management, control, and supervision of curriculum and instruction. Transformational leadership seeks to build the

organization's capacity to select its purposes and to support the development of changes to practices of teaching and learning (Hallinger, 2003).

Instructional Leadership

The increasing importance of principal instructional leadership during the 1980's did not initially surface from research conducted on instructional leaders. Instead, the importance of this role of the principal was concluded from studies that examined change implementation (Hall & Hord, 2006), school effectiveness (Edmonds, 1979; Rutter, Maughan, Mortimore, Ouston, & Smith 1979), school improvement (Edmonds, 1979), and program improvement (Leithwood & Montgomery, 1982). Scholars conducting research in each of these areas consistently found that the skillful leadership of school principals was a key contributing factor when it came to explaining successful change, school improvement, or school effectiveness.

Researchers have developed many different definitions of instructional leadership. The National Association of Elementary School Principals [NAESP], (2001) defined instructional leadership as leading learning communities. Principals are viewed as a vehicle, encouraging and channeling a school in which principals and teachers work collaboratively to identify and resolve issues that are facing their schools (NAESP, 2001).

Effective instructional leadership begins with recruiting and hiring the best staff (Haycock, 2001). Teachers must know the content of their subjects and be able to deliver the subject matter effectively to the students to make certain that learning is occurring (Haycock, 2001). Instructional leadership also includes evaluating and improving instruction. DuFour and Eaker (1992) advised that principals must look not only for

good instruction but also look for student learning when monitoring and observing teachers.

Much research has been performed on instructional leadership. Some of the conclusions from the research are:

1. The large amount of evidence indicates that school principals contribute to school effectiveness and student achievement indirectly through actions they take to influence what happens in the school and in classrooms (Hallinger, 2003). Leadership was top down as well (Hallinger, 2003).
2. The most influential path of effects concerns the principal's role in shaping the purposes of the school (Bamburg & Andrews, 1990). The actual role that principals play in mission building is impacted by features of the school situations such as socio-economic status and school size (Hallinger & Murphy, 1986; Johnson, Uline & Perez, 2011;).
3. Instructional leadership influences the quality of school results through the alignment of school structures (e.g., academic standards, time allocation, and curriculum) with the school's mission (Hallinger & Heck, 1996a).
4. Few studies find a relationship between the principal's hands-on management of classroom instruction, teacher effectiveness, and student achievement (Hallinger & Heck, 1996a). Where effects have been identified, it has generally been at the elementary school level, and could possibly be due to the size of the school (Heck, Larsen, Marcoulides,1990).
5. The school context does have an effect on the type of instructional leadership employed by principals (Hallinger & Heck, 1996a). As suggested above, the

school level as well as the socio-economic status of the school influences the requirements for and implementation of instructional leadership (e.g. Hallinger & Murphy, 1986).

Cuban (1988) described the managerial or maintenance role of the principal as "embedded in the structure of the principalship" (Cuban, 1988, p.138). The author emphasized that efforts by principals to act as instructional leaders in schools run against basic function and normal circumstances of the principalship and the school.

Effective Leadership in High Poverty Schools

Effective leadership is vital to the success of a school (Hallinger, 2003). Research and practice confirm that there is small chance of creating and keeping high-quality learning environments without a skilled and committed leader to help shape teaching and learning (Portin et al., 2009). That's especially true in the most challenging schools (Portin et al., 2009). As pressure has increased to have all children in every school succeed as learners, there is wide acceptance that education leaders need to be more than building managers. The challenges presented by the "achievement gap" data and the federal No Child Left Behind (U.S. Department of Education, 2001) law have refocused the primary work of principals on leading the essential teaching and learning activities in their schools (Portin et al., 2009). This shift from building managers to learning leaders first and foremost is well documented in research, and is further backed by research indicating that leadership is second only to teaching among school-based factors in influencing learning (Portin et al., 2009).

What does it look like when principals lead communities of students where there is diversity, including high poverty schools? Effective principals in this arena consistently do the following (NAESP, 2008):

- build consensus on a vision that reflects the core values of the school community;
- value and use diversity to enhance the learning of the entire school community;
- broaden the framework for child development beyond academics;
- develop a learning culture that is adaptive, collaborative, innovative and supportive. (NAESP, 2008, p. 40)

To build a consensus on a vision that reflects the core values of the school community, principals in high poverty schools set the expectation that all students will learn at high levels regardless of their backgrounds (NAESP, 2008). To create this consensus, effective principals collaborate with all school stakeholders to listen to their desires and work with them to create a vision that reflects shared values (NAESP, 2008, p. 42). Once the vision has been set, high expectations for all students must be persistent throughout the school and be the center of student learning while creating a safe, motivating learning environment for every student (NAESP, 2008).

According to the National Association of Elementary School Principals (2008), setting a long-term vision that includes college readiness standards for all students, including those who are disadvantaged, can promote equity and the closing of the achievement gap. Further, a shared vision for high performance for all can provide everyone in the school license to try ground-breaking strategies (NAESP, 2008).

Effective leaders know that learning takes place not only in school. These leaders provide opportunities for nonacademic skills to be built through community and out of school learning opportunities through after school programs, cultural institutions, business and industry, and community organizations (NAESP, 2008). Effective leaders

combine all types of learning in and out of school and find ways to bring attention to the developmental needs of the whole child by finding out of school learning opportunities that support and extend academic learning where students in high poverty might not otherwise receive (NAESP, 2008).

Struggling schools find high-quality principals in short supply, and these are the schools that need them the most (Bottoms, O'Neill, Fry, & Hill, 2003). High-need schools often are characterized by lower salaries, a lack of local support and a weak professional climate (Bottoms et al., 2003). The best leaders, who often have many leadership opportunities from which to choose, seldom opt to work in high-need schools (Bottoms et al., 2003).

Leithwood (1994) found that principal effects are achieved through fostering group goals, modeling desired behavior for others, providing intellectual stimulation, and individualized support. According to the researcher, principals in these schools were better at supporting staff, providing recognition, knowing problems of school, were more approachable, better at following through, seeking new ideas, and spending considerable time developing human resources (Leithwood, 1994).

In a related study comparing schools serving high-socioeconomic status versus low socioeconomic status student populations, Hallinger and Murphy (1986) found that principals in both types of settings were instructional leaders. The form of leadership was adjusted to meet the needs of their schools. Principals in low socio-economic status schools had *measurable goals* that were clearer and focused on student achievement but tended to be more task-oriented and direct in their approach with staff. The principals in high socio-economic status schools had a clearer *academic focus* that was known and

supported by staff, students and the community. These principals were less direct and more collegial when working with staff. Andrews and Soder (1987) also validated that situational effects of instructional leadership have also been found with respect to socio-economic status.

According to Hallinger (2003), schools where sustained school improvement has been maintained and where knowledge has been gained from the questioning of basic assumptions to which collaborative inquiry occurs, a new standard of leadership seems to have surfaced. Three conclusions about leadership from these actively improving school situations can be made:

1. For the long haul of school improvement, school leaders have to develop and expand their leadership range.
2. The school improvement journey offers a context for the development of new understandings, both about leadership and about school development.
3. The collaborative processes relative to the inquiry approach to school improvement offer the opportunity for teachers to study, to learn about, to share and to enact leadership. (Hallinger, 2003, p. 340)

Leadership in high poverty schools often requires searching for and securing additional funding to develop teachers, exposing students to opportunities that they might not otherwise receive, and providing much needed resources beyond the allocated school budgets (NAESP, 2008). Effective leaders have long been skilled at securing grants, community resources, partnerships or other resources to supplement budgets (NAESP, 2008). Securing additional resources requires more than identifying new dollars and partners. It requires assuring that these resources will be used to advance the learning objectives of the school (NAESP, 2008).

According to Hallinger (2003), leadership must be understood as a *mutual influence process*, rather than as a one-way process in which leaders influence others.

The extent of staff participation in leading these processes (i.e., development of the school's goals and coordination of the curriculum) might be different depending upon where the location of the school is in its improvement journey. Long-term, sustained improvement will ultimately depend upon the staff assuming increasing levels of ownership over proposed changes in the school (Hallinger, 2003, p. 347).

The findings of Hallinger, Bickman, and Davis (1996) support the notion that principals adjust their instructional leadership to the community in which they work. Hallinger (2003) states that schools at risk may initially require an instructional approach where clear, time-based, academically focused goals are in place in order to improve the achievement of the students and that leadership is a developmental process and is dependent upon the needs of its stakeholders.

Instruction in High Poverty Schools

In 2007, poor, Black students were more likely than their classmates to be retained during their K-8 school careers (Lewis, Simon, Uzzell, Horwitz, & Casserly, 2010). Studies based on the relationship of effective teaching and student achievement all share the same commonality where the focus is on the classroom teacher as the key to student success (Lewis et al., 2010). National goals set by The No Child Left Behind Act (U.S. Department of Education, 2001) focus on closing the achievement gap for low income and minority students. Research now supports that children in these groups will achieve if they are taught by highly effective teachers (Carey, 2004). Recently generated research supports that students of color and students in poverty can learn high standards as equally as students in other populations with effective instruction (Carey, 2004). According to Carey (2004) poor students, low performing students and students of color

are far more likely to get teachers who are inexperienced, poorly educated, not highly qualified and who under-perform in the classroom. Students from low-income, minority communities attend schools with less resources and less qualified teachers than students in wealthier communities (Mangiante, 2011).

In schools serving diverse student populations, instruction, as well as the curriculum, should meet the same standards of effectiveness that would be expected in schools serving relatively advantaged students (Carey, 2004). But such standards are not often met. A significant proportion of these schools lack minimally adequate instructional resources and are in physical disrepair (Leithwood et al., 2004).

Many teachers do not find it satisfying to work with students in especially challenging schools and move on to less demanding environments at the first opportunity, citing the lack of rewards from seeing their students succeed (Englert, 1993). Teachers want to feel certain about their ability to meet the goals they have for students, and to know when they have done so (Englert, 1993). Rewards of this sort are more easily available to teachers in less challenging schools according to Leithwood and others (2004). Teachers in especially challenging schools often have low expectations for pupil performance and require their pupils to spend excessive time on drill and practice activities aimed almost exclusively at improving basic academic skills (Leithwood et al., 2004).

Brophy's (as cited in Leithwood et al., 2004) inclusion of research suggests that effective instruction is conducted in a highly supportive classroom environment that is embedded in a caring learning community. In this environment, most of the class time is spent on curriculum-related activities and the class is managed to maintain students'

engagement in those activities. In effective instruction, teachers pose questions aimed "to engage students in sustained discourse structured around powerful ideas," and provide the assistance students need "to enable them to engage in learning activities productively" (Leithwood, et al., 2004, p.8-9).

In contrast to the features of effective instruction identified by Brophy (as cited in Leithwood et al., 2004), Cummins' (1986) research suggests that much of the instruction used with children designated as "at risk" places them in a passive role. Such children, he argues, need to be encouraged to become active generators of their own knowledge, to "assume greater control over setting their own learning goals and to collaborate actively with each other in achieving these goals" (Cummins, 1986, p. 28). At-risk children also may require "culturally responsive" teaching (Jagers and Carroll, 2002 as cited in Stringfield and Land, 2002; Riehl, 2000). This is teaching based on the premise that culturally diverse students pose opportunities instead of problems for teachers. Teachers adopting this view identify the customs, values and practices identified with the often diverse cultures of their students and adapt their instruction to acknowledge, respect and build on them. (Riehl, 2000).

Scieszka (1996) expanded the research into teachers' views of effective schools by studying the key indicators of effective rural elementary schools. In this investigation, rural Vermont teachers agreed that the following phrases were indicative of effective schools: (a) strong leadership; (b) a safe, orderly environment; (c) a clearly defined curriculum and goals; (d) parent involvement; (e) high expectations; (f) monitoring student progress; and (g) professional staff development. An additional point made by Scieszka (1996) was that some teachers disagreed with a basic principle of the effective

schools movement, that all students can learn and can master the skills needed to be successful in school.

Rock (1988) found that high expectations by teachers for student performance were significantly related to reading achievement when controlled for socioeconomic status (SES). In contrast to Rock's study, Venrick (1995) stated that teachers' views of the importance of a positive school climate were statistically related to student achievement test performance, regardless of SES. Other than that finding, Venrick (1995) discovered little evidence that teachers' beliefs of effective school characteristics were strongly related to student achievement.

Haycock and Hanushek (2010) stated that the difference between a good and a bad teacher can be a full level of achievement in a single school year. The authors argued that the focus must be on teacher performance, what teachers are doing in the classroom with students. Wiliam (2007; as cited in Reeves, 2007) found that the difference in the least effective and the most effective classroom was the teacher. The author also found in his research that it isn't what teachers *know*, it's what they *do* and that teachers need help and support in changing what they do in classrooms (Reeves, 2007). According to McEwan (2009), the source of effective instruction is the staff: teachers who consistently teach using methods, models, strategies, and approaches that enable all students to learn. Teachers in highly effective schools are well trained, highly motivated and masters of content. Teachers in these schools are constantly looking for more effective ways to reach struggling students through collaboration with their colleagues, the investigation of best practices in other successful schools, and observation of their peers. (McEwan, 2009, p. 35)

Borich (2000) cited five behaviors that show potential relationships to desirable student performance that is primarily measured by classroom assessments and standardized tests: (a) designing lessons that are clear and meaningful; (b) providing instructional variety; (c) being oriented to time-on-task and task completion; (d) engaging students in the learning process; and (e) ensuring a high rate of student success.

Brophy and Good (1996; as cited in McEwan, 2009) conclude that students learn more efficiently when their teachers first organize new information for them, help them relate it to what they already know, and then monitor their performance and provide corrective feedback during oral review, drill, practice or when applying the learning to an activity or assignment. Teachers who are effective, are clear about what they intend to achieve through their instruction, and they keep those goals in mind both in developing the instruction and in communicating its purpose to the students (Porter & Brophy, 1988; as cited in McEwan, 2009). Sanders and Horn (1995; as cited in McEwan, 2009) state that the major indicator that separates effective from ineffective educational practice is whether students learn what has been taught.

McEwan (2002) lists seven areas of expertise where teachers must excel in order to be effective: (a) lesson planning; (b) lesson presentation; (c) lesson management; (d) climate management; (e) classroom management; (f) student management; and (g) formative assessment and diagnostic teaching. The author states that when lessons start "clunking" for students instead of "clicking," teachers need a tune-up in one or more of these essential skills (McEwan, 2002).

Students in high poverty, challenging schools often need differentiated instruction (McEwan, 2009). Mastery teaching and recursive teaching are two ways offered by

Gentile and Lalley (2003) to differentiate instruction. Mastery learning contains four basic principles: (a) explicit instructional objectives, hierarchically sequenced, which all students are expected to learn; (b) criterion-referenced assessments to evaluate and provide feedback on the achievement of those objectives; (c) remedial instruction for students who do not achieve the desired standard of performance; and (d) enrichment activities and a corresponding grading scheme to encourage students to go beyond initial mastery of essentials to high-order thinking that includes a variety of application of their newly acquired knowledge and skills. (Gentile & Lalley, 2003, p. 156)

According to McEwan (2009), recursive teaching occurs when a teacher repeatedly comes back to important concepts, outcomes or standards. This type of teaching provides students with multiple opportunities to master the important skills and knowledge that are currently taught in addition to previously taught skills and concepts as well as those coming up in the near future (McEwan, 2009).

Studies performed in school systems in Chattanooga and Dallas by Babu and Mendro (2003), students who were minority and considered low achieving were placed with effective teachers for three consecutive years in reading and mathematics, were found to be more successful than their counterparts who did not have effective teachers. These students all passed the state reading and math tests that were administered in these states at a 50% higher rate. Some of them even performed better than students who were considered high achieving. On the contrary, other low achieving students in the same studies were placed with ineffective teachers for three consecutive years. These students as did not perform as well as the students who were placed with the highly effective

teachers. These studies support effective teaching as the primary source in student achievement for low income and minority students (Babu & Mendro, 2003).

Chenoweth (2009) adds to the research by stating that children residing in low-socio economic communities not being ready for school cause them to begin school behind their counterparts in the areas of vocabulary, background knowledge, and organizational ability. This unpreparedness leads to low academic achievement which in turn contributes to the widening gap in student achievement (Chenoweth, 2009). As a result, the perception of teachers, administrators, as well as the public, is that schools can do little to support these students in becoming proficient at levels equivalent to their more privileged peers (Chenoweth, 2009).

Mathematics Achievement in High Poverty Schools

Mathematics achievement for students in high poverty schools continues to be a challenge. In a recent study performed by Lewis and others (2010), which examined achievement of students by ethnicity and socio-economic status on the National Assessment of Educational Progress (NAEP), revealed the following:

- The average mathematics scale score of large city fourth grade black students increased significantly from 212 in 2003 to 219 in 2009; the average mathematics scale score of large city fourth-grade Hispanic students increased significantly from 219 to 226 in 2009; and the average mathematics scale score of fourth grade white students in national public schools increased significantly from 243 in 2003 to 248 in 2009.
- In 2009, the average mathematics scale score of large city fourth grade Black students (219) was significantly lower than the average mathematics scale score of Hispanic students (226) in large cities. Black and Hispanic students in large cities, however, scored lower than White students (248) in national public schools.
- The average mathematics scale score of large city fourth grade black males who were eligible for free or reduced-price lunch was significantly different from 2003 (210) to 2009 (217), while the average mathematics scale score of white male fourth graders in national public schools who were eligible for free or reduced-price lunch increased significantly from 232 to237 over the same period.

