2014

The Relationship Between Family, Personal, and School Variables and the Math Achievement of Elementary Students

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COLLEGE OF EDUCATION

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Abstract

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MA, University of Phoenix, 2006

BS, Lander University, 1989

Doctoral Study Submitted in Partial Fulfillment

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Abstract

School administrators and teachers must determine the factors most associated with academic success in order to meet the academic needs of all students. Researchers have identified general risk factors such as student socioeconomic status (SES), but there may be additional unidentified factors correlated to student achievement. The purpose of this study was to explore the relationship between a set of school, family, and personal demographic variables and students' math achievement. Bandura's social learning theory, Vygotsky's zone of proximal development, and Feurestein's mediated learning experience served as the guiding frameworks for this study. A descriptive correlational design was used to examine the degree of association among variables and how well the variables of students' SES, gender, ethnicity, attendance, and parental involvement predicted the math achievement among 115 students in 3rd through 5th grade at the study elementary school. Chi square and regression analyses did not reveal significant relationships among the predictor and criterion variables, indicating that the demographic, family, and school variables examined in the study did not predict student math achievement at the study site. These findings support the idea that math achievement is not necessarily predicated on variables extraneous to the teaching and learning process. A professional development project was designed for the study site to provide math teachers with best practice skills on differentiated learning strategies and classroom community building. This project study contributes to positive social change by providing educators at the study site with research-based findings on the relationship between student and school factors and math achievement, and with professional development on math strategies to improve the math achievement of all students.

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Dedication

First, I dedicate this study to my three daughters. Kristi, Jessica, and Hayden Grace, I have tried my best to instill in you a love of learning. I pray that you see the value of perseverance and strive to obtain the goals you set for yourself. Kristi, I know there have been many times you have called and I did not feel I gave you my full attention. I hope you never sensed that, but if you did, I thank you for your patience and love. I am so proud of the woman you have become. Jessica, I know there have been times when you had to fend for yourself because I was so involved in this goal. Know that I do everything I do for you. Thank you for being such a strong, wonderful young woman. Hayden Grace, I hope you know I wanted to be playing instead of sitting in front of my computer. I pray you grow to learn how important education is and why I struggled so hard for this degree. I love all of you.

I also dedicate this doctoral study to my husband David. You pushed me when all I wanted to do was quit. You would not let me give up. I shewed you away from my office more times than I can count, but you always seemed to understand. Your pride in me is what has kept me going. I could never have accomplished this dream without your unending love, support, and understanding. I love you more than words can ever express.

Finally, I wish to dedicate this doctoral study to the memory of my wonderful mother, Anne, and in honor of my wonderful daddy, Henry. Momma, although I know you will not physically be here to watch me walk across the stage to get my diploma, I know you will be here in spirit. Daddy, thank you for loving me. I love you both.

Without each of you, I would not be the wife, mother, and scholar I am today.

Acknowledgments

My research and project study would not have come to fruition without the support and guidance of my committee members, family, friends, and coworkers.

I wish to begin by thanking my committee members. Dr. Fowler, I have been blessed to have you as my chair. Your time, advice, and wisdom have been invaluable. Dr. Sharon Goodvin, your input and guidance were greatly appreciated.

Kaylee Wicker, my wonderful niece, four years ago at a band competition, you helped me with a paper. I remember telling you that I would acknowledge you. I did not forget. Thank you for being such a great young woman.

Mrs. Carol Dukes, I did it. You have been such a wonderful friend and mentor to me as long as I have known you. Your prayers, advice, and best wishes kept me going more than you will ever know. Thank you.

To my new PDMSTA family, I am so blessed to be working with all of you. Together we make our world better.

Mama Eller, I thank you for being here for me every inch of the way. The pride for my accomplishments that I heard in your voice everyday reminded me that I needed to keep going. You keep me sane. I love you.

Linda, thank you for loving my Dad and our family. We love you.

Davie, thank you for supporting me through the good and bad times. I love you.

Finally, I thank the greatest friend and learning partner ever. I feel as if I have known you my entire life. Dr. Lora, thank you for all the late nights, editing help, phones calls, and work weekends. This was not manageable without you. I love you.

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Section 1: The Problem

Introduction

Low academic achievement is often associated with a lack of desire to learn or low ability levels (Boon, 2008). However, Boon (2008) indicated that low socioeconomic status is a major risk factor of underachievement. Prior research (Bickelhaupt, 2011; Fadlelmula, 2011; Graves, 2010; Sheldon, 2007) has identified other factors related to the inability of certain students to reach or maintain grade-appropriate levels of achievement. These factors include gender, ethnicity, school attendance, and parental involvement. Meanwhile, schools across the country are under pressure to show adequate growth and progress in meeting grade level standards for learning. Government officials and elected representatives in the United States are continually establishing higher mandates for public education (Mehta & Doctor, 2013).

The No Child Left Behind Act (NCLB) of 2001, also known as the Elementary and Secondary Education Act, is descended from reforms that began in 1965 with President Lyndon Johnson's attempt to improve education and close achievement gaps. Based on NCLB, all students in grades 3-8 must be tested each year in reading and math. By 2014, students must reach the proficient level on state standardized tests and make annual yearly progress (AYP) until that time. All subgroups of students, including Hispanic, black, second language learners, and those with special needs must also meet the AYP requirements (National Education Association, 2013). According to the United States Department of Education (2011), President Barack Obama offered relief from these requirements for states willing to develop and maintain more rigorous, state levels

of accountability in order to ensure that all students in the United States are prepared for college or a career upon high school graduation. However, factors not related to instruction, state standards, and competent teachers affect learning. Educators in the United States are still not thoroughly cognizant of the relationships between socio-economic status, gender, ethnicity, attendance, parental involvement, and poor academic achievement.

Definition of the Problem

For decades, educational researchers in the United States have demonstrated that students from homes indicating higher levels of socioeconomic status academically outperform students from less advantaged backgrounds (Fan, 2012). Despite this history of study, most students from low socioeconomic backgrounds continue to achieve at the same levels. This suggests that there are unidentified factors correlating to a decline in academic achievement amongst all students, especially those of low socioeconomic status. This performance gap significantly affects teachers and students in 3rd through 5th grade at the small, urban elementary school examined in this study, hereafter referred to as ABC Elementary.

Approximately 91% of the students at ABC Elementary come from low socioeconomic situations, as determined by involvement in the free or reduced lunch program. Measures of Academic Progress (MAP) test results show that a significant percentage of students in 3rd through 5th grade were not performing at or above grade level in 2013. A noteworthy problem is that the specific factors relating to this

achievement deficiency in math are unidentified. The independent variables include socioeconomic status, ethnicity, gender, attendance, and parental involvement.

There are currently eight elementary schools in the school district encompassing the study site. Five of the seven other elementary schools have very similar student demographics to ABC Elementary. Students in grades three through five at these schools are also similarly not performing at or above grade level on math-standardized tests. This suggests an undetermined relationship between the independent variables and the criterion variable at each of these schools, in addition to ABC Elementary, and that any findings at ABC Elementary will be applicable to these schools as well.

Rationale

Evidence of the Problem at the Local Level

An examination of data retrieved from the computer-based assessment program Measures of Academic Progress (MAP) showed that a high percentage of students in 3rd through 5th grade at ABC Elementary were not performing at or above grade level. In order to meet the academic needs of these students, administrators and teachers must first determine which factors most influence academic success. Only after identifying these factors can teachers develop strategies that will accommodate the needs of individual students. The research and data compiled is valuable in determining the mitigating factor or factors influencing minimal academic achievement in math.

Evidence of the Problem from the Professional Literature

Multiple research studies have identified a variety of factors having potential negative effects on academic achievement. Several studies have proven the existence of

achievement gaps in schools (Ikpa, 1994; Roscigno, 1999; Madyun, 2011). According to Burney and Beilke (2008), poverty is the most significant factor causing differences among student achievement and significant gaps in learning. Ethnic and gender data, as it relates to achievement, has been researched and publicized since the mid-1960s (Coltfelter, Ladd, & Vigdor, 2009). Sumari, Hussin, and Siraj (2010) reported a lack of parent involvement, discipline, and overall concern for a child's well-being as important factors for academic success or lack thereof. Lucio, Rapp-Paglicci, and Rowe (2011) noted that ethnicity, school mobility rate, gender, and attendance are all factors determining student success. The greater the number of risk factors, the greater the chance of poor academic success.

Definitions

Key terms defined for the purpose of this study: *absenteeism*, *attendance*, *ethnicity*, *gender*, *low socioeconomic status student*, *Measures of Academic Progress (MAP)*, *parental involvement (PI)*, *remedial classroom instruction*, and *socioeconomic status*.

Absenteeism. The number of excused or unexcused days missed from elementary, middle, or high school (Kearney, 2008).

Attendance. Students at the study site are considered in attendance if they arrive at school. There is no time limit for arrival, departure, or length of stay.

Ethnicity. Belonging to a particular cultural origin or background (Merriam-Webster, 2013).

Gender. Students are considered to belong to either the male or the female gender.

Low socioeconomic-status student. Any public school student meeting the guideline requirements for free- or reduced-price meals (United States Department of Agriculture, 2012).

Measures of Academic Progress (MAP). A computerized assessment program created and promoted by the Northwest Evaluation Association (NWEA). This assessment is administered twice yearly, in the Fall and Spring. The test data, aligned to state and national standards, enable educators to focus on individual student achievement and progress (Northwest Evaluation Association, 2013).

Parental involvement (PI). Parental activities related to their children's education. These can occur at home or at school, including participating in parent/teacher organizations, helping in the classroom, chaperoning field trips, providing a safe, consistent environment for the child to study at home, talking about daily events, and helping with or checking over homework (Taliaferro, DeCuir-Gunby, & Allen-Eckard, 2009).

Remedial classroom instruction. Resource, special education, or speech classes.

Socioeconomic status. Socioeconomic status is based on the education, work or employment status, income, and wealth (Ross & Mirowsky, 2008).

Significance

A good educational foundation in the primary grades significantly improves the likelihood that students from all socioeconomic situations will become contributing and

productive citizens (Ready, 2010). Many students from low-socioeconomic families come from families with generational poverty (Cavanaugh, 2008). The majority of students attending ABC Elementary come from such families. Therefore, it is imperative for teachers to analyze data related to individual needs and adjust instruction accordingly. According to Cavanaugh (2008), a successful education can assist in establishing a productive life for these students and their future generations. Students have succeeded in overcoming the restraints of poverty to flourish academically.

Significant amounts of research and data have been collected on factors correlating to academic achievement in students from low socioeconomic backgrounds. The study findings of the current research aim to provide constructive information for administrators, teachers, and staff to assist in identifying the variables relating to the decline in math academic achievement. By analyzing the data and employing strategic plans to accommodate the correlating factors, educators have the potential to enhance academic performance, differentiate lessons, improve attendance, and increase parental involvement. By improving academic achievement, the students at ABC Elementary have the potential to overcome the generational poverty in which they live.

Research Questions

The primary research questions for this study were designed to determine which factors correlated most strongly with math academic achievement at the small, urban elementary school in South Carolina used in this study.

Research Question #1: What is the relationship between socioeconomic status and math achievement among students in 3rd through 5th grade at ABC Elementary?

Research Question #2: What is the relationship between ethnicity and math achievement among students in 3rd through 5th grade at ABC Elementary?

Research Question #3: What is the relationship between gender and math achievement among students in 3rd through 5th grade at ABC Elementary?

Research Question #4: What is the relationship between student attendance and math achievement among students in 3rd through 5th grade at ABC Elementary?

Research Question #5: What is the relationship between parental involvement and math achievement among students in 3rd through 5th grade at ABC Elementary?

Research Question #6: How accurately can math academic achievement be predicted from a linear combination of the variables socioeconomic status, ethnicity, gender, attendance, and parental involvement?

Review of the Literature

The purpose of this literature review was to examine and summarize current literature related to academic achievement, specifically in the early and elementary school years. The literature review focused on five key topics. These topics included the theoretical framework, gender, ethnicity, school attendance, and parental involvement.

A methodical approach was utilized to glean the information for this literature review. The educational research focused on gathering peer-reviewed literature through a variety of online resources, databases, and educational journals. The search process primarily used online databases available through the Walden University Library, including Academic Search Complete, Education from SAGE, Education Research Complete, ERIC, ProQuest Central, and PsycINFO. Search terms included *academic*

achievement, African-American, Asian, attendance, Bandura, black, Caucasian, elementary, ethnicity, female, gender, grade level, Hispanic, individual learner variables, learning, low performing, male, math, mathematics, parental involvement, single gender, socioeconomic status, and *Vygotsky.*

Theoretical Framework

Social environment is a fundamental variable in child development and learning. Gender, ethnicity, attendance, and parental involvement are substantial factors in academic achievement. These factors contributed to three major theories of child development and learning being used to inform this doctoral study. These theories are Bandura's social learning theory, Vygotsky's zone of proximal development (ZPD), and Feuerstein's mediated learning experience.

Bandura's (1977) social learning theory asserted that observational learning – the modeling of peers, teachers, and parents by children – is the source for all learning behaviors. Early learning consists of children imitating what they see and hear others around them do or say. Gender and ethnicity impact the environments children observe, directly affecting observational learning. As a number of the students at ABC Elementary come from generational poverty, determining how the effects of such poverty relate to student learning was essential to improving academic achievement.

The second major theory significant to the current study was that of Vygotsky's (1978) zone of proximal development. Vygotsky acknowledged that older studies, as well as pedagogical experiences and observations, attest that mental development and education are interwoven and synchronized to reach the ultimate levels of academic

achievement (Kozulin, 2011). ZPD has been used to increase student motivation while scaffolding lessons, facilitating students meeting higher levels of academic achievement (Silver, 2011). Attendance and amount of classroom instruction influence the quality and quantity of opportunities to increase student motivation and academic success. Synchronization of mental development and education is made more difficult for educators if students are not present for classroom instruction and teacher observation.

The third major theory relative to this study was Feuerstein's mediated learning experience (Feuerstein & Falik, 2010). Feuerstein and his colleagues developed the mediated learning experience in order for a mediator to assist the student working on a specific goal by "focusing attention, selecting, framing, interpreting, and cuing the student on specific stimuli" (Rodriguez & Bellanca, 2007, p. 18). Rodriguez and Bellanca (2007) suggested that by following this learning strategy, cognitive skills would developed in order for students to think analytically and transfer understanding from one subject to another.

The theories of Bandura, Vygotsky, and Feuerstein highlight diverse facets of childhood learning. The three theories, in collaboration, related to the students at ABC Elementary. By considering the outside learning environment of the students, differentiating for student levels rather than specific grade levels, and mediating learning experiences, educators have provided greater opportunities for student achievement. Ergo, the purpose of the current research and project study.

Gender

Gender, and the measurement of its differences, has become an intense topic in the world of education today. Research data indicated a difference in the way girls and boys learn, particularly in a variety of different subjects (Kessels, Heyder, Latsch, & Hannover, 2014; Voyer & Voyer, 2014). A meta-analysis by Voyer and Voyer (2014) consistently favored females over males in all subject areas. However, data showed differences in gender were insignificant (Cotton, McIntyre, & Price, 2013; McIntosh, Reinke, Kelm, & Sadler, 2013). A mixed model analysis by McIntosh et al. (2013) indicated no difference in reading ability based on gender. Cotton et al. (2013) found that gender was insignificant in math related competitive activities. The literature reviewed for this study posed additional questions on gender differences in education.

Stereotypes have been present throughout the nation concerning gender and mathematics. Based on a German study, math was considered a male domain (Steffens & Jelenec, 2011). According to Cvencek, Meltzoff, and Greenwald (2011), in the United States there remained an early realization for girls, as young as six, that math was a male domain. Gender differences in math, typically found in adults, were found at much early ages and showed up in testing as early as first and second grades. Cvencek et al. (2009) suggested that gender stereotyping began as early as Kindergarten and grew stronger as the student aged.

Math achievement gaps are present in the United States. Nosek et al. (2009) found in a study of gender-science stereotyping that the math achievement gap was directly correlated to the gender of both adults and children. Achievement gaps between

girls and boys in elementary school attributed to the gender stereotyping in later years for math and science oriented occupations. In order to overcome this gap and maximize science and math achievement, educators must, at early ages, work feverishly to change the mindsets of students as to the stereotype that is unintentionally imbedded in their minds as young boys and girls (Nosek et al., 2009). Teachers of math differentiated instruction in order to offer both girls and boys a plethora of mathematical strategies with which to analyze problems and find solutions. In this way, educators facilitated understanding, rather than provide single applications for problem solving. As students of both genders developed these strategies, the math achievement gap lessened between males and females.

Liu (2009) recognized that decades of research and test scores indicated a difference in math achievement between boys and girls. Boys generally received more teacher assistance in math, at all levels, than girls. Parents of boys expected them to excel in math, a stereotype lingering from years of men as scientists, engineers, and architects. According to Liu (2009), "girls have opportunities to discuss with classmates and collaborate on homework assignments" (p. 219). Furthermore, "the questions that appear in class assessments usually resemble the examples used by teachers in lectures" (Liu, 2009, p. 218). However, on standardized tests, the learning strategies utilized by boys allowed them to regulate the level of difficulty for each question and they were more apt to use a wide variety of problem solving strategies to decode problems not seen previously. Therefore, it was imperative that educators provided both girls and boys

assistance with strategizing techniques for problem solving to decrease the difference in math achievement.

In a study conducted during the spring semester of an academic school year, with 1019 seventh grade students, Fadlelmula (2011) focused on the impact gender had on students' learning strategies and mathematical achievement. The data collection consisted of two parts, a questionnaire and a math achievement test. Both ANOVAs and Robust tests of equality of means were utilized to analyze the data collected. Although there were small differences between males and females on many of the variables studied, Fadlelmula (2011) concluded that the impact of gender on students' use of learning strategies or math academic achievement was insignificant.

Ethnicity

Ethnicity and gender influenced teaching and students ability to achieve. A student's color and ethnic background determine how he responded to the teaching styles of the instructor and curriculum being taught. Students of different ethnic groups have brought a variety of cultural differences into the classroom. Successful academic achievement was determined by the integration of these cultural differences to meet students' needs. Ignoring color and ethnic backgrounds was a refusal to realize the different needs of students as individuals, thereby inhibiting academic success (Hawley & Nieto, 2010).

Multiculturalism, as described by Smith (2011), is "understanding people of other backgrounds, speaking languages other than English and learning to respect and appreciate differences" (p. 12). Chang and Le (2010) researched the impact of

multiculturalism on the academic achievement of Hispanic and Asian American students. The study found that sharing cultural likenesses and differences with others promoted academic achievement. Educators and administrators who promote true multiculturalism provided students of varying ethnic groups opportunities for greater academic success.

Cokley and Chapman (2008) conducted a study to determine if race and attitudes against those people not Caucasian affected the academic achievement of African-American students at a typically black university. Literature reviews found that race had both negative and positive links to academic achievement in African-American students. Cokley and Chapman's (2008) research found that students of African-American ethnicity "who express a strong dislike of whites and who do not value doing well in school will have lower grades" (p. 360). However, African-American students who held more positive ethic identities felt better about school and had higher grades.

