The Impact of School Configuration on Sixth Grade Student Achievement

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Abstract

This study examined the impact of grade configuration on the academic achievement of sixth-grade students. The purpose was to determine to what extent there is a difference in sixth-grade student achievement, as measured by the Kansas State Reading and Kansas State Mathematics Assessments, of students who attended K-6 elementary versus a 6-8 middle school grade configuration. The research was also conducted to determine to what extent is the difference in sixth-grade student achievement affected by gender and socio-economic status. The research design for this study was quantitative in nature. The sample included sixth-grade students in District X. There were 4,374 sixth grade students in the elementary school for the 2008-2009 and 2009–2010 school years, and 4,298 students in the middle school setting for the 2010–2011, and 2011-2012 school years.

As part of the quantitative study, archival data was used to examine the relationship between grade configuration and academic achievement of sixth-grade students. Data from the Kansas State Reading Assessment and the Kansas State Mathematics Assessment was downloaded from the District X reporting system for the years 2008-2009, 2009–2010, 2010–2011, and 2011-2012. The six research questions concerning grade configuration and academic achievement were analyzed using one-way and two-way ANOVAs.

Results from the hypothesis testing indicated there was a statistically significant difference in school configuration and mathematics achievement. The findings revealed that sixth-grade students in the elementary school scored higher in mathematics than sixth-grade students in the middle school.

Dedication

This dissertation is dedicated to my amazing God and incredible family. God carried me through this journey helping me balance being a mother, wife, daughter, sister, friend, student, and educator. To my husband Travis, you have been my rock since the day we met. You have continued to support me throughout all of my professional dreams and pursuits. This dissertation is just as much yours as it is mine. Thank you for encouraging me every step of the way. I am forever grateful. Luke, Jake, and Nick, you are my true inspiration. I love you boys with all that I am and I hope you three know that everything I do is because of you. Thank you for understanding when I could not be home to tuck you in these last four years. Your encouraging words and notes helped give me the strength to finish. To the best parents and grandparents, Mom, Cindy, and Randy, thank you for your unconditional love and support. Most of all thank you for helping with the boys whenever help was needed. You helped keep my household running smoothly. To the original Dr. Waters, Grandpa Harry and Uncle Scott, thank you for inspiring me to continue your legacy and for instilling in me the importance of education. Last, I dedicate this to my Grandmother Margaret. You were my hero here on earth, and now you are my angel in heaven. You modeled for me that anything is possible with hard work and determination. Thank you for always believing in me. I love you always and forever!

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Chapter One

Introduction

The middle school years are a unique time for preadolescents. Students are experiencing changes cognitively, socially, emotionally, psychologically, and physically. The schools they attend play a primary role in their development as they move from childhood to adolescence (Juvonen, Vi-Nhuan, Kaganoff, Augustine, & Constant, 2004). Educators have been searching for the best school configuration for preadolescents since the early 1900s. Specifically, educators have tried to determine if sixth-grade students perform better in the elementary, middle or K-8 school setting. Chen (n.d.a) writes that sixth grade is described as a major crossroad in children's lives, so it is important to place them in the proper setting during this critical time. The focus of this study was to investigate student achievement and sixth-grade students' placement in an elementary or middle school grade configuration.

In this chapter, background information is provided to help the readers understand the study in the proper context. The statement of the problem, purpose statement, and significance of the study are also provided, followed by a description of the delimitations, assumptions, research questions, and definition of terms. Finally, an overview of the methodology and organization of the study are included.

Background

Middle-level education has undergone many transformations in the United States. The transformations date back to the one-room schoolhouse in the 1800s, followed by the establishment of junior high schools in 1910 and middle schools by 1960 (Alexander & McEwin, 1989). The National Middle School Association (NMSA) (1999; 2001; 2003)

maintains that a middle school setting of grades 6-8 best meets the developmental needs of a preadolescent student. However, other research suggests that educators should consider going back to a K-8 configuration due to student achievement loss that happens during the students' transition to middle school (Alspaugh, 1998; Hough, 2005).

To respond to the perceived lack of student achievement, legislation known as No Child Left Behind (NCLB) was enacted in 2002 (Dove, Pearson & Hooper, 2010). NCLB was implemented with the expectation that all students in grades 3-8 would be proficient on state reading and mathematics assessments by the year 2013-2014. With student achievement carrying such importance at the federal, state, and district levels, it was pertinent that educators continue to explore and research the school setting that would best maximize the educational experience of the preadolescent student.

Grade configuration for preadolescent students has been a topic of debate since the beginning of formal schooling (Juvonen et al., 2004; Renchler, 2000). Educators have the task of determining which setting, elementary or middle school, would best meet a preadolescent student's academic and developmental needs. There is no definitive answer as to what is the best setting (Coladarci & Hancock, 2002; Paglin & Fager, 1997).

The debate becomes more specific when determining whether to place sixth grade students in elementary school or middle school. Sixth grade is typically when the transition to middle school takes place (Black, 2009; Chen, n.d.b; Cook, MacCoun, Muschkin, & Vigdor, 2008; Howley, 2002; Schafer, 2010). Sixth grade students have their developmental needs. They have perceived unique differences that could have a direct impact on the decision to keep them at the elementary level or to move them to the middle school.

According to LeZotte and Snyder (2011), both settings can be effective when educators nurture a school environment that:

> (a) provides a safe and organized place, (b) sets high expectations, (c) exhibits strong instructional leadership, (d) has a clear mission, (e) monitors student progress, (f) provides the opportunity to learn, and (g) builds a true partnership between home and school. (p. 2)

However, even with these effective practices in place, the elementary and middle school settings are very different. The question is which setting is best at addressing the unique differences of the preadolescent.

The National Middle School Association (2003) emphasized that while students ages 10 to 15 go through puberty at different rates, as a group they have important characteristics that parents and educators need to consider when making decisions. There are typically five developmental stages adolescent students experience: physical, intellectual (cognitive), moral, psychological, and social-emotional. Implications range from the need to provide students social interaction with peers to the need for relationships with significant adults to help influence students (NMSA, 2003).

In a middle school setting, students have choices with exploratory courses, opportunities to take advanced courses, an academic advisor, more options for extracurricular activities, and educators who are highly qualified in their subject matter (NMSA, 2003). Hough (2003) writes that middle school students benefit from a team of teachers working together to develop an integrated curriculum that allows for higher levels of learning.

However, the transition to middle school brings about both personal and educational concerns. Students' worries include finding their classes, opening their locker, making friends, getting on the right bus, and understanding their schedule (Lorain, n.d). To decrease the negative impact of transitioning to a new school, it is imperative that school districts have effective and comprehensive transition programs. According to Schumacher (1998), the program should be in place before, during, and after the student's transition.

Others argue that keeping sixth grade students in an elementary school would eliminate the negative effects of transitioning to a new setting altogether. For example, Pardini (2002) is against taking preadolescents out of the elementary setting too soon. She writes, "here we are taking children at their most delicate age and ripping them from a stable school environment" (p. 1). An elementary school setting provides stability because students are traditionally taught in a self-contained classroom with one teacher and experience all subjects with the same group of peers. Additionally, the elementary schools are usually smaller, providing security for students as opposed to navigating around a big school (Pardini, 2002).

Other benefits of remaining in an elementary setting include instructional and leadership advantages, as well as increased parental support (Epstein, 1990). For example, the amount of time taught for each core subject is longer in an elementary school setting. McLeod, Fisher, and Hoover (2003) reported that in elementary schools, reading and language arts take the largest part of the day, followed by mathematics. Sixth grade students are typically the oldest students of the school and thus have more opportunities to be in leadership roles. Parent involvement also tends to decline once

students enter middle school, so keeping students in elementary school keep parents involved (Mertans & Anfara, 2008).

While there are advantages and disadvantages to both settings, districts are still faced with the decision of whether sixth grade should be housed in a K-6, 6-8, or a K-8 setting. District X faced such a decision to keep sixth grade students in the elementary or middle school setting.

District X was formed in 1965 when five neighboring districts consolidated. It is located in one of the larger cities in Kansas. The population of the city has quadrupled since the 1950s to over 131,000 citizens (City of District X, 2012). As the city quickly grew, so did the district. In 2010, the district became the second largest district in the state (District X, 2013).

The district has experienced an increase in enrollment since 1965. The initial enrollment in 1965 was 3,687 students and grew to almost 28,000 students in 2010 (District X, 2013). In 2010, the district had two early-childhood schools, thirty-four elementary schools, nine middle schools, four high schools, and four alternative school sites. The Kansas Department of Education (KSDE) (2010a) provided reports regarding gender, socio-economic and ethnicity demographics for District X. The breakdown for gender in 2010 comprised of 48.3% of the population being female while 51.7% of the population was male. The percent of students who are economically disadvantaged was 23%. The population included students from various ethnic backgrounds. The groups were: Caucasian (74%), Hispanic (12%), African American (6%), Asian (5%), and other (3%) (District X, 2013).

To address the increased accountability of NCLB, and District X's vision of "preparing students for their future", the district began to reevaluate its current school configurations to determine if students were being offered the highest levels of learning (District X, 2012). Discussions began in 2006 with the superintendent, senior leadership team, and the district construction manager to determine if moving sixth grade students to the middle school and ninth grade students to the high school would provide increased academic opportunities for students as well as address elementary space issues and crowding.

District X had a commitment to prepare students for their future by maintaining a high standard of excellence. Even though at the time, the majority of sixth graders were proficient or above on the Kansas State Reading (KRA) and Kansas State Mathematics Assessments (KMA) as seen in Table 1, district leaders felt they could offer a more rigorous level of education. They wanted to offer additional reading courses, higher-level math courses, and exploratory options that were not available at the elementary school.

Table 1

Percentage of Sixth Grade Students Who Scored Proficient and Above on the Kansas Reading Assessment

Assessed Group	2006-2007	2007-2008	2008-2009	2009-2010
The State of Kansas	78	81.1	85.8	86.3
District X	89	91.7	92.5	93.3

Note. The percentages in this table represent the student group *All Students*. Adapted from "Report Card: District X," by KSDE, 2010a and "Report Card: The State of Kansas," by KSDE, 2010b.

Table 2 shows that a high percentage of sixth grade students scored proficient and above on the KMA each of the years before the configuration changes in District X. In addition, District X sixth grade students scored higher than the state each year.

Table 2

Percentage of Sixth Grade Students Who Scored Proficient and Above on the Kansas Reading Assessment

Assessed Group	2006-2007	2007-2008	2008-2009	2009-2010
The State of Kansas	78	81.1	85.8	86.3
District X	89	91.7	92.5	93.3

Note. The percentages in this table represent the student group *All Students*. Adapted from "Report Card: District X," by KSDE, 2010a and "Report Card: The State of Kansas," by KSDE, 2010b.

According to the deputy superintendent, the district leadership team researched the advantages and disadvantages of moving sixth graders to the middle school. The district wanted to be able to address as many of the disadvantages as soon possible as the transition was being made. To meet the academic and emotional needs of sixth grade students, the district knew it would be important to have a specific transition plan in place. First, the district developed a comprehensive transition program for fifth graders as they transitioned to middle school. Second, they made sure each student had an advisory teacher in the middle school to help fill the void of the close relationship a child had with a homeroom teacher in elementary school. Third, a curriculum was developed that provided accelerated content and exploratory choices. Once those three disadvantages had been addressed, the district implemented the transition of sixth graders

to middle school the beginning of the 2010-2011 school year (Deputy Superintendent District X, personal communication, November 13, 2013).

Statement of the Problem

Preadolescence is a challenging time in a child's life, and educators have tried since the early 1900s to determine what educational environment will best meet the needs of their students. As John Lounsbury (1991) wrote, the development of middle grades education is the "longest-running, most extensive educational reform movement in the United States" (p. 68). However, despite numerous changes to middle-level grade configuration, there has not been a consensus reached as to what model is best for educating preadolescents (Weiss & Kipnes, 2006). There is conflicting research regarding whether moving from K-6 to 6-8 impacts student achievement. Some research reports that there is a definite decrease in academic performance when students transfer to a middle school (Alspaugh, 1998; Howley, 2002; Rockoff & Lockwood, 2010b). However, research completed by Weiss and Kipnes (2006) showed there was little to no difference in academic achievement of a student based on the type of school attended. Other researchers suggested that there is a positive impact on students when placed in the middle school (The National Forum To Accelerate Middle-Grades Reform, 2008). Based on the conflicting literature, it is important to determine which school configuration best supports 6th graders' academic needs.

Purpose Statement

The purpose of the study was to investigate the extent of the difference in academic achievement for sixth-grade students attending elementary school and sixth-grade students attending middle school as measured by the KRA and KMA.

Additionally, the current study investigated the extent of the difference in academic achievement in reading and mathematics as influenced by school configuration and as affected by gender. Finally, the study investigated the extent of the difference in academic achievement in reading and mathematics as influenced by school configuration as affected by socio-economic status (SES).

Significance of the Study

According to NMSA (2003), "twenty million diverse, rapidly changing ten to15-year-olds are forming the attitudes, values, and habits of mind that will direct their behavior as adults" (p. 1). The transition from elementary school to middle school can bring about challenges for students (Akos, 2006). It is especially difficult because the challenges come at a time when students are facing developmental changes associated with puberty. Educational leaders must seek the best learning environment for these young adolescents to prepare them for their future. The results of this study could provide valuable information to school districts as decisions are made regarding the best placement of sixth-grade students. Districts could then make changes to their current configuration based on research.

Delimitations

According to Lunenburg and Irby (2008), delimitations are "self-imposed boundaries set by the researcher on the purpose and scope of the study" (p. 134). The delimitations of this study are:

1. Kansas State Assessments scores were used to determine achievement.
2. The study was conducted measuring the academic achievement of sixth-grade students who either attended sixth grade in elementary or middle school.

3. Subjects were students attending a suburban school district in Kansas.

Assumptions

Lunenburg and Irby (2008) define assumptions as "premises and propositions that are accepted as operational for purposes of the research" (p. 135). This study included the following assumptions:

1. Administering and scoring of assessments were accurate.
2. All students were assessed in a favorable testing environment.
3. Sixth-grade students were taught using the same curriculum regardless of the grade configuration of the schools they attended.
4. All teachers were highly qualified to teach reading and mathematics.