- In 2009, the average mathematics scale score of fourth-grade black males in large cities who were eligible for free or reduced-price lunch was 20 points lower than fourth-grade white males in national public schools who were eligible for free or reduced-price lunch and 8 points lower than black males in large cities who were not eligible for free or reduced-price lunch in 2009.
- In 2009, the percentage of large city black males who were not eligible for free or reduced price lunch and were performing at or above Proficient levels in mathematics was 11 percentage points lower than the percentage of white males in national public schools who were eligible for free or reduced-price lunch and were performing at or above Proficient levels. (Lewis et al., 2010, p.41)

Hsi Wu (2009) states that there is a lot more to teaching mathematics than teaching how to do calculations. Mathematics at the elementary level is the foundation of all K-12 mathematics and beyond (Hsi Wu, 2009). Hsi Wu (2009) further states that "coherence, precision, and reasoning are a prerequisite to making math learnable". The author contends that most elementary teachers lack the knowledge to teach mathematics which stems from their pre-service expectations (His Wu, 2009, p.14). The author further elaborates that we must teach mathematics the right way by creating a corps of teachers who have the requisite knowledge to get it done. According to Schmoker (2011) for students to become confident, knowledgeable math users, the math curriculum must be understandable and infused with literacy.

Teacher Reflection and Student Achievement

For teachers to be successful, they require the necessary tools for coping with challenges that occur each day (Yost, 2006). Research suggests that teachers will use reflection as a problem solving tool if trained to think reflectively (Dieker & Monda-Amaya, 1997; Yost, Sentner & Forlenza-Bailey, 2000; as cited in Yost, 2006). A study performed by Kelley (2004) required teachers to assess the efficacy of their instruction which in turn enabled them to determine their effectiveness. Numerous authors have put

forth the thought that critical reflection is a realistic tool to help teachers deal with issues that occur in the classroom (Dewey, 1933; Schön, 1987).

Dialogue with colleagues is critical to establishing an environment that supports long-term school and classroom improvement (Ferguson & Coupland, 2000). As teachers engage in an exchange of ideas, they begin to examine their own practice and beliefs about teaching, deepen their collective understanding, and develop support systems that encourage continual learning. They become more thoughtful about their practice and the strategies that they use to help students learn (Ferguson & Coupland, 2000).

Rodgers (2002) states that reflection can happen in the midst of an experience which is considered "reflection-in-action", or outside an experience which is "reflection-on-action" (Schön, 1983). Zeichner and Liston (1996) describe reflection-in-action as framing and solving problems on the spot, where unexpected student responses or understandings are met while teaching and changing instruction to take those actions into account. Reflection-on-action, according to the authors, comes either before or after a given situation (Zeichner & Liston, 1996).

In a qualitative study performed by Yost (2006), which examined the ability of teachers to use reflection as a problem solving tool, it was revealed that the participants in the study were highly successful in resolving academic and behavioral challenges by using a model of critical reflection that was introduced to them in their teacher education program. The model contained five elements: (a) identify the problem; (b) locate the source of the problem; (c) make connections to teacher education content or research; (d) implement alternative strategies; and (e) closely observe results and alter strategies when

and if necessary (Yost, 2006, p. 65). The goal was to produce graduates who had the ability to use critical reflection for the purpose of educational change.

Teacher reflection can be felt in the collaboration process of professional learning communities. According to Dufour and Eaker (1998), one purpose of learning communities is to be action-oriented where a willingness to experiment is the standard. Members of the community are asked to develop new presumptions and to test and evaluate the results. Reflecting on the results leads to the development of new theories that are then implemented and evaluated (Dufour & Eaker, 1998).

A research study performed by Vogt and Au (1995) where ongoing teacher development featured classroom observation, feedback with mentors and peers, and self-reflection through videotaping and journal writing were used as mechanisms for teacher support, found that self-reflection was a key to program change within a school to increase achievement. The authors state:

> However, it has been our experience that teachers who develop the skills of a reflective practitioner through training experiences such as these, tend to fall back on reflection, to engage these skills, when unexpected things happen in the classroom. They tend to withhold the automatic transnational response and assume a stance of; Hmmmm, what's going on here? They can make informed decisions without relying on another person to stimulate their thinking. Most certainly, these kinds of staff development opportunities foster much higher levels of skill in objective observation, analysis and reflection than traditional educational course work offers. (Vogt & Au, 1995, p.120)

Peterson and Clarke (as cited in Costa and Garmston, 1991) describe a four-phase cycle of instructional decision making where teachers engage before, during and after classroom instruction. The first phase includes all the thought processes which teachers perform prior to classroom instruction called the *planning phase*. The second phase involves the mental functions performed during the act of teaching and is referred to as

the *interactive phase*. The *reflective phase*, which is the third phase, is where teachers look back to compare, analyze and evaluate the decisions that were made during the planning and teaching phases. The final phase is where teachers abstract from what has been learned during their own critical self-reflection and then infuse that learning into future lessons. The process then begins all over again. Costa and Garmston (1991) contend that a basic assumption of teaching is that a teacher's observable classroom performance is based upon internal skills that are invisible which are thought processes that drive the apparent skills of teaching. The authors suggest that decision making is the basic behavior of teaching.

Teacher and Principal Engagement and Collaboration

Use of the term *collaboration* varies. In general, it entails a shared purpose, commitment to a continuing relationship, and bringing together people of different experiences and perspectives to gain results greater than could be accomplished individually (Markow & Pieters, 2009). Historically in education, the classroom has been the realm of an individual teacher, who worked independently to develop or adapt a curriculum and a unique style of teaching, and who succeeded, or not based, mainly on the individual's own strategies. Changes in education and society, however, have stressed a need for less isolation and more shared responsibility. Over the past twenty-five years, concern to increase the achievement of all students has led to waves of education reform, encouraging and duplicating innovation, setting standards, increasing accountability, and mandating greater use of data, particularly standardized tests, to demonstrate results (Markow & Pieters, 2009). According to Markow and Pieters (2009), high rates of teacher turnover have called attention to the need for more formal

ways of nurturing new teachers and sharing experience. Many changes, including growth in knowledge about different learning styles, importance of whole school reforms, and requirements for higher levels of college and career readiness have challenged, motivated and required most teachers, leaders and schools to seek greater collaboration. The experience, skills and viewpoints of others can be a resource for individual teachers in supporting them in being successful in meeting the diverse needs of students (Markow & Pieters, 2009).

In a 2008 study conducted by Robinson and associates, the researchers found that the leadership in higher performing schools was reported by teachers to be, among other things, more focused on teaching and learning and a stronger instructional resource for teachers and their development. The study also determined that effective leaders incorporate staff considerations with task requirements. Robinson and others (2008) contend that successful leadership influences teaching and learning both through face-to-face relationships and by structuring the way teachers do their work. The authors further report that the importance of relationships in high achieving schools was apparent in that the principal placed more emphasis on communicating goals and expectations. Clear goals focus attention and effort and enable individuals, groups, and organizations to use feedback to regulate their performance (Robinson et al., 2008).

In *Dimension 4* of the study completed by Robinson et al. (2008) which focused on promoting and participating in teacher learning and development, leadership was described as both promoting *and* participating because more was involved than just supporting staff in their learning. The leader participated in the learning as leader,

learner, or both. The contexts for such learning were both formal (staff meetings and professional development) and informal (discussions about specific teaching problems).

The more that teachers report their school leaders (usually the principal) to be active participants in teacher learning and development, the higher the student outcomes (Andrews & Soder, 1987; Bamburg & Andrews, 1990). Leaders in high-performing schools are also more likely to be described by their teachers as participating in informal staff discussions of teaching and teaching problems (Heck , Larsen, & Marcoulides,1990; Heck, Marcoulides & Lang, 1991).

The principal is also more likely to be seen by staff as a source of instructional advice, which suggests that they are both more accessible and more knowledgeable about instructional matters than their counterparts in similar lower achieving schools according to Robinson and others (2008). In one study that used a social network rather than instructional leadership theory, teachers were asked to indicate who they approach for advice about their teaching (Friedkin & Slater, 1994). Principals were significantly more likely to be cited as sources of advice in higher achieving schools in the study. In contrast, the extent to which teachers identified principals as participants in discussions was not significantly related to school performance in the study performed by Robinson et al. (2008). The authors suggested that leaders who are perceived as sources of instructional advice and expertise gain greater respect from their staff and hence have greater influence over how they teach. In addition, the principals' central position in school communication networks means that their advice is more likely to have an influence across the school (Friedkin & Slater, 1994).

Coaching as Engagement

Principals of today are charged with developing, creating and leading the learning organization. Teachers and principals must continuously interact with new ideas about their practice and collaborate to change ideas and practices to fit into the needs of the school's culture (Knapp, 2008). To do this, coaching has been identified as a tool to guide improvement in many arenas from athletics to business. This means for improvement was introduced in the business sector as *executive coaching* and was used to build skills, enhance performance, or to guide leaders toward the promotion of organizational objectives (Witherspoon & White, 1996).

In terms of the context of school and the education system, Reeves (2009) describes coaching as making use of independent professionals which includes retired administrators, who coach new principals, principals coaching teachers, veteran teachers who coach teachers facing significant challenges, and a wide range of consultants who provide instructional and leadership coaching. Reeves (2009) contends that effective coaching focuses on changing performance and the person receiving the coaching must agree that a change in performance is needed.

Recent educational research supports the premise that leadership coaching leads to increased effectiveness of school practices (Knight, 2008; Robertson, 2008). Reeves and Ellison (2009) list the advantages of coaching to an organization:

- the leader, the main client of the coach, who grows in three ways: coaching skills, strategies to accomplish the goals, and care of self in moving toward renewal;
- others who work with the leader as the leader begins to use newly learned coaching skills;
- individuals and teams the leader works with as they experience the work the leader begins to achieve;

- the organization as the actions of leaders and their teams accomplish meaningful outcomes and as it begins to embrace coaching as a strategy for problem solving and ultimately for changing the culture. (Ellison, 2009, p. 110-111)

Wise and Jacobo (2010) investigated the impact that coaching can have on the transformation of schools to meet the challenges of changes in school populations. The authors contend that in order for today's principals to create and sustain a learning organization, the school culture must be one where principals and teachers engage in constant dialogue and reflection for improvement to occur. The framework describes principals using coaching to clarify his or her beliefs, values, and vision and then composing a plan to involve all other stakeholders to move towards improvement. Teachers are then brought in to share the vision in directing and guiding the school. The leadership then becomes distributed so that the vision is strengthened. According to the authors, this builds capacity within the organization. John Birch (as cited in Reeves, 2009) summarized the research on coaching: "Coaching results in improved productivity, better relationships with direct reports and supervisors, improved teamwork, and greater job satisfaction." (Reeves, 2009, p. 73). The coach plays a vital role as a vehicle for new thoughts and ideas (Wise & Jacobo, 2010).

To guide change, effective leadership is essential (Wise & Jacobo, 2010). According to Fullan (2001), effective leaders do not lead change by their own innovative ideas, but through using creative ideas to build consistency within the school; that they are able to help others build understanding by addressing concerns and guiding shared meaning. Hall and Hord (2006) recognized the role of the principal as a change agent and a coach. They note, however, that though the research on successful schools

identifies the principal as a primary catalyst for success, the principal is not alone in this success as others play a major role (Hall & Hord, 2006).

Developing a common vision of increased achievement is a crucial element of success (Wise & Jacobo, 2010). According to Bolman and Deal (2000), the principal as coach must work to clarify beliefs, values, vision so that all stakeholders share a common vision leading toward student success. Effective leaders invite trust and encourage people to think in different ways, to take risks, challenge beliefs, and suspend judgment (Bolman & Deal, 2000). Coaching allows the principal to remain focused, reflect, assess, and strategize to develop an alignment to the goal of increased student achievement (Wise & Jacobo, 2010). According to Hargrove (2008), coaching has the power to motivate and empower people to think and act differently where eventual change will occur.

Analyzing student work can assist principals in becoming more effective instructional coaches (Nidus & Sadder, 2011). The process of "formative coaching" is an approach that can be used to create a community of educators who collaborate, reflect on, and improve their practice (Nidus & Sadder, 2011). In formative coaching, the administrators and teachers analyze student work as a means for creating next steps for instruction. Principals use formative coaching as a way to deepen conversation with teachers concerning instruction and achievement (Nidus & Sadder, 2011).

Professional Learning Communities

McEwan (2009) lists collaboration as an effective strategy to build instructional capacity in schools. The author offers the definition of collaboration as working with others to achieve a shared goal. McEwan (2009) further explains that collaborative

groups of teachers who have a common grade level, content area or group of students are also known as professional learning communities or PLC's (McEwan, 2009, p. 96). The critical attribute of the PLC is centered on collaboration for increased student achievement through improving instruction (McEwan, 2009).

According to Dufour and Eaker (1998), people who engage in collaborative team learning are able to learn from one another where creating momentum feeds continued improvement. Collaborative team learning focuses on organizational renewal and a willingness to work together in the continuous improvement processes (Dufour & Eaker, 1998, p. 27). In these communities, teachers recognize the obligation of working together for the purpose of achievement in student performance (Dufour & Eaker, 1998). According to the authors, teachers in professional learning communities understand and recognize that shared action is required to solve school problems and personal as well as professional responsibility are accepted as contribution to solutions. Teachers come together in sharing sessions where new ideas are presented for others to try in their classrooms. These sessions are also inspiring as colleagues are the ones sharing ideas where teachers can discuss practices and strategies with each other (Dufour & Eaker, 1998).

In a mixed method study consisting of surveys and interviews of teachers and principals performed by Markow and Pieters (2009), where beliefs of teachers and principals concerning collaboration to increase achievement were performed, the following findings were listed:

1. Two-thirds of teachers and three-quarters of principals think that greater collaboration among teachers and school leaders would have a major impact on improving student achievement.

2. On average, teachers spend 2.7 hours per week in structured collaboration with other teachers and school leaders, with 24% of teachers spending more than 3 hours per week.
3. The most frequent type of collaborative activities are teachers meeting in teams to learn what is necessary to help their students achieve at higher levels; school leaders sharing responsibility with teachers to achieve school goals; and beginning teachers working with more experienced teachers.
4. The least frequent type of collaborative activity is teachers observing each other in the classroom and providing feedback. (Markow & Pieters, 2009, p. 9)

The study also found that elementary schools were more collaborative than secondary schools. In addition, the study cited that schools with higher degrees of collaboration are associated with shared leadership and higher levels of trust and job satisfaction (Markow & Pieters, 2009).

Changes that occur in a school must ultimately enhance the capacity of teachers to teach well and must be supported in a variety of ways (Wise & Jacobo, 2010). When teachers are responsible for a room full of students who reside in disadvantaged circumstances, a leader who helps them find the strength, persistence and inspiration to increase achievement is needed, according to Wise and Jacobo (2010). Meaningful and consistent collaboration between teachers and school leaders can enhance the capability of teachers to support the increase in achievement of students (Wise & Jacobo, 2010).

Unlike standard staff development, learning communities encourage and allow for teachers to share and recognize the best of what they already know to increase achievement (Schmoker, 2006). Learning communities focus on what the typical workshops disregard: collective follow up, assessment, and adjustment of instruction (Schmoker, 2006). Accordingly, effective team-based learning communities, not workshops, are the best type of professional development (Scmoker, 2006). Schmoker (2006) further states one of the reasons such teamwork and lesson study are so effective

is that they tap into teachers' existing capabilities and potential, which are more likely to flourish in teams than under outside resources.

In a study performed by Franke and Kazemi (2004), teachers met in monthly workgroups throughout the year examining student work in mathematics. The study found that the teachers in the workgroups worked to create a community of teachers who learned from one another as they collaborated on the teaching of mathematics. In the study, the teachers learned how to elicit and listen to children's mathematical ideas, interpret them and use resources to decide the next step in developing instructional ideas. The participants were finding ways, by meeting in the workgroups, to experiment in their own classrooms and to use the workgroups as a place to further reflect on their experimentation to increase achievement in mathematics (Kazemi & Franke, 2004).

School Data Teams

More schools have begun using data teams as another form of collaborative communities to increase achievement. The purpose of these teams is to improve instructional practice and student learning through the collaborative process (McNulty & Besser 2011). These teams consist of the principal and teachers whose primary purpose is to engage in data driven decision-making that focus on the implementation of shared instructional practices to increase achievement (McNulty & Besser, 2011). The authors contend that data teams and professional learning communities differ in that PLC's grounds teams in the collaborative process and inquiry whereas school data teams enhance PLC's by providing a clear, data-driven structure that leads to results (McNulty & Besser, 2011).

According to White (2005) when data is collaboratively analyzed, it becomes meaningful, assists in making better decisions, and supports making a direct connection between the strategies that are used and the outcomes that are received. Through the collaborative process and dealing with student data, conditions are created for open dialogue and honest discussion (McNulty & Besser, 2011). Instructional improvement to increase achievement is at the foundation of the school data team (McNulty & Besser, 2011). Schmoker (2006) states that data teams are the right kind of collaboration. Data teams assist schools in becoming results driven and should be used as a way to improve teaching, learning, leadership, and most importantly, student achievement (McNulty & Besser, 2011).