Research showed that suspending or expelling students with severe behavior issues handled many of the behavioral problems in US schools. Lewis, Bonner, Butler, and Joubert (2010) concluded that African American males appeared to be the most targeted group for suspension and expulsion due to an overuse of notorious zero tolerance policies. These students, often removed from their classrooms for extended periods, suffered academically. Ethnicity, although not the specific reason for suspension and expulsion, played a significant role in lower academic performance.

School Attendance

School attendance, mandatory in South Carolina, is governed by the Department of Education. The majority of districts are somewhat lenient with the numbers of

absences allowed per school year, based on individual circumstances and medical situations. Ready (2010) stated, “Surprisingly few researchers have explicitly examined the associations between elementary school attendance and children’s cognitive development” (p. 273). Based on available research studies, a definite determination as to the significance a lack of attendance has on achievement was not found. Some studies have found minimal correlation to attendance and achievement, while others have found significant correlations between the two.

Hall-Kenyon, Bingham, and Korth (2009) studied the effects on half-day and full-day kindergarten students’ attendance and achievement. The findings concluded that students who were absent less than 10 days during the year performed considerably better in oral language than those students missing 10 or more days. However, Hall-Kenyon et al. (2009) also determined that attendance did not affect literature or math achievement for students in either half-day or full-day classes.

Ready (2010) suggested that being absent from school has a more pronounced negative effect on “socioeconomically disadvantaged children” (p. 272) than their more affluent peers. Based on a longitudinal study conducted by Ready (2010), those students who gain the most from being at school, the low socioeconomic children, were the ones who are most absent due to illness, financial complications, or housing instability.

Although Ready’s (2010) results indicated a correlation between attendance and literacy development, very weak associations were shown between math and attendance. Additional attention was given to the fact that students who miss school often may affect those students who do attend school on a regular basis. Teacher instruction was often

delayed or interrupted in order to meet the needs of those who have missed instruction (Ready, 2010).

Sheldon (2007) stated that students who attended school on a regular basis in elementary school performed better on standardized tests, had less likelihood of dropping out of school early, and abusing substances such as alcohol and tobacco. Bickelhaupt (2011) added that students with poor attendance throughout elementary, middle, and high school are more at risk to become adults living in poverty with higher rates of unemployment.

In a study of attendance patterns and truancy, Spencer (2009) found that a group of students with truancy and academic issues in 8th grade had the same issues as early as pre-kindergarten through first grade. Early absenteeism and poor academic achievement amongst these students led to retention and social promotion. Absences included both excused and unexcused, with a "range of 11 to 76 days" per year (Spencer, 2009, p. 312). These absences, along with retention or social promotions, predicted future truancy issues and increased risks of dropping out of school prior to high school completion.

Gottfried (2009) studied the differences between excused and unexcused absences amongst elementary school children. The purpose of his research was to determine if the distinct types of absences, excused or unexcused, could predict academic achievement in different ways. Gottfried's (2009) results supported the past literature findings that missing days of school can have an adverse consequence on school achievement. However, the results also specified that students with high numbers of unexcused absences were more likely to achieve at lower levels in reading and math than those

students with a high number of excused absences. Gottfried (2009) additionally indicated the need for a closer look at the patterns in absences as an indicator for family, socio-economic, or other school problems. Delving deeper into the issue of absences had the potential to enhance school-wide academic achievement.

Baxter, Royer, Hardin, Guinn, and Devlin (2011) conducted a study on body mass index (BMI), achievement, and attendance. Although the data failed to substantiate the researchers' predictions for BMI, it did confirm those for attendance and academic achievement. The study found that absenteeism is linked to less academic success. Baxter et al. (2011) confirmed that students who miss more school likewise miss more of the instruction and skills necessary to perform satisfactorily on standardized assessments.

Parental Involvement

Parenting is different today from three decades ago. Many students live with only one parent, and a rising number of students live with grandparents. The time has come for educators to acknowledge these changes. Although there is no general agreement on the definition of parental involvement, researchers and educators agree that it is crucial for academic success.

In some homes, parent involvement became family involvement. Larocque, Kleiman, and Darling (2011) defined family involvement as "the parents' or caregivers' investment in the education of their children" (p. 116). Involvement included activities such as volunteering at school, helping with homework, and taking on leadership roles within the school or school community.

Coleman and McNeese (2009) stated, “an involved parent can have an immensely positive impact on their child’s learning an overall school experience” (p. 460). Lipscomb (2011) reported that children whose parents are involved have higher levels of motivation and set higher goals for themselves. Parental views, input, and presence at school showed support for students and increase student motivation.

Cheung and Pomerantz (2012) completed a two-year study of American and Chinese children to determine how parental involvement affected academic achievement in middle school students. The purpose of the study was to determine if parent involvement increased student motivation to succeed. Cheung and Pomerantz (2012) found that a parent’s involvement in student learning is indeed an indicator of a child’s motivation to succeed. The greater the parental involvement, the higher the motivation to succeed, resulting in higher academic achievement.

Graves (2010) studied the differences in parental involvement for male and female African American students, as related to academic achievement. Graves (2010) found that parents of male African American students were more involved than female African American students in Kindergarten. However, as the male students progressed through grades one through three, parental involvement decreased, while female parental involvement increased. All levels of parental involvement were studied to determine if a correlation existed between parental involvement, reading, and math achievement in 3rd grade African Americans. In reading, parental involvement did not affect achievement. However, parental involvement negatively affected math achievement amongst 3rd grade African American students in the study.

El Nokali, Bachman, and Votruba-Drzal (2010) conceptualized parental involvement as "a product of the interaction between the influences of school and home settings by providing continuity between the two environments" (p. 989). For example, parents who were aware of the instructional goals within the classroom, provided materials and support at home to assist with reaching and maintaining the instructional goals at school. However, El Nokali et al. (2010) found that the simple act of engaging in typical parent involvement customs did not significantly relate to academic achievement. Improvements in the time and amount of parental involvement were also not a predictor of higher academic gains.

According to Harris and Goodall (2008), several barriers prevented parent involvement. One of the most prominent reasons for the lack of participation was work commitments. Full-time workers, whether during the day or at night, listed time restraints and other parental demands as significant indicators of lack of involvement. If parents considered active participation in their child's education as one of the jobs of parenting, time restrictions were not relevant.

Educators conceded that not all parents are the same. Parents of high socioeconomic status participated differently than parents living in low socioeconomic situations. Parents of Caucasian, African-American, Hispanic, Asian, and other ethnicities defined parental involvement differently. Regardless, involvement was meaningful and equally available for all parents.

Implications

Possible implications for this project study include the collection of comparable research data on a more significant scale. Data collected on a district-wide or statewide magnitude may indicate transferability of the findings for this study. Educators and administrators may customize the information to determine instructional strategies and programs to benefit all learners, especially those students of low socioeconomic status. Furthermore, this study may also encourage districts to amend attendance policies, initiate gender specific classrooms, and actively seek information and guidance on how to improve parent involvement throughout all institutes of learning.

The project study for this research is in the form of professional development. A professional learning community (PLC) is being established at ABC Elementary for the purpose of training teachers and staff in order to achieve specific goals. DuFour, DuFour, and Eaker (2008) described a learning community as a group of persons committed to the learning of every study. The goals of the PLC at ABC Elementary are to continually gather evidence on current levels of student achievement and demographic information, develop strategies to improve the learning environment, implement those strategies throughout each classroom, and to analyze the impact of changes to determine which strategies were effective and which were not.

Summary

The purpose of this study was to determine the relationship between academic achievement in math and the independent variables (socioeconomic status, gender, ethnicity, school attendance, and parental involvement) amongst 3rd through 5th grade

students at ABC Elementary. Research, as indicated by the literature review, recognized a variety of factors having implications for academic success. Despite supportive teachers and administrators at the study site, students in 3rd through 5th grade were unable to achieve scores at or above grade level.

Section 2: The Methodology

Introduction

The purpose of this research was to explore the relationships between socio-economic status, gender, ethnicity, school attendance, and parental involvement on math academic achievement for 3rd, 4th, and 5th graders at ABC Elementary. An explanation of how well the independent variables would predict the criterion variable, math academic achievement, was pursued.

A quantitative, correlational research design was implemented for this study. The reason this particular design method was employed was to determine the significance of the relationships between math achievement and five predictor variables. A binary logistic regression was applied to determine these relationships. All variables were placed into the regression analysis simultaneously.

Research Design and Approach

Approach

Grounded in the scientific realism philosophical framework, the quantitative approach to research was used by researchers to answer questions utilizing numerical data (Lodico, Spaulding, & Voegtle, 2010). Purely quantitative researchers hypothesized and determined how the data would be collected prior to beginning the research process. A quantitative, correlational research design was implemented for this study in order to determine the relationships between one criterion variable and five predictor variables.

One of the defining characteristics of quantitative research is to understand the nature of the relationship between variables. Variables are characteristics or conditions

that “vary” or change over time within and/or between individuals (Gravetter & Forzano, 2012). Variables also have certain measurement properties, such as being *nominal* (discrete), *ordinal/rank*, or *interval/ratio* (continuous) in nature; moreover, when looking at differences between groups, variables can be *independent* or *dependent* (Hanna & Dempster, 2012). To ensure that study findings can be trusted, quantitative researchers do what they can to ensure findings can be generalized (i.e., external validity) and ensure that the study design/procedures itself removes doubts or questions about the interpretation of the findings (i.e., internal validity) (Gravetter & Forzano, 2012). Another major characteristic of quantitative research is the presentation of research questions, hypotheses, and purpose statements (Hoare & Hoe, 2012). These aspects of quantitative research provide this researcher with a methodological approach for the study, in order to insure the results are as reliable and valid as possible.

The task of a quantitative researcher is to develop a theory, research the literature to form a hypothesis, collect the appropriate data, and accept or reject the null (i.e., no significant difference or relationship between variables) hypothesis based on the statistical analysis of the data to determine if results were due to chance factors or not. Statistical significance means that the observed relationship or differences between variables were not due to chance (usually affected by sample size); however, researchers do not rely on statistical significance alone for deciding whether findings are meaningful. They then measure effect sizes to evaluate whether significant findings are actually of practical significance or substantial/large enough to have practical application (Gravetter & Forzano, 2012). A researcher can have statistically significant findings but these same

findings may have limited practical value. Once hypotheses have been accepted, they "are typically considered to be generalizable: applicable to a wide range of similar situations and populations" (Lodico et al., 2010, p. 6). For example, accepted hypotheses from this study can be applied to schools with similar demographical data as ABC Elementary. If the hypotheses are rejected, an examination of the presence of any methodological/design flaws and other limitations affecting results in order to make recommendations for future studies is necessary.

Design

The quantitative design used for this study was the correlational research design. According to Creswell (2012), the correlational research began with the development of the correlational statistical test. This test, procedures for utilizing it, and several concepts used in quantitative research today were made well known by Karl Pearson in the late 19th century (Creswell, 2012).

Correlational research is used to explain the relationship between two or more distinct variables. According to Lodico et al. (2010), two variables are related when different amounts of a particular variable correspond with different amounts of another variable. In correlational designs, researchers do not strive to influence or control the variables but rather use the correlational statistical test to indicate the significance of the connection between two or more variables. Creswell (2012) stated, "Correlational research does not 'prove' a relationship; rather, it indicates an association between two or more variables" (p. 354). Utilizing correlational designs is beneficial if a researcher is seeking to determine the influence one variable has on another.

Correlational research is considered to be of two forms, either the explanatory design or the prediction design. The prediction design, on which this study was based, is a design in which the researcher attempts to identify which variables will predict a particular outcome (Lambie, Hayes, Griffith, Limberg, & Mullen, 2013). Researchers of predictor designs pinpoint predictor variables and criterion variables (Creswell, 2012). Predictor variables are used to make conjecture about an outcome and the criterion variable is the result the researcher is predicting. Generally, according to Creswell (2012), there is more than one predictor variable, but only one criterion variable.

A binary logistic regression was used for this research study. The type of analysis utilized had a binary outcome variable and was predicted by several dichotomous predictor variables. The standard entry method used placed all variables into the regression analysis simultaneously instead of sequentially (Tabachnick & Fidell, 2010).

The goal of this research study was to hypothesize whether the predictor variables of socio-economic status (as determined by free/reduced lunch subsidies), gender, ethnicity, attendance, and parental involvement reliably predicted overall math achievement as measured by MAPs. The correlational predictor design was specifically chosen for this study due to its quantitative nature and my desire to forecast future math achievement, based on the predictor variables. Statistical tests related to correlational predictor designs assisted in determining the relationships between variables. I chose the design to determine which, if any, of the predictor variables had an effect on math achievement. Professional development would further target the particular variables ascertained to affect achievement.

The problem addressed by this study was that insufficient data was not available at the study site to determine how the variables predicted math achievement. Predictor variables included socio-economic status, gender, ethnicity, school attendance, and parental involvement. Each variable was addressed equally to determine all relationships to the criterion variable, math achievement. The research design choice evolved logically from the existing problem. Examining the relationships between the five predictor variables and the criterion variable was essential to answering the research questions and developing strategies to improve academic achievement in the area of mathematics.

Setting and Sample

Setting

The site of the study was a public elementary school in South Carolina, ABC Elementary. At the time of the study, ABC Elementary provided public education for approximately 422 students, preschool through fifth grade. The school building was comprised of a main building and a smaller brick building.

The school district in which ABC Elementary resided consisted of seven elementary schools, two middle schools, two high schools, a community school housing grades K4-12, a career center, and an alternative school. According to the 2013 school district report card, the school district's 423 teachers provided quality education for approximately 5,740 students in pre-kindergarten through 12th grade (South Carolina Department of Education, 2014). Of those 5,740 students, 13.5% had Individualized Education Programs (IEPs), and 14.9% were served by the district's gifted and talented program. Two of the seven elementary schools were considered Title I Reward Schools.

These schools were considered the highest performing Title 1 schools for 2013, as determined by the South Carolina Annual District Report Card (South Carolina Department of Education, 2014).

Additional data was relevant to ABC Elementary and the school district's demographics. More than 90% of students in the district received subsidized meals, indicating that the majority of families were of low socio-economic status. The district's annual attendance rate was 95.8%, with an annual dropout rate of 1.4%. The dollar amount spent by the district, per pupil, was $9,805 (South Carolina Department of Education, 2014).

According to the district report card, the school district tested 1,233 third through fifth grade students in the district in 2012-2013 (South Carolina Department of Education, 2014). Of those 1,233 students, 388 were 3rd graders, 420 were 4th graders, and the remaining 425 were 5th graders. Based on the South Carolina Palmetto Assessment of State Standards (PASS), 124 students (31.9%) scored not met (NM), 113 students (29%) scored met (M), and 151 students (39.1%) scored exemplary (E). Of the 420 4th graders, 75 students (17.9%) scored NM, 171 students (40.8%) scored M, and 174 students (41.3%) scored E. Finally, of the 425 5th graders, 87 students (20.4%) scored NM, 162 students (38.3%) scored M, and 176 students (41.3 %) scored E. The scores for students in 3rd through 5th grades at ABC Elementary did not meet the achievement levels as determined by the average district scores. Third-grade PASS scores at the study site, for the same time period, indicated that 37.5% of students scored NM, 25% scored M, and 37.5% scored E. Thirty-seven percent of fourth graders scored

N, 43.8 scored M, and 18.8 scored E. Of the fifth graders, 17.2% scored NM, 51.7% scored M, and 31% scored E. Correlations between MAP and PASS scores were indicated through data compiled by NWEA each year. Grade level score ranges were identified for each level of PASS. For example, in 2013, a 3rd grade student considered capable of obtaining an M on PASS, must obtain a score no lower than 203 on the Spring MAP assessment. In the past, based on district analyses, PASS scores have been closely correlated with MAP scores.

Sample

The sampling method utilized for this study was the convenience sampling method. According to Suen, Huang, and Lee (2014), this type of sampling "subjects more readily available to the researcher are more likely to be included" (p. 111). The opportunity for all to participate is not equal in a convenience sampling. At ABC Elementary, there were 143 third-, fourth-, and fifth-grade students during the study term. In order to be eligible to participate in this study, students had to be currently enrolled in third, fourth, or fifth grade and had completed both Fall 2012 and Fall 2013 Math MAPs testing. Students must have been enrolled at the study site throughout the past 12 months. Students' parents also had to be willing to participate in a written survey about parental involvement.

Several factors reduced the effective sample size. Twelve students (8%) were not eligible to participate in the study as they were not students at the school in 2012 and did not have the opportunity to participate in MAPs testing. One hundred and thirty-one of the remaining students were given consent forms for their parents to give permission for

their data to be included in the research study. Of the 131 students, 115 (88%) had parents who gave permission for their data to be included in the binary logistic regression analysis. These one hundred and fifteen students provided an adequate sample of the students in third, fourth, and fifth graders throughout the school, based on results of a statistical power analysis detecting moderate effect sizes.

The study sample included data from these 115 students, representative of roughly 1,200 third-, fourth-, and fifth-grade students, throughout the school district. As demographic information was similar throughout the district, data from this sample was likely to be generalizable to the larger population, as suggested by Lodico et al. (2010). Of the 115 eligible students in third, fourth, and fifth grade at the selected study site, 100 lived in government-subsidized housing, received free or reduced lunch, and were considered to be of low socio-economic status. Sixty-three of the students in the sample were male, while 52 were female. Seventy-three of the students were African-American, 23 were Caucasian, and 19 were Hispanic. Students' scores on Fall 2012 Math MAP scores ranged from 160-227. Seventeen of the male African-American boys had an Individual Education Plan (IEP), four Caucasian male students had an IEP, one Hispanic girl had an IEP, and all 19 Hispanic children received inclusion services with an English as a Second Language (ESL) teacher. These diverse characteristics provided a plethora of information to add to the research and data collection.

Instrumentation and Materials

One of the primary instruments used in data collection for this study was the Measures of Academic Progress (MAP) assessment. This instrument, designed by the

Northwest Evaluation Association or NWEA (2013), is a computer-based assessment tool that provides immediate achievement scores and feedback for teachers and administrators. MAP assessments included the academic domains of reading, language usage, science, and math. The math assessments included 50 multiple-choice questions and took approximately 1 to 2 hours to complete. However, students took as long as needed since the test was not timed.

MAP assessments are developed, field-tested, normed, and maintained by the NWEA regularly (NWEA, 2014). Norm studies conducted by NWEA (2014) are "based on a nationally representative sample of MAP test scores from over 5 million students" (Header 3, para. 1). The regular studies, based on the student's position on the RIT (Rasch Unit) scale and amount of instruction time offered for the subject, determine each student's mean growth.

Wang, McCall, Jiao, and Harris (2013) conducted a study on the validity and invariance of computerized tests, including MAPs. In the study, Wang et al. (2013) stated,

> Because content validity is one of the most important sources of evidence of test validity in achievement tests, in NWEA item development, all items match the assessable sections of a set of academic content standards both in breadth of content and depth of knowledge. (p. 92)

MAP math assessments consist of seven goals: numbers/operations, geometry, problem solving, statistics/probability, measurement, equations, and application (Wang et al., 2013). Prior to development of the Common Core Standards, each state's MAP

assessment was based upon state standards. In the states currently referencing Common Core Standards, MAP assessments are based upon those new standards.

Although validity is most imperative when evaluating tests and test scores, the factor invariant across grade levels is essential when interpreting the amount of student growth. After completing a study of 10 different states, those who most implement MAP, Wang et al. (2013) found the results to show, "consistency and reasonableness of interpretation of the MAP RIT scale across grades and academic calendar years" (p. 98). Therefore, validity of the MAP testing instrument was verified.