Research Questions

The following research questions guided this study:

RQ1. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration?

RQ2. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration, affected by gender?

RQ3. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration, affected by socio-economic status?

RQ4. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration?

RQ5. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration, affected by gender?

RQ6. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration, affected by socio-economic status?

Definition of Terms

The following section includes clarification of terminology central to this study.

Adequate yearly progress (AYP). AYP is the "process of making judgment as to whether or not all public elementary and secondary schools, districts, and states are reaching the annual targets to ensure that all students achieve the state's definition of proficiency by 2013-2014" ("Adequately yearly progress," 2008, para 6.)

Advisory program. "The program assists young adolescents in becoming self-possessed, positive, and successful in both life and learning" (Allen & Sheppard, 1992, p. 2). An advisory program helps a student's academic success as well as personal growth by providing an adult advisor that serves to support a student's development (NMSA, 2003).

Elementary school. Elementary school can be organized "kindergarten or grade 1 through grade 6, 7, or 8" ("Elementary education," 2014, para. 1). For the purpose of the current study, elementary school refers to Kindergarten through sixth grade.

Grade configuration/grade span. Grade span or grade configuration is "the range of grades that a school comprises" (Coladarci & Hancock, 2002, p. 2).

Middle school. Middle school can be organized by grades 5-8, 6-8, or 7-8 (Herman, 2004). For the purpose of the current study, middle school refers to a sixth through eighth grade configuration.

Transition. In education, the term transition typically refers to the three major transitional points in the public-education system: when students move from elementary school to middle school, from middle school to high school, and from high school to college. (Schumacher, 1998).

Overview of the Methodology

The purpose of the current study was to determine the impact of school configuration on sixth-grade students and student achievement. The study was a non-experimental research design using archival data. The data consisted of results from the KRA and KMA of sixth grade students in District X for the school years 2008-2009, 2009-2010, 2010-2011, and 2011-2012. A one-way analysis of variance (ANOVA) was conducted to determine the extent of the main effects of the independent variable of grade configuration and the independent variable of student achievement as measured by the Kansas Reading and Kansas Mathematics Assessment, among sixth-grade students. Two-way ANOVA tests were conducted to determine the extent of main effects of the independent variable of grade configuration, gender, and socioeconomic status on the

dependent variable of student achievement, as measured by the KRA and KMA, among sixth-grade students.

Organization of the Study

The study is divided into five chapters. The first chapter included an introduction, background of the study, statement of the problem, purpose statement, and significance of the study. The chapter also included the delimitations, assumptions, research questions, definitions of terms, and an overview of the methodology used in the study. Presented in chapter two is a review of literature connected with the topic of the study. Topics include the history of middle-level education, adolescent development, research on grade configurations, and effective elementary and middle schools. In chapter three the methodology used in the study is described. The research design, population and sample, sampling procedures, instrumentation, measurement, and validity and reliability are presented. Data collection procedures, data analysis and hypothesis testing, and limitations of the study are also included. Chapter four includes hypothesis testing of the research questions as well as the results of the study. Finally, chapter five provides a summary that includes an interpretation of the results, conclusions, implications for action, and recommendations for future research.

Chapter Two

Review of Literature

Despite research that has been conducted, a consensus has not been reached as to the grade configuration most appropriate for sixth-grade students. Some studies indicate that sixth-grade students should remain in an elementary school setting while others have found that sixth-grade students belong in middle school. The purpose of this literature review is to present research on school configuration for sixth graders and its impact on student achievement. The framework for chapter two has been organized around four main topics. These areas are (a) history of middle school configuration; (b) research on grade configuration and achievement; (c) pre-adolescent characteristics; and (d) effective elementary and middle schools.

History of Middle School

Valentine and Whitaker (1997) wrote that "Historians are quick to remind us that the value of history lies not in the documentation of the past per se, but in the manner with which an understanding of the past informs the future" (p. 277). In order to look into the future of middle-level education, educators must better understand the past transformations that have influenced the placement of middle-level grades. Historically, transformations were often brought about because of social, political, and economic reasons.

In the late 1800s, middle school grades were embedded into a first through eighth-grade configuration in one-room schoolhouses. In this configuration, there were no grade levels; there was one teacher; older students helped the younger children; students received individual help easier; and students participated in cooperative learning (Goldin,

1999; Herman, 2004). The curriculum included subjects that touched on values, ethics, laws, and respect for authority and country. The configuration seemed to meet the needs of the community at the time. However, at the beginning of the 1900s, population growth and societal influences resulted in a new movement to house grades seven, eight, and nine in a separate school called the junior high school (Brough, 1995; Webb, 2006).

Population growth in the United States went from 76 million at the end of the 1800s to 106 million by 1920 (Webb, 2006). The reasons for the growth were the overall increasing immigration numbers and the declining infant mortality rates due to improved medical services. As a result, the urban population grew 39% from 1900 to 1910. Furthermore, between 1890 and 1930, school enrollment doubled and overcrowding in schools became an issue, creating a need for districts to look at a different model (Webb, 2006).

Another reason for the shift toward a junior high model in the 20th century was pressure to keep students from dropping out after eighth grade. Sailor (1986) reported at the turn of the century, "only a tenth of beginning first graders finished high school, with almost a third dropping out before ninth grade" (p. 6). The Committee of Ten, a group of college presidents, and the Committee of Fifteen, a group of school administrators formed by the National Education Association (NEA), worked to address the dropout issue in secondary education. In the first decade of the 20th century, the committee's recommendation was to decrease elementary school by two years and increase secondary school by two years, breaking secondary schools into a 7-9 and 10-12 configuration (Brough, 1995; Webb, 2006). This model was supported because educators believed moving seventh-grade and eighth-grade students to a secondary level would decrease the

dropout rate and better prepare students for the workforce. Students were given the opportunity to explore interests and receive specialized training earlier than high school. Also, students could take college prepratory courses such as higher-level mathematics and foreign language before the ninth grade (Alexander & George, 1993).

A final reason for moving to the junior high model in the 20th century was the need to create a separate school to better meet the developmental demands of an adolescent. According to developmental psychologist Stanley Hall, there is a distinct difference between a child and a preadolescent. Once a child reaches puberty, different needs emerge (Hall, 1982). The junior high school would provide the necessary bridge between elementary and high school to meet student needs.

In spite of strong arguments for moving to a junior high school model, Webb (2006) wrote that the movement was slow to catch on with school systems. In 1920, almost ten years after implementing the first junior high school in 1909, 94% of students were still in elementary school for eight years and high school for four years. Twenty years after the implementation of junior high schools, approximately 67% percent of students were still in a K-8 school pattern. However, the junior high model became the dominant model after the end of World War II (Webb, 2006). By 1950, four out of five high school graduates had attended a junior high school (Alexander & George, 1993; Alexander & McEwin, 1989). Herman (2004) studied that the junior high schools remained popular for the next decade as "they provided a transition period from elementary to high school and eased the difficulty of entering adolescence, and allowed students to explore special interests while fostering independence" (p. 10).

Just as leaders were not content with a K-8 setting and moved to a junior high school model at the turn of the 20th century, leaders continued to question whether junior high schools fit the needs of adolescent students (Brough, 1995). Political and social influences started the junior high movement, but also caused its decline around mid-20th century. Specifically, the civil rights movement, the rise of industrialization, a population shift, and challenges of preadolescent needs all influenced the move of housing sixth, seventh and eighth grades to a middle school setting.

The civil rights movement was challenging schools to meet desegregation mandates, causing school districts to rethink the reorganization of grades (Brough, 1995). Around 1957, Sputnik, the first man-made satellite to orbit the earth, was launched and caused a renewed interest in science and technology in the United States (NASA, 2007).

While the number of elementary schools were on the rise, secondary schools were seeing a decline in enrollment (Brough, 1995). To relieve overcrowding in the elementary schools, many districts had the idea to make room for kindergarten by moving sixth-grade students out (Alexander, 1984). While space considerations were important, educators wanted to address finding the best fit developmentally for preadolescent students.

There was a criticism of the junior high model because of the concern that it did not meet the developmental needs of the students. Critics felt junior highs were more like high schools focusing on content rather than exploration (Juvonen et al., 2004; Sailor, 1986). Additionally, critics questioned if ninth graders would better fit in high school because their social maturity "parallels that of the older students" while the "social patterns of 6, 7, and 8th grade students were nearly the same" (Brough, 1995, p. 41).

Students in the 1960s were reaching puberty and physically maturing sooner than students in the 1900s, so it made sense to educators to move sixth grade and ninth grade up to the next setting.

The middle school model was seen as more child-centered and included interdisciplinary teaming, advisory programs, exploratory classes, and flexible scheduling. Middle schools were believed to improve academic achievement by having a deeper understanding of young adolescence, by providing a challenging and integrative curriculum, and by creating a supportive and safe environment (NMSA, 2003). Rockhoff and Lockwood (2010a) reported that in 1970 there were 1,500 middle schools. By the year 2000, the number of middle schools had increased to 11,500, educating over nine million students (Jovonen et al., 2004).

Many praised the middle school concept. However, new concerns about academic achievement and increased accountability for students in middle school emerged at the beginning of the 21st century. Educators began to consider the academic benefits of moving back to a K-8 model. After a report in 1998 showed that test scores for the 77,000 students in Cleveland schools declined when students reached sixth grade, the leader of the district, Barbara Byrd-Bennett, initiated a reconfiguration back to a K-8 district (Pardini, 2002). She did not believe in moving sixth graders during the most critical time in their life developmentally. Just two years after the reconfiguration, sixth graders were performing higher on standardized tests than students in the middle school.

During the same period, a new law called No Child Left Behind (NCLB) was being developed (U.S. Department of Education, 2002). It required that all students, including special education students and students from low socio-economic backgrounds,

be tested in grades 3 through 8 on state reading and mathematics standards. One hundred percent of students were required to reach the same set of standards in reading and mathematics by the year 2014.

In the K-8 model, educators believed that students benefit academically because there is only one transition to high school instead of two. According to Eccles, Lord, and Midgley (1991) students in a K-8 setting also tended to be more motivated and better behaved. Eccles, Lord, and Midgley analyzed a series of studies to summarize the impact of environmental changes on motivation. A questionnaire was administered to 1,350 participants. They found that student-teacher relationships deteriorated when students left the elementary school for middle school. Eccles, Lord, and Midgley (1991) wrote, "when students moved from elementary teachers they perceived to be very supportive to teachers in middle school they perceived to be in low support, there was a decline in motivation" (p.536). The studies showed that preadolescents in a K-8 setting do not have to deal with both school and developmental changes. Students can better cope with just one major transition as opposed to two. Supporters of the K-8 model also suggested students in a K-8 model form longer lasting relationships, have a stronger support system, have the opportunity to be in leadership roles, have fewer behavior problems, and have more parental support (Pardini, 2002).

Additionally, according to Alspaugh (1998), students do better academically when they have fewer transitions. Alspaugh compared achievement scores of sixth-grade students that transitioned to middle school with sixth graders in a K-8 configuration. He found there was a significant achievement loss with sixth-grade students that transitioned to a middle school compared to those that did not.

Herman (2004) refered to the shift in the placement of middle school students as the "pendulum swinging back and forth" (p. 1). Beane and Lipka (2006) concurred that the history of middle schools has been a "roller coaster of reform" (p. 1). Further research in understanding the preadolescent student is presented in the next section to help educators determine the best configuration for the changing pre-adolescent.

Grade Configuration and Academic Achievement

Educators have long pondered the most effective way to meet the needs of sixth-grade students. Many believed that middle school was a more appropriate setting (Alley, 1992). According to Rockhoff and Lockwood (2010a), 45% of sixth-grade students attended school with a K-6 configuration in 1987. By 2007, only 20% of all sixth-grade students attended school in a K-6 model. However, because of research findings many wondered if it was still best practice to have sixth-grade students in middle school (Alspaugh, 1998; Alspaugh & Harding, 1995; Cook, MacCoun, Muschkin, & Vigdor, 2007; Franklin & Glasscock, 1996; Wren, 2003). The following section will present a synthesis of research about the relationship between grade configuration and academic achievement.

Research has shown that there is a significant difference in the elementary and middle school environment. A sixth grader in an elementary school is typically the oldest student in the school, has one primary teacher, and spends the day with the same group of students (Cook, MacCoun, Muschkin, & Vigdor, 2007). A sixth grader in the middle school is often the youngest, is taught by several teachers daily, has a variety of choices for exploratory courses, joins a larger cohort of students, and moves from class to class with different students. Both settings may contribute to positive and negative outcomes

for students. For example, some research discusses the negative impacts of sixth-grade students in the middle school academically, while other research describes the positive impact on the emotional development of a sixth grader attending middle school.

Franklin and Glasscock (1996) conducted a study in 1991 on the relationship between grade configuration and academic achievement. Information was collected from the Louisiana public schools. The sixth-grade sample was taken from 78 elementary schools, 78 middle schools, and 78 combination schools defined as K-8. Franklin and Glasscock concluded that sixth graders grouped in the elementary and combination school (K-8) did better on the California Achievement Test than sixth-grade students in the middle school. Sixth-grade students in the elementary and combination schools had a mean score 10 points higher than sixth-grade students in the middle school.

Wren (2003) studied 232 schools from a large inner-city school district. Test scores from the Michigan Educational Assessment Program were analyzed, and it was found that there was a positive correlation between grade-span configuration and student achievement, and a negative correlation between grade configuration and transition effect. The results showed that the longer a student was in a grade configuration, the higher they achieved. On the opposite end, the more transitions a student experienced, the poorer the academic performance. Research by Rockhoff and Lockwood (2010b) found that student achievement dropped when students entered middle school. They followed students in New York City from third to eighth grade. Some attended school at a middle school while others went to a K-8 school. Rockhoff and Lockwood found that those who transitioned to a middle school experienced a decline in scores on a standardized test that continued through eighth grade.