There are several big ideas surrounding data teams according to McNulty & Besser (2011): (a) schools and districts get better outcomes when they focus and learn from that focus; (b) the primary focus should be on instruction; (c) implementation, monitoring, feedback, and support all matter; (d) data should provide a starting point and focus on the actions, help assess the team's progress, and identify where the team is being successful and where it needs support; (e) schools should align with the district in making improvements through data-driven investigation and continuous learning; and (f) data teams help schools to exam, learn more deeply, provide more effective guidance in terms of what support is needed and provide opportunities for leadership improvement, ownership and staff accountability.

Socio-cultural Learning Theory

Socio-cultural theory grew out of the work of the work of psychologist Lev Vygotsky who held the belief that parents, caregivers, peers and the culture surrounding a

person were responsible for the development of higher order functions. The theory not only focuses on how adults and peers influence individual learning but also on how cultural beliefs and attitudes impact how learning takes place (Vygotsky, 1978). Socio-cultural learning asserts that culture is the leading determinant of an individual's development (Vygotzy, 1978). The theory states that cognitive development results from dialectical processes that surround problem solving experiences that are shared with others (Doolittle, 1997). Teachers interacting with one another through discussions pertaining to student work or collaboration through data teams are examples of using dialogue to solve problems related to instruction and achievement. According to Doolittle (1997), interactions with surrounding culture, social agents, and more competent peers contribute to intellectual development.

The basic premise of socio-cultural learning theory is that cognitive processes develop through participating in shared problem-solving interactions (Knapp, 2008). One such interaction can be through the reflection process where the principal engages in conversation with teachers concerning instruction. According to Vygotsky (1978), reaching a person within their *Zone of Proximal Development* (ZPD) is important. ZPD is defined as the area in close proximity to current practice and/or knowledge where the person is most likely to learn (Vygotzy, 1978). Zone of Proximal Development includes all of the knowledge and skills that a person cannot yet perform or understand on their own but is capable of learning with support or guidance from others (Vygotzy, 1978).

Zone of Proximal Development is further demonstrated during the reflective dialogue process where a principal, another teacher or an instructional coach engages in dialogue with a teacher concerning instruction where areas of improvement are cited. For

example, the teacher receives information pertaining to instructional practices during an observation, that were not considered best practices, but through guidance and support from the principal, improvement can be achieved (Knapp, 2008). Vygotsky (1978) believed that learning occurs not through individual knowledge, but through engagement with others and that learners construct meaning through social interactions and also by this same process create habits of mind for the culture of their work environment (Wertsch, 1996). By engaging with other teachers, instructional coaches and principals, teachers learn to master the reflective process that may lead to changes in instructional delivery to increase achievement (Ferguson & Coupland, 2000). Vygotsky (1978) recognized the influence that peers have on learning (Jaramillo, 1996). Learning involves change and this social construction of meaning is how change occurs (Wise & Jacobo, 2010).

Socio-cultural learning theory explains the relationship of cultural, institutional, and historical context as related to individual mental functioning (Vygotzy, 1978). The focus is on the roles that participation in social interactions and activities that are culturally organized effect psychological development. Tudge and Scrimsher (2003) noted that Vygotsky was not only interested in what others who were more knowledgeable brought to an interaction, but what others who were less knowledgeable brought to the interaction as well and how the cultural setting shaped the interaction.

Wertsch (1991) identified a Vygotskian theme that human action, both socially and individually, is interceded by semiotics or tools and signs. These tools and signs can be language, computers, calculators and other items that are useful in representational activity. These means are the tools that facilitate the co-construction of knowledge used

to support future independent problem solving activity (Wertsch, 1991). As an example, teacher use of student data, assessments and assignments as a basis to construct knowledge concerning the achievement of students aids in changing instructional delivery of curriculum to increase achievement.

Peter Senge (1999) notes that "the rationale for any strategy for building a learning organization revolves around the premise that such organizations will produce dramatically improved results" (Senge, 1999, p. 44). This concept is supported by professional learning communities where focusing on continuous improvement is assessed on the basis of results rather than intentions (Dufour & Eaker, 1998).

Summary

The focus of chapter two provided a summary of the literature on topics related to principal engagement and collaboration with teachers that cause teachers to reflect on instructional practices to increase student achievement in mathematics in high poverty schools. Literature related to leadership models that are relative to principal leadership was discussed. The way teachers reflect on their instruction through collaboration with principals and other teachers was examined and discussed in terms of how reflection leads to student achievement.

Different types of collaboration amongst staff through professional learning communities, data teams, and coaching of teachers by the principal were discussed in Chapter 2. Instructional practices, along with instruction in mathematics, in struggling schools were investigated in this chapter. Finally, Vygotsky's Soci-cultural Learning Theory was discussed as the framework for this research. Methods used in the study to collect and analyze data are discussed in the following chapter.

CHAPTER 3

METHODOLOGY

This chapter describes the research methodology used to answer the overarching research question and the four subsequent research questions presented in chapter one that were used to guide this study. Using a qualitative design, this body of research provided a case study approach to examine how schools that increase mathematics Criterion Referenced Competency Test (CRCT) scores engage in conversation where teachers reflect on their instructional practices to make instructional changes to increase student achievement in mathematics in a Title I school. Merriam (2009) defines case study as an in-depth description and analysis of a *bounded system* where a bounded system is described as a "single entity", a unit around which there are boundaries (Merriam, 2009, p. 40). In this study the bounded system was Happy Elementary School, a pseudonym for the site of study.

Chronically low student achievement continues to plague America's schools (Schmidt, McKnight, & Raizen, 1996). According to Carey (2004) poor students, low performing students and students of color are far more likely to get teachers who are inexperienced, poorly educated, not highly qualified and who under-perform in the classroom. With The No Child Left Behind Act (2001) and school staff, including principals, being held accountable for student achievement, there is a need for expanding

the research on how principal engagement with teachers impacts teacher reflection to change instructional practices that will lead to an increase in achievement. Because the way teachers teach affects the way students learn, it is critical for teachers to make adjustments to meet the needs of their students as teacher success is defined by the success of students according to Martin & Furr (2010).

This body of research provided a detailed description of how principals engaged with teachers to influence reflection on instructional practices that led to instructional changes that impacted student achievement in mathematics in a Title I school. The following qualitative methods were used to answer the research questions associated with this study: (a) the study investigated how principals engaged with teachers in groups through observations of interactions in both formal and informal settings; and (b) to gain an understanding of how these engagements impact the way teachers reflected on their instruction, focus groups and one-on-one interviews were employed between the researcher, teachers and the principal.

The findings generated from this study are intended for teachers, principals and other school system personnel who seek to understand how engagement with teachers may or may not influence reflective practices in teaching.

Research Questions

Teachers must use the process of reflection to understand that the ways in which their students learn is central to achievement (Rodgers, 2002). According to Rodgers, the sequence of reflective teaching rests in the teacher's ability to slow down their thinking so that he or she can attend to what is rather than what they wish was so, and then shift the weight of that thinking from their own instruction to the learning of students.

A qualitative research design was employed to record and analyze how principals engage with teachers in formal and in informal settings that led to teachers reflecting on their instructional practices to impact student achievement in mathematics in a Title I school. An observation of a teacher group, along with the principal, engaging in conversations about student achievement during a PLC sesson, a focus group interview and individual interviews provided documentation for findings of this body of research.

The overarching research question guiding this study was: How do Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices?

The supporting questions

1. How do principals actively engage teachers in conversations concerning instruction?
2. To what extent do teachers' conversations with principals lead to self-reflection on their instructional practices?
3. In what ways do teacher reflections guide instructional practices?
4. What types of conversations occur between principals and teachers that cause teachers to change their instructional practices?

Research Design

In qualitative research, the focus is on process, meaning, and understanding (Merriam, 2009). The researcher is the primary instrument used to collect and analyze data (Merriam, 2009). A case study design was utilized to further explore the research questions. Merriam defines case study as "an in-depth description and analysis of a bounded system (object)" (Merriam, 2009, p. 40). Creswell (2007) defines case study as:

"developing an in-depth description and analysis of a case or multiple cases through the study of an event, a program, an activity, an individual or more than one individual" (Cresswell, 2007, p. 78).

This research method has many advantages for studies that desire to provide information about the distinctiveness of a particular population or area of interest where descriptive information is needed to answer a question or questions (Merriam, 2009). Case study research has proven useful for studying educational innovations, evaluation of programs and informing policy (Merriam, 2009).

Site Selection

Happy Elementary was selected for the research site because of the following criteria: (a) the school is considered to be Title I based on federal guidelines; (b) Happy Elementary has consistently shown growth in mathematics achievement within all subgroups; and (c) Professional Learning Communities exist within the school where the principal is an active participant.

Title I Designation

Ninety-three percent of the student population receives free or reduced lunch. This exceeds the federal criterion for school wide Title I status which requires that at least 75% of the students receive free or reduced lunch. Thirty-six percent of the students are black, 49% Hispanic, and six percent of the students are white. The other nine percent of students are considered multi-racial or Asian.

Mathematics Achievement

The school has consistently shown growth in mathematics achievement within all subgroups of the student population which includes black students, English Language

Learners (ELL), students with disabilities (SWD), and economically Disadvantaged (ED) students. This is a second criterion for selecting this site based on the research study. The state Department of Education provided a list of Title I schools that met AYP in mathematics for all subgroups for the 2007-2011 school years (The Governor's Office of Student Achievement, 2011). Happy Elementary was one such school. Data in Table 1 below provides results of Happy in the area of mathematics over the course of three years for the *All Students* group.

Table 4

*Georgia Criterion-Referenced Competency Tests (CRCT): Comparison for 3rd-5th Grade Students in Math-Percentage Meeting and Exceeding Standards at Happy Elementary**

School Year	2008-09	2009-10	2010-11
Grade 3rd	78%	78%	67%
4th	59%	54%	79%
5th	84%	82%	91%

(*GOSA, 2011)

Professional Learning Communities

A third criterion for selecting Happy was that professional learning communities exist within the school where the principal is an active participant. These teams allow teachers to engage in reviewing student data and student work to make instructional decisions with the principal, as well as with one another, concerning student achievement.

Principals within two metro Atlanta school districts, where schools were identified as high poverty and showed consistent gains in mathematics CRCT scores, were petitioned for involvement in the study. This information was retrieved from the Governor's Office of Student Achievement. The principals of these schools were

solicited by the researcher in order to determine if the teachers and the principal met in PLC's to discuss student achievement on a regular basis. Happy and another site were selected for the investigation as the principals agreed to allow the researcher to conduct the study upon approval of the school district and Mercer University's Institutional Review Board (IRB) approval for the use of human subjects. Happy was the final selection as the principal at the additional site was not directly involved in the PLC process with the teachers.

The researcher requested official, written permission from the research department in the school system where Happy Elementary is located to obtain permission to conduct the study. The researcher then solicited approval through Mercer University's IRB application process. Once written approval was secured through both sources, the study commenced.

Happy Elementary School is located ten to fifteen miles southwest of Atlanta in the state of Georgia. According to the 2010 census report (Census Bureau, 2010), the small city where the school is located consists of 6,373 residents where 29% are African-American, 43% white, and 35% are Hispanic. The school reflects a high population of Hispanic and African-American students. The population of white students has changed over the years where this population is now in the minority at the school. The researcher was not able to determine the cause of this change.

The area consists of 74% high school graduates and 17% of the residents hold a Bachelor's degree or higher. The median household income of residents is reported as $34,167. Thirty-four percent of the residents in the area live below the poverty line

which reflects the amount of poverty within the school. Ninety-three percent of the students receive free or reduced lunches.

The population in this small city has decreased about 3% from the 2000 census. This could be due to the closing of a major automotive plant that once thrived in the area. Residents in the area are primarily employed in retail, warehousing and manufacturing. The area touts many small businesses that range from food retail to supplying goods and services to the local residents as well as other small surrounding businesses. Thirty-eight percent of the population is actual homeowners.

The school serves about 684 students in grades prekindergarten through fifth. About 173 students are enrolled in English Language Learners (ELL) classes and 145 students are receiving support through the Early Intervention Program (EIP), which supports those students who are considered as struggling either by their CRCT scores or by teacher identification (GOSA, 2011). Fifty-five full time staff members and nine part time staff are assigned to Happy. Forty-one staff members have received level five and above certification. Thirty-five staff members are African-American. Twenty-six are Caucasian and three are considered multi-racial. Thirty-eight staff members have one to ten years of teaching experience. Eighteen have eleven to twenty years of teaching experience, while seven have twenty-one to thirty years of experience. The principal has been leading the school for ten years and has recently announced her retirement.

Participants

Teachers and the principal of the selected school were the targeted participants for this study. The criteria established for the participants were that they have been employed full time at the research site for at least one full academic school year and

possess a state-issued clear renewable teaching certificate (highly qualified status). Participants selected were teachers in grades kindergarten through five who directly instruct students in mathematics or who impact students' mathematics achievement. It was important that participants had at least a full year's experience in working with the principal and other teachers in the PLC setting because they would have knowledge of the protocols set forth in working in this setting. The principal served as the primary source of identifying teacher participants who were highly qualified, directly instruct students daily, and had been employed at the school for at least one year. An invitation to participate in the study was placed in each teacher's mailbox.

Of the full time teaching staff that was solicited, fourteen responded. Of this fourteen, four teachers participated in the focus group and another four teachers, along with the principal, participated in the one-on-one interviews. The remaining six did not respond to follow up emails, thus not participating. The principal participated in the one-on-one interview process as well. The participants represented racial diversities from Caucasian, African-American and Hispanic origin. Of the eight participants, two were Caucasian, one was multi-racial, and all others were African American. The teachers represented students in grades kindergarten through grade five. One participant taught special education students. Two teachers taught ELL classes within the regular education setting. One teacher was the math coach for the school and was the only male participant. The principal was African-American and was in her early sixties. Each participant had varying levels of overall teaching experience and different years of experience teaching at Happy Elementary. This information was obtained during the interview process. Information regarding the participants is shown in Table 5.

Table 5

Information Pertaining to Participants of Happy Elementary School

Participant	Grade/Area	Ethnicity	Other Information
AL	Math Coach	African-American	Male, teaches all students Supports all teachers with instructional strategies or modeling of instruction
Ms. C.	Special Ed.	African-American	Provides instruction for students in grades kindergarten-2nd
TS	2nd Grade	African-American	Initially struggled as a teacher
TF	ELL	Hispanic/AA	Works collaboratively with teachers in grades 3-5; teaches ELL pull out; pushes into 5th grade math classes
SJ	5th Grade	African-American	Began at Happy as a student teacher
LT	4th Grade	African-American	Serves on Leadership Team; teaches Subjects
AS	2nd Grade	Caucasian	Second year at Happy; taught prek previous year
SL	ELL	Caucasian	Works collaboratively with teachers in kindergarten through 2nd; skilled in technology; has 23 years of teaching experience
Ms. Principal		African-American	10 years as principal; just announced her retirement

Data Collection

Audiotaped interviews, a focus group, observations from a kindergarten PLC session and field notes were used to collect data for this study. Once participants agreed to participate, each received an *Informed Consent* document outlining the study and the

agreement to confidentiality of the researcher. The researcher implemented the use of audio-taped, one-on-one interviews and a focus group, an observation during a PLC meeting, field notes from all observation opportunities, and a researcher's journal as tools to collect data.

Observations

According to Merriam (2009), *fieldwork* involves going to the site, program, institution, or setting to observe the phenomenon under study. An observation, individual interviews and a focus group were the sources used to collect data for the study. Observations are a primary source for collecting data in a qualitative study according to Bogdan and Biklen (2007). Patton (2002) states that observations are performed when the researcher is involved as a participant observer and there is the opportunity for observations and recordings of the setting being researched.

Observations allowed the researcher to observe the phenomenon in its natural setting, and the data collected represented a firsthand encounter with the experiences of the teachers and the principal (Merriam, 2009). This made it possible to record behaviors as if they were occurring. The researcher followed Patton's (2002) recommendations to prepare for the observation, which include: (a) learning to pay attention; (b) learning how to write descriptively; (c) practicing the disciplined recording of field notes; (d) knowing how to separate detail from trivia; and (e) using rigorous methods to validate observations. The interactions observed occurred during the following: (a) teachers interacting with the principal within PLC's; (b) teachers interacting among themselves in PLC's; and (c) the principal and teachers interacting in settings where informal engagements took place after the PLC session.

Field notes and a recording device were used to record observations. According to Merriam (2009), field notes are a written account of the observation that is being conducted. A field journal and a tape recorder were used as reflection tools to register any thoughts, descriptions, actions, conversations and perspectives of the setting throughout the study. A fieldwork journal, as recommended by Merriam (2009), was used to record the researcher's experience in the field. In the current study, the goal of the interview process was to elicit responses from participants that demonstrated how they reflect on their instructional practices to make instructional decisions and to what extent they engage in conversations with the principal that lead to self-reflection of their instruction.

The researcher used a journal as a method to reflect during the research period. Included in the journal were the thoughts and feelings of the participants, research site, as well as the research process for this qualitative study. The researcher also used this as a means to bracket researcher bias. Patton (2002) suggests that researchers record their feelings and responses of what is observed during this period.

Interviews

Interviews were also used as a source of data collection. deMarrais (2004) defines an interview as the "process in which a researcher and participant engage in a conversation focused on questions related to a research study" (deMarrais, 2004, p. 55). The most common type of interview is the person-to-person encounter where one person extracts information from another (Merriam, 2009). Also conducted was a focus group, also known as a group interview. According to Patton (2002), the main purpose of an interview is for the researcher to find out what is "in and on someone else's mind"

(Patton, 2002, p. 341). Interviewing becomes necessary when a researcher cannot observe behavior, feelings or how people interpret the world around them (Merriam, 2009).