Based on research completed by the NWEA, updated norm information was released in July, 2014. The NWEA medians for third through fifth grade math students were 192, 204, 213, respectively. These scores represented the norm for a student at the beginning of the school year (NWEA Research, 2014).

Scores on the math portion of the MAP assessment, administered two times each year to grades one through five at the study site, were the source of educational data for this study. According to NWEA (2014), each assessment question corresponds to a value assigned to a RIT scale.

> The RIT Scale is a curriculum scale that uses individual item difficulty values to estimate student achievement. An advantage of the RIT scale is that it can relate the numbers on the scale directly to the difficulty of items on the tests. In addition, the RIT scale is an equal interval scale. Equal interval means that the difference between scores is the same regardless of whether a student is at the top,

> bottom, or middle of the RIT scale, and it has the same meaning regardless of grade level. (The RIT Scale, para. 1)

RIT reference charts allow teachers and administrators to analyze which topics the students have mastered or not mastered, in order to provide remediation and enrichment to increase opportunities for learning (NWEA, 2013).

MAP had been utilized with third, fourth, and fifth grade students at ABC Elementary since 2005. Teachers and administrators utilized the data from this assessment to predict achievement on the state standardized test each May. Used as an indicator of PASS success, MAP testing passed state validity and reliability checks. Although no specific data could be located on NCSD's correlations, data were collected in a neighboring district with similar demographics. A study was completed for Edgefield County School District in 2010. This project, completed by NWEA, aimed "to connect the scale of Palmetto Assessment of State Standards (PASS) used for South Carolina mathematics and reading assessments with NWEA's RIT scale" (Kingsbury Center at NWEA, 2010, p. 3). Table 10 of the research project indicated that MAP predicted PASS performance with 86.04% accuracy for 3rd grade, 86.64% for 4th grade, and 88.33% for 5th grade (p. 13). Districts within the state used this information to comprehend the predictive validity of MAP as it correlated to PASS.

An additional instrument utilized to collect data for this study was a parent questionnaire (see Appendix A). I created a Likert style questionnaire, simply named "Parent Questionnaire", to gather information on parent involvement. Calculation of the scores determined the level of parental involvement as indicated by the survey. The

questionnaire contained 20 questions and required 20 minutes to complete. Parents were instructed to return the questionnaire in the stamped, addressed envelope provided with the form.

Questions on the survey concerned homework assistance, study habits, involvement in school activities, and school/home communications. Each question had a score of 1 to 6. Due to the range of scores, 20 was the minimal score available. Questionnaires scoring in a range of between 20 to 70 points were considered as no involvement to infrequent levels of involvement; 71 to 100 points indicated consistent levels of parental involvement, while scores between 101 and 120 displayed high levels of parental involvement.

I have utilized the questionnaire at the beginning of each school year for more than three years. Although these questionnaires were completed and analyzed on an informal basis, the results have indicated test-retest reliability.

The parent questionnaire was sent to parents in May 2014, after they had returned signed consent forms to agree to participate in the study. Parents were asked to complete the surveys and return them to the homeroom teacher within one week. One hundred, fifteen of the 131 students returned the questionnaires as asked.

The data for math achievement was gathered from the Fall 2012 math MAP database. Students participated in regular classroom instruction for nine months, with a two-month summer vacation between the eighth and ninth months. Fall 2013 math MAP data were gathered to determine if each student performed below grade level, on grade level, or above grade level, as well as the percentage of improvement or lack thereof.

Data for attendance, gender, ethnicity, and socio-economic status, with identification information removed, was obtained through specific databases accessible to the researcher. Once all data had been collected, relationships between independent variables and the criterion variable were established. These data are available in tables throughout the data analysis portion of the document.

Data Collection and Analysis

Collection Process

In order to collect raw data for this study, I requested permission and cooperation for this study from the school administrator and district superintendent, in November 2013. The letter of approval to collect data was obtained prior to collection of any data for this study. Additionally, no data for this study was retrieved prior to receiving permission from the Walden University Institutional Review Board. All information related to student identity was removed and confidentiality has been maintained by the implementation of a random number coding system.

As this study was an attempt to determine to what degree each independent variable relates to math academic achievement, a binary logistic regression was used to establish the relationship between the independent variables and the dependent variable. The analysis of data started by the collection of interval type math MAP scores from the NWEA website. The interval-type math MAP scores were then transformed into a dichotomous variable: 0 = decrease in scores, 1 = increase in scores. Individual MAP scores were not used in the analysis, but were calculated to a percentage of improvement, or lack of improvement, from the previous year's scores. Transforming the variable

(MAP scores) was performed in order to show degrees of academic gain or loss. Nominal data, which included socio-economic status, gender, ethnicity, and attendance, was to be obtained from the designated program at the school study site. As these data were not public information, a parent letter (see Appendix A) along with a letter of informed consent (see Appendix A) was sent to parents. Parents willing to allow their students to participate signed a letter of informed consent, giving permission to collect student scores and demographic information. However, all student names, addresses, and other identification information were removed immediately following obtainment from the school attendance system. A random number coding system was utilized to match student demographical data to test scores and parent questionnaires.

A binary logistic regression establishes the relationship between a set of independent variables and the single dichotomous dependent variable. The goal is to establish the likelihood that the dependent variable occurs based on the predictor variables (Tabachnick & Fidell, 2010). The logistic regression creates an odds ratio, which is the likelihood an event occurs given a single unit increase in the predictor variable (Tabachnick & Fidell, 2010). If the independent variable is dichotomous, then it compares the likelihood that the event occurs given the predictor variable is the "1" group compared to the "0" group. The assumption of adequate sample size should be met for the logistic regression. At least 20 participants per predictor variable are necessary (Peduzzi et al.,1996).

Nominal data, based on a Likert type scale, were obtained from parent surveys regarding parental involvement. The parent survey collected data on assistance with

homework and test preparation, monitoring of academic progress, availability to teachers, and providing additional educational experiences outside of the school setting.

Analysis

Data were entered into SPSS version 22.0 for Windows. Descriptive statistics were conducted to describe the sample demographics and the research variables used in the analysis. Frequencies and percentages were calculated for nominal data while means and standard deviations were calculated for continuous data (Howell, 2010).

Data were screened for accuracy, missing data and outliers. The presence of outliers was tested by the examination of standardized values. Standardized values represent the number of standard deviations the value is from the mean. Standardized values greater than 3.29 were considered outliers and were removed from the data set (Tabachnick & Fidell, 2012). Cases with missing data were examined for non-random patterns.

A chi square analysis establishes the relationship between two nominal variables. It compares the observed frequencies between the cross-tabulation of the two variables and the expected frequencies of the cross-tabulation. The assumption of adequate cell size was assessed prior to each analysis. The chi square assumes that each expected value calculated is above 5.00 for no fewer than 20% of the cells, and that no expected value is below 1.00. If the assumption is not met, then the Fisher's Exact Test will be conducted instead, which is an alternative to the chi square that is appropriate when there is a low sample size (Tabachnick & Fidell, 2012).

To examine research question 1, a chi square test of independence was conducted to assess if there was a relationship between math achievement and socioeconomic status. A chi square is the appropriate analysis to conduct when the goal is to assess the relationship between two nominal variables (Pallant, 2010). In this case, math achievement was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test). Socioeconomic status was measured as 0 = regular lunch and 1 = free/reduced lunch. Thus, both variables were measured nominally.

To examine research question 2, a chi square test of independence was conducted to assess if there was a relationship between math achievement and ethnicity. A chi square is the appropriate analysis to conduct when the goal is to assess the relationship between two nominal variables (Pallant, 2010). In this case, math achievement was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test). Ethnicity status was measured as 0 = Hispanic, 1 = African American, and 2 = Caucasian. Thus, both variables were measured nominally.

To examine research question 3, a chi square test of independence was conducted to assess if there was a relationship between math achievement and gender. A chi square is the appropriate analysis to conduct when the goal is to assess the relationship between two nominal variables (Pallant, 2010). In this case, math achievement was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test). Gender was measured as 0 = female, 1 = male. Thus, both variables were measured nominally.

To examine research question 4, a chi square test of independence was conducted to assess if there was a relationship between math achievement and attendance. A chi

square is the appropriate analysis to conduct when the goal is to assess the relationship between two nominal variables (Pallant, 2010). In this case, math achievement was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test). Attendance was measured as 0 = six days or more absent, 1 = five days or fewer. Thus, both variables are measure nominally.

To examine research question 5, a chi square test of independence was conducted to assess if there was a relationship between math achievement and parental involvement. A chi square is the appropriate analysis to conduct when the goal is to assess the relationship between two nominal variables (Pallant, 2010). In this case, math achievement was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test). Parental involvement was measured as 0 = high (91 – 120 score), 1 = moderate (61 – 90 score), 2 = low (60 or less). Thus, both variables were measured nominally.

To examine research question 6, a binary logistic regression was conducted to assess if socioeconomic status, ethnicity, gender, attendance, and parental involvement predicts math academic achievement. A binary logistic regression is the appropriate analysis to conduct when the goal is to assess the relationship between a set of independent variables and a single dichotomous dependent variable (Pallant, 2010). In this case, socioeconomic status, ethnicity, gender, attendance, and parental involvement were used as predictor variables. Socioeconomic status, gender, and attendance are dichotomous variables. Ethnicity is a nominal variable that was dummy-coded to use "Caucasian" as the reference group. Parental involvement was dummy-coded to use

"high" as the reference group. Math achievement (the outcome) was measured as 0 = decrease in score while 1 = increase in score (from previous achievement test).

Hypotheses

Research Question #1: What is the relationship between socioeconomic status and math achievement among students in 3rd through 5th grade at ABC Elementary?

$H_0$1: There will not be a significant relationship between math achievement of students considered to be of low-socioeconomic status and those of high-socioeconomic status.

H_a1: There will be a significant relationship between math achievement of students considered to be of low-socioeconomic status and those of high-socioeconomic status.

Research Question #2: What is the relationship between ethnicity and math achievement among students in 3rd through 5th grade at ABC Elementary?

$H_0$2: There will not be a relationship between students of different ethnicities and math achievement.

H_a2: There will be a relationship between students of different ethnicities and math achievement.

Research Question #3: What is the relationship between gender and math achievement among students in 3rd through 5th grade at ABC Elementary?

$H_0$3: There will not be a significant relationship in math achievement between girls and boys.

H_a3: There will be a significant relationship in math achievement between girls and boys.

Research Question #4: What is the relationship between student attendance and math achievement among students in 3rd through 5th grade at ABC Elementary?

H_04: There will not be a significant relationship in math achievement between students who have missed more than six days and those who have missed five or less days of school.

H_a4: There will be a significant relationship in math achievement between students who have missed more than six days and those who have missed five or less days of school.

Research Question #5: What is the relationship between parent involvement and math achievement among students in 3rd through 5th grade at ABC Elementary?

H_05: There will not be a relationship in students whose parents indicate parental involvement and those who do not.

H_a5: There will be a relationship in students whose parents indicate parental involvement and those who do not.

Research Question #6: How accurately can math academic achievement be predicted from a linear combination of the variables socioeconomic status, ethnicity, gender, attendance, and parental involvement?

H_06: Math academic achievement will not be predicted from a linear combination of the variables socioeconomic status, ethnicity, gender, attendance, and parental involvement.

H_a6: Math academic achievement will be predicted from a linear combination of the variables socioeconomic status, ethnicity, gender, attendance, and parental involvement.

Results

Descriptive Statistics

A total of 115 3rd through 5th grade students were chosen to take part in the study. The majority of the participants were on free/reduced lunch (100, 87%) and were African American (73, 64%). Most of the students were male (63, 55%). The majority of the students had only one to five days absent (61, 53%). Many of the students had high (56, 50%) or average (50, 44%) parental involvement. The majority of the participants had an increase in their MAP scores (85, 74%) and many were on grade level (56, 49%).

Table 1

Frequencies and Percentages for Participant Demographics

Demographic	*n*	%
Socioeconomic status		
Regular lunch	15	13
Free/reduced	100	87
Ethnicity		
Hispanic	19	17
African American	73	64
Caucasian	23	20
Gender		
Female	52	45
Male	63	55
Attendance		
16 or more days absent	8	7
11 to 15 days absent	14	12
6 to 10 days	26	23
1 to 5 days absent	61	53
Perfect attendance	6	5
Parental involvement		
High (91 – 120 score)	56	50
Average (61 – 90 score)	50	44
Low (20 – 60 score)	7	6
MAP		
Decrease in scores	30	26
Increase in scores	85	74
Grade level		
Below	37	32
On	56	49
Above	22	19
Percentage difference in math achievement score from prior year		
Decrease 5% or more	8	7
Decrease 1 – 4%	18	16
Increase 1 – 2%	38	33
Increase 3 – 4%	39	34
Increase 5 – 7%	12	10

Research Question 1

What is the relationship between socioeconomic status and math achievement among students in 3rd through 5th grade at ABC Elementary?

To examine research question 1, a chi square test of independence was conducted to examine if there was a relationship between socioeconomic status and math achievement. The assumption of adequate cell size was examined and one of the four cells (25%) in the chi square had an expected value of 3.40. Therefore, the Fisher's Exact test was used instead to test for significance. The results of the Fisher's Exact test were not significant, $p = .102$, suggesting no relationship between the variables. Results of the analysis are presented in Table 2.

Table 2

Chi Square Test of Independence for Socioeconomic Status and Math Achievement

	Math Achievement			
Socioeconomic Status	Decrease	Increase	$\chi^2(1)$	*p*
Regular lunch	6	9	-	.102
Free/reduced	20	80		

Note. Fisher's Exact test conducted for significance instead of Pearson's chi square. For the chi square results that have the dash, a chi square could not be conducted due to the assumption failure. Instead, a Fisher's Exact test, which produces only a *p*-value, was conducted.

Research Question 2

What is the relationship between ethnicity and math achievement among students in 3rd through 5th grade at ABC Elementary?

To examine research question 2, a chi square test of independence was conducted to examine if there was a relationship between ethnicity and math achievement. The assumption of adequate cell size was examined and one of the six cells (17%) in the chi square had an expected value of 4.30. Since less than 20% had a low expected value, the Pearson's chi square test statistic was examined. The results of the chi square test were not significant, $\chi^2(2) = 2.64$, $p = .267$, suggesting no relationship between the variables. Results of the analysis are presented in Table 3.

Table 3

Chi Square Test of Independence for Ethnicity and Math Achievement

	Math Achievement			
Ethnicity	Decrease	Increase	$\chi^2(2)$	*p*
Hispanic	6	13	2.64	.267
African American	13	60		
Caucasian	7	16		

Research Question 3

What is the relationship between gender and math achievement among students in 3rd through 5th grade at ABC Elementary?

To examine research question 3, a chi square test of independence was conducted to examine if there was a relationship between gender and math achievement. The assumption of adequate cell size was examined and none of the cells had an expected

count below 5.00. Since less than 20% had a low expected value, the Pearson's chi square test statistic was examined. The results of the chi square test were not significant, $\chi^2(1) = 0.01$, $p = .913$, suggesting no relationship between the variables. Results of the analysis are presented in Table 4.

Table 4

Chi Square Test of Independence for Gender and Math Achievement

	Math Achievement			
Gender	Decrease	Increase	$\chi^2(1)$	*p*
Female	12	40	0.01	.913
Male	14	49		

Research Question 4

What is the relationship between student attendance and math achievement among students in 3rd through 5th grade at ABC Elementary?

To examine research question 4, a chi square test of independence was conducted to examine if there was a relationship between attendance and math achievement. The assumption of adequate cell size was examined and none of the cells had an expected count below 5.00. Since less than 20% had a low expected value, the Pearson's chi square test statistic was examined. The results of the chi square test were not significant, $\chi^2(1) = 1.66$, $p = .197$, suggesting no relationship between the variables. Results of the analysis are presented in Table 5.

Table 5

Chi Square Test of Independence for Attendance and Math Achievement

	Math Achievement			
Attendance	Decrease	Increase	$\chi^2(1)$	*p*
Six days or more absent	8	40	1.66	.197
Five days or less absent	18	49		

Research Question 5

What is the relationship between parent involvement and math achievement among students in 3rd through 5th grade at ABC Elementary?

To examine research question 5, a chi square test of independence was conducted to examine if there was a relationship between parent involvement and math achievement. The assumption of adequate cell size was examined and one of the six cells (17%) in the chi square had an expected value of 1.50. Since less than 20% had a low expected value, the Pearson's chi square test statistic was examined. The results of the chi square test were not significant, $\chi^2(2) = 0.27$, $p = .873$, suggesting no relationship between the variables. Results of the analysis are presented in Table 6.

Table 6

Chi Square Test of Independence for Parental Involvement and Math Achievement

	Math Achievement			
Parent involvement	Decrease	Increase	$\chi^2(2)$	*p*
High (91 – 120 score)	12	44	0.27	.873
Average (61 – 90 score)	10	40		
Low (20 – 60 score)	2	5		

Research Question 6

How accurately can math academic achievement be predicted from a linear combination of the variables socioeconomic status, ethnicity, gender, attendance, and parental involvement?

To examine research question 6, a binary logistic regression was conducted to asses if socioeconomic status, ethnicity, gender, attendance, and parental involvement predicted math achievement. Ethnicity was dummy-coded and Caucasian was used as the reference group. Parental involvement was dummy-coded and High was used as the reference group. Therefore, the assumption of sample size was met for the logistic regression (115 > 5*20). The results of the logistic regression did not show a significant model, $\chi^2(7) = 5.88$, $p = .554$, Nagelkerke $R^2 = .08$. This suggests that socioeconomic status, ethnicity, gender, attendance, and parental involvement did not all predict math achievement. Results of the logistic regression are presented in Table 7.

Table 7

Binary Logistic Regression with Socioeconomic Status, Ethnicity, Gender, Attendance, and Parental Involvement Predicting Math Achievement

Source	*B*	*SE*	Wald	*p*	*OR*	$CI_{95\%}$ for *OR*	
						LL	UL
Free/reduced (vs. regular)	0.94	0.73	1.64	.201	2.55	0.61	10.74
Hispanic (vs. Caucasian)	-0.49	0.78	0.39	.534	0.62	0.13	2.84
African American (vs. Caucasian)	0.45	0.70	0.42	.516	1.57	0.40	6.14
Male (vs. female)	0.16	0.48	0.10	.747	1.17	0.45	3.01
Five days or less absent (vs. Six days or more absent)	-0.08	0.25	0.10	.754	0.93	0.57	1.51
Moderate parental involvement (vs. High)	-0.27	0.53	0.27	.606	0.76	0.27	2.14
Low parental involvement (vs. High)	-0.64	0.95	0.46	.497	0.53	0.08	3.37

Note. $\chi^2(7) = 5.88$, $p = .554$, Nagelkerke $R^2 = .08$

Assumptions, Limitations, Scope, and Delimitations

This study focused on the correlation of several factors and the math academic achievement of third, fourth, and fifth grade students at ABC Elementary. It was assumed that the data gathered from the computerized data program providing attendance, socio-economic status, gender, and ethnicity information was correct. It was also assumed that parents participating in the survey regarding parental involvement

responded to the survey truthfully and without bias. It was assumed that the representations made are true approximations of the involvement at home and at school.