Experts believe that the achievement loss, as described in the previous studies, is tied to the transition effect. Alspaugh and others have completed studies on the effects of grade span and concluded that students suffer achievement loss during the transition year, but generally will catch up the following year (Alspaugh, 1998; Alspaugh & Harding, 1995). These studies focused on small town, rural districts. Alspaugh and Harding (1995) conducted an ex-post facto study that looked at five school groups, K-4, K-5, K-6, K-7, and K-8 from the 540 Missouri school districts. The authors looked at student achievement on the Missouri Mastery and Achievement Tests. The results showed that during the transition years there was a decline in reading and math achievement in all four groups when compared to students not in transition. A second study completed by Alspaugh (1998) reinforced that there is academic achievement loss due to transition. He compared students from 16 school districts in three different groups. The first group was a K-8, 9-12 organization; the second was K-5 with one elementary school feeding into one middle school, and the last group was a K-5 with multiple elementary schools feeding into the one middle school. The results confirmed that when compared to the K-8 model, sixth graders experienced an achievement loss when transitioning to middle school. The biggest loss came from the last grouping when multiple elementary schools fed into a middle school. Alspaugh (1998) attributed the loss to the fact that the student-teacher relationship changes from elementary to middle school, as does the delivery of instruction, therefore contributing to the achievement loss.

Mertens and Anfara (2008) found that grouping students in a setting with limited transitions, such as a K-8 configuration, had little to no impact on academic achievement. Other variables, such as school size, teacher experience, and socio-economic status, have

been found to have a strong effect (Mertens & Anfara, 2008). State assessment data was also used to complete an analysis of variance between professional development and grade configuration.

Mckenzie et al. (2006) examined grade configuration as a factor that could impact academic success. The researchers examined reading and mathematics achievement data on 105,000 students from Arkansas each year for five years to determine the impact of grade configuration on AYP performance. Students were in fourth, sixth, and eighth grades in the years 2001 through 2005. Based on the data, they found grade configuration not to be statistically significant.

Weiss and Kipnes (2006) analyzed district and student data in a Philadelphia school district that had an equal number of middle schools and K-8 schools. They used a random sample of 1,483 students from 45 schools, both middle school and K-8. Weiss and Kipnes looked at students' average final grades to determine the impact of grade configuration on the academic achievement of students. After an analysis of the effects of school configuration on student outcomes, the results of the study found that students were impacted more by school size and socioeconomic status than grade configuration.

Byrnes and Ruby (2007) used a sample of 41,000 eighth graders from 95 different schools, 39 middle schools, and 56 K-8 schools in Philadelphia to compare the reading and mathematics achievement of students in middle school to students in K-8. They analyzed student test scores on the Pennsylvania State System of Assessment. Brynes and Ruby concluded that there was no significant difference in student achievement between students in a 6-8 and K-8 schools.

Dove, Pearson and Hooper (2010) found that there was not a significant relationship between grade configuration and academic achievement. The study included all sixth-grade student performance in Arkansas as measured by the Arkansas Benchmark Examination. However, Dove and Pearson were quick to acknowledge that educators should still consider the findings from the study important. The study allowed educators to consider other factors affecting academic achievement such as programs, curriculum, or newly implemented practices.

The limited research by Alspaugh (1998) revealed to educators that the fewer transitions students have, the better they will achieve academically. However, some researchers found that transitions could be a positive variable in that they give students a fresh start, a chance to develop coping skills, and a chance to make new friends (Anfara & Schmid, 2007).

Gender. In the 1970s and 1980s girls lagged behind boys on national academic performance measures, especially in math and science; however, national data in the last twenty years showed that boys are now performing lower than girls (K12Academics, n.d.). On average, girls do better in reading but lose ground to boys in the area of mathematics (Dee, 2005). The National Assessment of Educational Progress (NAEP) reported trends in the Nation's Report Card (National Center for Education Statistics (NCES), 2013). A sample of 9, 12, and 17-year-olds in fourth, eighth, and twelfth grade respectively are assessed each year in various subjects to help monitor the performance of American students. According to NAEP, in 2004, fourth graders taking the test in reading showed almost no difference between boys and girls, but by 2012 when those same students attended twelfth grade, girls were performing significantly higher (NCES,

2013). The 2013 NAEP report also showed that in 2012 girls scored higher than boys in all three age groups.

The NAEP testing in mathematics resulted in no significant gender gap among students in fourth or eighth grade between the years 1990 and 2011. NAEP used average scale scores for the eight years of testing in fourth grade to report student performance. The scales run 0–500 for reading and mathematics (NCES, 2013). The average scale score was 240 for girls and 241 for boys. In eighth grade, the average scale score was 283 for girls and 284 for boys. The twelfth-grade average scale score for girls was 304 and for boys 308 (NCES, 2013).

Shores, Smith, and Jarell (2009) addressed individual learner differences contributing to math performance. The researchers examined mathematic test scores and grades for 301 fifth grade students in elementary school and 460 sixth grade students in middle school. The results indicated that boys and girls had a slightly higher score in mathematics in elementary school compared to boys and girls in middle school. However, the differences were not significant.

Yates (2009) conducted a study involving 108 middle school students from central Illinois. Academic achievement and gender differences of low-income African-American students across three grade levels attending middle school were the focus of the study. Academic achievement was measured by semester grade point averages on the student's report card. A significant difference ($p = .023$) was found between student gender and academic achievement. On a 4.0 scale, females had a higher grade point average (GPA) (2.118) than the males (1.73).

Parekh (2015) wrote that "If boys and girls mature, in an academic sense, at different points in childhood, then blanket school policies regarding grade configuration may affect boys differently than they affect girls" (p. 4). In his study, reading and math test scores of male and female students were investigated as they moved from third through eighth grade. Results found that males started out ahead of the females, but the females caught up by eighth grade in math. Females, on the other hand, performed higher than males in reading each year.

Another study (Meyer, 2014) examined the effect of school configuration on fifth-grade student achievement that included the independent variables of gender and socio-economic status. Using the Texas Assessment of Knowledge and Skills (TASKS), data were collected on students in various grade configurations. When the gender variable was analyzed, there was a significant difference in males. The data showed that 81.6% of females and 77.1% of males met the standard in reading. In math, there was not a significant difference with 50.3% of boys and 50.1% girls meeting standard (Meyer, 2014).

Simply looking at gender differences is not sufficient. Other factors, such as socio-economic status, should be considered when analyzing student achievement. Statistics show that over 15 million children live in poverty in the United States (Editorial Projects in Education Research, 2011). Despite efforts across our country to ensure an equal educational opportunity for all students, an achievement gap exists for low socioeconomic students (Coley & Baker, 2013).

Socio-economic status. Socioeconomic status (SES) can have an impact on academic achievement as students transition to middle school. Early adolescence is already a time of increased stress for middle school students.

However, students who have other risk factors, such as living in poverty, increase their vulnerability to experiencing academic problems (Gutman & Midgley, 2000). Academic problems include lower achievement scores, more grade retentions, and fewer years of completed schooling compared to their more advantaged peers (Bates, 2004; McLoyd, 1998). Several studies (Black 2009; Kruse, 1996; Meyer, 2014; Scott, 2006) validated the impact of poverty on academic achievement.

Kruse (1996), in a study on the effects of a low socioeconomic environment on a students' academic achievement, found that there was a statistically significant difference between students from low socioeconomic backgrounds and students from higher socio-economic backgrounds. Kruse looked at midterm and final grades of 66 sixth-grade students who were divided into two socio-economic groups. The average midterm grade for low SES was 80% while higher socio-economic students had an average score of 87%. The average final grade for low SES students was 77% while higher SES students had an average score of 88%.

Scott (2006) conducted a comparative analysis study of African-American middle school students' performance on a standardized test called the Palmetto Achievement Challenge Test (PACT) for mathematics and language arts. The purpose of the study was to determine if there was a relationship between socio-economic status and student achievement. Results were not statistically significant but did show a difference in the

proficiency level of students who received free and reduced lunch and students who paid full price for lunch in mathematics and language arts.

Black (2009) conducted a quantitative study of school configuration and the achievement of sixth-grade students in Alabama, including the effects of gender and socioeconomic status. Students were randomly selected from 87 elementary schools, 90 middle schools, and 65 other schools with varied configurations. Data were collected from the Alabama Reading and Math Test (ARMT). The results were similar to other studies that found socio-economic status makes a difference in achievement scores. Only 21% of students from poverty exceeded academic content standards. Even when combining scores with the next category of "met standards", there was still a significant difference, with 83% of non-poverty students scoring in the top two categories, while only 66% of students in poverty scored in the top two categories.

Using data from the Arizona Instrument to Measure Standards (AIMS), Freitas (2012) conducted a study to determine if there was an achievement gap between high-SES and low-SES schools, and if so, did the gap widen or shorten over time. The researcher used a sample of 2,238 students that had a complete set of standardized tests scores for grades 5, 6, 7, 8, and 10. The results confirmed there was a gap in achievement between low-SES and high-SES schools in both reading and mathematics. Students in low-SES schools consistently and significantly scored below grade level proficiency in every grade while students from high-SES schools scored above grade-level proficiency each year. However, based on standardized scores, the gap did not widen between fifth and tenth grade (Freitas, 2012).

In 2014, Meyer studied the impact on a student's achievement based on gender and socio-economic status. Meyer used the TASKS to collect data on students in various grade configurations. The results for low-SES students showed a significant difference from non-economically disadvantaged students in both mathematics and reading. In mathematics, 39% of students from low socio-economic backgrounds met standards on the TASKS. Forty-nine percent of students from non-economically disadvantaged backgrounds met standards. In reading, the results were similar. Thirty-eight percent of students from low socio-economic backgrounds met standards on the TASKS while 50% of students from non-economically disadvantaged backgrounds met standards.

The answer to where to best educate sixth-grade students does not seem to be conclusive. Howley (2002) cautioned that current studies were only suggestive and would need to be replicated in several other states for there to be solid evidence that sixth-grade students score better when included in elementary or middle school. It seems that no particular grade configuration guarantees student success. Before educators consider switching grade configurations, school leaders and policymakers must consider other factors to ensure student success such as attributes of the young adolescent learner.

Pre-Adolescent Development

When districts make educational decisions, the unique needs of a pre-adolescent learner should be considered. Thornburg (1974) described pre-adolescence as a time of great change not only intellectually, but also physically and socially. Thornburg wrote that youth between the ages of nine to thirteen go through six developmental tasks when moving out of childhood. The tasks are: "developing and organizing knowledge and concepts necessary for everyday functioning; accepting increasing changes in one's

physique; learning new social sex roles; developing friendships with peers; becoming an independent person; and developing moral concepts and values" (Thornburg, 1974, p.13). While no two students are the same, nor do they develop at the same rate, preadolescent students do exhibit common developmental characteristics. These characteristics are often grouped into categories (NMSA, 2003). The categories are physical, cognitive-intellectual, moral, psychological, and social-emotional development.

Physical development. Preadolescent students experience the most dramatic change in the category of physical development due to puberty. Puberty typically begins around the age of 10 for girls and 12 for boys. A young adolescent's body experiences rapid changes in height, weight, bone, and organ growth causing the body to be awkward and uncoordinated (Kellough & Kellough, 2003). Scales (2003) added that preadolescent students can be prone to developing poor habits and risky behaviors affecting physical development. Preadolescents are also experiencing increased hormonal changes causing restlessness, fatigue, the need to release energy, and an increased appetite (Brown & Knowles, 2007).

Cognitive development. During preadolescence, children continue to develop cognitively. According to Piaget and Inhelder (1969), preadolescents aged 10 to 14 are able to move from concrete to deductive reasoning, and from step by step processing to generalizing. They can also utilize propositional operations such as if-then or either-or. Wadsworth (1989) calls this the stage of formal operations. He described this stage as one where the young adolescent has the potential to think logically as an adult and solve problems. However, logic early in this stage is very egocentric as adolescents attempt to adapt self to the adult world. They are also very curious, switch interests

frequently, enjoy active learning experiences, think about the future, and prefer learning activities with peers (Kellough & Kellough, 2003; NMSA, 2003).

Students ages 10-14 need authentic, real-world learning experiences that enhance a student's logic and problem-solving skills, various exploratory courses, higher thinking opportunities, and differentiated instruction due to differing levels of development and learning styles (Casky & Anfara, 2007). Knowledge of a preadolescent's cognitive development positively influences instructional decisions. Educators can guide preadolescents in moving from concrete to deductive reasoning. The ability to teach them to be analytical and reflective begins to cross over into the area of moral development.

Moral development. According to a report completed by North Carolina Public Schools (2004), "Preadolescents begin to be idealistic; have a strong sense of fairness; are reflective about their thoughts and feelings; address moral and ethical dilemmas; and are curious about the meaning of life" (p. A-1). A young adolescent is transitioning from self-centered thinking to thinking about other people's feelings.

Scales (2003) explained this development with some specific behaviors of preadolescents. He summarized that preadolescents want to make the world a better place. They show concern for others but will quickly see flaws in others without seeing their own flaws. He continued that while they still rely on significant adults when making major decisions, they begin to develop personal beliefs and values. Finally, Scales (2003) wrote that preadolescents can be impatient, strive to be honest, and no longer see in black and white when considering moral issues.

Psychological development. While students are developing morally and ethically, they are also growing psychologically. Scales (2003) described the psychological stage of development of a preadolescent. He wrote that students want to become independent but still look to adults for guidance; think more about their ethnicity, go up and down in their self- esteem, dislike being criticized, become very self-conscious, appreciate being recognized for achievements, are vulnerable yet resilient, and are optimistic. Kellough and Kellough (2007) added that during psychological development, the young adolescent is looking for a sense of identity, individuality, and uniqueness while still trying to maintain peer approval (Kellough & Kellough, 2007). This inner conflict results in moodiness, restless, and inconsistent actions.

There are practical ways educators can address the psychological needs of the young adolescent. Kellough and Kellough (2007) advised that schools provide exploratory courses, advisory programs, and curricular experiences that support a young adolescent's search for identity formation. Also, teachers can foster an environment that is free from criticism and encourages a positive self-esteem. A positive environment can also aid in a child's social-emotional development.

Social-emotional development. Caskey and Anfara (2007) refered to socialization as a "person's capacity for more mature interactions with individuals and groups" (p. 4). When a young adolescent reaches the middle grades, they interact with many people and groups. Kellough and Kellough (2007) described preadolescent social development with these common characteristics: have a need to belong to a group; want peer approval; may become rebellious and argumentative with adults; tests the limits;

react to ridicule and rejection; fear being embarrassed; need affirmation; like fads; and start to seek relationships with members of the opposite sex.