Merriam (2009) describes three types of interviews, highly structured or standard, semi-structured, and unstructured or informal. In semi-structured interviews, the questions are more flexibly worded or the interview is a mix of more or less structured questions. Questions are open-ended to allow the researcher to respond to the situation at hand, to the rising worldview of the person being interviewed, and to new ideas on the topic (Merriam, 2009). For the purpose of this research study, semi-structured interviews were conducted.

This study's third data collection method was the focus group interview. According to Merriam (2009), a focus group interview involves a group of people who have knowledge of a topic. In this study, the focus group was dependent on the makeup of the topic, so it included teachers who instructed students in mathematics. Purposeful sampling was used to include people who knew the most about the topic (Merriam, 2009). A focus group was advantageous to this study because: (a) information from this particular set of respondents yielded the best information about how the school principal engages in conversation with the participants and how this conversation leads to self-reflection to impact instruction; (b) individuals interviewed in a one-on-one setting are hesitant to respond; (c) respondents were familiar with one another and were cooperative; and (d) time to collect information is limited (Creswell, 2007).

The questions asked during each interview were highly dependent upon the focus of the study and were worded in a way that enabled the researcher to extract information

about the topic (Merriam, 2009). Patton (2002) suggests six types of questions: (a) experience and behavior; (b) opinion and values; (c) feelings; (d) knowledge; (e) sensory; and (f) background/demographic. The purpose of the experience and behavior questions is to elicit information from respondents concerning behavior, actions and activities. Opinion and values questions examine the beliefs and opinions of respondents. Feelings questions tap into the emotional dimensions of the respondents. Knowledge questions elicit factual information from respondents. Sensory questions allow the researcher to elicit more specific data that require participants to use the five senses. Finally, background and demographic questions refer to the personal demographics of the respondents such as age, income, education, or number of years on the job that are relevant to the study (Patton, 2002). For the purpose of this study, experience and behavior questions were used.

A recording device was used to record the one-on-interviews of all participants as well as for the focus group interview. The purpose of the recordings was to assure that all information reported by the participants was accurate. Recording the interviews allowed the researcher to ask questions and engage in ordinary conversation with the participants. Relying on note taking during the interviews would prohibit and interrupt the natural flow of conversation between the researcher and participants. The researcher made anecdotal notes of questions that emerged during the interviewing process.

The researcher conducted a one-on-one interview with each participant who chose to participate, and a focus group interview using semi-structured questions for those participants who chose to participate in this activity. Semi-structured questions allowed the researcher to probe, explore and to ask additional questions as needed (Patton, 2002).

The researcher hosted four participants for the focus group as Merriam (2009) states that a focus group should contain no more than ten participants at a time as these were the people who desired to be a part of this group as opposed to a one-on-one interview.

Observing and using the semi-structured interviewing process were the data sources used in this investigation. The types of questions used in this process were experience and behavior as the researcher desired to identify the behaviors and activities that existed within the site that led to conversations between the principal and teachers that impacted students' mathematics achievement.

Trustworthiness and Credibility

Per Lincoln and Guba's (1985) standards, trustworthiness was established through: (a) credibility; (b) transferability; (c) dependability; and (d) confirmability. Credibility speaks to the question of how research findings match reality, how congruent the findings are with reality, and whether or not the findings really capture what is in the research (Merriam, 2009). Credibility was established through the use of triangulation, the most well known strategy used to increase credibility in a qualitative study (Merriam, 2009).

According to Merriam (2009), triangulation "shores up" the internal validity of a study. Denzin and Lincoln (2005) propose four types of triangulation: (a) the use of multiple methods; (b) multiple sources of data; (c) multiple investigators; or (d) multiple theories to confirm emerging findings. This study involved the use of multiple methods and multiple sources of data. Data were triangulated by conducting interviews, an observation and a focus group to support the implementation of using multiple methods for increasing credibility of the study. The researcher also used member checking,

conducted multiple interviews and made several notes of descriptive information pertaining to the site while waiting for interviews to be conducted as multiple data sources. These data sources allowed the researcher to rule out the possibility of misinterpreting what participants say and do (Merriam, 2009). Trustworthiness was also established through transferability. Transferability requires detailed description of the findings with adequate evidence in the form of quotes from participant interviews, field notes and documents (Merriam, 2009). Transferability questions whether or not the findings can be applied to another context and the extent to which conclusions or findings of a study could be relevant (Angrosino, 1989, as cited in Creswell, 2010). To achieve transferability, the researcher provided a thick, rich description of the setting and quotes from the participants involved the study.

Dependability, another element of trustworthiness, refers to the extent to which research findings can be replicated or repeated (Merriam, 2009). According to Merriam (2009), researchers conduct qualitative research to describe and explain the world as those in the world experience it, and there is no benchmark to use to replicate a qualitative study, but more important is the question of whether or not the results are consistent with the data collected. To ensure dependability for the current study, the researcher utilized member checking and the collection of multiple sources of data.

Confirmability was the final element used to establish trustworthiness. Merriam (2009) addresses Lincoln and Guba's (1985) confirmability as ethics of the researcher. Patton (2002) uses the term interchangeably with "credibility" and states that it involves professional integrity and methodological competence (Patton, 2002, p. 570). Both authors state that a research study has to be carried out with integrity and trust (Merriam,

2009; Patton, 2002). During the interview process, the researcher established mutual trust and respect among the participants through what Patton (1990) calls sponsor credibility. Sponsor credibility allows the researcher to establish trust through another person's legitimacy and credibility. For the purpose of this study, sponsor credibility was obtained through the school's principal with support of introductions to participants and an explanation of the purpose of the research. The researcher established personal relationships by appealing to participants' understanding of the purpose of the study and its possible impact on student achievement at Happy. The zeal of the researcher for the value and input of the participants in contributing to the research study was also used to establish a relationship.

Researcher's Role

The researcher served two roles in the study, as the principal investigator and as an observer participant. As the principal investigator, the role of the researcher was to act as an observer and as the facilitator of the individual and focus group interviews. As an observer, the role of the researcher was to inconspicuously record and analyze the physical environment and human interactions of the participants in their natural environment, Happy Elementary School. According to Merriam (2009), in the observer as participant role, the researcher's observer activities are known to the group and participation in the group is secondary to the role of information gatherer (Merriam, 2009, p. 124). Researchers in this role "observe and interact closely enough with members to establish an insider's identity without participating in those activities constituting the core of group membership" (Merriam, 2009, p. 125). Observational data represent a firsthand encounter with the phenomenon of interest, where information is

gained in the naturally occurring setting, rather than a secondhand account that is obtained through an interview (Merriam, 2009).

Researcher Bias

As a principal of a Title I elementary school, the researcher acknowledged any personal biases during this study. One of the biases included the researcher's involvement in implementing the practice of professional learning communities at her own school site where using engagement with teachers is a part of the process. Thoughts for the effectiveness of the PLC process used by the staff at Happy could have impacted the outcome of the study. Information from this study may be used to impact the implementation of the PLC process at the researcher's school. The researcher remained cognizant of these biases throughout the study to prevent the influence of the results. Observer comments were noted as a part of the researcher's field notes and were noted in the researcher's journal. Merriam (2009) contends that *observer comments* are used in field notes to denote the *feelings* of the researcher and are used to prevent research bias. Neutrality of the researcher, during the interviews, prevented the researcher's passion from overshadowing and influencing the responses of the participants. The researcher allowed a neutral party to read all transcriptions and codings as a means to double check for researcher bias. A transcriptionist was hired for the purpose of transcribing the audio-taped information into legible transcripts. Member checking was used as a mode to check for researcher bias. This allowed the researcher to confirm that what was transcribed is what was stated during the interviews and focus group.

Institutional Review Board Approval

The researcher submitted a signed application for Research and Human Subjects to Mercer University's Institutional Review Board (IRB) for approval, as well as to the IRB of the selected site. Once approval was received from both Mercer's IRB and from the IRB of the selected case study site, the research began using the data collection process. All guidelines and requirements from Mercer University's IRB and the selected site were observed for the duration of the data collection phase of the study. Confidentiality of all participants and the site was established through the use of pseudonyms and non-specific demographic descriptors.

Participants were interviewed, based on the availability of the participants' schedules, in a private room located within the selected site in the front office area. One interview was held in the classroom of one of the participants. A paid assistant transcribed all data collected from one-on-one interviews and the focus group. The researcher checked and verified all transcripts. The researcher analyzed and coded all data. Field notes and recordings will be maintained on the researcher's personal computer, notebook, recording device and within the researcher's home office. Only the researcher and assistant will have access to recordings which will be destroyed in three years.

Data Analysis

The analysis of data related the findings of the study to the literature provided to support the rationale for the study. Patton (1990) contends that the most significant factor of a study is analyzing data to produce findings. Information collected was coded according to patterns and themes that were identified. According to Weiss (1994), the

objective of coding is to link what the respondent says in the interview to the concepts and categories that will appear in the final report. Bogdan and Biklen (2007) state that data analysis for this research type involves combining the information collected by the researcher from interviews, the focus group, and the observation to produce findings.

The transcripts of the interviews and focus group were analyzed to detect and discover similarities and differences in the responses of the participants. Double spacing, line numbers and broad margins were used in the transcripts to allow for comments and coding. After the transcripts were coded and the similarities that existed were identified the themes for the study were generated. The researcher used this information to group similar responses to provide answers to the research questions. This information was used to identify commonalities in the responses and to draw conclusions. Data were divided into themes after coding the transcriptions. The appropriate themes were matched with the appropriate research questions.

Reporting Results

After data were collected, the researcher submitted audio-taped information to a transcriber for the purpose of the researcher's ability to analyze the data. The information gathered through data analysis from the interviews, focus group, observation and field notes were combined to detect common themes. In reporting the data, a narrative summary was used to report the results of the study.

Summary

This chapter provided background information for the selected site and participants who volunteered for the study. An in-depth description of the site was provided to support the rationale for the site selection. Chapter three focused on

presenting a detailed description of the research design for the study as a single case, within a natural setting (Creswell, 2007). The chapter also provided a detailed description of the research methods which consisted of one-on-one interviews, a focus group and at least one observation of a professional learning community.

The chapter continued with a detailed description of the selected site, participants of the study, description of the population, and the site selection process. Procedures for collecting data, the Institutional Review Board approval process, data analysis and how results were reported followed. Interviews, focus group and observation were used to collect data. Information recorded was transcribed verbatim and all transcripts were coded to identify common themes for each session.

A narrative summary was used to report the data collection and analysis. Chapter 4 will present the results of the methodology described in this chapter.

CHAPTER 4

RESULTS

The purpose of the research study was to identify how principal engagement with teachers impacted how teachers self-reflected on their instructional practices that led to changes in their instruction to increase student achievement in mathematics. After an extensive literature review, the researcher selected to conduct a qualitative, single case study of one Title I elementary school in a large suburban, metropolitan school district that reported continuous achievement in mathematics on the CRCT for all subgroups.

The chapter is organized into several sections which include a description of the respondents and visits to the site with an explanation of events during observations. The remaining sections are guided by the four research questions where recurring themes were identified. These themes are based on the frequency of responses from participants during the individual and focus group interviews and an observation of the professional learning community (PLC).

The overarching research question for the study was: How do Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices. In addition, there were four supporting research questions.

1. How do principals actively engage teachers in conversations concerning instruction?

2. To what extent do teachers' conversations with principals lead to self-reflection on their instructional practices?
3. In what ways do teacher reflections guide instructional practices?
4. What types of conversations occur between principals and teachers that cause teachers to change their instructional practices?

Respondents

Eight teachers and the principal participated in either one-on-one interviews or a focus group. Teaching experience of the participants ranged from two years to 23 years of classroom experience. The participants represented racial diversities from Caucasian, African-American and Hispanic origin. Of the eight participants, two were Caucasian, one was multi-racial, and all others were African American. The teachers represented students in grades kindergarten through grade five. One participant taught special education students. Two teachers taught ELL classes within the regular education setting. One teacher was the math coach for the school and was the only male participant.

Site Visits and Observation

The researcher visited the site on nine different occasions. The purpose of the visits was to meet with the participants either for one-on-one interviews, for a focus group or to observe. The initial visit was scheduled to meet with the principal to discuss the role of the participants in the study, get her signature of the Research Request and the Informed Consent forms, and for the researcher to begin to immerse into the culture of the school by interviewing the principal. The researcher and the principal met in the principal's office during after school hours for about an hour and a half discussing the

research study. The researcher attempted to begin the interview process with the principal, but the recording device did not capture any of the conversation. As a result, another meeting was set up later to interview the principal. This worked to the advantage of the researcher in that interviewing the teachers first removed some of the bias of the researcher.

During some of the site visits, the researcher was able to sit quietly to observe the operations of the school prior to moving to interview participants. Another visit to the site occurred during the school day while one of the participants was on her planning period. The researcher met the participant in her classroom. The classroom was student-focused with lots of student work displayed. There was much print around the room that consisted of student work, charts, student data, and other teaching and learning tools. This was a fifth grade classroom, but the room contained tables rather than desks. The teacher explained that she decided to use tables in lieu of desks to prevent students from taking things from other students as the grade level was departmentalized where each teacher taught either reading, math, science or social studies.

The final visit was for the observation of the professional learning community for mathematics. The PLC consisted of kindergarten teachers, the principal, the mathematics coach, the special education teacher and the Early Intervention Program (EIP) teacher. The meeting was held in the room of the teacher leader. There was much print along the parameters of the room with some student work displayed. One of the kindergarten teachers had brought donuts for the group and encouraged all to eat them. Only a few did. The team sat in a semi-circle so that they could all see one another.

Initially the teachers seemed reserved and quiet. The researcher could not determine if it was due to her presence or if this was the normal demeanor of the meeting for this team. It is also relevant to add that each team member had a PLC binder and was expected to have it at all PLC's. It was not clear to the researcher what was in the binders. It is also important to note that two of the teachers did not say much during the discussion. Both were Caucasian and one appeared to be the oldest teacher on the team and the other appeared to be the youngest member. These teachers only spoke when they were asked to while others joined the conversations at will. It was not clear to the researcher the dynamics of why this was so. The other teachers consisted of the math coach, an African-American male; the principal; the special education teacher who was a young, heavy set African-American woman who entered the meeting late; the Early Intervention Program (EIP) teacher, a fortyish-looking African-American; and two other kindergarten teachers, both early to late fifties and African-American as well. The lead teacher appeared to be in her early thirties and was Caucasian.

The researcher was only able to conduct one observation due to scheduling conflicts. The study commenced during a critical time of the school year, which was CRCT preparation and testing. The participants were immersed in preparing their students for the CRCT as well as other end of year assessments.

The following section provides results that suggest answers to the research questions and identifies recurring themes that were identified through interviews with the participants as well as an observation of a professional learning community with a team of teachers and the principal.

Principal Engagement of Teachers in Conversations

The first research question addressed how the principal engages her teachers in conversations concerning instruction. The following themes were identified from the participants' responses that addressed how the principal engaged teachers in conversations concerning instruction: (a) conversations about support for teachers, (b) conversations that provided feedback to teachers, and (c) conversations about student achievement.

Support for Teachers

In a conversation with one participant during the individual interviews, the teacher shared how she reached out to the principal for support with something that she wanted to try in her classroom. She discussed that the conversation was supportive from the principal in that the teacher was allowed to try it. The participant talked about why the principal supported the effort in that it was research-based and she could show evidence that it worked for students. Another teacher offered that the principal once sent her an email about a lesson describing it as the "best lesson that she had ever seen". A conversation between the principal and the teacher pertaining to the lesson had occurred prior to the email.

AS, a teacher, discussed how conversations that she has had with the principal concerning student behavior or parent situations have been supportive on the part of the principal. She talked about the principal being available for her on these issues. Her statement is as follows:

> I try to be very open as a teacher, you know if I have any questions I don't want to – I want to go to a supervisor if I do have questions. So she is available and I talk to her, usually over a situation where I'm not sure what to do in a situation, or, you know, something on that line and she usually provides guidance for me.

The principal, in her interview, discussed how she offers support to teachers through conversations with them. She discussed how she will ask the teachers what can she do and some will ask her to come into their classrooms to model. She stated that she will either come in or someone else from the support staff will come in to assist the teacher with the request. She provided the following example of a conversation that she had with others on the Administrative Team concerning how to support a particular teacher:

> I don't really think she knows how to model yet. I say I'm going down and we've talked about it or I've gone down and modeled. I need for you to make sure you go in at the beginning of her class period to observe her modeling because I think it helps them [the teachers] to hear from more than one person. When they hear it from more than one person, that usually works for that person who is not making a difference.

Feedback to Teachers

Providing feedback to teachers after a formal or informal observation was a second recurring theme from the participants as to how they were actively engaged in conversations with the principal. The principal discussed how asking questions of the teachers when meeting with them or using open-ended statements that allowed them to begin the conversation concerning their observations opened the avenue to begin the dialogue on their performance. She stated:

> Even though I ask questions, usually my question would be, tell me how you think you did, okay? And then I get them to sort of do their own reflection with that. But since the Cambridge Education came out, you know, with County, I use their questions now. My teaching and learning is at its best when... and teaching and learning could have been better if... And we just had a great time using those sentence starters. And teachers think real hard. A lot of time they try to think of what they think I want to hear and I say to them, just truly think about what you did and reflect on, now that it's over, how you could have done it better. And so I get some . . . I get some good conversations from that. And as a result of that, you know, I offer suggestions of things that I would suggest doing and sometimes, I

> love taking the opportunity of taking the observation and the comments that I made and sharing with them, if I was the classroom teacher and I had this lesson, this is what I think I would tried, you know. They love to hear the leaders give them suggestions of what they would do instead of just saying "I really would like to see you improve in that", they like to hear us say what we would have done differently.