One potential weakness, or limitation, of this study was that some students who took the MAP in September 2013 might not have taken the test in September 2012. Therefore, there was no data to determine the percentage of math achievement for these students. Another limitation was that students could be ill or having a stressful day during one of the testing times. This would cause an inaccurate test score and skew the results for that student. Screening and eliminating these scores prior to analysis was not an option as different teachers were present during testing procedures, leaving the researcher no knowledge of who may have been sick or having a stressful day during test times.

Another potential limitation of this study was that no control was available to alleviate the differences between grade level teachers' instructional styles and approaches to teaching math. There was no accountability or documentation as to whether the 3rd, 4th, and 5th grade teachers taught math effectively.

The validity and reliability of the parental involvement aspect of this study are questionable as proper; standard procedures were not followed for developing and piloting the survey instrument. A realistic threat to the internal validity of the study exists for this reason. A better choice would have been to research the literature for studies on measuring parental involvement in schools and using a preexisting survey rather than a self-created instrument. The Ohio Department of Education (ODE) developed and piloted a survey to determine how family involvement practices were

being utilized in their schools (Ohio Department of Education, 2009). As part of a framework developed and implemented for five years, the survey was one of the steps in ODE's commitment toward providing the tools and strategies that "educators, families and community members can take to strengthen the connection between home and school" (Ohio Department of Education, 2013, para. 2). The survey, although similar in format to the one used for the present study, demonstrated validity and reliability.

The scope of this study was delimited to third, fourth, and fifth grade students and parents in one elementary school in South Carolina. The study was delimited to these grades as I was only given access to scores at the particular study site. Approval for other sites within the district was not granted. Due to these boundaries, the results of the study are not generalizable to rural areas, other regions in South Carolina, or neighboring states.

Protection of Participants' Rights

Measures were taken to insure the rights of participants, including confidentiality and informed consent. Confidentiality was ensured by removing personal student information from all data. A number coding system was used to identify each participant. All parents participating in the study signed a letter of informed consent, providing them with information about the study and risks, if any, associated with their participation in the study. The letter of informed consent also articulated to them that their participation was strictly voluntary and that they could withdraw from the study at any time.

Conclusion

Section 2 included the methodology of the project study. The quantitative research approach and correlation research design were defined and justified. The

population and sampling size were identified, described, and eligibility criteria determined. Instrumentation and data collection tools, including an explanation of the data used to measure each variable, related to the guiding questions. Provided was an explanation of the descriptive and inferential statistics utilized to in the study, as well as a hypothesis for each guiding question discussed in Section 1. Researcher assumptions and limitations determined a need for correct information and honest answers on a parental involvement questionnaire. Confidentiality and a letter of informed consent were included as integral measures taken to protect the rights of all participants.

The problem at ABC Elementary was the lack of data available to determine to what degree each independent variable, socioeconomic status, gender, ethnicity, attendance, and parental involvement related to the dependent variable, math academic achievement.

Results of statistical analyses for all research questions in this study indicated there was (a) no significant relationship between socioeconomic status and math achievement; (b) no significant relationship between students of different ethnicities and math achievement; (c) no significant relationship between gender and math achievement; (d) no significant relationship between student attendance and math achievement; (d) no significant relationship between parent involvement and math achievement; and (e) no significant linear regression model showing that math achievement can be predicted by socioeconomic status, ethnicity, gender, attendance, and parental involvement. Therefore, the null hypotheses for all research questions were retained.

Section 3 includes a description and goals of the project. A scholarly rationale of how the problem was addressed through the project content is included. A literature review, not including literature discussed in Section 1, provides theory and research support for the project. The project consists of a school-wide book study and professional development workshops to discuss how to build classroom communities, meditate learning, and use the best practice of incorporating technology, to reach each child at his/her ability level. Utilizing these strategies, it is my goal, as well as the goal of the school district, that the outcome of the project study is that math test scores and overall levels of achievement improve.

Section 3: The Project

Introduction

The purpose of this quantitative study was to evaluate the nature of the relationship between socioeconomic status, gender, ethnicity, attendance, and parental involvement and math academic achievement of 3rd through 5th grade students at the study site. Analysis of the collected data revealed, however, that each of the variables investigated by this study were not significantly related to math achievement and that parents' self-reported level of school involvement did not predict changes in MAP scores. The administrators at ABC Elementary were informed of this finding. These school administrators then indicated their preference for a project addressing how to improve math achievement.

Section 3 provides a description of this follow-up project, as well as its goals and rationale. It includes a literature review that offers theory and research support specifically for the project. It also includes implementation information, an evaluation of the project, and a description of the project's implications for social change. This information explains how the project was implemented and how it is of potential use to other educators and administrators.

Description and Goals

Although the findings of my study indicated no relationship between the tested variables and math achievement, administrators and teachers at the study site agreed that the levels of achievement at ABC Elementary were not acceptable. This analysis supported the idea that all groups, SES, gender, and ethnicity, were similar in their need

to improve scores. The demographics of the school were not found to impact MAP scores. Therefore, the data supports the idea of utilizing best practices for all students. The school leaders indicated a necessity to attain math scores comparable to similar schools across the state, based on district and state report card data. This project was developed to incorporate mediated learning experiences, community building, and best practices into each classroom. The project consisted of a school-wide book study and professional development workshops to discuss how to build classroom communities, mediate learning, and the best practice of incorporating technology to reach each child at his/her ability level.

The problem identified in Section 1 was that math achievement was declining in the examined urban school setting and the specific factors relating to this achievement deficiency in math were unidentified. Although this research study did not suggest a relationship between the variables and math achievement, the problem of declining math achievement that prompted this study still exists in the school. Therefore, it was my goal (see Appendix A) for the project to promote mediated learning, classroom community, and best practices in order to improve academic achievement, focusing on math, but including all areas of study.

Mediated learning provides an opportunity for students to learn how to learn. Mediation strategies provide educators with examples of how to improve learning using prediction, use of prior knowledge, higher order goal setting, and inquiry (Rodriguez & Bellanca, 2010; Todor, 2013). Students engaged in mediated learning are taught to reflect on their work and provide connections to the world outside of the classroom. It is

my goal to assist the educators at ABC Elementary in preparing mediated lessons in order to provide the students with mediated learning experiences.

Classroom community building promotes mutual trust and respect. Students learn to work together to improve academic achievement for participants in the classroom. Higher levels of self-esteem, improved academic success, and strong work ethics are products of a well-organized classroom community (Morcom & Cumming-Potvin, 2010; Zepeda, 2014). Classroom community building strategies were not utilized at ABC Elementary. Introducing these strategies to teachers allows for development of lessons and community building within the classrooms at the school.

The best practice of technology integration into the classroom promotes deep understanding of academic concepts. Students and teachers integrate technology usage through interactive white boards, chat forums, and blogs. By using these mediums in the classroom, students conceptualize better and gain a more profound understanding of mathematical concepts (Lindler, 2012). Although ABC Elementary maintained two computer labs, smartboards in every classroom, and a minimum of three computers in each classroom, the teachers were not utilizing the technology. Coaching teachers on simple ways to integrate technology into their instruction provides students the opportunity to utilize technology to further their understanding of mathematical concepts and applications.

The project was designed to enable educators to improve math achievement, as well as achievement in reading, science, and social studies, by providing strategies and resources on mediated learning, community building, and best practices. Teachers will

additionally be provided with time for collaboration with peers and administration. During the professional development days, question and answer sessions with the speakers will provide teachers the opportunity to ask questions or voice concerns. Time slots during the afternoon portions of the sessions are set aside for teachers to work in grade levels to plan and develop lesson plans and strategies for mediated learning and community building.

Rationale

The results of this doctoral study indicated the variables of socioeconomic status, ethnicity, gender, attendance, and parental involvement were not significantly related to math academic achievement at the study site. Because these results did not find any significant new factors to address, it was necessary to develop a new project to address the previously noted math achievement problem that remained. The project had to evolve from concentrating strictly on math improvement to improving learning in general in ABC Elementary classroom environments. The resulting project was developed to focus on promoting mediated learning strategies and building classroom communities.

The data analysis in Section 2 indicated that 32% of the study participants scored below grade level on standardized tests, while only 19% scored above grade level. Fifty-six percent of the students in 3rd through 5th grades at the study site scored at grade level. In order to improve the achievement of the students on and below grade level, the project, entitled *Know Me, Teach Me,* was designed. Its component strategies were selected to promote advancement, not only in math, but also in all content areas. The concentration of the project ultimately centered on finding solutions for classroom

teachers to enhance instruction, thereby promoting higher levels of academic achievement.

The school district and South Carolina Department of Education are under political and social pressure to improve test results and annual yearly progress (AYP) outcomes. Despite the non-significant findings of this research, administrators and teachers needed to change their instructional strategies by researching evidence-based approaches that had not been considered or were not currently in place. The purpose of this project was to provide teachers at ABC Elementary with a book study and professional development opportunity. *Know Me, Teach Me* was specifically designed to address the need for improved test results and AYP outcomes, focusing solely on teaching educators. It specifically sought to teach these educators how to build successful classroom communities and become mediators in their classrooms based on students' needs and achievement levels.

After conferring with a neighboring district's math coach, the administration at ABC Elementary agreed to undertake professional development opportunities for mediated learning and community building for all teachers at the school. Best practices for math instruction were explored to determine what additional professional development would help with the overall math achievement at the school. Technology-based instruction, for all grade levels, was agreed upon as an area for professional development by all staff members. The project planning included the collection of future research at the end of one school year to determine if these strategies improved math academic achievement.

The non-significant results of the current study, research, and discussions with an experienced math coach provided a framework for the development of a bi-weekly book study and professional development sessions. The project sessions would focus on how to mediate learning, build classroom communities, and utilize existing technology, by including time for book reflection, collaboration with other teachers, and the creation of samples of lessons for immediate use in their classrooms. The book study and professional development sessions were designed to also provide awareness of how teachers should adjust their teaching to improve all students' standardized test scores.

Review of the Literature

Based on research evidence, the theory deemed most appropriate to addressing the problem of low academic achievement in math was Feuerstein's mediated learning experience, including ideas of community building within the classroom (Levenson, 2011; Rodriguez & Bellanca, 2007; Summers, 2006; Tzuriel & Shamir, 2010). The review of literature included the following topics on mediated learning experiences, community building, and technology use: (a) definition of and need for mediated learning experiences, (b) definition of and need for successful classroom communities, (c) instructional strategies for mediated learning, (d) instructional strategies for building effective classroom communities, (e) best practices for math instruction, and (f) professional development. Studies regarding mediated instruction, classroom community building, and technology instruction were chosen to support the content of the project.

The educational research focused on gathering peer-reviewed literature through a variety of online resources, databases, and educational journals. Online databases

included ERIC, Education Research Complete, Education from SAGE, ProQuest Central, Academic Search Complete, and PsycINFO. The following Boolean phrases were utilized: *academic achievement*, *achievement*, *best practices*, *classroom*, *classroom community*, *classroom environment*, *classroom expectations*, *cognitive*, *cognitive curriculum*, *community*, *curriculum*, *elementary*, *expectations*, *Feuerstein*, *instruction*, *instruction strategies*, *KWL*, *mediation*, *mediated learning*, *mediated learning experience*, *morning meetings*, *professional development*, *rules and expectations*, *school*, *technology*, and *Reuven Feuerstein*. A combination of the Boolean phrases and the various databases provided the opportunity to gather a rich quantity of literature that allowed me to reach saturation for the literature review.

Definition of and Need for Mediated Learning

According to Rodriguez and Bellanca (2007), mediated learning, the supporting theory for this project, took shape in the late 1970s and early 1980s. Reuven Feuerstein, once a supporter of Piaget and Vygotsky, proposed that between a learner and his/her response to the learning, was a mediator. Mediated learning is learning in which "the mediator helps children develop their own way of filtering those stimuli that promote learning from those that detract" (Rodriguez & Bellanca, 2007, p. 18). Simply put, the mediator assures that students learn how to learn by processing at higher levels in order to achieve, regardless of means of instruction or content.

As Feuerstein continued to study learning in all types of learners, regardless of socioeconomic status, gender, or students with special needs, he directed his focus not on cultural differences, but on "cultural deprivation" (Feuerstein et al., 1981). According to

Feuerstein et al. (1981), cultural deprivation is illustrated by a reduced predisposition "to learn and become modified even under apparently conducive learning conditions" (p. 270). The research conducted by Feuerstein and his colleagues suggested that the lack of mediated learning experiences (MLE) is the etiology of low academic implementation (Feuerstein et al., 1981). Individuals who lack MLE were considered culturally deprived and had trouble learning as they "lack the cognitive structures that serve to connect, organize, integrate, and relate stimulus information" (Feuerstein et., al, 1981, p. 272). In other words, these students had never been taught how to learn and would benefit from a mediator.

According to Feuerstein and Falik (2010), there are generally two approaches to education in the United States. The first of these approaches, content-based instruction, relies on the passage of knowledge from a teacher and the absorption of the information by a student. This instruction varies depending on the teacher, his/her knowledge of the content, and the ability to transmit the knowledge in a fashion the student can understand and retain. The second approach to education in the United States, the curriculum infusion approach, replies on the ability of the teachers and students to analyze knowledge to a higher degree, while understanding the underlying content as well. Although this is possible, Feuerstein and Falik (2007) conveyed that learning to think progresses through different stages such as "the stage of input (gathering data), then processing and making meaningful the information that we have gathered (elaboration), and at the point output (formulating and communicating responses to which we have

processed)" (p. 9). If these stages are haphazardly taught, the results could be redundant responses that are not meaningful to the educator or learner.

Therefore, a third approach to education, the cognitive curriculum was proposed by Feuerstein and Falik (2010). This approach provided for inclusion of differentiated instruction and mediation of learning. The MLE provided educators the ability to "offer direct exposure to cognitively oriented tasks and provide numerous repetitions with variations, and become increasingly and progressively more difficult" (Feuerstein & Falik, 2010, p. 12). Through this approach, students were able to utilize higher order thinking skills and create relationships between content areas. Using this method placed the learning responsibility on both the educator, as mediator, and the student.

Based upon the idea of successful mediation, Rodriguez and Bellanca (2007) discussed 10 criteria for interaction that Feuerstein deemed essential to mediated learning. Rodriguez and Bellanca stated that Feuerstein believed the first three of the 10 principals, "(1) intentionality and reciprocity, (2) meaning, and (3) transcendence" (p. 18) were crucial to the success of mediation in any learning situation. The other seven criteria were perceived as being useful in specific learning circumstances. These seven include "(4) competence, (5) self-regulation and control of behavior, (6) sharing behavior, (7) individualization, (8) goal planning, (9) challenge, and (10) self-change" (Rodriguez & Bellanca, 2007, p. 19). These criteria revolved around the need to "provide children life experiences significant for their cognitive growth" (Todor, 2014, p. 681). Incorporating the 10 criteria into the classroom inspired students to communicate, share,

reflect and regulate their learning and behavior. Experiences in the classroom were adapted for individual learners in order that everyone can learn to learn.

In a study of the effects of MLE on students, ranging from 12.5 years to 13.5 years of age, in London, White and Dinos (2010) randomly selected students to participate in either the control group or the experimental group. These groups completed activities separately focused on cooperation and communication behaviors while completing problem-solving exercises. The experimental group participated in a one-hour mediated learning experience "involving trust activities, effective communication, and group-cohesion exercises" (White & Dinos, 2010, p. 231). After students in the experimental group had completed this exercise, White and Dinos (2010) found, "an increase in on-task completion, effective communication during conflict, and the willingness to support each other in task completion" (p. 234). These results indicated that teachers, as mediators, had the ability to foster communication and support during instruction.

Students taught using mediated learning techniques and strategies were more likely to improve academically than students taught utilizing traditional teaching methods. Mediated learning developed motivated and self-regulated learners. Based on the research data of Mega, Ronconi, and De Beni (2014), "self-regulated learning positively predicts academic achievement" (p. 128). Students who motivated themselves, and others, to learn offered a plethora of learning potential within the group of learners. The efforts of such students positively affected academic advancement and progression. Therefore, mediated learning experiences in the classroom, by developing motivated,

self-regulated students, increased the opportunities for academic growth and school success.

Definition of and Need for Classroom Communities

Classroom communities are similar to the communities in which we live. People in communities throughout the world work together, learn together, and grow together. Wisneski (2007) defined a classroom community as "safety and comfort, helping others, inclusion, and being good democratic citizens" (p. 37). Research suggested that social and emotional education, developing peer relationships, and an overall sense of togetherness was the basis for classroom communities (Morcom, 2014). Effective classroom communities were built upon mutual trust and respect, while allowing each individual to flourish. Friendly and welcoming, classroom communities built and sustained healthy friendships and encouraged "the development of positive self-worth" (Zepeda, 2014, p. 25). The students in these classrooms were attentive to each other's needs and were compassionate to those needs.

Building effective classroom communities is more essential today than in the past. Bullying, playground violence, disrespect for teachers, and lack of mutual respect and empathy have increased through the years. A study by Morcom and Cumming-Potvin (2010) found that particularly at the beginning of the school year these core values were not evident in the behaviors exhibited by their students. Gibes *Tribes Learning Community of Practice* program (as referenced in Morcom & Cumming-Potvin, 2010) was the framework utilized as the intervention to build classroom community skills. After working with the students on appropriate communication skills, solid work ethic,

deeper levels of understanding for others, mutual respect, and confidence, the students were able to resolve issues with bullying and disrespect, not only in the classroom, but outside of it as well. Positive results spanned the remainder of the school year.

Currently, high-stakes testing is a staple part of the education arena. Any characteristic of education that affects a student's achievement positively is of concern. The environment in the classroom affects academic achievement. The degree to which a student believes he or she can achieve is called self-efficacy (Fast et al., 2010). Self-efficacy can be increased or decreased based upon how students perceive communication, caring, and the degree of challenge in the classroom.

Students working together, communicating efficiently, and having a mutual respect for each other allows the learning to extend past that of the teacher taught content. According to Rodriguez and Bellanca (2007), "In a learning community where sharing behavior is the norm, achievement soars" (p. 141). After students master sharing and working together, they use cooperative skills and strategies to move toward future success by three distinct means.

> First, they improve the social skills that business and industry consider essential for employment in this century. Second, they improve their cognitive skills and become problem solvers. Third, they raise their achievement level in the contents areas. (Rodriguez & Bellanca, 2007, p. 141)

Teachers at ABC Elementary shall be charged with the task of creating these types of communities in all content areas, especially math.

Fast et al. (2010) found that "teachers can positively influence math self-efficacy by creating a caring, challenging, and mastery-oriented classroom environment" (p. 739). Higher levels of self-efficacy had a positive academic effect on these learners. Caring and challenging classrooms encouraged "students to take pride in their effort and to value learning for its own sake, rather than simply emphasize the importance of good grades" (p. 731). This allowed students to feel more confident in their ability to perform math computations at a higher application levels. What teachers did to create a caring, respectful, and motivated classroom environment was significant to the academic success of all students.

Upon studying the effects teachers have on social and behavioral skills in early elementary school, Jennings and DiPrete (2010) found a researched connection between these skills and academic achievement. Appropriate behavioral and social skills are part of a well-developed classroom community. The impact teachers had on teaching these skills in this study were "almost identical" (Jennings & DiPrete, 2010, p. 141) and ascertained that the sample limitations of the study did not alter the study's findings. Evidence from Jennings and DiPrete's (2010) study suggested that attainment of these skills is "positively associated with academic achievement" (p. 147). With this in mind, it is imperative that teachers at the study site learn how to provide for behavioral and social skill instruction, in order to promote positive classroom environments.