Socialization plays an important role in a preadolescent's development. School staff can address the social-emotional needs of students by providing curriculum, instruction, and programs that promote skills for making and maintaining friendships. For example, students need opportunities to join various organizations outside of class. Students should also be placed in mixed social groups when participating in cooperative learning activities in class (Brown & Knowles, 2007).

Five types of developmental areas have been discussed. Many characteristics in each area are related and may even overlap. Young adolescents move through these areas at various rates and do not always exhibit all of the characteristics of each area. However, they all will begin to form a view of themselves and the world in which they live (Scales, 2003). Districts that understand the physical, cognitive, psychological, moral, and social-emotional developmental characteristics of their students will plan accordingly. The most effective schools should implement practices that address the unique characteristics of a preadolescent.

Effective Schools

Hough (2003) wrote, "regardless of the grade configuration, young adolescents should not be thrust into an inappropriate learning environment" (p. 5). Effective programs and practices that address the needs of adolescents could be in place at any level. In the following subsections, information about effective elementary and middle schools are presented.

Elementary School. Effective elementary schools support establishing positive teacher-student relationships and a smaller school environment that encourages a strong sense of belonging (Comer, 1980). Elementary schools offer a close-knit environment because they are often smaller in size and population than middle schools. Students often have one teacher per grade level in elementary school. Because of this, the teacher gets to know the students better and can give them special attention (Comer, 1980). Also, in the elementary school, there is more involvement by parents (Wells, 1987). Students in an elementary school exposed to an effective learning environment have higher motivation, interest, performance, and positive behaviors (Eccles et al., 1993). Instructionally, elementary school students have opportunities to work in smaller groups (Alspaugh, 1998). The National Forum to Accelerate Middle Grades Reform (2008) summarized the history and research on grade level configuration and wrote that "the students in grades 6-8 fared significantly worse than K-8 counterparts on some measures such as grades, failure rates, perceived safety concerns, and self-esteem" (p.4).

Dr. Lawrence Lezotte (1995), along with Ron Edmonds and Wilbur Brookover, conducted the original effective schools research in elementary schools, known as the Effective Schools Movement. The research was completed in response to a report written by sociologist James Coleman claiming that family background determines student achievement. Coleman believed that a school does not affect a student's learning (Lezotte, 1995). The Effective Schools movement provided research that demonstrated school does, in fact, make a difference in a student's learning process. The researchers found that effective elementary schools had all the attributes that resulted in what is

known as the Correlates of Effective Schools. The seven correlates of effective elementary schools listed by Lezotte (2001) are:

- Strong instructional leadership;
- Climate of high expectations for success;
- Opportunity to learn and time on task;
- Frequent monitoring of student progress;
- Clear and focused mission;
- Safe and orderly environment; and
- Positive home-school relations. (p.5)

Lauritson (2012) took a closer look at Lezotte's seven effective school practices and characteristics. The author surveyed a total of 92 elementary school principals and 48 elementary school teachers in schools he considered highly effective. The schools had met or exceeded AYP goals under NCLB. Lauritson (2012) wanted to investigate the ways that highly effective public schools in Missouri were meeting Lezotte's seven correlates of effective schools. A survey was administered that addressed the seven correlates. Once the data was collected, Lauritson (2012) found that the highly effective schools mirrored Lezotte's correlates of the effective schools framework.

Lezotte (2001) described strong instructional leadership as principals bringing together the key stakeholders for the purpose of student learning and achievement. One study, in particular, looked at the principal's role in building teacher leadership capacity in high performing elementary schools in Florida (Jones, 2007). The author used convenience sampling in utilizing seven elementary schools and principals for the study. The study included the use of a survey, focus groups, and interviews. The results showed

that principals sought the opinion of the teachers on curriculum and instructional concerns. They were able to build leadership capacity by cultivating a culture of trust and professionalism with their teachers (Jones, 2007).

Effective schools provide a safe and orderly environment. A safe and orderly school environment is essential to ensure that students are motivated to achieve (Lashway, 1999). In recent years, schools have increased their level of security in response to public school shootings so that students and staff feel safe (Blue, 2000). Safe includes physical safety, but also a level of respect and acceptance for each other that results in positive behavior. Research shows that students tend to have fewer discipline problems in elementary school. A group from Duke University looked at grade configuration and behavior (Cook, MacCoun, Muschkin, & Vigdor, 2007). They used data from a disciplinary infraction database and end of the year standardized test scores for students who attended different types of schools in sixth grade. Sixth-grade students in the middle school were twice as likely to have discipline infractions as sixth-grade students in the elementary school. The study also showed that elementary sixth-grade students scored higher on standardized tests than their peers in a middle school setting.

According to Lezotte and Snyder (2011), another correlate that leads to higher student outcomes was positive home-school relations. Test scores were higher when there is strong home-school involvement (Halsey, 2005; Lezotte & Snyder, 2011; Sheldon & Epstein, 2005; Simons-Morton & Crump, 2003; Wherry, 2004). However, parental involvement drops off between elementary and middle school and even more significantly in high school (Anfara & Mertens, 2008; Carnegie Council on Adolescent Development, 1989; Epstein, 1987; Gott & Purnell, 1987). In a study conducted by

Novey (2001), parents responded on a questionnaire that they were more connected when they had a child in elementary school because there were more opportunities to be involved in the elementary setting than at the middle level (Novey, 2001). Middle schools are larger and can seem uninviting (Chen, n.d.a) to parents. Additionally, preadolescents have a desire to be around their peers and may not want parents around as much.

The elementary school gives sixth graders one more year to mature and have parental involvement before they are exposed to the influences of the older students. Preadolescents mature at different rates and are easily influenced by others. Some may not be ready to make decisions if faced with tough choices (Chen, n.d.b).

While there are components of the elementary setting that may be more effective than the middle school setting, educators should be cautious when making configuration decisions too quickly. They should consider that a middle school gives students' access to extracurricular activities, more independence, and exposure to mentoring programs. The following subsection provides additional further detail about effective middle schools.

Middle school. In *This We Believe: Implementing Successful Middle Level Schools*, the NMSA (2003) described fourteen school practices and cultural characteristics that create successful schools for young adolescents:

- Educators who value working with this age group and are prepared to do so;
- Courageous, collaborative leadership;
- A shared vision that guides decisions;
- An inviting, supportive, and safe environment;

- High expectations for every member of the learning community;
- Students and teachers engaged in active learning;
- An adult advocate for every student;
- School-initiated family and community partnerships;
- Curriculum that is relevant, challenging, integrative, and exploratory;
- Multiple learning and teaching approaches that respond to their diversity;
- Assessment and evaluation programs that promote quality learning;
- Organizational structures that support meaningful relationships and learning;
- School-wide efforts and policies that foster health, wellness, and safety; and
- Multifaceted guidance and support services. (p.7)

Each characteristic is important in producing a middle school environment that is more responsive to students developmentally; however, they should be implemented in harmony (NMSA, 2003). Four instructional and organizational components of an effective middle school can enhance the implementation of the fourteen characteristics. They are interdisciplinary teaming, advisory programs, exploratory offerings, and transition programming.

Interdisciplinary teams. Interdisciplinary teaming is defined as a group of core teachers that share the same students and the responsibility for guiding students to meet their academic and personal goals (Carnegie Council on Adolescent Development, 1989). Clark and Clark (2006) identified three clarifying questions to better understand teaming. They were: (a) What ways do teams affect students and adults; (b) How does teaming influence school reform and improvement; and (c) What are the characteristics of

effective teams (p. 1)? The following paragraphs will briefly address each of the questions.

Rottier (2001) described specific advantages of interdisciplinary teaming for students and teachers, specifically that it creates a "small, caring family" (p. 5). Through teams, students can get to know their peers and teachers well, which is helpful in building positive relationships. Additionally, a teaming approach provides students a consistent set of expectations, procedures, and practices across the team. Preadolescents need the consistency in an already confusing time in their lives. Teams also give students a built-in support system. As for the teachers, they benefit from the common plan time in which they can collaborate professionally. Common plan time gives the team of teachers the opportunity to talk with various stakeholders such as counselors, resource teachers, administrators, and parents. They can plan their lessons so that students can make connections throughout the disciplines. Like students, teachers also have a built-in support system (Thompson &VanderJagt, 2001).

Teachers can draw upon each of their strengths and areas of expertise. They can collaborate, and problem-solve about areas of the curriculum, instructional strategies, and student data (Clark & Clark, 2006). Teachers in teams can make shared decisions on goals for student learning as well as their professional growth. Valentine, Clark, Hackman, and Petzco (2004) wrote, "Teachers working together in teams appeared to provide the most powerful influence on curriculum, instruction, and school improvement" (p. 92).

Certain components need to be present for interdisciplinary teams to be effective. Rottier (2001), stated that teams need to have team goals, team roles, and ground rules.

Team goals should be clear, meaningful, realistic, measurable, and impact student performance (Thompson & VanderJagt, 2001). Goals should be specific to curriculum needs or social-emotional needs. They should have criteria to help determine if goals have been met through data collection and analysis.

Team roles such as leader, recorder, liaison, timekeeper, and resource person are critical to effective interdisciplinary teaming. Experts believe that determining team roles early will create a successful team. Thompson and VanderJagit (2001) advised that each team member should know every role and understand the responsibilities of each role; all team members are responsible for taking a role; team roles should only be assigned after discussing the needs of the team; and roles are rotated each quarter so that everyone gets to know each position.

Team behaviors will often emerge from these team roles. Team members must exhibit supportive behaviors as opposed to negative behaviors. Along with positive interpersonal and positive nonverbal behaviors, guidelines are also pertinent to the success of an interdisciplinary team. Misunderstandings and conflict can be prevented by establishing ground rules (Rottier, 2001). Ground rules should include establishing a meeting time and place, attendance expectations, and a no-interruption rule. Additionally, Rottier (2001) recommended teams establish basic procedures to ensure that all members participate along with the ground rules. They should then be posted for all to see.

With these behaviors in place, school leaders are charged with keeping teams running effectively. Principals should make it a priority to schedule common planning time for teams; keep the size of the teams to 90-125 students; keep teams consistent; and

have certain areas designated for each team (Clark & Clark, 2006). Clark and Clark (2006) also suggested that principals should be knowledgeable about teaming as well as about staff members' areas of expertise. Further, principals need to regularly communicate with teams and work to build positive, trusting relationships with staff (Clark & Clark, 2006). Finally, an effective principal needs to support and participate in professional development opportunities.

While NMSA (2003) called the interdisciplinary teaming component, "the heart of the school," another effective organizational component of a middle school, called an Advisory Program, is an important part of middle school. Like interdisciplinary teaming, advisory programs connect students to adults.

Advisory programs. Baker and Narula (2012) wrote, "When students believe the adults at their school genuinely care about them as individuals and care about their learning; they are more engaged and more likely to be academically successful" (p. 1). Entering middle school can be a scary transition for an adolescent at a critical time in their life. In addition to dealing with developmental changes, they are searching for a connection to others. Most middle schools have guidance counselors that seek to build positive relationships with students; however, there are usually just one or two counselors in a typical middle school. As a result, middle schools often implement an advisory program to meet the adolescent need to have a trusted adult in his or her life. An advisory program assigns an advisor to each student. The advisors serve as an advocate and mentor. They are there to offer ongoing guidance and support (NMSA, 2003).

Adult advisors can have a direct impact on a student's success in school. However, since advisors are not trained guidance counselors, the Carnegie Council on

Adolescent Development (1989) recommended that teachers receive professional development on guiding preadolescents in their academic and social development. Along with professional development, counselors can also help teachers fill this important role by sharing their expertise and resources with teachers (NMSA, 1995).

Positive outcomes take place when an advisory program is implemented correctly. Leaders must have a commitment to the program:

> They should help develop short and long-range goals; are cognizant of students', teachers', and parents' needs; provide for ongoing training; provide an orientation; have small teacher-student ratios; have a structured schedule; be aware of the school climate, and involve stakeholders in the planning process. (Anfara & Brown, 1998, p. 26)

Additionally, they must consider such things as teacher and student resources, meeting times and locations, and how to assign students (Burkhardt & Kane, 2005).

Finally, advisory programs should not be seen as a "curriculum to be taught", but rather as a "relationship to be nurtured" (NMSA, 2005, p 68). Advisory programs can have a lasting effect on students. Middle school educators have the great opportunity to touch the lives of preadolescent students during their most critical, complex, confusing, and formative period. Additionally, educators can encourage students by offering exploratory courses. Exploratory offerings can positively influence students intellectually, social-emotionally, and physically as they prepare for the future.

Exploratory offerings. Adolescents are curious to explore new interests. NMSA (1995) stated that middle schools need a "curriculum that is challenging, integrative and exploratory" (p.24). By definition, exploratory offerings encompass courses and

activities that allow middle school students to engage in "a variety experiences to help students discover areas of interests for future pursuit that will perhaps develop into a lifelong passion" (Kellough & Kellough, 2003, p. 135). For example, a student may discover a love of music, theater, art, or science in middle school.

A student may discover a passion through exploratory offerings, but just as importantly, he or she must feel a sense of belonging. School connectedness plays an important role in an adolescent's development. Exploratory offerings give students a chance to be connected to others. Experts believe that when a student is connected, he or she is less likely to do drugs, participate in violent acts, or engage in sexual activity (Eaccles & Barber, 1999; McNeely, Nonnemaker, & Blum, 2002). The Center for Disease Control and Prevention (CDC, 2009) also emphasized that students involved in various activities such as band, theater, or sports, develop a stable peer network. Reports have stated that a stable peer network results in "higher levels of peer acceptance, increases social competence, higher levels of motivation, and lower levels of behavior problems as well increases self-worth, school performance, and leadership skills" (Hall-Land, Eisenberg, Christenson, & Neumark-Sztainer, 2007, p. 266).

Since exploratory offerings are a critical piece for young adolescents, and their development, Brazee (2000) advised leaders to consider a few items when implementing exploratory courses:

- Articulate the importance of exploratory experiences to all stakeholders;
- Ensure stakeholders understand that exploratory experiences complement the academic experiences;
- Provide time for communication and collaboration between staff;

- Allow time for students to explore not just be exposed to an opportunity. (p. 3)

In addition to promoting exploratory offerings, leaders need to have a comprehensive transition program in place for students entering middle school.