The teacher participants offered that most of the feedback they received came from meeting with the principal or another member of the Administrative Team after an informal or formal observation. SL, an ESOL teacher, discussed that one of the conversations about her performance centered on her use of technology in her instruction. She stated that the conversation was positive and was held after an observation.

SJ, a teacher who has been employed at Happy Elementary School for a while, discussed how she receives feedback from the principal during informal conversations that sometimes occurred in the hallways. She discussed that the relationship with the principal is open and feels comfortable discussing her students and her performance with the principal. She said that the conversations usually begin with the principal asking, "How are you?" or "How are things going?" She stated that the questions are not about her personally, but about how things are going in her classroom with her students. One discussion centered on a problem that she was having with a certain group. SJ discussed how the principal suggested that she see another staff member concerning some materials that might be helpful to her. She shared:

> Often times she'll say something that will send me off. So, for instance, we were having problems with a group that I teach, vocabulary arts, with vocabulary. And so she said, well, why don't you get this new program I just bought, you should try it with that group of kids. It was wonderful. And so she made a suggestion that involved me going to see our language arts coach to get the materials and to use them and it worked out great.

Student Achievement

The third theme that addressed how the participants were engaged by the principal in conversations concerning instruction was that of student achievement. Each of the participants was able to relay conversations where they were actively engaged with the principal concerning student achievement. The teachers all seemed to have an understanding that the ultimate goal for everything that occurred at Happy Elementary School was for the achievement of the students. During the focus group interview the following comments were provided:

> TF: I want to say one last thing. You didn't ask much about it, but we work as hard as we work for these students. We have the best students, hands down, in the whole county. Sorry. And these students come from all type of backgrounds. They face so many different challenges. And for them to still get up each morning and come here with smiles on their faces. Some of them have not eaten. Some of them have not slept, but they still come here for us so we owe them. And I think almost every teacher in this building takes that approach with these kids, no matter what their exceptionalities are, no matter what their stories are. That's our approach.
>
> TF: They're here for us, so we have to be here for them.
>
> TS: They do love us. They want to work hard for us. They do. So I tell my kids all the time, we're a family in here. A mama and her babies. And they believe it. And once you get them to buy into anything you got them.

This was also reiterated by the principal as well. The principal described conversations with teachers who received "Needs Improvement" on observations. She discussed how she was able to actively engage the teachers in the conversations about their performances that ultimately led to them doing a better job with her support, suggestions and even co-teaching with some staff. The conversations were all initiated by the principal due to what she saw in some classrooms with the achievement of the students. The principal offered the following information:

> You get to see where a teacher who was receiving NI's and engaging students no longer got them for the rest of the year after a certain amount of time. So you

know that that teacher is maintaining, she's grown and she's maintained. If they begin to drop back then just looking at that data, that teacher data, I'm able to call her back in. The data is not a secret. And I can ask what's going on? Are you encountering challenges with some of the elements and things like that? And they'll say no. I thought I was engaging or something like that. So then I will ask teachers — I usually will ask teachers to bring their lesson plans out and let's just go over the lesson plans. And so when they bring their lesson plans we'll go over activities and I will say something like, if I came into your classroom, instead of the person who did, I would want to see a child doing this, this, and this. I would want to hear children talking. You could have asked this type of question to make that happen. So they begin to, depending on the scale. I found that teachers do not engage students. They engage them least when they don't know the skill well themselves. So when you talk about it and talk about how they can. Because we still have teachers who ineffectively instruct children. And you just can't be in all the classrooms.

AL, the mathematics coach, discussed a conversation with the principal concerning student achievement during the focus group. He described the conversation surrounding his role in mathematics achievement at Happy Elementary School. He talked about how he and the principal discussed the role of reading and vocabulary in mathematics and how critical they are in moving students forward in mathematics:

> She's given me autonomy to do what we're been mentioning. My biggest focus is, like I said, I actually try to just check the reading and math data. And what I find is something that we're repeated here that the vocabulary is very important. So, like they both mentioned, I'm very big on the vocabulary because I truly believe with reading and I encourage the kids to read. I truly believe if they can understand it, if they can comprehend what's written on the paper, then they can believe to pull out, they can begin to pull the problem apart and use the strategies that they've been taught. But she's been very supportive as far as me pushing vocabulary, pushing higher order activities, because we've been doing more so the Georgia frameworks now where they have a lot of the activities that challenge kids to think big. So it's more autonomy as far as challenging our kids and the teachers.

Teachers' Conversations with the Principal and Teachers' Self-Reflections

The second research question explored the extent to which teachers'

conversations with principals lead to self-reflection on their instructional practices. Common responses indicated that conversations with the principal were open and honest and that teachers were held accountable for student achievement. Those two themes caused teachers to reflect and make changes according to the responses.

Honest Dialogue

The participants expressed that the conversations held with the principal were open and honest. According to one of the teachers, SJ, she has a very open relationship with the principal at Happy Elementary School and she feels comfortable talking with her. During the one-on-one interview SJ explained that if she was not doing something right that she felt confident that the principal would be honest. She stated, "She would say something and it would not tear me to pieces, like my world wouldn't be shaken. She'll say, why are you doing that? That's not how we do it. Okay. Go fix it!"

In another interview, AS stated that when she has met with the principal, "we go over things that I could improve on or that I do well". She provided a scenario of when the principal came in to observe a lesson in mathematics. AS stated:

> She actually gave me some great advice. She suggested one of the things that I needed to work on is my modeling and a little bit more practice for the students. So since then I've been working very hard on modeling, thinking out loud and about more guided practice for my students, seeing exactly where they are before I have them work independently or work in groups.

This premise was supported by the principal in her interview. She discussed how she is always up front with the teachers and how she equated the phrase of "playing school" with teachers not performing up to expectations and that teachers have to understand that the children are our customers. The principal stated:

> I have to be honest as we are right there in the trenches with them and teachers are just uncomfortable being asked to explain why children in their classrooms are not learning.

During the focus group interview, TF an ESOL teacher, described a conversation with the principal that was open and honest after a formal observation:

> I remember my first year. I'm a fifth-year teacher, and I remember my first year teaching and the principal came in to observe a lesson. And after the lesson, you know, we had a conference, and you know, she explained to me that she expects the best from her teachers. And she told me, she said the lesson was sub-par and it could have been a lot better. And so within that conversation, you know, she encouraged me, offered professional development and she just told me to always be prepared for my lessons and if it was something that I didn't, maybe, understand, to do my research and to utilize, you know, the math coach. So in all that I can say that she has encouraged me and she has pushed me to become a better mathematics teacher. And I can say that I have seen myself grow within the past five years, and I feel much more comfortable teaching math now. I enjoy it much more because of, you know, just whether it's a formal conference or just informal and even now when she comes into my classroom, you know, I can see that she is proud of what I'm doing because she may have a smile on her face or she's impressed when my students are able to tell her what they're doing and what they're expected to know by the end of the lesson.

From this conversation, TF stated that the conversation was "hurtful" at first, but she could see where the principal was coming from and that she [the principal] was critiquing her so that she could improve. TF went on to say that the conversation caused her to reflect on how she instructs her students.

AL, the mathematics coach, described an open, honest conversation and interaction that he has had with the principal that caused him to reflect on his role in the school and the support that he provides to the teachers and students. He stated in the focus group interview:

> ...So that's another battle also, just getting her [the principal] to understand, you know, by this time we'll have students where we need them to be. So it becomes the scheduling, how math is going, the reading aspect of it. I'm always the one to speak out and mama beats you sometimes, but it comes back and I think she sees the big picture. She always gets on me about my passion, because I'm very

> passionate when it comes to kids and supporting the teachers. And she has to sit me down sometimes, just calm me down.

Several of the teachers gave examples of when they had conversations with the principal pertaining to their performance, instruction, or interaction with students. SL, a teacher of 23 years, though not all at Happy Elementary School, discussed conversations with the principal where the principal gave her feedback on her use of technology in her instruction. The principal was positive about what she had observed and then later had a conversation with her about what was going to be expected in the coming school year with differentiation and how technology would play a big role in that process. SL stated that because of their schedules there was not a whole lot of time to have many conversations with the principal but she appreciated the professional learning that was provided at the school.

According to SL, one other honest conversation that she held with the principal and other ESOL teachers was the amount of time they were pulled from instruction to administer assessments. This conversation happened during one of the PLC's where the students did not perform well, but the teachers felt that the principal still held them accountable for the performance of the students. Once the issue was discussed openly, the school administrators stated that they would look into the matter. When the researcher asked if the problem had been resolved, SL stated that the administrators are still looking at it. It was difficult to determine if SL felt comfortable responding during her time with the researcher and seemed to respond in such a way that was reserved.

The principal discussed times when there have been conversations where the teachers were open and honest with her about her performance and things that they felt needed to be changed. She stated in her interview:

> I do what is called "thrown tomato". And thrown tomato is when I hold a faculty meeting where I give them the index cards. And I'll say these are tomatoes and you are to throw them at me. Anything that you need for me to change or you don't particularly enjoy. Just put it on this card. I will compile them. I will share them with the entire staff and we'll see if we can work through them. Some of them we can't. Because some of you just think that, you know, some of the things that you want I can make happen, and I can't you know.

It appeared that open, honest dialogue occurred frequently between the teachers and the principal at the school concerning teacher performance related to student achievement. The researcher had the opportunity to observe this taking place during the observation of one of the PLC's as evidence. The dialogue that occurred between the teachers and the principal at the PLC was candid and centered around the teachers' honesty about their students' performance. The principal was a key player in the conversation in that she asked questions of teachers that required them to consider deeply the performance of the children and what plan of action would be implemented for those students who continued to struggle.

Teacher Accountability

Teacher accountability was a common theme that was identified often as teachers discussed their reflective practices. Participants offered several examples of accountability for the success of their students and how it impacted their reflective practices that led to changes in their instruction.

One teacher, SJ, detailed a conversation with the principal that occurred during one of the math PLC's where the principal questioned the teachers about the progress of their students. She stated:

> I actually appreciate that everybody does have to be accountable she's pushy in that, you know, she's, if this group of kids is doing this, why. What is happening here? Positive warning, you know. So but just being that specific and being that, okay, so, what's going on Ms.____, with these numbers? Because it forces you to

> reflect. Some people, it forces them to defend. But if you know that you are doing all you can, what are you defending? I don't understand.

According to SJ, the principal expects the teachers to be able to articulate what is occurring in their classrooms. The teacher did not see the accountability of the principal as having to defend her performance or the performance of her students.

Most responses centered on the PLC discussion of student performance where the teachers were held accountable for the achievement of their students. A dialogue that occurred during the focus group interview between three of the participants concerning a discussion with them and the principal went as follows:

> CL: Okay, so I heard you all talk about the data PLC and you mentioned it about three or four times. If we can focus on that, talk about Ms. Principal's role in the mathematics data PLC.
>
> TS: We tell her and she listens. And she'll speak. (laughter) Usually the grade level chair facilitates and each teacher basically goes down and looks at each teacher's data and look at sub-groups within their classrooms. And, you know, she won't accept, oh, well, this child failed because he's ESOL. No-nonsense approach. No-excuse approach. Okay. So, basically —
>
> AL: What are you going to do next?
>
> TS: Yeah, her response is what is the action plan? What are the next steps and how are we going to get there? Who is involved and what is the time-line? Because we have too many resources, you know. That email comes with a price. I sent an email out asking you what do you want and need. I didn't get many responses so I got these responses. I gave it to you. Now, show me, basically, where my money went.
>
> CL: And so, are you all comfortable responding and talking about your students' data?
>
> TF: Now, I am. At first I was uncomfortable in the PLC but you know, when you come to learn what she expects, and if you know that you've been doing what you're supposed to do, if you have done the right thing for your students, then everything's okay, whether the data has been great or not so great. But I'm okay now. Like we had our last PLC I remember we hadn't taken the assessment for multiplication and division yet. We had just taken some mini-assessments. So my class, compared to my grade level didn't look so great. And so Mr. AL is looking at me like, so what's going on? What happened? And I was like, I got this. Everything's okay. My students know what they're doing and on post-test

> they did very well. But she always wants to know, you know, well, if the kids did well, what strategies did you use? Are you sharing that with your team? If your students didn't do well, what strategies did you use? Did you go to your team-mates for suggestions or advice?

The principal, in her interview, also provided statements that led the researcher to understand her role in holding the teachers accountable for children learning. When asked about her role in the PLC process she provided the following statement:

> The other part of the conversation may have to do with what the teachers will have already put together as an action plan. We see that this percentage of them are not learning, or this sub-group is not learning. Okay. So what are you going to do? My role there is just to ask those directed questions. What are you going to do differently? Because the teachers a lot of time they will say, are we going to re-teach? Are we going to have a focus day? We're going to have team time we see that this teacher's children are getting much better so we're going to give her the children who didn't pass, we're going to send those children to her for her to use her strategy and then we'll take her kids. And, so, as a leader, then I'm at the table being a devil's advocate pretty much and simply saying, okay, so why didn't we already know that this teacher had a great strategy for teaching this before we started the instruction of this unit. Because one of the things that the teachers have been asked to do and encouraged to do, and developed to do is before any unit starts, they sit down and they take that test themselves. They take the pre-test and they take the post-test. In doing so, they get to see what the thinking patterns are. How does the child have to think? You see. And so when they're thinking about it in that collaboration around the table, we're hoping that it's going to come out well, you know, I think a kid is going to have trouble doing this. And then we're hoping another teacher is going to say, I do too. And somebody is going to say, well, why? Okay. Or some teacher is going to say Oh, God, no. I've got a great way of teaching that. So it shouldn't happen. I'm trying to, as a leader, I'm trying to help teachers to see that a lot of the problems we face, we can just nip it in the bud if we have the right conversation at the very beginning. We already know who our strong teachers are in those areas. Teachers will sit around the table and say, you know when I taught this kid last year, let me tell you what I did that the kids really caught hold to and did really well. So that's my role, pretty much. It's to help them to think differently about student's achievement and how to make it happen the first time and not having to go back and re-teach. Because we've got too many standards and elements to have to go back and reteach something. We're going to run out of time if we do all the elements.

From the conversations with the teachers and the principal, it appeared that holding teachers accountable for student performance played an important role in

teachers reflecting on what their students know and needed to know in order to be prepared and for achievement to occur. The principal seemed to accept no excuses for the failure of students.

Reflection and Changes in Instruction

Many of the teachers who were interviewed made reference to reflecting on their performance or on the performance of students after having a conversation with the principal or with others on their team that was open and honest where they had to account for student achievement.

AS, a second year teacher at Happy Elementary School, discussed revising her lesson plans and instruction to see what she could do better after a conversation with the principal about AS needing to provide more modeling for her students:

> Well, I take criticism very seriously ah constructive criticism very seriously and I try to reflect on how I can do it better. In that particular sense I spoke to some of the teachers on my grade level after that and said, "Okay, what are you doing, or can you tell me a little bit about how you do it so that I can set it up?" So that kind of leads to me taking a look at my lesson plans, analyzing and seeing what I can do a little bit better.

When asked specifically how often she reflects on what she does in the classroom with her students, she responded:

> Every day. I try to think of myself as a perfectionist, and it's a good thing and a bad thing, because some people may come in and say "Oh, the lesson was great". And then I'm sitting down and saying "I want to change this." And I want to change things around. So it's a good thing and a bad thing in some way. Especially I do concentrate a lot on math, so I feel like I'm reflecting every day, how each lesson went, how I can change, what went well, what can I do next time and how can I challenge them a little bit more.

In the focus group interview AL, the math coach, who worked with all of the teachers to support math instruction, discussed how his conversations with teachers caused them to reflect and make changes in their instruction. He also discussed how

some teachers who didn't reflect continued to have students who consistently did not experience growth in achievement:

> I think what I do is I have conversations with them and they do go back to routine time instruction, reviewing some skills and you know they see a new strategy that maybe one of their grade level peers have taught or that I've taught. I do go back and I see them trying to attempt to use some strategies to get kids where they need to be. And also spiral reviews. Putting a problem on the board of something that we've already taught but that needs further addressing with the students. And I worry because, you know, the people that are in this room, they're very reflective. If something comes up they'll reflect and get better at it. Everyone's not like that. You still have some people who still want to do it their way. So the ones who are reflecting and taking criticism in a positive way, you see growth even with their kids. The ones that are not, those are the ones that still need extra support. They might not want you there, but you still have to do what you have to do, because you're there for the kids.

SJ, a fifth grade teacher at Happy, provided a conversation that occurred during the PLC process where an example of reflective thinking was in place. The principal asked questions pertaining to the performance of her homeroom compared to the performance of another group that was taught. The conversation caused the teacher to consider the strategy of co-teaching during the students' reading instruction time. This change would impact the type of instruction that the students received as she was able to determine that it made a difference in the students' math instruction:

> Sometimes it really causes you to stop and say, okay, why is that group doing so well. One of the things that I saw here recently was, my homeroom has TAG, special ed and EIP. Well, my homeroom tends to do better than most of the other groups. Well, why is that? Because 10 special ed kids get pulled out of my group which means they get small group everywhere they go. And then when they're in math they have three teachers... So just being that reflective, which is one of the reasons those kinds of conversations help us when we're looking at our schedules. Ms. _____ and I said, if we co-teach reading that will improve our reading scores. More teachers, less kids.