Instructional Strategies for Mediated Learning

Feuerstein's mediated learning experiences included 10 criteria for learning. These mediations provided for a variety of instructional strategies to be utilized within

the classroom to promote learning and academic achievement. Strategies for the three mediations, intentionality and reciprocity, meaning, and individualization, were included to support the purpose of this project.

Mediation of intentionality and reciprocity included checking for prior knowledge, structuring the task so that students were attentive, reflecting, and looking forward to future lessons. An instruction strategy used with this mediation was teaching the students to say, "Just a moment...Let me think" (Feuerstein & Lewin-Benham, 2012, p. 28). The teacher asked for their brainstorming ideas as the students became more engaged in the lesson while he/she scribbled them excitedly on the board. The students took time to reflect on the answers given, while checking for mistakes or incorrect information. The students and teacher worked together to ascertain how the information was relevant to the upcoming lesson.

An example of a technique designed to improve student achievement through prior knowledge was Math Mediated Language (Rudd, Satterwhite, & Lambert, 2010). Math Mediated Language (MML) is the use of math language concepts during children's math play in the younger grades, and math applications in the older grades. As Rudd et al. (2010) pointed out, as young children became proficient at counting, the teacher introduced "skip" counting, also known as multiplication. Ordering in primary school became sequencing in elementary school. Using these words in early years built a foundation of knowledge for students to build upon in higher grades.

Mediation of meaning started with an explanation of the curriculum topic and how it was applicable, not only in the classroom, but in life as well (Rodriguez &

Bellanca, 2007). Mediation of meaning focused on prediction, inquiry, and the topics connection to the real world. KWL (We Know, We Want to Know, We Learned/Still want to learn) and PRC2 (Partner Reading and Content, Too) organizing tools (Ogle, 2009) supported thinking and meaning within the classroom. These strategies encouraged student inquiry and prediction, as well as connecting the context to real world applications.

Utilizing the KWL strategies allowed for learning while being involved in the learning process. As students at ABC Elementary complete a KWL chart, they will become involved in using prediction and inquiry to solve math problems. Therefore, the goal for math achievement should be attained. Based on the research findings of Tok (2013), the application of the KWL strategy by 6th grade math students was effective "in increasing students' math achievement" (p. 207). El-Rahman (2011) also concluded the use of KWL charts to be an effective means of improving math academic achievement. Students' use of these tools allowed for active engagement, thinking, effective learning, and improved math scores.

Mediation of Individualization is the process of successful instruction based on a learner-centered approach (Rodriguez & Bellanca, 2007). Students today enter the classroom with a variation of learning styles, backgrounds, interests, attitudes, and motivation levels. Although whole-class instruction has been used for decades, the method is decreasing in use as more educators focus on differentiated instruction strategies to create enhanced thinkers and individual learners (Margolin & Regev, 2011). This individualized instruction occurs most prominently in a learner-centered classroom.

A learner-centered classroom focused on the development of self-directed learners, less dependent on the teacher, learning with curriculum designed to benefit all of the students in the classroom (Rodriguez & Bellanca, 2007). To differentiate instruction, educators created interdisciplinary units for learning that revolve around a subject, math for example, and allowed students to focus on the style in which they learn best to assist in understanding, learning, and assessing the information.

Although all students are not mathematically or verbally inclined, especially minority students in urban communities (Dillihunt & Tyler, 2006), they may be gifted in other areas such as spatial, intrapersonal, or music. Allowing students to learn in such ways provided a better opportunity for learning in the classroom. A few strategies to incorporate individual learning preferences into the classroom environment included creating story problems, publishing a class newspaper using a budget, and using music to calculate beats and learn rhythmic steps. Differentiated instruction, as stated by De Jesus (2012), has been known to meet the needs of students with a variety of learning styles, help students understand at higher levels of thinking, and stimulate creativity. Differentiated instruction, by adapting teaching to meet the individual needs of students, provided them with "the appropriate level of challenge and the appropriate supports to help them reach learning goals" (p. 9). Students who reach their ideal learning goals were more successful academically.

Instructional Strategies for Building Effective Classroom Communities

Communities, as defined by Barnett and Falcon (2007), included four primary domains. These domains were "trust, membership, power, and capacity" (p. 4).

Communities also existed within the classroom in order for democratic decision making to occur. Social skills and academic achievement were enhanced in classrooms with effective communities.

As reflected upon earlier, effective classroom communities affected behavioral and academic issues. There were varieties of strategies from which to select to create an effective classroom community. Among these were class meetings, more commonly known as morning meetings, and establishing clear expectations.

Class meetings, also called morning meetings, were defined as "regularly scheduled times when all class members and the teacher sit together in a closed circle to discuss important topics" (Lundeberg et al., 1997, p. 36). Morning meetings were an opportunity for students to share with their classmates and receive feedback, generally on any topic. In an article focusing on building classroom communities, Cabrel (2013) noted of her experience during morning meeting, "I try to spark a conversation with a few and then the rest join in" (para. 3). The morning meeting time also included some form of learning lesson, usually based around character traits the teacher wants to see evolve in his/her classroom. Additionally, problem-solving strategies were often incorporated in morning meetings. Bucholz and Sheffler (2009) stated that classroom meetings assist in developing trust within the community of learners and "encourage children to work together to solve problems while practicing pro-social skills" (p. 4). For older students, creating an agenda of what is planned for the day, allowing time to communicate with each other, and giving positive feedback was crucial to the success of a productive classroom environment.

Morning meeting time set the tone in the classroom for the remainder of the day. The social skills exhibited during the meeting time should be recognized and used by the students during other times and settings. Working together as a time, regardless of subject area, required that students resourcefully apply the social skills acquired during morning meetings (Gardner, 2012).

While improving social skills through strategies such as morning meeting, these effective classroom communities stimulated students to learn and utilize self-management. Students who worked towards mastery of self-management skills often had greater success academically (Sonja, Melita, Milena, Jana, & Cirila, 2009). Implementing meetings in a classroom setting provided for growth both academically and socially.

Creating and maintaining clear expectations is fundamental to a successful classroom community. Yang et al. (2013) endorsed structure in the classroom, including high expectations, promotion of academic improvement, fair rules, consistent routines, and curtailment of any behavior causing classroom disruption. During my years in the classroom, I invited my students to help create our student and teacher expectations. Students participated in the creation of these clear expectations and to ownership of the expectations, promoting feelings of pride and self-worth.

A program that endorses structure, high expectations, and consistent routines for the classroom is Positive Behavior Interventions and Supports (PBIS). PBIS (2014) is a framework designed to assist educators and administrators in providing evidence-based behavioral interventions. These interventions are integrated into the regular curriculum

to improve social and academic behaviors. Students are involved in reinforcing acceptable behavior as they complement each other on correct actions and offer assistance when needed to remediate incorrect behaviors.

Best Practices for Math Instruction

As the focus for ABC Elementary was math academic achievement, it was crucial to provide educators with the knowledge of best practices for math instruction. This was necessary in order that teachers at the study site become equipped with appropriate instructional strategies and methods to provide consistent, meaningful math instruction, throughout all grade levels.

Based on a study of teacher perceptions and definitions of best practices, Suarez-Ortega, Ballesteros-Velazquez, and Malik-Lievano (2012) defined best practices as "singular, contextualized" and transferrable "to other educational contexts" (p. 7). Differentiated instruction, included in the ideas of mediated learning, is a best practice Bender (2012) described as necessary for academic achievement for students of all levels. Bender further stated, "the increased availability of technology, social networking, and computerized curricula in the classroom today allows for a totally differentiated instructional program" (p. 10). Utilizing technology in the classroom, while providing differentiated instruction, leads to future academic success in math.

One publicized and well-known instrument for use of technology in the classroom is the interactive white board (IWB). Although several models have been made available for classroom use, they all provide the same purpose, to allow students the opportunity to manipulate objects, otherwise known as math manipulatives, during math instruction.

Lindler (2012) suggested that students in early childhood classes should develop a conceptual understanding of math, and by utilizing the IWB, teachers can promote active learning on a daily basis. Lindler also provided a list of effective practices for math instruction throughout the younger grades. These practices included "building communities and communication" (p. 27) and providing students with hands-on and mind-on tasks such as the IWB. Lindler concluded that when lessons for young students are designed appropriately, "children are more likely to develop conceptual understandings and positive dispositions toward mathematics at a young age" (p. 34). These positive dispositions for learning mathematics leads to improved math academic success in future years.

A second best practice found for math academic achievement was writing in the mathematics classroom. It is well known that writing throughout the curriculum provides greater in-depth understanding of the subject matter. Math is one area in which writing is not often incorporated in the lessons. Chat forums and blogs provide students the opportunity to communicate in math, not just through computation. By allowing these mediums in the math classroom, "students learn cooperatively, scaffolding from each other" (Cooper, 2012, p. 84). Students were able to articulate their mathematical ideas and expand their understanding of the content being taught in the classroom. Including this technology opportunity in modern classrooms increased mathematical understanding, therefore increasing levels of academic achievement.

Professional Development

Professional development opportunities provide continuing education and support for teachers and administrators on a variety of topics and in variety of ways. Each professional development opportunity expands upon different goals, in different settings, and with different support systems. The professional development opportunity for this study was created to improve math academic achievement at ABC Elementary with a faculty and staff fewer than 25 persons.

As discussed by Argentin, Pennisi, Vidoni, Abbiati, and Caputo (2014), effective profession development (PD) programs were directed at "improving teaching skills, or at updating teachers on their subject content, curricular changes, or other educational reforms" (p. 103). A PD opportunity was provided for educators in a study conducted by Argentin et al. The PD focused on "teacher practice and on math content" (p. 104). Educators were provided with specific teaching materials, suggestions, and materials to include collaborative work within the math classrooms. Also included was time for teacher communication and continued support for teacher learning.

Argentin et al. (2014) conducted a study that examined the link between professional development and student math academic achievement. The results of their three-year study research study suggested that although no immediate academic improvement was evident, "effects on students' attitudes and teachers' practices and beliefs do appear" (p. 118) later on as the study continued throughout the three-year period. Students' attitudes toward math reflected a higher sense of responsibility for their own learning and teachers began communicating more frequently with colleagues.

Effective professional development opportunities address an array of topics to assist teachers in leading students to proficiency levels for all areas of content. These topics may include the alignment of lessons with appropriate standards, pacing guides to allow for coverage and depth of understanding for each subject, and suggestions for meeting the needs of low-achievers (Hochberg & Desimone, 2010). These initiatives, according to Hochberg and Desimone need to be implemented "in real school settings in a way that allows teachers to build their knowledge and skills for classroom practice, which plays a central role in student achievement" (p. 103). Student achievement leads to higher standardized test scores.

Implementation, Potential Resources, and Existing Supports

Prior to the conducting this study, I gained permission from the school district. As previous research suggests, mediated instruction and classroom communities increase academic achievement. The goal of this project is to provide professional development on mediated instruction, classroom community building, and technology integration in order to assist the teachers at ABC Elementary in increasing standardized test scores. In addition to the support of the school district leaders and the school administration, support was gained from the teachers of the 3rd through 5th graders whose scores were included in this research. The teachers conveyed a commitment to assist in any capacity to create and participate in the suggested professional development opportunities.

Potential resources for this project include literature for the book study, materials for the professional development meetings, and examples of classroom community building activities. The book utilized for the book study will be *What is it About Me You*

Can't Teach? An Instruction Guide for the Urban Educator by Rodriguez and Bellanca (2007). Through the support of the administrator at the study site , as well as the school district, each teacher and administrator at the school will receive a copy of the book for his/her personal library.

The support materials and resources for the professional development opportunities will be provided by the school as well. These materials include paper, pencils, pens, chart markers, chart paper, construction paper, scissors, post it notes, tape, glue, and additional supplies as needed, in order to create lessons and materials to use immediately within the classroom.

Examples of ideas for effective classroom community building and morning meetings will be shared using a smartboard, the internet, and print materials. Print materials include the following books: *Comprehensive Classroom Management: Creating Communities of Support and Solving Problems* by Vernon and Louise Jones (2006), *Doing Math in Morning Meeting: 150 Quick Activities that Connect to Your Curriculum* by Andy Dousis and Margaret Berry Wilson (2010), *Teaching in Elementary and Secondary Classrooms: Building a Learning Community* by Johanna Lemlech (2004), and *The Morning Meeting Book* by Roxann Kriete and Carol Davis (2014). Additional practical books for any teacher to have as a resource for effective teaching, include *Explicit Instruction: Effective and Efficient Teaching* by Anita Archer and Charles Hughes (2011), who are researchers out of the Pennsylvania State University and experts in the area of learning disabilities; and Effective *Teaching Strategies That Accommodate Diverse Learners* by instructional/curricular design experts, Michael

Coyne, Edward J. Kame'enui, and Douglas Carnine (2011). This book assists teachers with a better understanding of effective teaching as it relates to big ideas, conspicuous strategies, mediated scaffolding, primed background knowledge, strategic integration, and judicious review (Coyne, Kame'enui, & Carnine, 2011). Both Carnine and Kame'enui are pioneers in special education and researchers in the area of learning disabilities and effective, direct and explicit teaching/practices for reading, math, writing.

IWB information will be shared through a review of the Smartboard applications available at the school. The teachers are aware of these applications and have training on the use of them. A review session, provided by the servicer of the equipment, will be included in this portion of the professional development opportunity. Research supporting the use of these applications will be provided for all teachers.

Potential Barriers

Potential barriers to the success of the project include teacher resistance from those who are not open to change, regardless of the newly mandated state standards. These teachers, many of them veteran teachers, are set in their teaching practices and believe what they are doing is working; therefore, there is no reason to change. Musanti and Pence (2010) found that resistance is inevitable in professional development. However, by redefining resistance "as a positive force for change instead as an obstacle for growth is essential to the success and long lasting impact" of professional development (Musanti & Pence, 2010, p. 87). Presenting changes in teaching as positive experiences, although a daunting task, by means of collaborative, ongoing professional

development may assist in the alleviation of the unwillingness teachers have to accept change.

Teachers can also be resistant to using technology in the classroom. They may feel inadequate and insecure of their knowledge of technology, compared to the "tech-savvy" students today (Hicks, 2011, p. 189). Therefore, teacher resistance could be a potential barrier to the success of this project.

Another potential barrier is time management. Although the project's timetable is scheduled during already arranged professional development days and regular faculty meeting times, the teachers may find it hard when adding the book study to their presently hectic schedules. Teacher dedication to reading the text will be instrumental in the success of the book study portion of the professional development.

Proposal for Implementation and Timetable

Although the findings of this study did not assist in determining one specific variable related to math achievement, the findings need to be shared with the stakeholders in the community. Upon meeting with the proposed stakeholders and discussing my findings, I suggested implementation of the proposed professional development. I requested that the stakeholders allow me to work with educators in the school to promote strategies of mediated learning, community building, and technology integration, in order to improve academic achievement in all content areas. The professional development opportunity, including supporting literature, was shared with the stakeholders in order that they might ascertain the benefits of the project.

Professional development for building successful communities within the classroom will be addressed through a workshop (see Appendix A). This workshop will take place prior to the implementation of the book study. The workshop will be held on the first regularly scheduled teacher workday after the meeting of stakeholders. During the workshop, educators will be presented with literature to support classroom communities and examples of how to create classroom communities. Groups of four to six educators will discuss the literature and create charts to share with others in the session. These charts will display reflections from their discussions on the pros and cons of building classroom communities. After a whole group discussion on these reflections, educators will work with members of their same grade level to create lessons for use in their classes on building community.

Professional development opportunities for technology integration will be addressed through a review of Smartboard applications available at the school site (see Appendix A). This review will be held on the first professional development day after meeting with the stakeholders. These professional development times are for all teachers within the district. The PD will be led by the support providers for the Smartboard equipment purchased by the school last year.

Professional development opportunities for mediated instruction will be addressed through a book study. Implementation of the book study portion of the project will begin with an initial meeting to introduce teachers to the book (see Appendix A). Expectations and future dates will also be discussed at the first meeting. Teachers will be asked to read one chapter from the book during each two-week period between meetings. Every other

Wednesday, during the regularly scheduled faculty meeting time, teachers will be split into groups for discussion of the assigned readings. After discussions, teachers will meet in grade levels to enhance an upcoming lesson using the mediated learning strategies in the text. Teachers will use this time to create lesson plans, make hands-on materials, posters, or other items for immediate use in their classrooms. The book study will consist of 13 meetings, over a time span of approximately seven months.

Roles and Responsibilities of Student and Others

My expectation would be that teachers, given the time and materials, would implement mediated learning, classroom communities, and technology integration into their settings. Therefore, it is my responsibility to provide them with the necessary tools and information to create these opportunities within their classrooms. It is the responsibility of the teachers and administrators to attend all meetings, participate in required activities, and follow through with implementation within their individual classes and throughout the school. By doing so, students will reap the rewards of learning to learn, regardless on context, and feel loved, safe, and appreciated in their learning environment. An increase in learning, thereby an increase in standardized tests scores, is anticipated.

Project Evaluation

The evaluation of this project includes four elements. The initial evaluation will be a formative evaluation by teachers regarding the community building professional development seminar (see Appendix A). Items to be evaluated include my overall

presentation, materials presented, productiveness of peer collaboration, creation of lesson plans, usefulness in the classroom, and the overall experience of the work session.

The next portion of the evaluation process will be an evaluation of the book study and lesson creations. Attendees will be asked to complete an exit slip (see Appendix A) at the end of each session. This outcome-based evaluation will measure the actual creation of the mediated learning lesson plans. These lessons will be evaluated for ease of creation and time management. The goal for each session is that attendees have enough time to create approximately two to four lessons that can be employed immediately. The feedback will be utilized to improve the quality and time allotments for future sessions. At the end of the final book study session, a summative evaluation (see Appendix A), similar to the evaluation used for the professional development seminar, will be completed.

The formative evaluations for the professional development sessions and book study will assist in improving or adjusting portions of the activities. These evaluations allow the possibility to improve future professional development sessions, on this topic, for other schools in the district should they wish to participate.

Follow up for the book study portion of the project requires the assistance of administrators and mentor teachers in the school setting. It is the administration desire that Quarterly Professional Learning Communities (PLCs) will be initiated to discuss concerns and ideas relating to community building and mediated learning. Mentor teachers in the school will be asked to observe other teachers, in order to determine the need for further professional development on the topics included in the project.

A final summative evaluation will be given during the last month of the school term (see Appendix A). The summative evaluation will grant teachers and administrators the opportunity to provide feedback to the facilitator by elaborating upon their experiences with mediated learning and community building once they have implemented them in their classrooms. Teachers will be asked to include information on how the lessons worked, what they would change about the lessons, if student achievement was affected, and additional feedback that might be helpful to others. This will provide the facilitator with data on how the information was useful, what changes in presentation of the information need to be made, and preliminary viewpoints on the whether mediated learning and community building will improve academic success.

The stakeholders for this project are those to be effected by the improvement of overall student achievement and standardized test scores. The stakeholders include, but are not limited to, the students, teachers, and administrators at the study site, parents, the school board, and the community surrounding the small, rural school.