Transition programs. Rick Wormeli (2001) posed the question, "If high school success, navigating the larger world, and discovering the direction we want our lives to take, all have roots in young adolescence, why would anyone leave the transition into this impressionable phase to chance?" (p. 48). Adolescent students already face life-changing intellectual, moral, social, emotional, and physical changes. The transition to middle school can add to that stress. Part of the worry comes from the unknown, but many times the anxiety comes from their current teachers who threaten their students with the next grade level (Andrews & Bishop, 2012; Lorain, n.d). They are anxious about going to a new school that is so different from their elementary school, including the organization of the new school, peer relations, and schoolwork.

Cauley and Jovanovich (2006) put these concerns into three categories: academic, social, and procedural. Academic concerns include students worried about going from one teacher to several and the various expectations from each, as well as the homework load, and an increase in responsibility. Social concerns include peer pressure, worries about making friends, losing friends from elementary school, and getting along with teachers. Procedural concerns about the daily routines such as finding their way to classrooms, restrooms, lunchrooms, and lockers, as well as being prepared for class with all the correct supplies and knowing the expectations of each class (Cauley & Jovanovich, 2006).

Schools should address these concerns by implementing a transition program. The program should begin before students enter middle school, during the transition, and continue after the transition (Schumacher, 1998). The National Education Association (Lorain, n.d.) recommended that a comprehensive transition program (a) helps "students form a realistic expectation of what middle school will be like"; (b) provide a positive first impression, and (c) ensure a successful introduction to the middle school experience" (p. 2). The research of Andrews and Bishop (2012) revealed that an effective transition program should be comprehensive and longitudinal. A comprehensive transition program includes parents, teachers, and students. Lorain (n.d.) adds that a quality transition program meets the needs of students, staff, and families; helps guide the transition process, and gives students a realistic snapshot of the middle school experience.

Additionally, Weldy (1991) suggested that stakeholders from both schools are involved in the transition process in order to share valuable information. Lorain (n.d.) added that incoming students should have the opportunity to visit the middle school and participate in an orientation program. Likewise, parents should also be invited to various activities and events at the middle school. Ultimately, families and schools can work together to provide an environment that nurtures healthy development in preadolescents (CDC, 2009). Implementing components of an effective middle school such as interdisciplinary teaming, advisory programs, exploratory offerings, and transition programs will foster an effective middle school.

Summary

In conclusion, chapter two reviewed the literature about the history of middle school configurations, research on sixth-grade configuration and achievement, characteristics of adolescents, and effective elementary and middle schools. Chapter three will provide a thorough overview of the methodology used in the study. The description includes the research design, population, sampling procedures, instrumentation, measurement, and validity and reliability. The chapter also includes data collection procedures, data analysis, hypothesis testing, and limitations of the study.

Chapter Three

Methods

The focus of this study was to determine the extent of differences between grade level configuration of sixth-grade students and student achievement on the Kansas State Reading (KRA) and Kansas State Mathematics Assessments (KMA) for the years 2008-2009, 2009-2010, 2010-2011, and 2011-2012. The study included an examination of achievement scores for students attending sixth grade in an elementary school setting compared to achievement scores for students attending sixth grade in a middle school setting. Specifically, the current study investigated to what extent there is a difference in math and reading influenced by school configuration as affected by gender and SES.

Described in chapter three is the methodology used to conduct the current study. The chapter begins with the research design, population and sample, sampling procedures, and instrumentation. A description of data collection procedures, the data collected, and hypothesis testing, as well as limitations of the study, are also provided.

Research Design

The current study was a quantitative non-experimental research design utilizing archival data. Quantitative research "is a means for testing objective theories by examining the relationship between variables" (Creswell, 2009, p. 4). The independent variables included the grade configuration for sixth-grade students (elementary or middle school), gender, and socio-economic status. The dependent variables were student academic achievement scores on the KRA and KMA.

Population and Sample

The population was all sixth-grade students attending either an elementary school or middle school. The sample was sixth-grade students in District X from each of the following school years: 2008-2009, 2009–2010, 2010–2011, and 2011-2012. Data used were from students attending sixth grade in the elementary setting during the years 2008-2009 and 2009-2010 and students attending sixth grade in the middle school setting in the years 2010-2011 and 2011-2012.

Sampling Procedures

Purposive sampling was used in this study. Lunenburg and Irby (2008) validated such a sampling method in research when "clear criteria provide a basis for describing and defending" (p. 175) the sample. Sixth grade students were included in the sample to analyze sixth-grade student achievement on the KRA and KMA of students in the elementary setting compared to students in the middle-level setting. All sixth-grade students in District X, who completed and received scores for the KRA and KMA, were a part of the study. Students who took the Kansas Alternate Assessment Measurement were not included in the sample. The first two school years, 2008-2009 and 2009-2010, the sixth-grade students attended classes at the elementary school, while during 2010-11 and 2011-2012, sixth-grade students attended the middle school.

Instrumentation

Student achievement data for this study were collected from the KRA and KMA. The Kansas State Legislature, as a part of the federal NCLB legislation (U.S. Department of Education, 2002), mandated the Kansas State Assessments. The assessments were derived from the Kansas Curricular Standards. "The Curricular Standards serve as the

basis for what is assessed by the tests and any interpretation and subsequent action based on student or group performance on these tests must focus on the assessed standards, benchmarks, and indicators" (Poggio et al., 2007, p. 2). The development of the assessments was monitored by the Center for Educational Testing and Evaluation (CETE) and the Kansas Department of Education (KSDE).

Items for the KRA and KMA were developed by West Ed, a third-party company, contracted by KSDE (Poggio et al., 2007). The newly designed test was initially administered in the spring of 2006 and served as a baseline year to measure the targeted indicators of the Kansas Curricular Standards (Poggio et al., 2007). The tests were made for grades 3-8 in reading and mathematics, grade 10 for mathematics, and grade 11 for reading. A pool of test items was piloted, and then actual test items for each grade level were selected from the pool based on multiple rounds of analysis of the pilot items. In the following section, a description of each measurement, including the reliability and validity of the tests, used for this study is presented.

Kansas Reading Assessment. According to the Kansas State Department of Education (2009a), the KRA and KMA were used for three main purposes. They were to:

(1) provide aggregate state accountability and yearly progress information toward meeting the Kansas Curriculum Standards in the tested areas as required by the *No Child Left Behind* federal mandate;

(2) provide building and district information to support school improvement evaluation needs as appropriate; and

(3) report on the performance of students to support instructional planning for individuals and groups as judged appropriate by local educators. (Poggio et al., 2007, p. 2)

According to Poggio et al. (2007) in each reading assessment there were different text types (narrative, expository, technical, or persuasive) represented in the reading selections based on those test types appropriate for each grade level. As described in the 2010 Kansas Assessment Examiner's Manual, each of the three tests combined contained approximately 57-84 questions based on the 16 tested indicators. There were four to eight questions per indicator (see Appendix D). Four test forms were used to test the indicators.

Kansas Mathematics Assessment. The KMA was first administered in the spring of 2006. Like the reading assessment, the purpose of the math assessment was to "provide state accountability and yearly progress information as required by NCLB; provide building and district information to support school improvement efforts; and report on the performance of students to support instructional planning" (Poggio et al., 2007, p. 2). The mathematics general assessment contains four to eight questions per indicator for a combined total of 70 - 85 questions (see Appendix E). Questions from the sixth-grade assessment included 14 indicators total. The test was given in three parts. Students complete the test over a period of three days.

Five forms were used to test the indicators. Indicators were broken into four categories: number sense and computation, algebra, geometry, and data. Sixth-grade students were allowed to use a calculator on two of the three tests. They were also given

access to scratch paper and manipulatives. Manipulatives used had to be on a state approved list and self-selected by the student.

Measurement. The KRA and KMA were used in this study. The assessments were given to students in three sessions and were not timed. Items on the assessments were in a multiple-choice format and students choose from four response options. Students took the test electronically unless individuals required a paper and pencil accommodation. Students then received a score on a 0-100 scale. The scale was divided into five performance categories, and students were placed into one of the five categories. Each grade level had different cutoff scores for the five categories. Sixth-grade cutoff scores in each of the performance categories for reading are as follows: 0 to 51% correct qualified as *Academic Warning;* 52-63% correct qualified as *Approaches Standards;* 64-78% correct qualified as *Meets Standards;* 79-87% correct qualified as *Exceeds Standards;* and 88-100% correct qualified as *Exemplary.* The following percentages are cut scores for sixth-grade students in mathematics: 0 to 52% correct qualified as *Academic Warning;* 53-62% correct qualifies as *Approaches Standards;* 63-78% correct qualified as *Meets Standards;* 79-89% correct qualified as *Exceeds Standards;* 90-100% correct qualified as *Exemplary.*

"Adequate Yearly Progress is a requirement of federal law No Child Left Behind. It is a process of judging whether public schools and districts are on track for achieving 100% proficiency by 2013-2014" (KSDE, 2011 p. 69). Since the reading assessment was administered in the spring of 2006, it was important the state analyze the scores to determine levels of proficiency. "The proportion of students classified in each of the

categories becomes a primary source of information in determining AYP for schools, districts, and states" (Poggio et al., 2007, p. 4.).

Validity and reliability. Creswell (2009) stated that validity "refers to whether one can draw meaningful and useful inferences from scores on a particular instrument" (p. 235). A valid instrument will test what it is supposed to measure. Technical information in regards to the development of the KRA, item analysis, administration, and evaluation of the assessments was provided in the 2006 Kansas Assessments in Reading and Mathematics Technical Manual (Poggio et al., 2007). Many steps were taken to ensure the validity and reliability of the instrument. First, the assessment was developed to align with the Kansas curricular standards. Second, content and fairness committees were formed to review test items for alignment and appropriateness. Finally, multiple forms of the tests were developed so that test items could be field-tested.

Poggio et al. (2007) wrote, "Validity is one of the most important attributes of assessment quality" (p. 76). There should be a high degree of relationship between the assessment items and the outcome criteria. Three analyses were completed to verify the validity of the Kansas State Assessments. The first was an analysis between formative and general assessments. Students took a formative test before the 2005-2006 general assessment. The results of the formative test were matched to students' summative test scores. "Correlations between formative aggregate and the General Assessment equated total score were obtained for each grade level" (Poggio et al., 2007 p. 78). The results showed a moderate to strong relationship. There was a range of .76 to .83 across the grades with a coefficient of .80 across all sixth-grade forms on the reading assessment (Poggio et al., 2007). On the mathematics assessment, there was a range across the

grades with a coefficient of .71 to .87 across all forms with an average coefficient of .77 on sixth-grade forms (Poggio et al., 2007).

The second analysis for validity was completed by following individual students across multiple years of testing to determine if there was criterion-related evidence. The mode in which the assessments were given was also considered. At the time of the analysis in 2006, the Kansas State Assessment could be administered electronically or by paper and pencil. In 2006, 60% of students used the computerized form. The analysis showed the validity ranged from .71 to .77 for reading. The analysis showed the validity ranged from .71 to .80 in mathematics.

The third test for validity investigated teacher ratings of students and their test performance. During the 2005-2006 school year teachers were asked to rate their students into one of five categories. The categories were in place for testing validity and were not the performance categories for student performance scores. Teachers entered the ratings online for students taking the computerized version or on students' answer sheets for the paper pencil form (Poggio et al., 2007). Teacher ratings were then compared to the students' actual performance score. The coefficients across grade levels were not as strong as the first two tests for validity but were stable with a range of .62 to .71 on all forms. At sixth grade, the correlation was high with an average of .71 for reading and .72 for mathematics.

Two indices called classification consistency and classification accuracy were used to perform a reliability analysis on the base form of the 2006 assessment to determine if performance categories were consistent and accurate.

> Classification consistency refers to the extent to which the classifications agree on the basis of two independent administrations of the test (or, two parallel forms of the test). Classification accuracy refers to the extent to which the actual classifications that are based on observed cut scores approximate those that are based on "true" cut scores". (Poggio et al., 2007, p. 59)

Classification consistency and classification accuracy were used to test the reliability of placing students into performance categories based on their scores on the Kansas Reading and Kansas Mathematics Assessments. The classification consistency for the sixth grade Kansas State Reading Assessment was .61 and the classification accuracy was .71. The "probability of misclassifications are low" because the "classification reliabilities were acceptable" (Poggio et al., 2007 p. 62). Seventy-seven reliability analyses were performed for the base form of the assessment. The classification consistency for the sixth grade Kansas Mathematics Assessment was .67 and the classification accuracy was .76.

Reliability is the consistency of the measurement (Lunenburg & Irby, 2008). Reliability for test scores across all forms also showed sufficient reliability (Poggio et. al., 2007). The coefficient values, called Cronbach alpha coefficients, ranged from .88 to .94 on the reading assessments for all grades. The sixth-grade test had a range of .92 to .93 for reading. The coefficient values, called Cronbach alpha coefficients, ranged from .91 to .95 on the mathematics assessments for all grades. The sixth-grade test had a range of .93 to .95 for mathematics. The range of both assessments is due to multiple test forms.

Data Collection Procedures

A formal request for approval from District X was submitted to collect data and conduct research (see Appendix A). Approval was obtained on September 22, 2014,

from the Assessment Department Supervisor (see Appendix B). A request was then submitted and approval obtained from the Baker University Institutional Review Board (IRB). The Institutional Review Board granted permission for this research proposal on August 31, 2015 (see Appendix C).

Data from the KRA and KMA were downloaded from the District X reporting system in September 2015. The Assessment Department of District X took out student identification information and pulled individual scores of sixth-grade students for the years 2008-2009, 2009-2010, 2010-2011, and 2011-2012. The data were then put into a spreadsheet and input into IBM® SPSS® Statistics Faculty Pack 23 for Windows for analysis.

Data Analysis and Hypothesis Testing

Lunenburg and Irby (2008) viewed the research questions or hypotheses as "the directional beam of the study" (p. 126). The following research questions and hypothesis statements that guided the study. The level of significance was set at .05 for data analysis. In the following table the research questions, variables, and type of analysis are listed.