One participant, TS, discussed that she was able to reflect immediately on her instruction during the school day. The teacher described how she is able to make

instructional changes after teaching one group and before teaching another. She discussed how she was able to tweak a lesson that had not gone well with a previous group to make changes that would be more effective for the next group. She talked about having to make the adjustment once while the principal was in her classroom.

TF, provided an example of a conversation with the principal that caused her to reflect on her instructional performance:

> I've had a lot of conversations with Ms. Principal about mathematics and my teaching, but going back to my first year and after that first conference I felt broken, but like I said, I took things personally. And so I thought about it and I tried to figure out, you know I was just trying to relate my situation and the conference, the notes and I was just trying to find some analogies and I think it hit me last year. She came and observed another math lesson and this time she was happy, she was satisfied and it was a wonderful observation. And so after reflecting on that I thought about how Ms. Nelson reminds me of a potter. And she really molds her teachers and she's molding me into the kind of teacher that I really believe she knows I can be. And so that's how I take it now, that you see something great in me and if you didn't see something great in me you want to try to pull it out of me. And so after that last conference that we had I think that's how my teaching has been, okay, you're on the right track. Keep going. Keep doing what you're doing. Keep learning and you'll keep growing. And, you know, you'll rise to higher heights and your students will too. So I really see her as a potter. She's just molding me. She's going to make me great.

Another participant, LT, discussed how the conversations with the principal during the PLC have caused her to reflect on her instruction. She stated:

> Before we even get to the table at PLC an action plan is developed. And so whatever unit we're on, we look at the data and make a list of the kids who passed and the ones that did not, and look specifically at their test, especially in the area of math. Because we do require children to show their work. And so to really -- so that I can present the information accurately and as best I can to the professional learning community, just looking at what the children's errors are and it may not be an error with the skill, it may be something that they missed in the previous years or just not paying a whole lot of attention to. So really dissecting the actual sample of the work so that the action plan will resemble what the children are lacking and not just, oh, they made an 80 or they made a 70 when they should have made an 80. Because you've got to know why the 70 was made and not just from bubbling in answers. Just looking at the student work. And then even when students don't show work that's data too, because maybe they

> didn't know how to, which gives you something else, you know. As a teacher I'm looking at well, if they didn't show any work maybe they don't know how to show the work. And so that allows me to plan my spot reviews and team time instruction so that I know this set of children need to do this, and then when we come to the PLC and we see how everybody -- what issues everybody is having, then we can group those children. Like your kids made 100 on this, you take all of them. And then I'll take this group of kids. And so each teacher, looking at their data individually and then come together as a grade level and identify commonalities kind of helps you. So that action plan that we developed, just looking at the data, looking at the actual test of children to kind of help us determine what it is we need to do before we go forth.

It appeared that the conversations that teachers had with the principal whether formally, informally or during PLC's caused them to reflect on their instruction to make adjustments in their instruction. Several of the teachers stated how the principal's discussions with them caused them to examine student data and student work more closely to determine root causes for non-performance for some student groups and to reflect on what they could do to transform their instruction to improve performance. The researcher could not determine the earnestness of the responses from the participants.

Teacher Reflections and Instructional Practices

The third research question of the study was in what ways do teacher reflections guide instructional practices. Experiences of the researcher, through observations and participant interviews, found that teachers at Happy Elementary School are involved in reflective practices. Collaborating with teammates and examining student data were most commonly discussed as ways of reflecting that guided their instructional practices.

Team Collaboration and Student Data

Much of the reflective practice appeared to come during the PLC's where teachers and the principal discussed student achievement. During this process, the principal and others on the administrative team would question teachers concerning student progress.

Teachers would have to reflect on what they did in the instructional setting that either caused student achievement or did not cause students to learn. The teachers could look at the performance of their students through data and reflect on what was successful and what did not work with certain children. After this part of the PLC was completed, the team would then devise a plan of action based on what they needed to change instructionally. One of the changes was the implementation of a "focus day" where the teachers would each take a standard or element, devise lessons for the grade level and then have the students rotate amongst the teachers until each child had been taught. Reteaching in small groups within each individual classroom was another change action where the teams collaborated to make adjustments in their instruction.

Team collaboration and communication were often discussed as a mechanism for guiding teacher reflection. The teachers all stated that talking with others on their teams was most effective when it came to helping them to reflect on their instruction to make changes. AS provided some insight into how collaborating with her team, after a conference with the principal about modeling for students, helped her to reflect and make instructional changes:

> I remember we were working on multiplication and division. I think one of the suggestions they explained was during guided practice to use dry erase boards and journals while we were doing the guided practice and that definitely helped rather than doing it individually and having children come up. So that helped for me to be able to observe how my children are doing individually and not just here and there and as a group. So that's definitely helped.

AS stated that she did follow the advice of her team and that the students did begin to improve due to her making adjustments in her instruction. She stated that she continues to take suggestion from her team and can see herself growing as a teacher.

One of the teachers, who served on the school's Leadership Team, expressed how team collaboration guided her reflective action during one of the PLC's for math. She discussed how the process of talking through her students' thought processes with her team concerning how they derived at the answers on an assessment helped her to reflect on her instruction to make adjustments. She questioned whether the errors that the students made came from gaps in their learning or from just not being focused. She then realized that the children possibly did not show their work pertaining to how they came up with answers to some of the problems because they may not have known how. This caused her to look closely at her instructional practices to make changes in her delivery.

MC, a special education teacher, provided an example of a conversation during a time of collaborating with others in her grade level concerning a child who was not passing any assessments and was struggling with learning the standards. After examining the child's data and adjusting his instructional placement, the child began to achieve. This would not have occurred, according to MC, had she not been in collaboration with teammates. This allowed her to focus and reflect on how to provide instruction for this student. The student was eventually moved to a lower functioning group in the classroom.

The participants provided further insight into team collaboration being a mechanism that caused reflective action. The focus group participants were asked about the kinds of collaboration that occurred other than with the principal. The response was:

> TS: Because we're a department, we being ESOL are more of a department than a grade level. We have different planning times. So if it's hard for my group to even collaborate as a department, but different ESOL teachers teach different grade levels. Ms. ___, grade level chair, Ms. ___ who was supposed to be here today, she's absent, she meets with her team and they come up with what am I teaching next week. And she emails to me and then I meet with my team, those

who teach second grade, and we tweak it to our kids. And so we have viral virtual collaboration levels and you can just see it. Our data was out of control in the last unit. Like our ELL kids superseded every other group of kids. And it's because like they're getting like a double dose almost. And that's not now it's set up, but I truly believe it's because of this virtual collaboration. They go in as a team and they decide what needs to be done within the unit actually from week to week. So it's almost like scratch that, this is on County's calendar, we need this instead. So knowing the kids in the grade level, what they need and then giving that to us and then we know our students within ELL and what they need. And so we're able to kind of fill in those gaps and I mean it's --

TF: So I'll send Ms. ___ my lesson plans, sometimes the whole lesson plan so you can look at it, you can see what, you know, you may want to change or what you like. We meet in the hallway. I'm like, what are you going to do? How are you going to teach this? You can give me an idea. And Ms. ___ is really good at that. She sees me and she's like, I'm about to teach this. We used to push in together. And she is like you're the graphic organizer guru. And it can happen in the copy room. So our collaboration happens in the oddest places. We don't feel like it has to be confined to a round table or at a meeting. It's when you feel the need that you need to talk to someone about something and it doesn't necessarily have to be with someone on your grade level or someone that you work with. I don't teach second grade this year. But we've collaborated. And I think it's that kind of open door policy that allows us to get the best results in student achievement

TS: Photographic organizers. We co-taught, she pushed in a few years ago in my classroom and she introduced me to the graphic organizers and it really has changed my teaching. Like I use a graphic organizer almost every day in every subject area. Not just reading or language arts but in math as well. Graphic organizers are wonderful. And it just helps. That visual helps my children just to understand what is happening.

Each of the participants discussed how team collaboration was most impactful in triggering the reflective process for them. Those in the focus group talked excitedly about the collaborative efforts outside of the PLC's where they were able to bounce ideas off one another, discuss their thinking about their students and how they could change what they provided for students that would increase achievement. Every participant stated that collaborating with their teammates was more helpful to them as compared to collaborating with the principal.

Types of Conversations between Teachers and the Principal

The fourth research question was what types of conversations occur between principals and teachers that cause teachers to change their instructional practices. Information obtained from the research supported that conversations between the teachers and the principal were held on a more formal rather than informal basis. The teachers and the principal met monthly for math PLC's where student data and student work were discussed. Conversations were also held more frequently during post conferences after a formal or informal observation. These were all one-on-one between the teachers and the principal. The staff had general staff meetings where conversations were held with the principal. Team collaboration during PLC's and one-on-one dialogue were the common themes that were identified when this particular question was discussed.

Collaborative Conversations

During the PLC process for mathematics at Happy Elementary School, the teacher-leader led the meeting using a Critical Friends protocol called, *Connections*. During this protocol, each member was given the opportunity to say something that was connected to the work that they do at the school. The protocol lasted for two minutes and was timed by the teacher-leader. One participant, AL, who is the math coach at Happy talked about a field trip to Legoland where the students had a great time and learned a lot. Another teacher made comments about the ages of her grandchildren, which did not follow the protocol. One teacher stated that she was excited about the upcoming workshop, but was not sure what she was going to learn. A final comment was concerning one of the local high schools going to the baseball playoffs. The teacher

leader called time and moved to the next agenda item where the norms for the meeting were stated.

During the one-on-one interview, the principal discussed the importance of using the Critical Friends protocols in PLC's. She stated that the protocol is used as a time to share and to receive feedback. She discussed one particular protocol called *Atlas*. The protocol is used to engage the teachers and other attendees in conversation that allows everyone to share information about students where they give suggestions to one another and then receive feedback to use in their instruction.

The conversation then moved to a discussion on student data from unit six in math where addition and subtraction were taught and assessed. Each teacher shared her data and the performance of students from the various subgroups. The teachers initially appeared apprehensive in sharing and explaining but eventually began to open up. The researcher could not determine if it was from her presence or just the concern of what the data showed. The teacher leader led the discussion and talked about the growth in the ESOL and EIP groups. She discussed the total number of students who took the test, which was 113, and 101 of them passed which was 89.4%. The teacher leader stated that part of the success was because of the team's decision to change the schedule which gave them more time to teach the unit. The rest of the team chimed in stating that was a good decision. She then continued to identify each of the subgroups of students and how they performed. AL, the math coach, inquired about those students who were none ESOL and non EIP who did not pass the assessment. The teachers named the children, some were Hispanic and some were not. He stated that he thought there still might be a language problem with those students. The teacher leader, asked the teachers to identify the

students listed who were non ESOL but received EIP. The teachers began to call the names of students. After the students were identified, AL asked about the race of one of the students, who was African American, and whether or not he passed as he was not included in the count for passing. The count for those who passed and did not pass was adjusted based on the discussion.

AL questioned the teachers again asking, "Well when we know that there is a language barrier with those students who did not pass, what do we do with them?" One of the teachers began to discuss how she works with the students who she has stating, "I mainly work with them in small groups, use manipulatives and pictures to help them connect. _____ (teacher stated a child's name) is lacking basic number sense and has difficulty with subtraction. Next year the focus for her needs to be ways to help her connect with subtraction." The teacher leader then stated that the team needed to focus on what they could do for the next two weeks. The team then began to focus on what to teach for the next few days. The principal asked, "Could we go back to the progress of the students? Let's go through all of the classes quickly." Each teacher then began to share the data for her class. One teacher asked, "I wonder if it is too much for them to have more than one way for them to solve the problem. Should we just have one way for them to do it that they can become acclimated to?" The principal responded with:

> I think the whole concept of differentiation is just what you're saying, that they can see option that they can be able to get a problem correct by doing it different ways; whichever way is best for that kid. I would love to see that started in kindergarten because as we move up the grades, they will need that differentiation. You are asking if we need to differentiate and the answer is yes.

The teacher leader called out the name of one student who did not pass from another class. The principal stated, "He did not pass, but he made growth. That is

great!" The team continued to share their data. The principal then asked about Imaging Math for the ELL students. The math coach reminded her that program was not in kindergarten. The principal then stated that the ELL teacher had purchased a program that would help their students. The teachers became excited and seemed pleased. The principal noticed that one classroom made 100% on the assessment. She asked that teacher to share her strategies. The teacher stated that she had used manipulatives and taught in small groups. The team continued to collaborate forming an action plan that they would implement for the next two weeks for those students who did not pass. One of the teachers asked a question of the teacher leader, who responded. The teacher did not seem pleased with her answer and responded very unprofessionally, "I was just asking!" This interaction was puzzling to the researcher as the conversations had been cordial and professional up to that point during the observation.

After a while, the 45 minute PLC ended. As the researcher walked to the front of the building with the assistant principal, she inquired about the relationship of the unprofessional teacher with the other team members. The AP explained that the teacher was formally in prekindergarten and that she is struggling and does not always get along with the others on the team. The researcher also observed that the young white teacher and the older white teacher were very reserved and did not say much, although both of their classes performed well. The researcher also noticed that the principal asked delving questions at this time that caused the teachers to closely examine their students' performance and their teaching. One such question was, "Did you all see any commonalities in the types of problems that the students missed?" The teachers all responded with which kinds of problems challenged the students. The teachers then

began to discuss in more detail the types of errors that the students made and what they needed to do differently for re-teaching.

The principal termed the PLC's as "diamonds for student achievement". She explained the terminology by stating:

> We think that when we started PLC's, it was one of the greatest things that we could have done for our students. When we get into a professional learning community, we are looking at student achievement that occurs after a unit assessment. And so when we get around the table we have the teacher-leader to lead that meeting and we'll just begin talking about the standards and the elements for that unit. And after they've [the teachers] already disaggregated [the data] when we get to the meeting. Teachers have been trained how to do that.

Each of the participants was able to discuss thoroughly the PLC process and its importance in what they do at Happy to support student achievement.

Formal One-on-One Conversations

Several of the teachers discussed the formal one-one-on conversations that they had with the principal pertaining to their performance and how these conversations helped them in their work with children. This information was confirmed by the principal who stated:

> I think the most important way [for me to communicate with teachers] is when I actually do the observations. I make a point of calling my teachers in, the majority of them. Most of the time I enjoy this part more than anything when I'm sitting down talking with them and doing those reflections. It helps them and it helps me know what I need to do better.

During this type of conversation, the teachers and the principal meet to discuss either a formal or informal observation. The principal then provides feedback on what she observed and then will allow the teacher to add to the information presented. The conversation then continues between the two.

One participant, LT stated that when she speaks one-on-one with the principal they are looking at where she currently is as a teacher along with the areas where she needs to grow. She stated that the principal offers her expertise in what she sees and makes suggestions of things that she could do to enhance what she is already doing with the students. LT went on to say that the dialogue is "just real open, honest dialogue" that we get when we sit down with her and that the principal just openly says exactly what needs to be said. LT has been a teacher at Happy for nine years.

Summary

This chapter disclosed the thoughts of the participants who discussed how conversations with the principal led to self-reflections to change instruction that would increase student achievement. The participants were able to identify characteristics of conversations with the principal that promoted academic success through reflective action.

The participants acknowledged that the relationships with the principal and with teachers, school expectations and communication through active conversations with the principal and with others led to teachers and the principal being able to reflect on instruction to make changes that led to student achievement. Most of the conversations came through the Professional Learning Communities that were consistent at the school or through formal and informal conversations with the principal after an observation.

For the first research question, how do principals actively engage teachers in conversations concerning instruction, it was determined that the principal actively engaged teachers in conversations at Happy Elementary School through conversations that were centered on: (a) providing feedback to teachers, (b) the principal offering her

support, and (c) student achievement. These conversations mainly occurred during the PLC process and, more often, during one-on-one conversations after a formal or informal observation of the teachers by the principal.

Findings for the second research question, which was do teachers' conversations with principals lead to self-reflection on their instructional practices, concluded that conversations with the principal were open and honest and caused teachers to be accountable for the success of their students. These conversations led the teachers to become more reflective on student data and student work during the PLC process and during one-on-one discussions with the principal. Teachers had to be accountable for explaining the results of student performance and to develop a plan of action to counteract student non achievement.

For the third research question, which sought to identify ways that teacher reflections guide instructional practices, it was found that some of the changes that occurred from the reflective action of teachers caused them to collaborate more with others on their teams to find more effective teaching strategies such as modeling, utilizing more small group instruction and using team time to key in on standards and elements that caused students to struggle. Most respondents saw the collaboration and conversations with their colleagues as more effective than conversations with the principal as impacting their ability to reflect and to make instructional changes.

The final research question, what types of conversations occur between principals and teachers that cause teachers to change their instructional practices, the researcher determined that collaborative and formal one-on-one conversations were the two most common types that took place at Happy Elementary School. Collaborative conversations

most often occurred during the PLC process where teachers and the principal analyzed and discussed student data and student work. During this process teachers were required to explain the progress of student groups on assessments and what teaching strategies occurred during instruction. The principal would provide suggestions and support to teachers as needed. During formal one-on-one conversations, the principal would meet with teachers to discuss a formal or informal observation of the teachers' lessons. At this time, feedback regarding a teacher's performance and the achievement of students were at the forefront of discussion. The principal again would offer suggestions for improvement or support.