Implications Including Social Change

Local Community

The local community includes school board members, parents, students, faculty, administrators, staff, and faculty in the rural area. This project study has significant implications for social change. Promoting the success of all students, regardless of socio-economic status, gender, or gender, is paramount. By utilizing mediated learning strategies, rather than the traditional teaching method, students reap the benefits of more individualized instruction. Successful classroom communities afford students the

opportunity to learn, work, and grow in a challenging, yet friendly, non-hostile, caring, and respectful environment. Technology integration provides students with interactive, fun learning opportunities and more in-depth understanding of math concepts, therefore increasing motivation to learn. These different approaches to teaching will yield improved state standardized test scores, more engaged learners in the classroom, and better human beings.

Far-Reaching

The professional development opportunities presented in this study can reach beyond the walls of one small, rural school. They may serve as a prototype for other schools in the district, state, and country. The teachers involved in this project can additionally share this information with new teachers, or student teachers, entering the school. Achieving social change outside the perimeter of the study school is possible if other schools and district implement the professional development as modeled by ABC Elementary. Therefore, the benefits of this project will not only influence the selected school, but other elementary schools throughout the state and nation.

Conclusion

The project study was developed due to the need for improved math scores in a rural elementary school in South Carolina. The professional development opportunities were created to assist teachers in learning how to teach through the incorporation of technology and mediated learning strategies, as well as how to build effective classroom communities. In addition to the learning the teachers would gain from the study, it has the opportunity to develop positive character traits in and improve learning for all

students. Not only will math academic achievement be improved, but also academic success should prevail in all subject areas. Through the study, I have been able to produce an implementation plan for instruction in mediated learning and classroom community building to share with my school, the district, and other districts within my state. My reflection and conclusions will be presented and detailed in Section 4.

Section 4: Reflections and Conclusions

Introduction

The purpose of this quantitative study was to evaluate the impact of socioeconomic status, gender, ethnicity, attendance, and parental involvement on the math academic achievement of 3rd through 5th grade students at a small school in South Carolina. Results from the correlational analyses indicated no relationship between the five predictor variables and math academic achievement. The null hypotheses were retained. The components of Section 4 support my reflections of the study. In addition, Section 4 includes a self-analysis of my role as a scholar, practitioner, and project developer. Finally, I discuss the need for future areas of research and how this project contributes to social change.

Project Strengths

The problem initially addressed by this study was the existence of factors correlating to a decline in academic achievement amongst all students. Prior to the study, it was not clear which variable – socio-economic statues, ethnicity, gender, school attendance, or parental involvement – affected math achievement most among 3rd through 5th grade students. However, the results of this study showed that none of the specific variables were directly related to math achievement. Although the findings of my study indicated no relationship between the tested variables and math achievement, administrators and teachers at the study site agreed that the levels of achievement at ABC Elementary were not acceptable. Student test scores were not deemed acceptable because they did not meet the expectations of the district and state. Interventions from state and

federal levels are viable if mandates are not met based on a yearly basis. During a meeting with the district superintendent and cabinet, the administrator of ABC Elementary and all stakeholders present indicated the necessity of attaining math scores, within the next two school terms, comparable to similar schools, based on district and state report card data.

Educators today work in a data-driven environment (Wayman & Jimerson, 2014). Lai and Hsiao (2014) stated, "Many school reform initiatives now require schools to make curriculum, professional development and resource decisions on the basis of data" (p. 63). Data consists of information gathered from parents, standardized tests, and community. The data is analyzed to inform instruction, determine areas of need for professional development, and eliminate programs that are not successful. Both the school district and the South Carolina State Department of Education, in which ABC Elementary is located, require schools to make instructional decisions based on data from prior PASS tests, school, and state report cards.

None of the tested variables directly influenced the levels of math achievement at the study site. Therefore, I met with the stakeholders to discuss my findings. The stakeholders and I established that the math curricula and strategies utilized to teach math were not providing adequate opportunities for instruction and learning. I suggested implementation of the proposed professional development. I requested that the stakeholders allow me to work with educators in the school to improve the use of the current curricula by promoting strategies of mediated learning, community building, and

technology integration, in order to improve academic achievement in math and other content areas.

As part of this request, I made a presentation to the stakeholders on mediated learning strategies, community building, and technology integration. These stakeholders were all receptive to allowing the professional development opportunities. A trial term of one year was granted, with opportunities for further training to be determined by the results of the trial period. Verbal permission was granted and a time frame was developed.

The project had many strengths for addressing the concerns about improving student achievement. The fundamental message that I wanted to convey to all parents, faculty, administration, and community stakeholders was three-fold. First, mediated learning provides an opportunity for students to learn how to learn (Rodriguez & Bellanca, 2007). Second, classroom community building promotes mutual trust and respect (Zepeda, 2014). Finally, as discussed by Lindler (2012), the best practice of technology integration into the classroom promotes deep understanding of academic concepts. Based on the needs to improve student achievement at ABC Elementary, the project topics were appropriate.

The administrators and teachers at this school needed to change their instructional strategies. A determination was made that I would provide researched, evidence-based approaches that had not been considered or were not currently in place. The developed project would allow faculty to participate in professional development opportunities, in the form of meetings and a book study, to learn how to mediate learning, build classroom

community, and integrate technology successfully in the classroom. The project will enable educators to improve math achievement, as well as achievement in reading, science, and social studies, by providing strategies and resources on mediated learning, community building, and best practices of technology integration. This improvement will be noted through increased student involvement, improved informal and formal assessments in the classroom, which will be provided through feedback from teachers regarding the changing occurring within their classrooms.

By promoting the professional development opportunities provided by this project study, the district and other community members have an opportunity to provide benchmarks and guidelines for other districts and states to improve academic success for students of all ethnicities and socio-economic backgrounds. Implementing mediated learning strategies, effective classroom community-building opportunities, and technology integration tactics allows for potential unrestricted growth in academic achievement. Students exposed to mediated learning experiences are better prepared to problem solve (Seabi, 2012). Utilizing technology in the classroom builds classroom community as students work collaboratively to research or answer questions (Cooper, 2012). Working collaboratively, students learn from other and teach others, therefore, improving academic achievement. This achievement leads to higher scores on standardized, state and national mandated assessments, setting scholastic objectives for other districts and states to pursue.

Recommendations for Remediation of Limitations

Study limitations are present even in the best-planned projects. One limitation of this project in addressing the problem is that many teachers are not willing to change their instructional practices in a substantial manner, as noted by Berkovich (2011) and Terhart (2013). Based on conversations with the administration at ABC Elementary, there was a need to end teacher resistance to change. However, stakeholders at the school were unable to formulate strategies to resolve this concern. Many of these teachers were continuing contract teachers and had tenure within the district. Therefore, ending their employment was not a viable option.

In order for me to provide mediated learning strategies at ABC Elementary, teachers had to accept that a change in teaching methods was essential to the success of the project. Although majorities of teachers were open to change, many still preferred the traditional teaching method they have utilized to the years. Terhart (2013) stated, "Teacher resistance is a perennial phenomenon which all school reforms in the past have had to deal with" (p. 489). Many educational researchers and organizations have established a variety of ways to handle teacher resistance. The administration at ABC Elementary requires that each teacher participate in all professional development. Active implementation of the strategies learned is necessitated as part of each teacher's annual contract. ABC Elementary administration is currently working to formulate strategies to mandate these implementations.

Teachers are resistant to educational practices that they are not familiar with, and resist these practices when they have not seen evidence that a practice is educationally

sound. Knight (2009) remarked that prior to suggesting practices for schools, "consumers of educational interventions must consider the quality of research that supports those practices, the effect sizes or other measures of statistical significance from supportive research studies, and the experiences of other educators" (p. 509). Permitting teachers to participate in the selection of new educational practices and having them view "demonstrations of new ways of teaching before they try to implement them" (Knight, 2009, p. 509) increases these teachers' likelihood of participation.

One suggestion that I had for addressing this concern was to allow resistant teachers to visit and observe classrooms where teachers use mediated learning. The practices of the teachers and students in the classroom where this instruction is typical inspires the traditional teachers to try some of the techniques they have observed in their own classroom. This may take some time, but even small steps toward change are progress.

District administrators and curriculum leaders develop small groups of educators to choose programs for implementation throughout districts. It is not feasible for all teachers to be involved in the process; however, teachers need to feel as involved as possible. If leaders do not acknowledge teachers' needs for involvement, alienation can occur. Additionally, "When someone else does all the thinking for teachers, there's little chance that teachers will implement the practice" (Knight, 2009, p. 512). Therefore, allowing opportunities for teacher involvement in the curriculum decision-making process is crucial for teacher buy-in.

Another limitation to the success of the project may be in the way of a financial burden. If a school or district is short on budget funds for professional development, buying books for all of the teachers may not be feasible. One alternative to buying books for all teachers at one time would be to buy two for each grade-level in the beginning and purchase more throughout the first few months.

An additional way to remediate a possible financial limitation is for teachers who are familiar with and comfortable using mediated instruction to offer additional professional development within their own school. If these teachers willingly volunteer to share their experiences and expertise, no expenditures would incur. Furthermore, these opportunities could be held during regular teacher professional development days, rather than having to pay substitutes so the teachers might participate in training.

Scholarship

An enormous benefit of creating this project study was a greater appreciation for scholarly research and becoming a scholar. Taking on a study of this magnitude required massive amounts of persistence, dedication, and commitment to the students for whom I desired academic success.

However, the knowledge of scholarship did not begin with this project. Over four years ago, I began a journey with Walden University that would forever change my personal definition of scholarship. Scholarship has been the result of four years of course work, to include critical thinking skills and intense amounts of scholarly writing. Data collection, SPSS programs, and social change became language used in every day conversation with colleagues and professors. A culmination of all these scholarly

experiences has led me to understand that scholarship is not just learning in order to achieve, but achieving to help others learn.

Project Development and Evaluation

This research project was developed to inform teachers, administrators, and community shareholders of the how utilizing mediated instruction, community building activities, and technology integration can affect achievement in 3rd through 5th grade students. Development of this project involved numerous hours of personal planning, as well as planning dates, times, and venues to present the project.

One of the most important aspects of project development is flexibility. Adjustments often need to be made in order for the project to be successful. Time-management and organization skills are paramount to the success of a project as well.

Evaluation of the project will occur at the conclusion of each book study session and the professional development opportunity. It will consist of feedback from the participants in attendance. Several forms of evaluations will be given to each participant (see Appendix A).

The development and evaluation of this project, in the form of a professional development opportunity, will provide training, guidance, and support for all teachers. The professional develop opportunity will be offered each year to train new employees, and current employees who desire a refresher on the information provided.

Leadership and Change

While working on this project study, I have learned a multitude of concepts surrounding leadership and change. Placing myself in a position of leadership, in order to

provide the book study and professional development opportunities, I was afforded the chance to talk with all teachers in grades three through five. I additionally had the opportunity to meet with the curriculum coordinator, assistant principal, and principal to express the need for changing the way teaching was occurring at the school. The project allowed me to pursue a leadership role as facilitator of the book study and professional development seminar.

Change initially became apparent as I researched and scrutinized the literature available for this study and project. Through the analysis of literature, I recognized the need for thorough, active engagement as a reader and researcher. The study and project took second place to the new desire to understand, achieve, and transform the learner I had been in the past. Only then was I able to take the information gleaned from the literature and apply it to the quantitative research study at hand.

In order for change to occur, because of this study, data collection and analysis were paramount. Once the data analysis had been completed and no distinct variables related to low academic achievement, the project itself had to change. Initially designed to focus on the variable most related to academic achievement, the project became one of using different teaching strategies to meet all learners on their level, and teach them how to learn, rather than just teaching content.

The creation of the book study sessions and professional development seminars reflected my capabilities as an informed leader and agent of change. Talking and meeting with the teachers and faculty at the school assisted me in setting the guidelines and timetables for the learning opportunities. This assured me that the benefits of these

meetings would out weight the time teachers and administrators had to sacrifice to read the book, attend the sessions, implement the strategies in their classrooms, and reflect on lessons learned.

Analysis of Self as Scholar

Through the completion of this project study, I have learned about myself as a scholar. The work necessary to complete this project has helped me grow into the scholarly educator I desired to become. For 10 years, I was content with the education level I had reached upon obtaining my M. Ed. After a major life event, the death of my mother, I began to question who I was and what my goals were for my future. I had become comfortable teaching in the elementary classroom and felt it was time for educational growth. Walden University has given me the opportunity to continue my quest as a life-long learner and as an educator.

As a scholar, I am aware of the changes in my professional life, as well as my personal life. I read scholarly articles to learn more about current research in education. The project study has allowed me to lead and assist educators interested in life-long learning and new teaching experiences. I appreciate learning and the opportunities it has provided me, and my colleagues, to grow into scholars of educational leadership.

Analysis of Self as Practitioner

As an educator, continued learning is paramount. Teachers today are constantly overwhelmed with the need to change, monitor, and adjust. Best practices five years ago may not necessarily be considered best practices today. As a practitioner, I must remain

vigilant in my quest to continuously research and put into practice those strategies and methods most effective to current educational settings and situations.

Throughout my years at Walden University, the faculty members have instilled in me the need to be a consumer of research and to strive for social change. Collaboration and learning experiences with peers have provided me opportunities for growth as a scholar and practitioner. Through the completion of the project study, I have been allowed to share my research on implementing mediated learning, community building, and technology integration with teachers throughout my school, the district, and neighboring districts. As a practitioner, I am able to share with others how math achievement can be improved, regardless of socio-economic status, gender, ethnicity, and parental involvement.

Analysis of Self as Project Developer

Creation of this project has been rigorous, but it has also been a phenomenal learning experience. During the process of developing this project, I have learned to support my ideas with scholarly evidence, data collection, and analysis. The knowledge I gained throughout this program has been put to use to develop a worthwhile, meaningful project.

Development of this project has provided me with insight on how to determine a concern exists, research the concern and the possible implications, and to address the concern with well-supported evidence. The hard work and dedication involved as a project developer has increased my knowledge of the planning and commitment needed to design and implement a presentation.

The Project's Potential Impact on Social Change

Education is, and has always been, a changing environment. Teachers are continually learning new strategies, only to have them replaced by newer suggestions. Generally, these suggestions are not new, but rather are evidenced-based strategies that administrators and curriculum coordinators feel are popular and in their experience, work well. However, some strategies remain best practices for decades. What is known about effective math instruction has been evident for years, but many educators are not instructed in the research and do not know what adjustments to make and when to make them. They do not know how to ask for evidence when told to use a particular curriculum or strategy. If shown the research, most educators are not skilled in knowing how to evaluate the quality of the research. Educators must demand to be shown why a curriculum/strategy is better than what is currently begin used and how it has been researched and tested.

Stanovich and Stanovich (2003) note, "As professionals, teachers can become more effective and powerful by developing the skills to recognize scientifically based practice and, when the evidence is not available, use some basic research concepts to draw conclusions on their own" (p. 2). Educators are generally introduced to scientific research in their preservice years as they are led to search archived research-based documents for class assignments. Once in the classroom, teachers continue to find researched information about best instructional practices through scholarly articles, journals, books, and graduate programs.

Stanovich and Stanovich (2003) provide scientific criteria for evaluating the credibility and effectiveness of instructional strategies, consistent with the National Academy of Sciences methods of scientific inquiry in education. These criteria include: the strategies published are in peer-reviewed journals, other researchers have found similar results, and there is "a consensus within a particular research community on whether there is a critical mass of studies that point toward a particular conclusion" (Stanovich & Stanovich, 2003, p. 6). Teachers need to apply the criteria while attempting to determine the value and effectiveness of teaching strategies and curriculum. By doing so, effective best practices can be chosen to improve student achievement.

Due to the importance of selecting appropriate and effective math instructional materials, such as textbooks and manipulatives, Doabler, Fien, Nelson-Walker, and Baker (2012) suggests that teachers and administrators involved with textbook adoption committees use a "a systematic, research-based approach for analyzing potential materials" (p. 209). Highly respected review organization searches can provide valuable information regarding best practices and assist in the process of narrowing down a list of appropriate, more effective instructional materials.

Hochberg and Desimone (2010) recommend that teachers be allowed to meaningfully interact with peers as they develop a professional learning community in order to promote effective professional development. Teachers who interact professionally to discuss research and best practices are centered "around improving instructional practice, aligning instruction with content standards, and addressing the needs of diverse learners" (Hochberg & Desimone, 2010, p. 101). These educators can

then influence how professional development opportunities shape the instructional aptitude of students.

Carnine (1997) and Stanovich and Stanovich (2003) have indicated that many educators and educational committees are notorious for rejecting evidence-based practices in favor of ineffective, ideologically popular practices which create gaps and inequities in educational outcomes for students. Equity in education is not just about whether all students are taught at equal levels, which is statistically impossible due to the nature of disabilities and individual differences in knowledge and learning. Equity implies justice (de Ramirez, 2005). Equity is also about whether educators effectively use the best practices for instruction.

Building effective classroom communities, integrating technology, and intentionally focusing on mediated learning strategies could significantly influence social change throughout education communities. A potential training opportunity would be a presentation on evidence based best practices in math. The presentation would provide best practices and why they are considered as such, as well as strategies that are not best practices and why they are not best for education. Continuing education and training on these best practices will provide for years of useful implementation in the classroom.

At the local level, promoting the success of all students, regardless of socio-economic status, gender, or gender, will affect social change. Mediated learning strategies, in collaboration with traditional teaching methods, will allow students to achieve at higher, more individualized levels of learning. Thriving in effective classroom communities, students will learn, work, and grow in a challenging, non-hostile

environment. Technology integration affords students the opportunity to learn through fun, interactive, creative means.

These different approaches to teaching will yield improved state standardized test scores, more engaged, intrinsic learning in the classroom, and ultimately life-long global learners (Nordgren, 2013). These life-long learners will be indispensable as the nature of our global society changes dramatically.

According to Sharma and Monteiro (2010), "Life-long learners are essential in the uncertain future where new types of problems and new information surfaces exponentially" (p. 104). As students flourish, teachers will feel accomplished as they reach all levels of instruction within the classroom, and community stakeholders will delight in the improvements of standardized test scores. With the understanding of what effective math instruction looks like and should be comprised of, schools throughout the district must take notice of how improving the context of math learning, can promote positive social change.

Outside of the local level, other school districts can utilize the professional development project to bring about similar results and successes in their districts. Students from all districts will be more prepared to live and work in a global economy, extending boundaries previously made or set for their future endeavors.

Implications, Applications, and Directions for Future Research

Mediated learning, building classroom communities, and technology integration are researched practices for successful academic achievement (Bucholz & Sheffler, 2009; Cooper, 2012; Gardner, 2012; Hicks, 2011; Rodriguez & Bellanca, 2007; Todor, 2014;

White & Dinos, 2010). The knowledge gained through this research has allowed me to understand the following statements. Through mediated learning experiences, students are taught to reflect on their work and provide connections to the world outside of the classroom. Higher levels of self-esteem, improved academic success, and strong work ethics are products of a well-organized classroom community (Ponitz, Rimm-Kaufman, Brock, & Nathanson, 2009). Students conceptualize better and gain a more profound understanding of content through technology integration (Lindler, 2012). Hicks (2011) stated, "The integration of technology into the classroom setting allows teachers the benefit of connecting with students digitally by providing rich learning experiences with which students can relate" (p. 189). Such academic practices can be critical to students' educational achievement.