Table 3

Research Analysis Plan

Reading	Research Question	Factor	Type of Analysis	Post Hoc
Reading	RQ1	Configuration	One-Way ANOVA	None
	RQ2	Configuration x Gender	Two-Way ANOVA	Tukey
	RQ 3	Configuration x Socio-economic	Two-Way ANOVA	Tukey
Mathematics	RQ 4	Configuration	One-Way ANOVA	None
	RQ 5	Configuration x Gender	Two-Way ANOVA	Tukey
	RQ 6	Configuration x Socio-economic	Two-Way ANOVA	Tukey

Note. Configuration is the setting that sixth-grade students attended. Socio-economic is the financial status of a student's household Adapted from "Report Card: District X," by KSDE, 2010a and "Report Card: State of Kansas," by KSDE, 2010b.

RQ1. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration?

H1. There is a difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration.

A one-way analysis of variance (ANOVA) was conducted to test H1. The categorical factor used to group the dependent variable of student achievement, as measured by the KRA, was grade configuration. The level of significance was set at .05.

RQ2. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration affected by gender?

H2. The difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus a middle school grade configuration is affected by gender.

A two-way analysis of variance (ANOVA) was conducted to test H2. The two categorical factors used to group the dependent variable of student achievement, as measured by the KRA, were grade configuration and gender. The two-way ANOVA can be used to test three hypotheses including a main effect for grade configuration, a main effect for gender, and a two-way interaction effect for configuration times gender. The level of significance was set at .05.

RQ3. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration affected by socio-economic status?

H3. The difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus a middle school grade configuration is affected by socio-economic status.

A two-way ANOVA was conducted to test H3. The two categorical factors used to group the dependent variable of student achievement as measured by the KRA were

grade configuration and socio-economic status. The two-way ANOVA can be used to test three hypotheses including a main effect for grade configuration, a main effect for socio-economic status, and a two-way interaction effect for grade configuration times socio-economic status. The level of significance was set at .05.

Additionally, an analysis was conducted to determine the extent of interactions between the independent variables of gender and socioeconomic status for H2 and H3, respectively, and the independent variable of grade configuration, on the dependent variable of student achievement, as measured by the KRA. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant interactions occurred in the analysis of H2 or H3. To control for Type I error, this procedure was used to evaluate any pairwise differences among the means of the gender and socioeconomic status variables.

RQ4. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration?

H4. There is a difference in sixth-grade student achievement, as measured by the Kansas State Math Assessment, between students who attended an elementary versus middle school grade configuration.

A one-way ANOVA was conducted to test H4. The categorical factor used to group the dependent variable of student achievement, as measured by the KMA, was grade configuration. The level of significance was set at .05.

RQ5. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration affected by gender?

H5. The difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration is affected by gender.

A two-way ANOVA was conducted to test H5. The two categorical factors used to group the dependent variable of student achievement, as measured by the KMA, were grade configuration and gender. The two-way ANOVA can be used to test three hypotheses including a main effect for grade configuration, a main effect for gender, and a two-way interaction effect for grade configuration times gender. The level of significance was set at .05.

RQ6. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration affected by socio-economic status?

H6. The difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration is affected by socioeconomic status.

A two-way ANOVA was conducted to test H6. The two categorical factors used to group the dependent variable of student achievement, as measured by the KMA, were grade configuration and socio-economic status. The two-way ANOVA can be used to test three hypotheses including a main effect for grade configuration, a main effect for

socio-economic status, and a two-way interaction effect for grade configuration times socio-economic status. The level of significance was set at .05.

Additionally, an analysis was conducted to determine the extent of interactions between the independent variables of gender and socio-economic status for H5 and H6, respectively, and the independent variable of grade configuration, on the dependent variable of student achievement, as measured by the KMA. The Tukey HSD procedure was chosen as the follow-up test to be conducted if any statistically significant interactions occurred in the analysis of H5 or H6. To control for Type I error, this procedure was used to evaluate any pairwise differences among the means of the gender and socioeconomic status variables.

Limitations

Lunenburg and Irby (2008) described limitations of a study as "factors that may have an effect on the interpretation of the findings or the generalizability of the results" (p. 133). The limitations of the current study were:

- District X has only had the middle school configuration for two years. Therefore, there was only access to two years of data post-reconfiguration. Data was collected and analyzed two years pre-reconfiguration and two years post-reconfiguration with the first year of data being a transition year for the change.
- The study does not follow a cohort of the same students. The study used a different sample of students in sixth grade each year as opposed to following the same group of students.
- There may have been a difference in the amount of instruction available in reading and mathematics in each setting. Typically in the elementary school

setting sixth- grade students spend more time in reading and mathematics classes than they do in a middle school setting.

- All assessments were completed online and needed access to the Internet. Technology can be unpredictable, and outages could have occurred that may have affected some student's results.

Summary

A comprehensive explanation of the methodology and procedures used to conduct the study were included in this chapter. The research design, population, sampling procedures, and instrumentation were discussed in detail. The instrumentation section included an overview of the measurement and validity and reliability of the KRA and the KMA. The method of data collection and limitations of the study were also discussed in the chapter. Presented in chapter four are descriptive statistics and the results of hypothesis testing.

Chapter Four

Results

The purpose of the study was to investigate the extent of the difference in academic achievement for sixth-grade students attending elementary school and sixth-grade students attending middle school as measured by the KRA and KMA. Additionally, the current study investigated the extent of the difference in academic achievement in reading and mathematics as influenced by school configuration and as affected by gender. Finally, the study investigated the extent of the difference in academic achievement in reading and mathematics as influenced by school configuration as affected by socio-economic status (SES).

The groups consisted of sixth-grade students in the elementary school setting and sixth-grade students in the middle school setting. An explanation of the descriptive statistics for the sample and the results of the data analysis for each hypothesis associated with the research questions are included in chapter four.

Descriptive Statistics

Lunenburg and Irby (2008) defined descriptive statistics as the "mathematical procedures for organizing and summarizing numerical data" (p. 63). The population for the current study consisted of sixth-grade students in District X for the years 2008-2009, 2009-2010, 2010-2011, and 2011-2012. There were 8,672 sixth grade students included in this study, 4,374 students who attended 6^{th} grade in the elementary setting while 4,298 students attended 6th grade in the middle school setting. Two additional independent variables, student gender and socio-economic status, were also included. Females made

up 4,251 of the total population while males made up 4,375 of the population. Sixth graders identified as low-income were comprised of 1,482 students.

Hypothesis Testing

This section contains results from statistical tests conducted to test the hypotheses of each research question. Each research question is followed by its corresponding hypothesis test and results of the test.

RQ1. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration?

H1. There is a difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration.

To test the main effect of school configuration (elementary, middle school) on KRA scores, a one-way ANOVA was applied using SPSS statistics software. Table 4 provides a summary of these results. No statistically significant difference was found between the means, $F = .980$, $df = 1, 8618$, $p = .322$. A follow-up Tukey's Honestly Significant post hoc was not conducted because the ANOVA was not significant. The school level elementary mean reading score ($M = 82.525$; SE=.267; N= 4374) was higher than the middle school mean reading score but was not statistically different ($M = 82.142$; SE=.281; N= 4298). Reading scores are independent of school configuration. No mean difference between the mean scores was found (see Table 4).

Table 4

Kansas State Reading Assessment SPSS One-Way ANOVA Test of Significance and Descriptive Statistics between School Type Categories for H1

Variable	School Type	*M*	*SE*	*N*
School Type	Elementary	82.525	.267	4374
	Middle School	82.142	.281	4298

$F = .980$, $df = 1, 8618$, $p = .322$.

RQ2. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration affected by gender?

H2. The difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus a middle school grade configuration is affected by gender.

As shown in Table 5, the results of the two-way ANOVA analysis indicated there was not a significant interaction between school configuration and gender on the KRA scores, $F = .581$, $df = 1, 8618$, $p = .446$. The null hypothesis was not supported when Alpha was set at .05. The KRA scores were not affected by the interaction of the two factors. A follow-up Tukey's Honestly Significant post hoc was not conducted because the ANOVA was not significant. The school level elementary mean reading score for females ($M = 82.252$; SE =.376, $n = 2161$) was slightly higher, but not significantly different, than the middle school mean reading score for females ($M = 82.164$; SE =.407; $n = 2090$) as can be seen in Table 5. The school level elementary mean reading score for males ($M = 82.799$; SE = .379; $n = 2213$) was also slightly higher, but not significantly different than the middle school mean reading score for males ($M = 81.120$; SE = .389; *n*

= 2162). The alternative hypothesis was not supported; no statistically significant mean difference was found in reading scores between and among school type for gender. Reading scores are independent of gender. Gender did not make a difference in student achievement. The interaction of school configuration and gender did not make a difference in student achievement.

Table 5

*Kansas State Reading Assessment SPSS Two-Way ANOVA Test of Significance and Descriptive Statistics Between and Among School Type*Gender for H2*

Variable	Gender	*M*	*SE*	*N*
Elementary	Female	82.252	.376	2161
	Male	82.799	.379	2213
Middle School	Female	82.164	.407	2090
	Male	82.120	.389	2162

$F = .581$, $df = 1, 8618$, $p = .446$.

RQ3. To what extent is the difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus middle school grade configuration affected by socio-economic status?

H3. The difference in sixth-grade student achievement, as measured by the Kansas State Reading Assessment, between students who attended an elementary versus a middle school grade configuration is affected by socio-economic status.

As shown in Table 6, the results of the two-way ANOVA analysis indicated there was not a significant interaction between school configuration and socio-economic status factors on the KRA scores, $F = .034$, $df = 1, 8618$, $p = .854$. The null hypothesis was not supported when Alpha was set at .05. Reading scores were not affected by the interaction

of the two factors. A follow-up Tukey's Honestly Significant post hoc was not conducted because the ANOVA was not significant. The school level elementary mean reading score for lunch full pay students (M = 82.306; SE =.226; n = 3588) was lower , but not significantly different than the middle school mean reading score for lunch full pay students (M = 82.851; SE =.227; n = 786). The school level elementary mean reading score for students at a free or reduced pay lunch (M = 82.745; SE= .483; n = 3556) was higher, but not significantly different than the middle school mean reading scores for students at free or reduced pay lunch (M = 82.432; SE = .514; n = 696). The alternative hypothesis was not supported, no mean difference in reading scores between and among school type for socio-economic status was found. Reading scores are independent of socio-economic status. Socio-economic status does not make a difference in student achievement. The interaction of school configuration and socio-economic does not make a difference in student achievement.

Table 6

*Kansas State Reading Assessment SPSS Two-Way ANOVA Test of Significance and Descriptive Statistics Between and Among School Type*Socio-Economic Status for H3*

Variable	SES Status	*M*	*SE*	*N*
Elementary	Full Pay	82.306	.226	3588
	Free/Reduced	82.745	.483	786
Middle School	Full Pay	82.851	.227	3556
	Free/Reduced	82.432	.514	696

F = .034, df = 1, 8618, p = .854.

RQ4. To what extent is there a difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration?

H4. There is a difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration.

To test the main effect of school configuration (elementary, middle school) on the KMA scores, a one-way ANOVA was applied using SPSS statistics software. Table 7 provides a summary of these results. A statistically significant difference was found between the means, $F = 9.041$, $df = 1, 8618$, $p = .003$. Although the difference was significant, the size of the difference was exceeding small, only a difference of 1.384 assessment values. A follow-up Tukey's Honestly Significant post hoc was not conducted because the independent variable had only two categories. The school level elementary mean mathematics score ($M = 82.584$; SE=.317; $n = 4374$) was higher than the middle school mean mathematics score ($M = 81.200$; SE=.334; $n = 4298$). The alternative hypothesis was supported, a mean difference in mathematics scores was found with sixth-grade students in the elementary school scoring better than sixth-grade students in the middle school. Mathematics scores are not independent of school configuration. School configuration did make a difference in student achievement.

Table 7

Kansas State Mathematics Assessment SPSS One-Way ANOVA Test of Significance and Descriptive Statistics between School Type Categories for H4

Variable	School Type	*M*	*SE*	*N*
School Type	Elementary	82.584	.317	4374
	Middle School	81.200	.334	4298

$F = 9.041$, $df = 1, 8618$, $p = .003$

RQ5. To what extent is the difference in sixth grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration affected by gender?

H5. The difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration is affected by gender.

As shown in Table 8, the results of the two-way ANOVA analysis indicated there was not a significant interaction between school configuration and gender on mathematics scores, $F = .581$, $df = 1, 8618$, $p = .446$. The null hypothesis was not supported when Alpha was set at .05. KMA scores were not affected by the interaction of the two factors. A follow-up Tukey's Honestly Significant post hoc was not conducted because the ANOVA was not significant. The school level elementary mean mathematics score for females ($M = 82.848$; SE =.447; $n = 2161$) was higher than the middle school mean mathematics score for females ($M = 81.358$; SE =.483; $n = 2090$). The school level elementary mean mathematics score for males ($M = 82.320$; SE= .450; $n = 2213$) was higher than the middle school mean mathematics score for males ($M = 81.042$; SE = .462; $n = 2162$). The alternative hypothesis was not supported, no mean

difference in mathematics scores between and among school type for gender was found. The interaction of school configuration and gender does not make a difference in student achievement.

Table 8

*Kansas State Mathematics Assessment SPSS Two-Way ANOVA Test of Significance and Descriptive Statistics Between and Among School Type*Gender for H5*

Variable	Gender	*M*	*SE*	*N*
Elementary	Female	82.848	.447	2161
	Male	82.320	.450	2213
Middle School	Female	81.358	.483	2090
	Male	81.042	.462	2162

$F = .053$, $df = 1, 8618$, $p = .817$.

RQ6. To what extent is the difference in sixth grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration affected by socio-economic status?

H6. The difference in sixth-grade student achievement, as measured by the Kansas State Mathematics Assessment, between students who attended an elementary versus middle school grade configuration is affected by socioeconomic status.