The answers to the research questions sought to explain how *Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices*. The responses of the participants were assimilated from individual interviews, an observation of a PLC in progress, and a focus group interview. Chapter 5 will present a discussion of the results, conclusions drawn from the results, implications for educators, and recommendations for further studies.

CHAPTER 5

SUMMARY, DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

Chapter 5 provides a summary of the research study and discusses the researcher's major findings as related to the literature review. Conclusions are drawn from the research findings that were presented in chapter 4 and the themes that were identified from the data sources are explored. Implications of the study for educational leadership as well as recommendations for further research to educators who have a desire to use this body of research for additional studies are addressed in this chapter as well.

The purpose of the study was to interview and observe staff in a high poverty elementary school in order to identify: How mathematics achievement is increased by actively engaging in conversations that lead to teacher self-reflection to impact changes in instructional practices. Chapter 4 presented the findings from the data which described how the principal and the teachers engaged in conversations concerning mathematics achievement that caused teachers to reflect on their instructional practices to make adjustments in their instruction. This single site case study revealed answers to the following research questions:

1. How do principals actively engage teachers in conversations concerning instruction?
2. To what extent do teachers' conversations with principals lead to self-reflection on their instructional practices?

3. In what ways do teacher reflections guide instructional practices?
4. What types of conversations occur between principals and teachers that cause teachers to change their instructional practices?

Gathering information from teachers and the principal of the school site was vital in securing the answers to the research questions in order to assure that information obtained for the research was from those who were directly involved in the instructional setting and not from vicarious sources.

Summary of the Study

In order to document the experiences of this case study, several data sources were used to triangulate the data. One-on-one interviews, an observation, a focus group, field notes and a researcher's journal were used to provide documentation for responses to the research questions. Observations allowed the researcher to gain insight into and to document interactions between teachers and the principal. These observations were recorded using field notes. Two types of interviews, one-on-one and focus group, were utilized for data gathering purposes for participants' responses. These responses were audiotaped to allow the conversations to occur with minimal interruptions. Transcripts of the interviews were completed by an outside transcriptionist.

The individual and focus group interviews recorded the responses of the participants regarding their interactions with the principal through conversations pertaining to mathematics achievement and how those conversations led to self-reflection to change instructional practices. The researcher found the participants eager to discuss their school, their instructional practices and student achievement. The participants

believed that conversations with the principal and with other teammates guided their reflective practice to change instruction and to increase student achievement.

Lewis, Simon, Uzzell, Horowitz and Casserly (2010) studied research based on the relationship between effective teaching and student achievement. The researchers determined that the common focus of the studies was the classroom teacher as the key to student success. In a study conducted by Leithwood (1994), it was found that principal effects were achieved through fostering group goals, modeling desired behavior for others, providing intellectual stimulation, and individualized support. According to the author, principals in these schools were better at supporting staff, providing recognition, knowing problems of the school, were more approachable, better with following through, seeking new ideas, and spending considerable time developing human resources.

Summary of Major Findings

Principal Engagement of Teachers in Conversations

One of the major findings of this study was that there were many opportunities for conversations to occur at Happy Elementary School between the principal and the teachers. When the principal engaged the teachers in conversations, the participants discussed that the conversations were usually to: (a) support teachers, (b) provide feedback to teachers, and (c) discuss student achievement.

The collaborative conversations occurred during math or reading PLC's where the teams were involved in discussing student work and student data. The teams consisted of the teachers at the grade level, the math coach, the principal, the assistant principal and other support teachers who represented a particular grade.

Most individual conversations between teachers and the principal occurred after a formal or informal observation. These conversations were held primarily to discuss teacher performance, expectations and student achievement. Principal and teacher conversations centered on the principal providing feedback after an informal or formal observation. During these conversations, the principal provided observations of what occurred during lessons, how the students performed, and ways the teachers could improve or change their instruction. She also offered support for teachers or their students.

Teachers' Conversations with the Principal and Teachers' Self-Reflections

The major findings related to the second research question to what extent do teachers' conversations with principals lead to self-reflection on their instructional practices were that conversations with the principal were open and honest and that teachers were held accountable for student achievement. Those two themes impacted teachers' reflective action that led to teachers making changes in their instruction.

The participants all stated that open, honest conversations were held often at Happy Elementary School and that the conversations held them accountable for the success of their students. The conversations held between teachers and the principal most often centered on student achievement and how the teachers' instructional practices impacted student progress. The teachers stated that conversations with the principal were direct and to the point. The principal would often ask delving questions that would guide their thinking about what they do in the classroom and how it impacted students. The questions usually focused on student data or student work. During the PLC's, teachers were required to openly and honestly talk about the achievement or non achievement of

their students. Through this questioning and discussion, came the opportunity for reflection to occur.

The principal stated during her interview that the teachers were expected to be accountable for the achievement of students, that Happy is not a place to come and "play school." This accountability was often present during the PLC's when teachers had to discuss the performance of their students on assessments. The principal expected the teachers to be able to articulate what was occurring in their classrooms and to devise a plan of action to support students who were not performing. The teachers did not see the accountability of the principal as having to defend their performance or the performance of their students, though several admitted that the process was difficult when PLC's were initially started at the school.

Several of the teachers stated how the principal's discussions with them caused them to examine student data and student work more closely to determine root causes for non-performance for some student groups and to reflect on what they could do to transform their instruction to improve performance. The researcher could not determine the earnestness of the responses from the participants.

Teacher Reflections and Instructional Practices

Findings from the third research question, in what ways do teacher reflections guide instructional practices, the researcher determined that teachers at Happy Elementary School are involved in reflective practices. Collaborating with teammates and examining student data were most commonly discussed as ways of reflecting that guided their instructional practices.

Conversations between teachers were also found to be consistent and relevant at the school site. During the interviews, the teachers spoke excitedly about the opportunities to talk with one another. During these conversations was where most of the respondents discussed how they were able to receive or provide strategies that were pertinent to them making instructional changes or to reflect on their service to children in their individual classrooms. They saw the conversations with one another as being the catalyst for the reflective process as opposed to conversations that were held with the principal. Though conversations held with the principal were helpful and meaningful, they deemed that their colleagues were "in it with them" and could provide more insight into what they really needed because they often experienced it themselves.

Examining student data during PLC's or during team meetings was discussed as a way of guiding teacher reflection to make instructional adjustments. Respondents spoke about the value of examining student data and student work that led to reflective action to make adjustments in their instruction. The teachers would look at the performance of their students through data and reflect on what was successful and what did not work with certain children. This practice often guided teachers to understand what their students were or was not able to do. The process of making changes in instruction would then begin.

Types of Conversations between Teachers and the Principal

The fourth research question, what types of conversations occur between principals and teachers that cause teachers to change their instructional practices, determined that collaborative and one-on-one conversations were the major types of conversations held at Happy Elementary School. The collaborative conversations at the

school where the principal was involved came mainly through the PLC process. As previously explained, collaborative conversations occurred during math or reading PLC's where the teams were involved in discussing student work or student data. The teams consisted of the teachers at the grade level, the math coach, the principal, the assistant principal and other support teachers who represented a particular grade. Each teacher was given the opportunity to discuss the performance of their students and the team would then devise a plan of action to support those who did not achieve. Plans would also be made for those who did achieve. The principal would often offer suggestions or support to the team or to individual teachers during this process.

The one-on-one conversations would most often take place after the principal had performed a formal or an informal observation. Teachers would sit with the principal to discuss the outcomes of what took place during the observation. The principal would offer suggestions for improvement, if needed, or she would offer support to the teacher. The participants stated that the conversations were open and honest and caused them to be accountable for the success of their students. The conversations led the teachers to become more reflective on student data, student work and their instructional practices.

Discussion of Findings

Teacher Reflection and Student Achievement

Dialogue with colleagues is critical to establishing an environment that supports long-term school and classroom improvement (Ferguson & Coupland, 2000). As teachers engage in an interchange of ideas, they begin to examine their own practice and their assumptions about teaching, deepen their collective understanding, and develop support systems that encourage continual inquiry. They become more thoughtful about

their practice and the strategies that they use to help students learn (Ferguson & Coupland, 2000).

The staff at Happy Elementary School consistently used dialogue as a method to exchange ideas. This exchange supported the practice of examining student work and student data to determine whether or not students were achieving. Through constant collaboration with the principal and with other teachers, the respondents stated that they were able to have open, honest dialogue about how their students performed. Conversations with others, more often than not, allowed them to think about what was needed to change in their instructional practices to better serve students according to the respondents. This dialogue led to them receiving support from the principal, or from their colleagues, with strategies to better implement instruction so that students could perform better. Some stated that the conversations were more valuable in supporting their reflective process than them looking at students' performance on their own. A response from one of the participants supported this premise and offered the following that occurred after collaborating with her team:

> Well, I always reflect after a PLC, after assessments, and after rotation days. I'm a reflective person, period. So I always go back and I just ask myself what is it that I'm doing, what is it that I can do better. And so, I'm okay with asking questions and I'm okay now with saying can you help me with this. What would you do? How would you teach this? And so that's what I do now. I ask myself what can I do better, and I'm always googling something reading a book just to find out what is it that I can do to help my students achieve. And a lot of the times when my students aren't achieving I'll google reasons that students don't do well on assessments. But I always bring it back to myself, you know, what is it that I can do.

Professional Learning Communities and Engaging Conversations

Teacher reflection can be felt in the collaboration process of professional learning communities. According to Dufour and Eaker (1998), one purpose of learning

communities is to be action-oriented where a willingness to experiment is the norm. Members of the community are asked to develop new theories and to test and evaluate the results. Reflecting on the results leads to the development of new theories that are then tested and evaluated (Dufour & Eaker, 1998). Professional Learning Communities were found to be critical in supporting opportunities for conversations amongst staff to occur at Happy Elementary School. PLC's were held twice a month at Happy, one for math and one for reading. Each grade level met with the principal and others to discuss student work and student data. According to Schmoker (2006), unlike standard staff development, learning communities encourage and allow for teachers to share and recognize the best of what they already know to increase achievement. The author also contends that learning communities focus on what the typical workshops disregard: collective follow up, assessment, and adjustment of instruction (Schmoker, 2006).

During these meetings, the collaborative conversations between the teachers, the principal and others who worked with students examined student data and work pertaining to performance on assessments. According to Markow and Pieters (2009), over the past twenty-five years, concern to increase the achievement of all students has led to waves of education reform, encouraging and replicating innovation, setting standards, increasing accountability, and mandating greater use of data, particularly standardized tests, to demonstrate results. Teachers discussed the collective and individual success of their students on the assessments at the school site. The principal required accountability on the part of teachers in that they were required to explain why the data reflected the performance of their students. The teams were then required to

devise a plan of action to counteract the performance of the struggling students who did not achieve the required results.

It is the opinion of the researcher that PLC's were an integral part of the teachers being responsible for student achievement. During the researcher's observation, it seemed apparent that the teachers were comfortable, for the most part, in discussing the performance of the students. The plans that were devised had to be specific to address the needs of the students and had to contain strategies that would support the students in overcoming low performance. The principal held each teacher to a level of high expectation and did not accept excuses for why students did not achieve.

Leadership and Student Achievement

Robinson, Lloyd and Rowe (2008) contend that successful leadership influences teaching and learning both through face-to-face relationships and by structuring the way teachers do their work. The authors further report that the importance of relationships in high achieving schools was apparent in that the principal placed more emphasis on communicating goals and expectations. Clear goals focus attention and effort and enable individuals, groups, and organizations to use feedback to regulate their performance (Robinson, et al., 2008). It was apparent to the researcher that all teachers understood that the goal of Happy Elementary School was to provide opportunities for all students to achieve.

The conversations that were held with the school's leader, according to the respondents, were always honest and were relative to the achievement of students. This was demonstrated during the PLC process when the teachers and the principal discussed data collaboratively. According to White (2005) when data is collaboratively analyzed, it

becomes meaningful, assists in making better decisions, and supports making a direct connection between the strategies that are used and the outcomes that are received. Through the collaborative process, dealing with student data, conditions are created for open dialogue and honest discussion (McNulty & Besser, 2011). Instructional improvement to increase achievement is at the core of the school data team (McNulty & Besser, 2011).

Evidence from the principal's interview and during the PLC observation demonstrated that the principal's ultimate goal was to increase achievement and to provide an opportunity for all students to be successful at Happy Elementary School. The reality that the principal was involved in the PLC process, demonstrated to the researcher that students were the most important stakeholders in the school. Second to students was the teaching staff. In the aforementioned study conducted by Robinson and associates (2008), leadership was described as both promoting *and* participating because more was involved than just supporting or sponsoring other staff in their learning. The leader participated in the learning as leader, learner, or both. The contexts for such learning were both formal (staff meetings and professional development) and informal (discussions about specific teaching problems). Leaders in high-performing schools are also more likely to be described by their teachers as participating in informal staff discussions of teaching and teaching problems (Heck, Larsen, & Marcoulides,1990; Heck, Marcoulides & Lang, 1991). The involvement of the principal in the learning process, constant and consistent conversations with teachers that were honest, and leader support, all seemed to be determining factors of the success of the students at Happy Elementary School.

Mathematics Achievement in a Title I School

According to Lewis and others (2010), mathematics achievement in high poverty schools continues to be a challenge. Mathematics at the elementary level is the foundation of all K-12 mathematics and beyond (His Wu, 2009). The author states that "coherence, precision, and reasoning are a prerequisite to making math learnable". He further states that most elementary teachers lack the knowledge to teach mathematics which stems from their pre-service expectations (His Wu, 2009, p.14). The author further contends that we must teach mathematics the right way by creating a corps of teachers who have the requisite knowledge to get it done (His Wu, 2009). For students to become confident, knowledgeable math users, the math curriculum must be understandable and infused with literacy (Schmoker, 2011).

Happy Elementary's free and reduced lunch percentage reflects that 93% of students at this school either received lunch at a reduced rate or at no charge. The high percentage rate of free and reduced lunch recipients qualifies the school as high poverty or Title I. In 2009, the average mathematics scale score of fourth-grade black males in large cities who were eligible for free or reduced-price lunch was 20 points lower than fourth-grade white males in national public schools who were eligible for free or reduced-price lunch and 8 points lower than black males in large cities who were not eligible for free or reduced-price lunch (Lewis et al., 2010). The demographics at Happy Elementary School reflect a high population of black and Hispanic students.

Chenoweth (2009) adds to the research by stating that children residing in low-socio economic communities not being ready for school cause them to begin school behind their counterparts in the areas of vocabulary, background knowledge, and

organizational ability. This unpreparedness leads to low academic achievement which in turn contributes to the widening gap in student achievement according to the author. During the interview with the principal, she discussed the service to homeless, high poverty, and Hispanic students at Happy Elementary School:

> We serve a lot of homeless children. We serve anywhere from 45 to 145 in any given year. And because of that, because of the homelessness and because of the 96 percent poverty level, I found that we had teachers who were feeling sorry for children more so than focusing on their education. And so the expectations were regardless of their circumstances in life, and regardless of where they are coming from, you're going to teach them the same and you're going to expect the same from them. Because when they leave us, you know, we want them to be equipped to go anywhere, you know, and be able to be successful wherever they are. So that was an expectation. And then we had quite a shift in just the community itself. It was a very quick, this 10 percent Hispanic to 60 percent Hispanic like occurred very quickly. It went from 10 percent to 40 percent like over a summer.

From speaking with the participants and observing at the school site, it appeared that the teachers and the principal worked diligently to find ways to not allow the circumstances of the students to interfere with instruction and student learning. The consistent disaggregation of data that reflected the performance of various student populations at the school and discussions on what needed to be provided for those student groups, supported the researchers contention that mathematics achievement was in the forefront of importance at Happy Elementary School.

The principal hired a math coach to support the teachers with instruction from her Title I budget. The math coach was involved in the PLC discussion and offered insight into what he saw as hindrances to the success of the various student groups which included the black, Hispanic, SWD and EIP groups. The coach provided instructional strategies and modeled lessons for the teachers, according to the focus group and principal interviews, that supported the teachers in successful implementation of

mathematics instruction. He also worked directly with groups of students daily who were struggling with math. This was helpful to the teachers in that they stated that they could not always provide direct instruction to all students daily due to the constraints of the school day. Several of the teachers and the principal credited this teacher as part of the reason that math achievement continued at Happy Elementary School.

Additionally, the teachers and the principal all discussed the amount of support that was provided for the teachers and the students at Happy Elementary School in the area of mathematics. Participants discussed the types of resources that the principal purchased with funds from various budgets that supported instruction in the classrooms. Several of the programs targeted the ELL and the SWD populations and were supportive to the needs of those student populations according to the respondents.

Socio-Cultural Learning Theory

According to Knapp (2008), the basic premise of socio-cultural learning theory is that cognitive processes develop through participating in shared problem-solving interactions. Vygotsky (1978) uses Zone of Proximal Development (ZPD) as demonstrating how people learn. He states that ZPD includes all of the knowledge and skills that a person cannot yet perform or understand on their own but is capable of learning with support or guidance. This theory is supported through the collaborative and reflective processes that occurred at Happy Elementary School.