Although there is sufficient research available supporting the use of mediated learning strategies, building communities within the classroom, and the integration of technology (Bucholz & Sheffler, 2009; Cabrel, 2013; Lindler, 2012; Rodriguez & Bellanca, 2007), I found little research available on effective professional development opportunities to instruct educators on the ideas supporting mediated learning experiences. Hochberg and Desimone (2010) note that professional development opportunities must coincide with accountability policies, both state and national. In order to do so, professional development opportunities must include:

> the demand for alignment of instruction with standards and assessments, the need for coherence with other school-level initiatives, the needs of diverse learners, and

> the need to be responsive to peculiarities of the organizational environment of individual schools and districts (Hochberg & Desimone, 2010, p. 93).

Professional development opportunities must also focus on closing the gap between the standards that must be addressed due to accountability measures, and the nature of the teaching practices of the educators involved. Teacher who build their knowledge and practice such in the classroom promote student achievement (Hochberg & Desimone, 2010).

Providing the suggested professional development opportunity, and analyzing the formal and summative feedback, would assist in creating successful research for this PD opportunity. Such research would be applicable to all members and participants in the field of academia.

Recommendations for future research include the perceptions of students and parents prior to and following the implementation of mediated learning strategies. As the current research and literature attends to the sentiments of teachers, achievement can additionally be measured through the feedback of students and parents.

Conclusion

Completion of this section has afforded the opportunity to reflect on the project's strengths, develop, and evaluation, recommendations for remediation of limitations, implications for social change, and recommendations for future research. The opportunity for self-reflection allowed for the evaluation of me as a scholar, practitioner, and project developer. How I grew in scholarship, leadership, and as an activist for change was also assessed. Completion of this study has influenced my life in numerous

ways, as an educator, parent, colleague, and activist. I have gained knowledge and gathered implements, so that as a lifelong learner, I can continue to academically influence students in my district and throughout the educational community.

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Appendix A: Professional Development Curriculum and Materials

Purpose, Goals, Outcomes, Objectives, and Audience

Purpose

The professional development project study was created to assist teachers in learning how to teach through the incorporation of technology and mediated learning strategies, as well as how to build effective classroom communities. In addition to the learning the teachers would gain from the study, the project has the opportunity to develop positive character traits in and improve learning for all students.

Project Goals

A. Educate teachers on how to incorporate mediated learning strategies within the classroom.

B. Educate teachers on how to building community within the classroom.

C. Educate teachers on best practices to integrate technology into the classroom curriculum.

D. Provide educators with the necessary skills and strategies to mediate learning, build community, and integrate technology.

E. Provide teachers with the opportunity to collaborate with peers to develop lessons to be incorporated into the classroom.

F. Provide on-going support for teachers during the initial stages of implementation in the classroom.

G. Promote mediated learning, classroom community, and best practices in order to improve academic achievement, focusing on math, but including all areas of study.

Learner Outcomes

A.1. Teachers will understand mediated learning strategies.

B.1. Teachers will understand community building strategies.

C.1. Teachers will understand and be able to identify best practices of technology integration.

D.1. Teachers will obtain the skills and strategies necessary to apply mediated learning strategies, community building activities, and technology integration.

E.1. Teachers will collaborate with peers and create lesson plans for personal use.

F.1. A training team will be established at the school to support new staff, or those needed refresher courses, in subsequent years.

G.1. Academic scores will improve, not only in math, but in all subject areas.

Program Objectives

A.1.a. As a result of the introduction to mediated learning strategies, teachers will be able to identify the strategies and utilize them when creating lesson plans and throughout instruction. The teachers will be able to apply sharing, behavioral, individualism, and other mediated learning strategies on a daily basis.

B.1.a. As a result of listening to teachers who have successfully established classroom communities and viewing materials and podcasts of community building within the classroom, teachers will be able to apply learned strategies for successful implementation of an effective classroom community.

C.1.a. After instruction on how to determine best practices for classroom instruction, including integration of technology, teachers will be able to apply those practices to

infuse technology into the class curricula. Teachers will be able to utilize technology, such as SmartBoards, Promethean Boards, and ELMOs in the classroom on a consistent basis.

D.1.a. After the professional development seminar and book study, teachers will be able to apply strategies for mediated learning, community building, and technology integration on a regular, consistent basis throughout the school year.

E.1.a. As a result of collaborating with peers and creating lessons, teachers should leave the professional development with four to six lessons to implement immediately within the classroom. Teachers will be able to instigate collaborative times at their school to work with peers on future projects. Sharing of lesson plans created will also be a result of such collaboration.

F.1.a. As a result of the project, teachers will have a main contact person for additional support, as needed. Teachers will also have colleagues in the building to provide extra support.

G.1.a. As a result of the overall project, academic scores for math, and all other subjects, will improve to levels desired by school administration. The desired levels are such that the school will meet national and state objectives, as well as be consistent with scores in surrounding districts.

Target Audience

The target audience for the project study is teachers in grades Kindergarten through fifth at an urban elementary school in South Carolina. All but one of the teachers is a veteran teacher, having at least two years in the elementary classroom at the school.

The teacher who is not a veteran teacher entered into the 3rd grade classroom in February of the current school year.

Two of the teachers, one veteran and the new teacher, were not employed with the school during the implementation of Smartboards in the classroom. Therefore, they did not participate in the initial Smartboard training. All of the teachers have participated in book studies, either as a faculty member or at the college level. None of the teachers have experience with Mediated Learning Strategies, but the majority of the teachers implement classroom meetings within their classrooms.

Professional Development: Day 1

The professional development seminar will take place during a regularly scheduled professional development day.

Time	Activity
7:30 - 8:00	Participants will gather in the Media Center for a light breakfast and informal conversation with peers of what they know about classroom community building and technology integration.
8:00 – 8:20	The presentation will begin with a testimonial given by a National Board Certified teacher from a neighboring school district, on how she has implemented effective communities into her classrooms.
8:20 – 8:40	Speaker 2, a National Board Certified teacher from a different neighboring school district, will speak on how he has implemented successful classroom communities.
8:40 – 9:00	Speaker 3, a National Board Certified teacher from the Newberry School District, will share a Smartboard activity on how she has successfully implemented technology into math instruction.
9:00 – 9:20	Speaker 4, a teacher from Newberry School District, will speak on how she uses a Smartboard and ELMO to integrate technology into all subjects, specifically focusing on math instruction.
9:20 – 9:30	Morning Break
9:30 – 10:00	Speakers will participate on a panel to answer questions the teachers

have from the morning's testimonials.

10:00 – 12:00	PowerPoint presentation: Participants will be presented with literature to support classroom communities. References will be shared with participants and each group (three to four participants) will be given an article to locate, read, and reflect upon. Groups will read and discuss the literature. They will create charts that display reflections from their discussions on the pros and cons of building classroom communities. Charts will be shared and discussed between 11:45 and noon.
12:00 – 1:00	Lunch on your own.
1:00 – 2:15	A brief discussion will occur on how to determine best practices for classroom instruction. Teachers will work in pairs to locate and analyze activities appropriate for their grade levels in regards to community building and technology integration. Leader will guide participants in how to find websites, books, and articles from which to glean this information.
2:15 – 2:30	Afternoon break
2:30 – 3:45	Teachers will work in grade levels to begin development of lesson plans to promote classroom community and technology integration.
3:45 – 4:00	The presentation will conclude with a survey to be completed by all participants.

Professional Development Day 1 Speaker Notes

Day 1, Speaker 1

Ms. Smith's Classroom Morning Meetings

- Beginning of each day
- Calendar time
- Read aloud (usually on a character trait)
- Meeting adjourns with the passing of the talking stick. Each student has an opportunity to share one important thing each morning, as long as he or she is holding the talking stick.

Day 1, Speaker 2

Mrs. Kinard's Morning Meetings

- Held at the beginning of each school day
- A written note to students in on the Smartboard when they come in. Students copy the note, correcting spelling, punctuation, and grammar mistakes.
- Students form a circle when called to carpet.
- Students work in pairs on the carpet, for 2 minutes, to check partner's work.
- Student names, written on popsicle sticks, are pulled one at the time. Students are allowed to share something for 30 seconds.
- If time permits, students complete a team building activity such as Minefield or Traffic Jam. Numerous team building activities can be found at http://www.ventureteambuilding.co.uk/freeteambuildingexercises.html

Day 1, Speaker 3

Ms. Wren's Smartboard Math Lesson

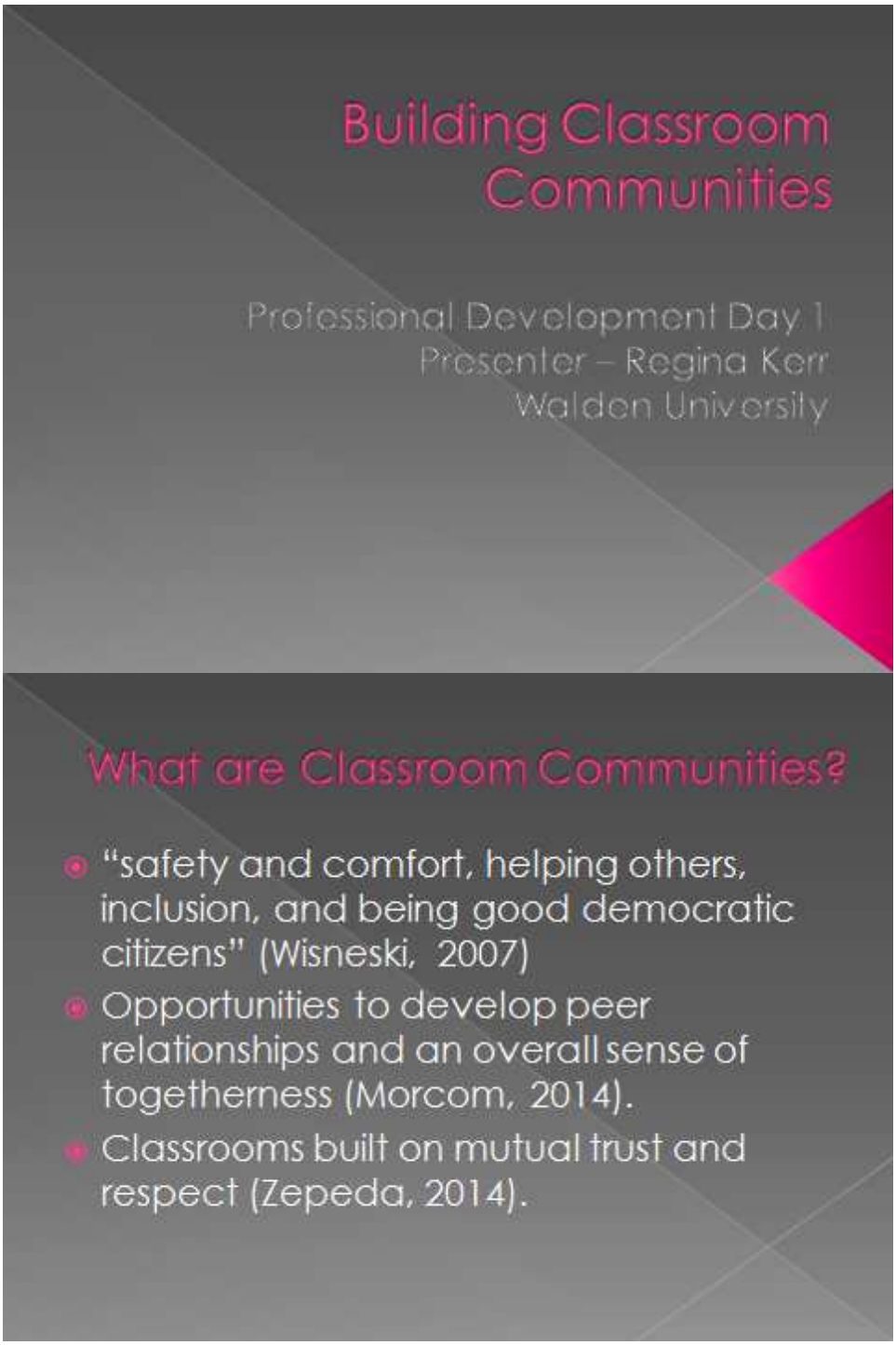
- Lesson includes showing teachers how to find virtual math manipulatives using the Smartboard tools section
- Rolling the Dice – Hundreds of uses

Day 1, Speaker 4

Ms. Wicker's Smartboard/ELMO Math

- Smartboard manipulatives reach kinesthetic learners
- Playing songs about math while working problems on the Smartboard reaches musical learners
- ELMO is great for math read alouds, so students can see the work while hearing the story.

Professional Development Day 1 PowerPoint Presentation



Why Classroom Communities?

- Allows individuals to flourish
- Builds and sustains healthy relationships (Zepeda, 2014)
- Students are more compassionate to the needs of others
- Lessons the numbers of bullying incidents, playground violence, and disrespect
- Helps develop solid work ethics (Morcom & Cumming-Potvin, 2010).

Find Out for Yourself

- Directions: Links for the following articles can be found on the school's server. Follow the links to find the article for your group.
  - Group 1 - Creating a warm and inclusive classroom environment: Planning for all children to feel welcome.
  - Group 2 - Building classroom community.
  - Group 3 - Morning meeting and science – A winning combination.
  - Group 4 - Does math-efficacy mediate the effect of the perceived classroom environment on standardized math test performance?

Discussion

- Now that you have read your articles, discuss the pros/cons for building classroom communities.
- Reflect upon your article and create a chart to teach the information you gleaned from the article to your peers.
- Sharing will commence at 11:45.

Additional Articles, Websites, and Books for Building Classroom Communities

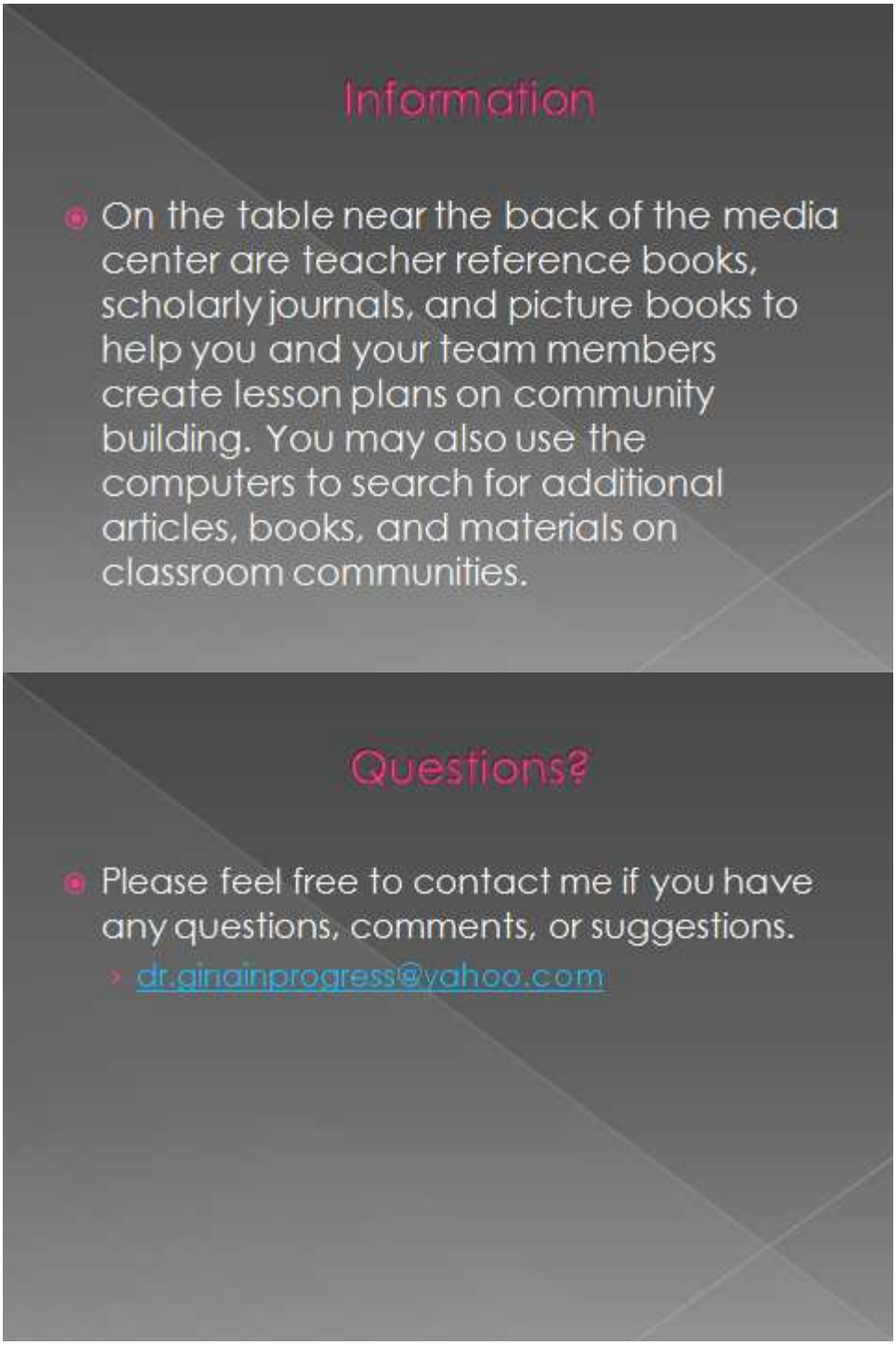
- Morcom, V. (2014). Scaffolding social and emotional learning in an elementary classroom community: A sociocultural perspective. *International Journal of Educational Research, 67*, 18-29. doi: 10.1016/j.ijer.2014.04.002
- Morcom, V., & Cumming-Potvin, W. (2010). Bullies and victims in a primary classroom: Scaffolding a collaborative community of practice. *Issues in Educational Research, 20*(2), 166-182. Retrieved from http://www.waier.org.au
- Zepeda, J. (2014). Stories in the classroom: Building community by using storytelling and storyacting. *Canadian Children, 39*(2), 21-26. Retrieved from http://www.cayc.ca/

Additional Articles, Websites, and Books for Building Classroom Communities

- http://www.edutopia.org/blog/back-to-school-strategy-building-community-anne-shaw
- https://www.teachingchannel.org/videos/building-classroom-community
- *Hound Dog True* by Linda Urban
- *Out of My Mind* by Sharon Draper
- *Interrupting Chicken* by David Ezra Stein

Additional Articles, Websites, and Books for Building Classroom Communities

- *I Want My Hat Back* by Jon Klassen
- *14 Cows for America* by Carmen Agra Deedy
- *Laundry Day* by Maurie J. Manning
- Because We Can Change the World: A Practical Guide to Building Cooperative, Inclusive Classroom Communities by Mara Sapon-Shevin
- Building Classroom Communities: Strategies for Developing a Culture of Caring by David Levine.