As shown in Table 9, the results of the two-way ANOVA analysis indicated there was not a significant interaction between school configuration and socio-economic status on the KMA scores, $F = .258$, $df = 1, 8618$, $p = .611$. The null hypothesis was not supported when Alpha was set at .05. Mathematics scores were not affected by the interaction of the two factors. A follow-up Tukey's Honestly Significant post hoc was

not conducted because the ANOVA was not significant. The school level elementary mean for mathematics score for lunch full pay students (M = 82.045; SE =.269; n = 3588) was higher than the middle school mean mathematics score for lunch full pay students (M = 80.895; SE =.270; n = 786). The school level elementary mean mathematics score for students on free or reduced pay lunch (M = 83.123; SE= .574; n = 3556) was higher than the middle school mean mathematics score for students at free or reduced pay lunch (M = 81.504; SE = .611; n = 696). The alternative hypothesis was not supported, no significant mean difference in mathematics scores between and among school type for socio-economic status was found. Mathematics scores are independent of socio-economic status. The interaction of school configuration and socio-economic status does not make a difference in student achievement.

Table 9

*Kansas State Mathematics SPSS Two-Way ANOVA Test of Significance and Descriptive Statistics Between and Among School Type*Socio-Economic Status for H6*

Variable	SES Status	*M*	*SE*	*N*
A Elementary	Full Pay	82.045	.269	3588
	Free/Reduced	83.123	.574	786
A Middle School	Full Pay	80.895	.270	3556
	Free/Reduced	81.504	.611	696

F = .258, df = 1, 8618, p = .611.

Summary

Provided in chapter four were the findings for each hypothesis. The chapter also included descriptive statistics for this research. One-factor and two-factor ANOVAs were used to test the hypotheses. The data related to school configuration, student

gender, and socio-economic status was presented. For each of these areas, descriptive statistics included mean score, standard deviation, and number of participants.

Results related to student achievement in reading regarding school configuration revealed that no level of significance was found in reading. However, mathematics scores proved not to be independent of school configuration. Sixth-grade students scored statistically higher on the Kansas Mathematics Assessment in an elementary school configuration versus sixth-grade students in a middle school configuration. However, although the difference was significant, the size of the difference was exceeding small, only a difference of 1.384 assessment values.

In chapter five, the interpretations of the findings and recommendations for future studies are included. An overview of the study including an overview of the problem, the purpose statement and research questions, the review of the methodology, and major findings are presented. Discussed in the conclusion were implications for action and recommendations for future research.

Chapter Five

Interpretation and Recommendations

The current study investigated the impact of school configuration on sixth-grade student achievement. Educators have tried to determine if sixth-grade students perform better in the elementary, middle or K-8 school setting. There does not seem to be a consensus among researchers as to what model is best. Research has been conflicting with some showing that sixth-grade achievement is impacted by configuration (Alspaugh, 1998; Howley, 2002; Rockoff & Lockwood, 2010b), and others that show no impact on sixth-grade student achievement by configuration (Weiss & Kipnes, 2006). The purpose of the study was to determine if there was a difference in academic achievement between the elementary and middle school setting. In chapter four, the results of the data analysis for this study were presented. Chapter five will synthesize the study by giving an overview of the problem, the purpose statement and research questions, the methodology, and the major findings related to this research. Chapter five also presents an explanation of the findings related to the literature. Concluding remarks follow, including implications for actions and recommendations for future research.

Study Summary

The study examined six research questions to determine the impact of grade configuration of sixth-grade students on academic achievement. Achievement scores were analyzed for sixth-grade students in the elementary setting and sixth-grade students in the middle school. Separate analysis were conducted on each group to determione the extent to which gender and socio-economic status impacted group performance on the KRA and KMA.

Overview of the Problem. NMSA (1999, 2001, and 2003) maintained that a middle school setting of grades 6-8 best meets the developmental needs of a preadolescent student. However, additional research suggested that sixth-grade students belong in elementary school because there is achievement loss that happens when students transition to middle school (Alspaugh, 1998; Hough, 2005). The controversy dates back to the 1900s when educators were trying to determine what educational environment would best meet the academic and social development needs of the preadolescent. Specifically, educators have tried to determine if sixth-grade students perform better in the elementary or middle school setting. There has not been a consensus reached as to what model is best for educating preadolescents (Weiss & Kipnes, 2006). Some research reports that there is a definite decrease in academic performance when students transfer to a middle school (Alspaugh, 1998; Howley, 2002; Rockoff & Lockwood, 2010b). However, research completed by Weiss and Kipnes (2006) showed there was little to no difference in academic achievement in reading and mathematics of a student based on the type of school attended. Based on the conflicting literature, it is important to determine which school configuration best supports 6th graders' academic needs.

Purpose Statement and Research Questions. The purpose of this study was to investigate the extent of the difference in academic achievement for sixth-grade students attending elementary school and sixth-grade students attending middle school as measured by the KRA and KMA. Additionally, the current study investigated the extent of the difference in academic achievement in reading and mathematics as influenced by school configuration as affected by gender and SES. The study included scores from the

KRA and KMA. Six research questions were developed to gain a deep understanding of the purposes of the current study.

Review of the Methodology. The study was a non-experimental research design using archival data. The data consisted of results from the KRA and KMA of sixth-grade students in District X for the school years 2008-2009, 2009-2010, 2010-2011, and 2011-2012. A one-way ANOVA was conducted to determine the extent of the main effects of the independent variable of grade configuration and the independent variable of student achievement as measured by the KRA and KMA, among sixth-grade students. There were four two-way ANOVA tests conducted to determine the extent of main effects of the independent variables of grade configuration, gender, and socioeconomic status on the dependent variable of student achievement, as measured by the Kansas Reading and Kansas Mathematics Assessment, among sixth-grade students.

Major Findings. There was a statistically significant difference between sixth-grade student achievement in mathematics between students who attended an elementary school versus a middle school grade configuration. However, the size of the difference was exceeding small, only a difference of 1.384 assessment values. The finding shows that sixth-grade students who attended elementary school scored higher on the Kansas State Mathematics Assessment than sixth-grade students who attended a middle school.

Additional evidence provided in the study did not support the five other hypotheses, which examined whether reading or mathematics scores were impacted by grade configuration, gender, and socio-economic status respectively. For hypothesis one, results showed that there was not a significant difference in reading scores between sixth-grade students who attended elementary school versus middle school. Hypotheses two

and five were also not supported because no statistical difference was found between gender and student achievement in either reading or mathematics. Additionally, hypotheses three and six were also not supported because no statistical difference was found between socio-economic status and student achievement in either reading or mathematics.

Findings Related to the Literature

Examined in this section are the study's findings as they relate to the literature regarding grade configuration and academic achievement. Educators have discussed the best grade configuration for preadolescents dating back to the early 1900s (Juvonen et al., 2004; Renchler, 2000). The relationship between grade configuration and academic achievement is not as clear-cut as popular views might suggest.

Some researchers have shown that achievement in reading and mathematics falls when sixth-grade students move to the middle school (Alspaugh, 1998; Alspaugh & Harding, 1995; Cook, MacCoun, Muschkin, & Vigdor, 2007; Franklin & Glasscock, 1996; Wren, 2003). The research from the current study appears to validate such a view in the area of mathematics. In the current study, there was a small but statistically significant difference between grade configuration and academic achievement in mathematics. However, other research showed that grade configuration was not statistically significant in reading and mathematics (Byrnes and Ruby, 2007; Mertens and Anfara, 2008; Mckenzie et al., 2006; Weiss and Kipnes, 2006). The results of the current study confirmed these findings in the area of reading. In the current study, there was no statistically significant finding between grade configuration and academic achievement in reading.

Research that was more specific focused on other factors impacted by grade configuration such as gender and socio-economic status. Existing literature indicated that boys and girls had a slightly higher score in mathematics in elementary school compared to boys and girls in middle school (Shores, Smith, & Jarell, 2009). The current study investigated the difference in sixth-grade student achievement affected by gender and found that there was not a significant difference of achievement scores between genders on the KRA or KMA.

Literature related to socio-economic status conveyed that there was a gap in achievement between high-SES and low-SES schools in both reading and mathematics (Black 2009; Frietas, 2014; Kruse, 1996; Meyer, 2014). Results of the studies showed a difference in achievement scores in language arts and mathematics among students who qualified as high-SES and students who were low-SES. Students from a high-SES background scored at a higher proficiency level than students who were identified as being from low-SES background. However, a comparative analysis study conducted by Scott (2006) of middle school students' performance on a standardized test called the Palmetto Achievement Challenge Test (PACT) for mathematics and language arts showed that there was not a significant difference in scores between the low-SES and high-SES students. The current study found similar results as Scott (2006). This study addressed the extent SES affected sixth-grade student achievement affected by socio-economic status, as measured by the KRA or KMA. There was no significant difference between groups.

Conclusions

Provided in this section are conclusions derived from the current study regarding the impact of grade configuration on sixth-grade student achievement. Implications for action and recommendations for further research are included. Concluding remarks complete this section.

Implications for Action. The findings from the current study can guide districts in making decisions about the placement of sixth-grade students. Based on the findings from this study, there is a minimal, yet statistically significant difference, in mathematics scores between students who attend sixth grade in an elementary school versus students who attend sixth grade in a middle school. Sixth-grade students at the elementary school performed better on the KMA than sixth-grade students in the middle school. As districts consider changing grade configurations for sixth-grade students, they may want to consider the following implication from the current study. Based on the findings sixth grade students performed higher in mathematics in the K-6 school setting school than in a middle school, district leaders should consider requiring an additional math course or extending the length of the course when offered in middle school.

Recommendations for Future Research. Findings from this study contributed to the existing literature regarding the impact of grade configuration on sixth-grade student achievement. Further, the current study examined whether factors such as gender and socio-economic status were affected by grade configuration of sixth-grade students. The following are recommendations for future research.

1. The first recommendation is to extend the study to include other districts of various sizes, including those in rural and urban settings. The current study used

a population from one of the largest suburban school districts in the state. Extending the study to districts of varying size and including district size as the variable to determine if there were differences would give a clearer picture as to if grade configuration affects student achievement.

2. The second recommendation is to include student data from a K-8 configuration. In a K-8 school, students do not transition during the middle years. It would be valuable information to know if sixth-grade students do better in a K-8 setting compared to sixth-grade students in an elementary or middle school setting.
3. The third recommendation is to replicate the current study but also include other variables such as school size, ethnicity, special education, and attendance. Including these factors would help educators to understand better the dynamics of school configuration and academic achievement.
4. A fourth recommendation is to investigate teacher certification and teacher attitudes. Teachers in District X moved from the elementary school to middle school when sixth grade was moved to the middle school. It is important to determine if their teacher certification impacted the results of the current study. Some teachers were K-6 and K-9 certified, while others were 6-12 content certified.
5. A final recommendation is to extend the study to survey sixth-grade teachers who moved from the elementary to the middle school to determine their satisfaction rate of having sixth-graders in the middle school compared to elementary school.

Concluding Remarks. One of the questions that face educators is how to effectively place students. The current study specifically looked at student achievement of sixth-grade students both in the elementary school setting and in the middle school setting. The only significant difference, though minimal, was in mathematics. Sixth-grade students in elementary school scored higher on the KMA than sixth-grade students in middle school. This data could help school districts make decisions about time spent teaching mathematics in the middle school. Many districts feel that the middle school setting best fits the developmental needs of a preadolescent sixth grader even though academically it does not seem to make a difference.

An implication from this study is that school districts should look at more than just academic achievement in determining the best placement of sixth-grade students. Both elementary and middle school settings have advantages and disadvantages. Educators claim that effective schools, whether elementary or middle, can provide an environment that promotes high levels of learning regardless of the configuration. Ron Renchler (2000) summarized it best when he stated that, "every grade configuration has its strengths and weaknesses…by building on the strengths and minimizing the weaknesses found within every grade configuration, school administrators can provide effective educational services regardless of the particular grade span being used" (p.4).

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Appendices

Appendix A: School District Internal Research Application Request

Research Application Request-Internal

INSTRUCTIONS:

Please provide the following information so that your project can be considered in relation to district criteria. Allow a minimum of two (2) weeks for completion of the review process.

PLEASE NOTE: Your final application should include submission of the following requirements:
(1) the on-line application,
(2) a copy of your Human Experimentation Committee project review and approval (if applicable), and
(3) a letter from your academic advisor/committee indicating that your research project has been reviewed and approved.

Requirements #2 and #3 can be scanned and sent through email to [redacted] inserted into the on-line application in word format, or sent in hard copy format to [redacted]

1. **Applicant(s) Name:** Rachelle Waters
2. **Position:** Assistant Principal
3. **School/Location:** Mission Trail Middle School
4. **Telephone:** 913-780-7260
5. **Email address:** rwatersmt@[redacted]
6. **Project Title:** The Impact of Sixth Grade Configuration and its Influences on Student Achievement.
7. **The proposed research is for:** Completion of Doctoral Dissertation for Baker University, Overland Park, KS.
8. **Anticipated Dates:**

   Beginning Date: September 2014 Ending Date: March 2016 Date Final Report Available: May 2016

9. **Participant Description:**

   Number of schools and names involved in the study: 34 elementary schools and 9 middle schools

   Number of teachers involved in the study: 0

   Number of students involved in the study: All sixth grade students in District X with reported scores on the Kansas Math and Reading State Assessment for the years, 2009, 2010, 2011, 2012.

10. Has the project been submitted to a Human Experimentation Committee? Respond Yes or No. No

11. If no, please explain why your project has not been submitted to a committee on human experimentation. I am waiting for final approval on chapters 1-3.

12. Either paste a copy of the letter from the Human Experimentation Committee regarding your study (Word format) below, email a scanned copy to [redacted] or send a hard copy to [redacted] at the Instructional Resource Center.

Attached is a cover letter with my advisor and research analyst signatures of approval.

13. Brief review of the literature:

Researchers disagree about the appropriate grade configuration of sixth graders. Some report that sixth graders belong in elementary school while others argue that sixth graders belong in middle school. There does not seem to be a definitive answer on the topic of grade level configuration. The framework for the literature review is developed around four main topics. These topics are: (a) history of middle school configuration; (b) research on grade configuration and achievement; (c) pre-adolescent Characteristics; and (d) effective elementary and middle schools.