According to Knapp (2008), ZPD is further demonstrated during the reflective dialogue process where a principal, another teacher or an instructional coach engages in dialogue with a teacher concerning instruction where areas of improvement are cited. For example, the teacher receives information pertaining to instructional practices during an

observation, that were not considered best practices, but through guidance and support from the principal, improvement can be achieved (Knapp, 2008).

The participants demonstrated shared problem solving interactions through the PLC process, during one-on-one discussions between teachers and the principal, and when teachers discussed student data and work in grade level team meetings. Through data disaggregation for student groups that focused on math achievement, the participants were able to discuss the progress of students and collectively made decisions based on the outcomes of students. Through reflective practice, teachers were able to make adjustments in their instruction to better support the needs of the students. This reflective practice often occurred after conversations with the principal or teammates or during discussions of student data and student work in PLC's or within team meetings.

Conclusions

Many assume that students who are educated in a high poverty setting typically receive instruction at a lower level than those students who receive instruction in a setting where poverty is low. As demonstrated by this study, the staff at Happy Elementary School works diligently to provide instruction for students in mathematics so that the students are able to achieve. Conversations between teachers and the principal occur frequently to discuss student progress throughout the school year. According to Reeves (2009) communication between the school's principal and teachers is critical in improving teacher performance that will lead to student achievement, and effective leaders allocate time for collaboration.

Socio-cultural learning theory (Vygotsky, 1978) states that cognitive development results from dialectical processes that surround problem solving experiences. Teachers

and the principal in this single case study consistently find the time to discuss student learning, the problems that surround why students are not achieving, and then make adjustments within the instructional setting. These adjustments often take place after conversations between teachers or with teachers and the principal where reflective practice has occurred. They learn from one another and through this learning process, student achievement is increased.

The participants in this study strongly believed in the importance of collaborative conversations about their students' mathematics achievement. They all verified that these conversations, whether with the principal or with other teachers, led to the practice of reflecting on their instruction to make changes that would better impact the achievement of their students. Each participant solidified that they often think about what they do in the classroom and how their instruction influences the success of their students. According to the teacher participants, the principal does play a significant role in the reflective process. But more important in the process are conversations with other teachers, as they felt like their colleagues could better identify with their needs to provide more realistic advice.

The participants also felt that the feedback and support offered by the principal to assist them in better instructing their students were valuable. Several of the teachers stated that the feedback given by the principal often was specific in what they needed to do to better instruct their children. After conversations with colleagues, according to the teachers, support or advice was offered which led them to further collaborate with other teammates. Collaborating with others then led to them seeking strategies that they could implement into their classrooms that would yield better results for their students.

The principal felt that holding teachers accountable for student achievement and having them to discuss the progress of their students either one-on-one or within the PLC sessions, led to higher achievement as well. These conversations were open and honest, per the principal, and caused the teachers to really think about what they do to affect the lives of children. According to Wise and Jacobo (2010), when teachers are responsible for a room full of students who reside in disadvantaged circumstances, a leader who helps them find the strength, persistence and inspiration to increase achievement is needed. Supporting the teachers in ways that they can become better was the mantra that was consistent with the principal and teachers of Happy Elementary School.

Implications

Prior to conducting this study, very little research was dedicated to recognizing and explaining how conversations between principals and teachers impact the reflective process of teachers that would lead to changes in instructional practices where these changes would increase mathematics achievement. At the completion of the study, the data collected identified implications for educators, school leaders and students.

One implication of the study is the importance of consistent, open and honest dialogue between educators. Conversations amongst teachers and school leaders should bring awareness of the significance of dialogue concerning student achievement where all school level educators bear the responsibility of assuring that students of all racial, socio-economic, and academic levels are instructed at the highest degree. Having conversations pertaining to student achievement must be non-threatening, but honest enough, where stakeholders are held accountable for the progress of students when evidence of non-achievement has been presented. Conversations surrounding student

data and student work should be focused on specific learning and instructional problems. The message of "no excuses" for poor performance of students or teachers must be resounded in schools, particularly when students reside in high poverty situations. Teachers and school leaders must be held accountable for student achievement.

A second implication of the study is the need for principal involvement in collaborative as well as one-on-one conversations with teachers concerning student achievement. Oftentimes, principals are not involved in conversations with teachers pertaining to instructional expectations and student achievement. These effects are left to teachers to interpret independently and to make instructional decisions. If principals are unaware of the academic needs of students and the progress of teachers, then student achievement will not occur. Principal involvement with analyzing and discussing student data and work, alongside teachers, sends a message to teachers that student achievement is in the forefront of all that occurs within a school. The principal is able to remain aware of what transpires within the school, how teachers are providing instruction and whether or not the instruction is meeting the needs of students. When good instruction does not occur and students do not achieve, it is the responsibility of the principal to be in dialogue with teachers concerning expectations. This dialogue has to be open, honest and specific to what changes need to occur with instruction and student achievement. Feedback to teachers, from the principal's standpoint, is critical in order for teachers to know if they are meeting expectations for instruction and for student achievement.

Principals are also able to provide the support that is needed for teachers in order for them to provide better instruction. Teachers from the study all spoke of the support that they received from the principal through additional materials and supplies or with

human resources such as the math coach. The teachers felt valued and the desire to do a better job of instruction was echoed.

The final implication of this study is the need for teachers to take the time to reflect on what they do in their classrooms to impact students. Through this reflective action should come changes in instruction so that the needs of all students are met for academic achievement. Consistently analyzing student data and student work and discussing the results with others should be the driving forces for teacher reflection. When teachers have a clear understanding of how each child has performed based on data, they have a responsibility to think about what has happened that has caused non-achievement to occur and then make adjustments in their instruction to increase achievement. Oftentimes, it takes being in dialogue with others, whether teachers or school leaders, for teachers to clearly understand what has transpired with their students. Suggestions from others can help teachers with their reflective practices and instructional changes when they are willing to accept ideas from others.

The implications of this study would be beneficial to the educational community in that the study confirms the importance of consistent conversations between principals and teachers surrounding student achievement being critical to the success of a school. If schools are to be successful, open and honest dialogue between school leaders and teachers that cause teachers to reflect and make changes in the delivery of instruction must occur.

Recommendations for Future Research

Conversations between teachers and principals concerning students' mathematics achievement that cause teachers to reflect and to make instructional changes is a topic

that has not received much attention in the literature. Since this phenomenon is important to the success of schools, additional research should be conducted on the topic. The researcher proposes three recommendations for future researchers who are interested in further analyzing the topic of this study.

Additional studies should address whether or not years of experience of teachers play a role in how well teachers reflect on their instruction and make changes after having conversations with the principal or other teachers. These studies will add to the body of literature and may determine whether or not experienced teachers reflect more often or more deeply than inexperienced teachers to make changes in their instructional practices to increase student achievement in mathematics.

A second recommendation is to conduct a multiple case study approach using a non Title I school and a Title I school to determine which school type does a more effective job with principals and teachers having conversations about students' mathematics achievement. The study could determine if teacher reflection occurs more often at one setting, as compared to the other, and if the reflective practices of teachers lead to changes in instruction where student achievement increases after conversations occur. This study type would expand the body of research pertaining to this research topic.

A final recommendation would be to conduct this study where the principal has less experience. The study could determine if years of experience of the principal has some bearing on the types of conversations that occur with stakeholders and how the conversations impact the reflective practice of teachers to make adjustments in their

instruction to increase students' mathematics achievement. Additional studies would increase the body of research pertaining to this research topic as well.

Summary

Chapter 5 presented a discussion of the findings, overall conclusions, implications for professional practice, and recommendations for further research. The discussion of the findings and the overall conclusions derived from the results explain *How Title I schools increase mathematics achievement by actively engaging in conversations that lead to teacher self-reflection to make changes in instructional practices.* The discussion and the conclusions drawn from the results also confirm the importance of consistent dialogue between school leaders and teachers concerning student achievement in order for schools to be successful through responses pertaining to the four research questions.

The study concluded that when the principal engaged teachers in conversations concerning mathematics instruction, the conversations were usually to: (a) support teachers; (b) provide feedback to teachers and; (c) discuss student achievement. The data determined that conversations held with the principal do lead to teacher self-reflection on their instructional practices. This determination was made through the individual and focus group interviews. With conversations being honest and teachers being held responsible for achievement, the teachers did self-reflect often and made changes in instructional practices when needed.

Findings also supported that through collaboration with teammates and examining student data and student work, teacher were able to reflect on their instructional practices. The collected data also revealed that collaborative and one-on-one conversations are the types of conversations that take place between the principal and teachers that cause

changes in instructional practices. These determinations were made through the interviews and the observation.

Finally, it is also important to note that conversations between principals and teachers do lead to teacher reflection where teachers make instructional changes in their practices that impact student achievement. These conversations must be open and honest and occur frequently. School staffs must find the time to identify and discuss problems that surround why students are not achieving so that adjustments can be made within the instructional setting to impact achievement. The message of "no excuses" must be resounded throughout schools with struggling students.

APPENDICES

APPENDIX A

GRADE K UNIT 6 SUMMATIVE DATA

Grade Level: K Math Unit 6*

Standards/Elements: Numbers and Operations
MKN1. Students will connect numerals to the quantities they represent. e. Compare two or more sets of objects (1-10) and identify which set is equal to, more than, or less than the other. f. Estimate quantities using five and ten as a benchmark. (e.g. 9 is one five and four more. It is closer to 10, which can be represented as one ten or two fives, than it is to five.) MKN2. Students will use representations to model addition and subtraction. a. Use counting strategies to find out how many items are in two sets when they are combined, separated, or compared. b. Build number combinations up to 10 (e.g., 4 and 1, 2 and 3, 3 and 2, 4 and 1 for five) and for doubles to 10 (3 and 3 for six). c. Use objects, pictures, numbers, or words to create, solve and explain story problems (combining, separating, or comparing) for two numbers that are each less than 10.

Grade Level Totals

Total # of students in the grade level: 113

Total # of students passing the unit post assessment: 101

Percentage of students that passed the unit assessment: 89.4%

General Ed. Totals

Total # of general ed. students in the grade level: 105

Total # of general ed. students passing the unit post assessment: 95

Percentage of students that passed the unit assessment: 90.5%

Special Ed. Totals

Total # of Special Ed. students in the grade level: 8

Total # of Special Ed. students passing the unit post assessment: 6

Percentage of Special Ed students that passed the assessment: 75%

ESOL Totals:

Total # of ESOL students in the grade level: 34

Total # of ESOL students passing the unit post assessment: 30

Percentage of ESOL students that passed the unit assessment: 88.2%

ESOL/EIP

Total # of ESOL/EIP students in the grade level: 8

Total # of ESOL/EIP students passing the unit post assessment: 7

Percentage of ESOL/EIP students that passed the unit assessment: 87.5%

EIP non ESOL Totals:

Total # of EIP students in the grade level: 6

Total # of EIP students passing the unit post assessment: 3

Percentage of EIP students that passed the unit assessment: 50%

African-American

Total # of Afr.-American students in the grade level: 42

Total # of Afr.-American students passing the unit post assessment: 38

Percentage of Afr.-American students that passed the unit assessment: 90.5%

Total # of Afr.-American EIP students in the grade level: 1

Total # of Afr.-American EIP students passing the unit post assessment: 1

Percentage of Afr.-American students that passed the unit assessment: 100%

% of students scoring 90 or better: 94/113 = 83.9%

% of students scoring 80 or better: 100/113 = 88.5%

% of students scoring 75 or better: 102/113 = 90.3%

%ESOL Students scoring 75 or better: 30 /34 = 88.2%

%ESOL/EIP scoring 75 or better: 7/8 = 87.5%

%EIP non ESOL scoring 75 or better: 4/6 = 66.7%

%African-American Scoring 75 or better: 41/42 = 97.6%

%Special Ed Scoring 75 or better: 8/8 = 100%

**Form used and developed at Happy Elementary School*

APPENDIX B

KINDERGARTEN ACTION PLAN

UNIT 6 MATHEMATICS

Happy Elementary School End of Unit Action Plan Form*

Grade Level : K Unit: 6 Reading Language Art (Math) (Circle One)

Re Assessment Date: May 11, 2012

Grade Level Weaknesses: (Performance Standard and Element)
MKN2. Students will use representations to model addition and subtraction. b. Build number combinations up to 10 (e.g., 4 and 1, 2 and 3, 3 and 2, 4 and 1 for five) and for doubles to 10 (3 and 3 for six). c. Use objects, pictures, numbers, or words to create, solve and explain story problems (combining, separating, or comparing) for two numbers that are each less than 10.

Action to be taken prior to reassessment:	Teacher(s) Responsible:	Completion Date:
Mr. AL will pull the children who were not successful for small group instruction focused on the thought process.	Mr.AL	May 7 – 11, 2012

Students not Passing Assessment:

Student name (first name and last initial)	Teacher

*12 students listed by name and teacher. Names have been removed for privacy purpose.

**Form used and developed at Happy Elementary School*

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MERCER UNIVERSITY

Institutional Review Board
for Research Involving Human Subjects

20-Jan-2012

Chandra D. Lemons
Tift College of Education
Macon, GA 31207-0001

RE: A Case Study of Principal Engagement, Teachers' Self-Reflections, and Student mathematics Achievement in a Title I School (h1201017

Dear Lemons:

Your application entitled: A Case Study of Principal Engagement, Teachers' Self-Reflections, and Student mathematics Achievement in a Title I School (h1201017 was reviewed by this Institutional Review Board for Human Subjects Research in accordance with Federal Regulations 21 CFR 56.110(b) and 45 CFR 46.110(b) (for expedited review) and was approved under Category 7 per 63 FR 60364.

Your application was approved for one year of study on 20-Jan-2012. The protocol expires 19-Jan-2013. If the study continues beyond one year, it must be re-evaluated by the IRB Committee.

Item(s) Approved:
New Application

Please complete the survey for the IRB and the Office of Research Compliance. To access the survey, click on the following link:
http://www.zoomerang.com/Survey/?p=WEB227URK2RB6Q

It has been a pleasure to work with you and much success with your project!!

If you need any further assistance, please feel free to contact our office.

Mercer University IRB & Office of Research Compliance
Phone (478) 301-4101
Fax (478) 301-2329
ORC_Mercer@Mercer.Edu

Respectfully,

Ava Chambliss-Richardson, M.ED., CIP, CIM
Member
Instutional Review Board

MERCER UNIVERSITY
TIFT COLLEGE OF EDUCATION
Educational Leadership Program

INFORMED CONSENT

A Case Study of Principal Engagement, Teachers' Self-Reflections, and Student Mathematics Achievement in a Title I School

You are being asked to participate in a research study. Before you give your consent to volunteer, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do.

Investigators

The investigator for this study is Chandra D. Lemons, a student in the PhD program at Mercer University, Atlanta Campus. Dr. Olivia Boggs, is the faculty advisor for the researcher, but will not be an investigator for the study.

Purpose of the Research

This research study is designed to investigate the extent to which principal engagement with teachers impacts how teachers self-reflect on their instructional practices that leads to changes in their instruction to increase student achievement in mathematics.

The data from this research will be used in a completed dissertation by the investigator, Chandra D. Lemons, a student a Mercer University in the PhD-Educational Leadership Program.

Procedures

If you volunteer to participate in this study, you will be asked to participate in a one on one interview with the researcher and participate in a focus group along with other participants. You will also be asked to participate in a grade level and/or principal-teacher observation session where engagement concerning student achievement in mathematics is the focus. These observations may be formally or informally conducted throughout the school day. (Note: **Observations are not conducive to teacher or principal evaluation.**)

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Your participation will take approximately two to three hours over the course of the data collection phase. The researcher will conduct a single one-on-one interview with each participant that will be scheduled to accommodate participant schedules and conduct at least one focus group session where each participant is a member. Focus groups will be scheduled in advance.

Potential Risks or Discomforts

There are no foreseeable risks associated with this study.

Potential Benefits of the Research

The benefits of this research will be that participants could potentially contribute to ground-breaking research that could possibly lead to the understanding of *how* engagement between teachers and administrators lead to reflective behavior that could potentially impact student achievement in mathematics.

Confidentiality and Data Storage

Confidentiality of participants will be maintained within the narrative of the findings from the study. Pseudonyms will be used within the finished document for the purpose of reporting the findings from the research. Audio taped interviews of participants will be housed in the office of the researcher in a locked file cabinet for no longer than three years.

Participation and Withdrawal

Your participation in this research study is voluntary. As a participant you may refuse to participate at anytime. To withdraw from the study during the research phase, please contact the researcher, Chandra D. Lemons, at the following email address: lemonsc@fultonschools.org or at 770-265-5641.

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Educational Leadership Program

Questions about the Research

If you have any questions about the research, please speak with Chandra D. Lemons or Dr. Olivia Boggs at boggs_om@mercer.edu or at 678-547-6641.

Audio or Video Taping

Audio taping will be used as a method of collecting responses of participants during the one on one interview process and during focus groups.

This project has been reviewed and approved by Mercer University's IRB. If you believe there is any infringement upon your rights as a research subject, you may contact the IRB Chair, at (478) 301-4101.

You have been given the opportunity to ask questions and these have been answered to your satisfaction. Your signature below indicates your voluntary agreement to participate in this research study.

_____ _____

Signature of Research Participant Date

_____ _____

Participant Name (Please Print) Date

_____ _____

Signature of Person Obtaining Consent Date

Rev 08/19/2010

Mercer University IRB
Approval Date 01/20/2012
Protocol
Expiration Date 01/19/2013

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