Information
On the table near the back of the media center are teacher reference books, scholarly journals, and picture books to help you and your team members create lesson plans on community building. You may also use the computers to search for additional articles, books, and materials on classroom communities.
Questions?
Please feel free to contact me if you have any questions, comments, or suggestions.
dr.ginainprogress@yahoo.com

References

- Buchholz, J., & Sheffler, J. (2009). Creating a warm and inclusive classroom environment: Planning for all children to feel welcome. *Electronic Journal for Inclusive Education, 2*(4), 1-13. Retrieved from http://corescholar.libraries.wright.edu/ejie
- Cabrel, K. (2013, September 12). Building classroom community. Retrieved from http://www.scholastic.com/teachers/top-teaching/2013/09/building-classroom-community
- Fast, L., Lewis, J., Bryant, M., Bocian, K., Cardullo, R., Rettig, M., & Hammond, K. (2010). Does math-efficacy mediate the effect of the perceived classroom environment on standardized math test performance? *Journal of Educational Psychology, 102*(3), 729-740. Retrieved from http://www.apa.org/
- Gardner, C. (2012). Morning meeting and science – A winning combination. *Science & Children, 50*(1), 60-64. Retrieved from http://www.nsta.org/

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- Marcom, V. (2014). Scaffolding social and emotional learning in an elementary classroom community: A sociocultural perspective. *International Journal of Educational Research, 67*, 18-29. doi: 10.1016/j.ijer.2014.04.002
- Marcom, V., & Cumming-Potvin, W. (2010). Bullies and victims in a primary classroom: Scaffolding a collaborative community of practice. *Issues in Educational Research, 20*(2), 166-182. Retrieved from http://www.iier.org.au
- Wisneski, D. (2007). Struggling with/for democracy: A case study of community in a US third-grade classroom. *European Early Childhood Education Research Journal, 15*(1), 37-57. doi 10.1080/13502930601161940
- Zepeda, J. (2014). Stories in the classroom: Building community by using storytelling and storyacting. *Canadian Children, 39*(2), 21-26. Retrieved from http://www.cayc.ca/

Professional Development: Day 2

The professional development seminar will take place during the second regularly scheduled professional development day.

Time	Activity
7:30 - 8:00	Participants will gather in the Media Center for a light breakfast and informal conversation with peers of what they know about mediated learning strategies.
8:00 – 10:00	The presentation will begin with a lesson, led by a former teacher in the district, and former Professor of Education at the University of South Carolina. The lesson will focus on Feurestein's Mediated Learning Experience and how it can benefit both teachers and students.
10:00- 10:15	Morning Break
10:15 – 10:30	Brief question and answer time for Speaker 1
10:30 -11:30	Speaker 2, a National Board Certified teacher from the school district, will share information on how she implements mediated learning strategies within her class.
11:30 – 11:45	Brief question and answer time for Speaker 2
11:45 – 1:00	Lunch on your own
1:00 – 1:30	Participants will be provided with a copy of the book to be used for the study. The book, written by Rodriguez and Bellanca in 2007, is titled "What is it About Me You Can't Teach: An Instructional Guide for the

Urban Educator". Participants will have an opportunity to scan the book and talk with colleagues about the book.

1:30 – 2:00 A short introduction of the book will be given. A decision of the timeline for the book study will be held.

2:00 – 3:00 Participants will be given information on how to locate the journal article by Feurestein and Falik (2010), "Learning to think, thinking to learn: A comparative analysis of three approaches to instruction from the Journal of Cognitive Education and Psychology". After allowing time for participants to read the information, a brief discussion will occur on how to utilize these strategies in the participants' specific classrooms. Participants will collaborate with grade levels members to brainstorm ideas for their particular grade level.

3:00 – 3:15 Afternoon break

3:15 – 3:45 Leader will provide participants with additional books and articles from which to glean information on mediated learning strategies (books and journals located in the back of the media center). A schedule for the book study sessions and homework assignments will be discussed and a copy given to each participant.

3:45 – 4:00 The presentation will conclude with a survey to be completed by all participants.

Professional Development Day 2: Speaker Notes

Day 2, Speaker 1

Dr. Bass on Mediated Learning Experiences (MLE)

- Theoretic basis for MLE: Vygotsky and Feuerstein
- Challenge of urban education
- TESA strategies
- Sharing behaviors
- Mediation of goal planning
- Mediation of self-change
- Math self-efficacy
- Higher achievement in math

Day 2, Speaker 2

Mrs. Robert's Mediated Learning Strategies

- What a mediated classroom looks like:
    - Students are collaborating and engaged in the learning.
    - Students are all called upon to give answers (TESA strategy)
    - Students are praised regularly (TESA strategy).
- Students need to learn how to learn and communicate.
- Students self-regulate their own thinking and problem solving.
- Students have to stop and think prior to answering. The TESA strategy of wait time is employed.
- Multiple intelligences are understood and utilized.

Materials Needed for Professional Development Days 1 and 2

The copies, one per participant, and materials listed below are required for Professional Development Days 1 and 2:

- light breakfast refreshments,

  access to a Smartboard and ELMO for the speaker(s) to utilize each day;
- copies of agendas,
- adequate paper, pencils, chart paper, and chart markers;
- a copy of "What is it About Me You Can't Teach: An Instructional Guide for the Urban Educator" (Rodriguez & Bellanca, 2007) for each participant;
- computers (one for each two teachers) for use in reading articles, completing lesson plans, and gathering additional information as needed;
- copies of the PowerPoint presentation listing websites for retrieval of information on mediated learning strategies and community building; and
- copies of the schedule/homework assignments for book study sessions and the formative feedback survey.

Professional Development: Day 3

The professional development opportunity for Smartboard Training will take place on a regularly scheduled professional development day.

Time	Activity
7:30 – 8:00	Participants will gather in the Media Center for a light breakfast and informal conversation with peers regarding how they use the Smartboard and ELMO to increase student involvement.
8:00 – 10:00	Participants will gather for the Smartboard training in the first floor computer lab. A brief introduction of the trainer, a consultant for the company the equipment was purchased from last year, will be given. Faculty and staff were previously notified to write down any concerns and questions they had concerning utilizing the Smartboard for math instruction as it directly related to their classroom. The trainer will begin by reviewing the participants' questions/concerns and focusing on clarifying those specific requests. The trainer will additionally review the main functions of the Smartboard, such as how to change fonts, use different markers, erasers, and additional tools. A significant portion of the training will be based upon the immediate needs of the faculty as presented to the trainer earlier in the morning.
10:00 – 10:15	Morning Break
10:15 – 11:45	Training will continue. This portion of the training will provide hands

	on manipulation of the Smartboard software. Participants will work in cooperative groups to design a simple math lesson for the Smartboard, utilizing the available tools on the Smartboard program.
11:45 – 12:00	A brief question and answer session will be held with the trainer.
12:00 – 1:15	Lunch on your own.
1:15 – 2:00	The trainer will review available functions of the ELMO and examples of how to use the instrument for math instruction within the classroom. Five to 10 minutes will be allotted for any questions participants may have about the ELMO.
2:00 – 3:00	The trainer will provide instruction on how to create more involved, detailed Smartboard lessons. Participants will work in cooperative groups to design a more complex math lesson for the Smartboard, utilizing the available tools on the Smartboard program.
3:00 – 3:15	Afternoon Break
3:15 – 3:45	Trainer will provide information for additional online tools, relating to math instruction.
3:45 – 4:00	The presentation will conclude with a survey to be completed by all participants.

Trainer Notes

The training for Professional Development Day 3 will be based upon the needs and questions presented by the faculty present. Detailed training will be provided to accommodate the immediate needs of teachers in the teaching of mathematics.

Materials Needed

The materials needed for Professional Development Day 3 include breakfast refreshments, computers with Smartboard software installed (one per two participants), an ELMO, and copies of the formative feedback for each participant.

Professional Development Book Study

The professional development book study will take place each month from October through April. The meetings will be held on the first and third Wednesday of each month, with the exception being April. The book study will conclude on the first Wednesday in April. The text used for the professional development book study is *What is it About Me You Can't Teach: An Instructional Guide for the Urban Educator* (Rodriguez & Bellanca, 2007).

Time	Activity
3:15 – 3:45	Participants will meet in the Media Center. During the first meeting, teachers will discuss potential outcomes of the book study. During subsequent meetings, this time will be spent reviewing the material read since the previous session.
3:45 – 5:00	Teachers will meet in grade levels to enhance an upcoming lesson using the mediated learning strategies in the text. Teachers will use this time to create lesson plans, make hands-on materials, posters, or other items for immediate use in their classrooms.
5:00 – 5:10	Participants will complete an exit slip at the end of each session to measure the creation of mediated learning lesson plans.

Materials Needed

The materials needed for each professional development book study session include paper, pencils, markers, crayons, chart paper, chart markers, glue, scissors, construction paper, tape, and copies of the exit slip for each participant.

Formative Feedback for Professional Development Day 1 and 2

Participant Name _____

Please answer each question in order to provide input on the level of help provided through the professional development session.

		1 – Not helpful	2 – Somewhat helpful	3 – Very helpful
1.	Speakers	1	2	3
2.	Question/Answer session	1	2	3
3.	Sharing of Literature/Discussion	1	2	3
4.	Locating/Analyzing Activities	1	2	3
5.	Lesson Plan Creations	1	2	3
6.	Collaboration	1	2	3
7.	Availability of Materials	1	2	3
8.	Usefulness in the Classroom	1	2	3
9.	Overall Experience	1	2	3
10.	Additional information that you wish to share to make this experience more helpful to others:			

Formative Feedback for Professional Development Day 3

Participant Name _____

Please answer each question in order to provide input on the level of help provided through the professional development session.

1 – Not helpful 2 – Somewhat helpful 3 – Very helpful

1.	Trainer Presentation	1	2	3
2.	Question/Answer sessions	1	2	3
3.	Time on Computer to Create Lessons	1	2	3
4.	Locating/Analyzing Tools	1	2	3
5.	Lesson Plan Creations	1	2	3
6.	Collaboration	1	2	3
7.	Availability of Materials	1	2	3
8.	Usefulness in the Classroom	1	2	3
9.	Overall Experience	1	2	3
10.	Additional information that you wish to share to make this experience more helpful to others:			

Exit Slip for Professional Development Book Study Sessions

Name _____

Please provide thorough answers for each question.

1. On a scale of 1-5, what would you rate the value of today's session? Please explain why you give the score you do.

2. Do you feel you have a significant knowledge of mediated learning to create the lessons you did today?

3. Do you feel you had enough time and sufficient materials to create the lessons you started today?

Summative Feedback at Completion of Book Study Sessions

Participant Name _____

Please answer each question in order to provide input on the level of help provided through the professional development book study sessions.

1- Disagree 2- Mostly disagree 3 – Do not have an opinion 4-Mostly agree 5 - Agree

1.	The text was relevant to my needs.	1	2	3	4	5
2.	I was able to create at least 20 lessons.	1	2	3	4	5
3.	Length of sessions was appropriate.	1	2	3	4	5
4.	The lessons worked well with my class.	1	2	3	4	5
5.	Student work was improved.	1	2	3	4	5
6.	MAP scores improved as a result of the use of mediated learning strategies.	1	2	3	4	5
7.	I will continue to use mediated learning lessons in my classroom.	1	2	3	4	5
8.	I feel confident in my ability to use mediated learning strategies.	1	2	3	4	5
9.	Overall, the book study sessions were successful.	1	2	3	4	5

10. Additional information that you wish to share to make this experience more helpful to others:

Appendix B: Informed Consent

INFORMED CONSENT FOR EVALUATING THE IMPACT OF SOCIOECONOMIC STATUS, GENDER, ETHNICITY, ATTENDANCE, AND PARENTAL INVOLVEMENT ON MATH ACADEMIC ACHIEVEMENT

Explanation of Informed Consent Procedures

You are being asked to participate in a research study designed to discover the relationship of socioeconomic status, gender, ethnicity, attendance, and parental involvement on math achievement among 3rd through 5th grade students. This research study will provide data for a project study titled: The Relationship Between Family, Personal, and School Variables and the Math Achievement of Elementary Students by Regina Wicker Kerr. The results of this study are expected to provide information to be used to improve the understanding of how teachers can differentiate instruction to adjust for the studied variables.

All parents of third through fifth grade students in your school are invited to participate in this study. Your participation will include completing a questionnaire on your level of parental involvement. The questionnaire is a 20-item survey that allows participants to respond based on a 6-point scare, ranging from "strongly agree to strongly disagree" or "never to daily". I will add the points to determine the level of parental involvement. Completing the questionnaire should take no more than 20 minutes of your time. The researcher also asks that you permit access to the following school records for your child: MAP test scores, gender, ethnicity, free/reduced lunch status, and attendance.

Potential Risks/Discomfort

There is no risk anticipated with participation in this research study. You may stop participation in the study at any time if you begin to feel uncomfortable.

Cost of Participation

There will be no cost to you for participation in this study. I will cover costs of all questionnaire materials and postage.

Benefits

You will receive no direct benefits for participating in this research study. No incentives, monetary or otherwise, are offered for your participation. The results of the study may potentially provide benefits for the students in your school. The information I receive will be communicated to the faculty to assist in the creation of differentiated instruction

lessons for future fourth grade students. Information from this study could additionally assist the researcher or other researchers in future studies.

Confidentiality

The information you provide through the parent questionnaire, as well as information received through school records, will be kept secure and confidential. Each parent questionnaire will be assigned a unique identification number that corresponds to the unique identification number assigned to the student. The results of this study will be used for educational purposes only.

All data collected will be kept in a locked file cabinet and on a password protected computer for a period of no longer than two years. The data will then be shredded, deleted, or otherwise destroyed. Only the research supervisor, the research committee, and I will be able to view the actual questionnaires and data collected from the school records. A copy of the study results can be obtained by contacting me using the information provided below.

Voluntary Participation

Your participation in this research study is voluntary, and you can decide to withdraw at any time. There will be no penalty to you or your child. If you decide you do not want to participate, please contact me.

Questions/Concerns

If you have any questions or concerns about the research, or wish to obtain a copy of the study results, you may reach Mrs. Kerr at _____ or through e-mail at _____. You may also contact Dr. Leilani Endicott, (612) 312-1210, at Walden University. Dr. Endicott is a Walden University representative who may address your concerns. You should contact Dr. Endicott if you have questions about your rights as a research participant, wish to discuss concerns about the confidentiality of your information, or you do not feel comfortable talking with Mrs. Kerr.

Legal Rights and Signatures

By signing this form, you agree to the following:

- I have read this form and have been able to ask questions about the study.
- The researcher has provided information about this study.
- Consent process and documentation are in language I can understand, or I have contacted Mrs. Kerr or Dr. Endicott for clarification.

- I agree to allow the use and sharing of the study-related records as described above.
- I have not given up any of my legal rights as a research participant.
- I will get a signed copy of this consent form for my records.
- I voluntarily agree to be in this study.

_____
Printed Name of Participant

_____ _____
Signature of Participant Date

I confirm that the participant named above has considered this information, had an opportunity to ask questions, and voluntarily agreed to participate in this study.

_____
Printed Name of Participant

_____ _____
Signature of Participant Date

Appendix C: Parent Letter

Dear Third, Fourth, and Fifth-Grade Parents,

My name is Regina Wicker Kerr and I am a doctoral student in Teacher Leadership at Walden University. Although I am currently an educator at your child's school, the research I am completing is in no way related to my job at your school.

I am currently gathering research to complete a project study on the variables affecting elementary math achievement. The variables I am studying include socioeconomic status, gender, ethnicity, attendance, and parental involvement.

Your child will not be asked to actively participate in this study. I ask that you permit access to school records to gather gender, ethnicity, free/reduced lunch, and attendance information on your child. Given your permission, I will access and analyze your child's MAP test scores from the Fall of 2012 and Fall of 2013.

Additionally, you will be asked to complete a survey indicating your level of parent involvement. I have enclosed a consent form, detailing the purpose of the study, the ways I will ensure the confidentiality of both you and your child's information, and the risks/benefits associated with participation in the study.

Please participate in this important research by signing and returning the enclosed consent form in the stamped envelope provided. You will then receive a copy of the consent form for your records and a copy of the questionnaire to complete and return to me prior to _____.

If you have any questions, please contact me at _____or _____,

Sincerely,

Regina Wicker Kerr
EdD student
Walden University

Appendix D: Parental Involvement Questionnaire

Parent Questionnaire **ID # _____**

Thank you for participating in the confidential parent questionnaire. This should only take a few minutes of your time to complete. As you are answering the questions, please consider the following:

- Please answer each question as truthfully as possible.
- Consider your beliefs and actions for this year's third grade student only.
- Please answer each question. Do not leave any blank.

Please use the following scale for questions one through five: Disagree very strongly = 1, disagree = 2, disagree a little = 3, agree a little = 4, agree =5, agree very strongly = 6

1. I help my child by explaining tough assignments.

   1 2 3 4 5 6

2. I consider it my responsibility, as a parent to make sure my child understands his or her assignments.

   1 2 3 4 5 6

3. I provide additional educational activities for my child, outside of school.

   1 2 3 4 5 6

4. My child has a regular bedtime each night.

   1 2 3 4 5 6

5. I make it my business to stay on top of things at school.

   1 2 3 4 5 6

Please use the following scale for questions six through 10: Never = 1, once this year = 2, about once each month = 3, once every two weeks = 4, once a week = 5, daily = 6

6. I monitor my child's academic and behavioral progress by checking his/her agenda and weekly papers.

   1 2 3 4 5 6

7. I check my child's homework to make sure it is completed correctly.

1 2 3 4 5 6

8. I help my child study for tests and quizzes.

1 2 3 4 5 6

9. I talk to my child about what he/she is learning.

1 2 3 4 5 6

10. I supply my child with the supplies he or she needs (pencils, paper, notebooks, etc.).

1 2 3 4 5 6

Please use the following scale for questions 11 through 15: Agree very strongly = 1, agree = 2, agree a little = 3, disagree a little = 4, disagree =5, disagree very strongly = 6

11. I assume my child is doing alright when I do not hear anything from the teacher, principal, or guidance counselor.

1 2 3 4 5 6

12. It is the teacher's job to let me know if there is an academic or behavioral concern with my child before I can do something about it.

1 2 3 4 5 6

13. It is not my job to teach my child manners.

1 2 3 4 5 6

14. I get most of my information about my child's progress from report cards.

1 2 3 4 5 6

15. My child's learning is mostly up to the teacher and my child.

1 2 3 4 5 6

Please use the following scale for questions 16 through 20: Never = 1, once this year = 2, once each month = 3, once a week = 4, when I believe it is needed = 5, Always= 6

16. I attend all parent/teacher conferences to monitor the progress of my child's education.

1 2 3 4 5 6

17. I exchange notes or phone calls with my child's teacher.

1 2 3 4 5 6

18. I sign my child's agenda or planner.

1 2 3 4 5 6

19. I contact the teacher with questions I have about my child's homework.

1 2 3 4 5 6

20. I attend school performances or other functions my child is involved in at school.

1 2 3 4 5 6

Thank you again for your participation in this parent questionnaire. Please return this form to Mrs. Kerr, sealed, in the enclosed envelope no later than _____. If you have any questions about the questionnaire, please call Mrs. Kerr by calling _____ or sending an e-mail to _____. Again, your participation is greatly appreciated.

Curriculum Vitae

Regina Wicker Kerr

Education

Walden University, Minneapolis, MN

Ed. D (candidate)

University of Phoenix, Phoenix, AZ

Med

Lander University, Greenwood, SC

BS

Professional

Pee Dee Math, Science, and Technology Academy

September, 2014 – Present

-3rd grade teacher

School District of Newberry County

2004 – 2014

-3rd grade teacher

-4th grade teacher

-3rd grade Chairperson

-Leadership Team Member

McCormick School District

2001 – 2004

-4th grade teacher

-1st grade teacher

Certification

South Carolina Professional Certificate #159214

1989 – Present

-Highly Qualified

-Elementary Education