14. Major research questions:

RQ 1To what extent is there a difference in achievement, as measured by the Kansas State Reading Assessment, between sixth grade students in an elementary K-6 setting and sixth grade students in a middle school setting?

RQ2: To what extent is there a difference in achievement, as measured by the Kansas State Math Assessment, between sixth grade students in an elementary K-6 setting and sixth grade students in a middle school setting?

15. Methodology:

Data from the state assessment in math and reading was collected from the state for the years 2009-2012. Names of sixth grade students will be numbered to protect confidentiality and downloaded by the district's assessment office. Next, the data will be uploaded into a spreadsheet and analyzed using IBM® SPSS® Statistics Faculty Pack 21 for Windows for analyses. A two sample t test will be conducted to address RQ# (or – to test H#) as written above in question 14. The two sample means will then be compared to see if there is a significant difference between scores of sixth grade students in the elementary setting and those in a middle school setting.

16. Method Summary:

Chapter three of my dissertation describes the methodology of the study. The study was a quantatative non-experimental research that used archived data from the 2009, 2010, 2011, and 2012 Kansas State Reading and Math Assessments. Chapter four explains the results of the statistical analysis. The results will determine if there was a statistical difference between grade configuration and student achievement.

17. Research Design/Data Analysis:

According to Joppe(2004), the research design "provides the reader with the structure of the study,detailing the methods selected to collect, record, and analyze data". The reader should be able to replicate my study after reading this section detailing the population, sampling procedures, instrumentation, data collection procedures, and limitations. For my dissertation,the study used a quantitative non-experimental research design using archival data. Participants were not randomly selected to see if a specific change in school grade configuration made a significant difference in the academic achievement in two settings, sixth grade students attending a K-6 elementary school, or sixth grade students attending a 6-8 middle school. The independent variables were the school settings of sixth grade students. The dependent variables were academic achievement on the Kansas State Reading and Math Assessments as well as gender and SES.

18. Perceived Benefits of the Project:

My research can add to the information out there on grade level configuration and academic achievement as well as contribute feedback to the district post reconfiguration.

19. Project Dissemination Plan:

After completing my study, I will present my dissertation to a committee consisting of my advisor, data analyst, Baker staff member and an external member. Upon completion of my defense in the spring of 2016, I will provide a copy to the Olathe School District.

20. Briefly describe how this research project supports Olathe District curriculum, a district goal, and/or individual school's improvement plan.

This research project explores the relationship between grade configuration of sixth grade students and student achievment. Four years ago the district moved sixthg grade students from the elementary K-8 setting to the middle school setting. Feedback from the study could be helpful to the district in supporting many of its goals. For example, a strategic goal is to improve student achievmentachievement for all students. In addition one of the district's core values includes: data driven continuous improvement and life-long learning. District decisions may be made based on my findings in regards to curriculum and program implementation.

21. Please provide a letter from your faculty advisor/committee indicating that the research project has been reviewed and the researcher has met all requirements necessary to conduct the proposed research. You can paste an electronic copy of the letter (Word format) into this section, email a scanned copy to matthewm@olatheschools.org, or send a hard copy to Mary Matthew at the Instructional Resource Center.

Please see attached letter from Dr. Verneda Edwards, advisor and professor at Baker University.

22. Any other comments regarding your application?

Thank you for your time to review my request and asisstting me with the completion of my doctoral dissertation.

Appendix B: School District Approval for Research

From: [redacted]
Sent: [redacted]ber 22, 2015 10:26 AM
To: Rachelle Waters
Cc: [redacted]
Subject: Data for dissertation

I have your data ready for your dissertation. I hope this is what you needed. No schools have been identified. All have generic markers and those are the same across all years. No students have been identified. All have generic markers and those are the same across all year. Good luck with your dissertation.

[redacted]
Director of Assessment and School Improvement

[redacted]

C: Instructional Review Board Application and Approval

BAKER UNIVERSITY

SCHOOL OF EDUCATION
GRADUATE DEPARTMENT

IRB PROTOCOL NUMBER _____ Date: _____
(IRB USE ONLY)

IRB REQUEST
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. Research Investigator(s) (Students must list faculty sponsor first)

Department(s) **School of Education Graduate Department**

Name	Signature	
1. Dr. Verneda Edwards	Verneda Edwards	Major Advisor
2. Mrs. Katie Hole		Research Analyst
3. Dr. Russ Kokoruda	_____	University Committee Member
4. Dr. Erin Dugan	_____	External Committee Member

Principal Investigator: Rachelle Waters
Phone: [redacted]
Email:
Mailing address: [redacted]

Faculty sponsor: Dr. Verneda Edwards
Phone: 913-344-1227
Email: Verneda.Edwards@bakeru.edu

Expected Category of Review: _X__Exempt ___ Expedited _ __Full

II: Protocol: (Type the title of your study)

The Impact of School Configuration on Sixth Grade Students and Student Achievement.

Summary

In a sentence or two, please describe the background and purpose of the research.

District X moved sixth-grade students to the middle school and ninth grade students to the high school in 2010 in order to address space issues and crowding as well as provide increased academic opportunities for students.

The purpose of the study is to investigate the relationship between grade configuration of sixth-grade students and academic achievement for sixth-grade students in District X from 2009 to 2012 in reading and mathematics as measured by the Kansas State Assessments.

Briefly describe each condition or manipulation to be included within the study.

There are no conditions or manipulations in this study.

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.

Archival data will be utilized from the Kansas Reading Assessment and Kansas Math Assessment from 2009, 2010, 2011, and 2012.

Will the subjects encounter the risk of psychological, social, physical or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

The subjects will not encounter any risk of psychological, social, physical or legal risk.

Will any stress to subjects be involved? If so, please describe.

No, there will not be any stress to subjects involved with the study.

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

No, the subjects will not be deceived or misled in any way.

Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.

I will not be requesting personal or sensitive information.

Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.

The subjects will not be presented with materials which might be considered to be offensive, threatening, or degrading.

Approximately how much time will be demanded of each subject?

Since I am using archival data, there will be no extra time.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

The subjects of the study will be all sixth-grade students in District X in 2009, 2010, 2011, and 2012, including a select group of sixth-grade students from Title One schools in the district.

What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

The use of archival data will not require active participation.

How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

The use of archival data will not require consent.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

No aspect of the data will be made a part of any permanent record that can be identified with the subject.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

Archival data will not require voluntary participants, which cannot be made part of any permanent record available to a supervisor, teacher, or employer.

What steps will be taken to insure the confidentiality of the data? Where will it be stored? How long will it be stored? What will be done with it after the study is completed?

The research analyst and I will keep all data confidential. Data will be stored on a computer file without names attached to the scores. The data will be stored for three years. The data will then be destroyed after the study is completed.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?
There are no risks involved in the study. If the study shows that there was a decrease in academic achievement when sixth-grade students moved to the middle school. District X could benefit from the learning opportunity for the need to enhance the education of middle school students.

Will any data from files or archival data be used? If so, please describe.
Yes, archival data from past Kansas State Reading and Math Assessments will be used from the years 2009, 2010, 2011, and 2012. I will be looking at grade six scores from 2009 and 2010 and comparing them to scores in 2011 and 2012 to determine if there was a difference in academic achievement as measured by the Kansas State Assessments. I will be comparing scores of sixth-grade students in the elementary school (2009, 2010), versus sixth-grade students in the middle school (2011, 2012).

BAKER UNIVERSITY
Own Confidence

Baker University Institutional Review Board

August 31, 2015

Dear Rachelle Waters and Dr. Edwards,

The Baker University IRB has reviewed your research project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at CTodden@BakerU.edu or 785.594.8440.

Sincerely,

Chris Todden EdD
Chair, Baker University IRB

Baker University IRB Committee
Verneda Edwards EdD
Sara Crump PhD
Erin Morris PhD
Scott Crenshaw

D: Kansas State Indicators for Reading at the Sixth Grade

Grade 6 Reading-Literature Indicators

6.R.F.1
The student uses the knowledge of sentence structure and conventions (e.g., question marks, exclamation points, commas, apostrophes, italics, graphics, hyphens) to read fluently at instructional or independent reading levels.

6.R.F.2
The student reads expressively with appropriate pace, phrasing, intonation and rhythm of speech.

6.R.F.3
The student uses a variety of word recognition and meaning-making strategies (e.g., practicing words in isolation, practicing reading words in text, applying good reader strategies) to read fluently.

6.R.F.4
The student self-selects appropriate text to develop reading fluency and adjusts reading rate to support purposes for reading and comprehension for different types of text: narrative, expository, persuasive, and technical.

6.R.V.1 (R.6.1.3.1)
▲ The student determines the meaning of words or phrases using context clues (e.g., definitions, restatements, examples, descriptions, comparison-contrast, and clue words) from sentences or paragraphs.

6.R.V.2
The student uses synonyms, antonyms, homographs, and homophones to determine the meaning of words.

6.R.V.3
The student understands and uses the references available in the classroom, school and public libraries (e.g., dictionaries, thesauri, atlases, encyclopedias and the internet) that are appropriate to the task.

6.R.V.4 (R.6.1.3.4)
▲ Student determines meaning of words through knowledge of word structure (e.g., ▲ root words, ▲ prefixes, and ▲ suffixes).

Required (But Not Limited To)Prefixes
ab, ad, up*, auto*, com, multi*, en, con,*
im, fore*, post, semi, super, sur,
trans, sub*

Required (But Not Limited To)Suffixes
Ant, ent, ous*,age*, ize/yze*, some*,al*, ate
ible, able, ary, ly,ure, ire,ice, tion
*(*state assessed prefixes and suffixes)*

Greek roots: phon, micro, zo, therm, cycle, aster/astr, arch

Latin roots: port, sci, terra, fac/fact

6.R.V.5 (R.6.1.3.5)
▲ The student determines the meaning of figurative language including ▲ similes, ▲ metaphors, ▲ analogies, idioms, hyperbole, onomatopoeia, and personification.

6.R.V.6
The student identifies word connotations and word denotations.

6.R.C.1
The student identifies characteristics of narrative, expository, technical and persuasive texts.

6.R.C.2 (R.6.1.4.2)
▲ The student understands the purpose of text features (e.g., title, graphs/charts and maps, table of contents, pictures/illustrations, boldface type, italics, glossary, index, headings, subheadings, topic and summary sentences, captions, sidebars, underline, numbered or bulleted lists) and uses such features to locate information in and to gain meaning from appropriate-level texts.

6.R.C.3
The student uses prior knowledge, content, text type and text features to make, revise, and confirm predictions.

6.R.C.4
The student generates and responds logically to literal, inferential, and critical thinking questions before, during, and after reading the text.

6.R.C.5 (R.6.1.4.5)
▲ The student uses information from the text to make inferences and draw conclusions.

6.R.C.6 (R.6.1.4.6)
▲ The student analyzes text structure (e.g. sequence, problem-solution, comparison-contrast, description, cause-effect) to help support comprehension of text.

6.R.C.7 (R.6.1.4.7)
▲ The student compares and contrasts varying aspects (e.g., topics, characters' traits and motives, themes, problem-solution, cause-effect relationships, ideas and concepts, procedures, viewpoints) in one or more appropriate-level texts.

6.R.C.8 (R.6.1.4.8)
▲ The student explains cause and effect relationships in appropriate-level narrative, expository, persuasive, and technical text.

6.R.C.9 (R.6.1.4.9)
▲ The student uses paraphrasing and organizational skills to summarize information (e.g., stated main ideas, main events, important details) from narrative, expository, technical, and persuasive text in logical order.

6.R.C.10 (R.6.1.4.10)
▲ The student identifies the topic, main idea(s), supporting details, and theme(s) in text across the content areas and from a variety of sources in appropriate-level text.

6.R.C.11 (R.6.1.4.11)
▲ The student identifies and describes the author's purpose and basic techniques the author uses to achieve that purpose.

6.R.C.12
The student establishes a purpose for reading (e.g., to be informed, to follow directions, to be entertained, and to solve problems).

6.R.C.13
The student follows directions explained in technical text.

6.R.C.14 (R.6.1.4.14)
▲ The student identifies or describes evidence that supports conclusions in persuasive texts.

6.R.C.15 (R.6.1.4.15)
▲ The student distinguishes between fact and opinion, and recognizes propaganda (e.g., advertising, media), bias, and stereotypes in various types of appropriate-level texts.
KS assessment: will not include stereotypes

6.L.C.1 (R.6.2.1.1)
▲ The student describes different aspects of major and minor characters (e.g., their physical traits, personality traits, feelings actions, motives) and explains how those aspects influence characters' interactions with other characters and elements of the plot, including resolution of the major conflict

6.L.C.2 (R.6.2.1.2)
▲ The student identifies and describes the setting (e.g. environment, time of day or year, historical period, situation, and place) and explains the importance of the setting to the story or literary text.

6.L.C.3 (R.6.2.1.3)
▲ The student identifies narrative elements (characters, setting, problem, plot, solution) & major and minor events related to the conflict in a story (e.g., problem or conflict, climax, resolution) and explains how one event gives rise to another.
KS Assessment focuses on bold text in this indicator

6.L.C.4
The student identifies aspects of theme (e.g., moral, lesson, meaning, message, author's ideas about the subject) and supports with implied and/or explicit information from the text.

6.L.C.5
The student identifies the use of literary devices (e.g., foreshadowing and flashback).

Revised 8/05

▲ = Kansas Assessment

E: Kansas State Indicators for Mathematics at the Sixth Grade

6th Grade Mathematics

Data Access Indicator #	KS Indicators	Description	Number of Items on Test
1	**M.6.1.1.K2** 6M.NC.NS.2	The student compares and orders: a. integers. b. fractions greater than or equal to zero. c. decimals greater than or equal to zero through thousandths place.	4
2	**M.6.1.1.K4** **No Calc** 6M.NC.NS.4	The student knows and explains numerical relationships between percents, decimals, and fractions between 0 and 1.	6
3	**M.6.1.3.A2** **No Calc** 6M.NC.E.5	The student estimates to check whether or not the result of a real-world problem using rational numbers and/or the irrational number pi is reasonable and makes predictions based on the information.	6
4	**M.6.1.4.A1** 6M.NC.C.7	The student generates and/or solves one- and two-step real-world problems with rational numbers using these computational procedures: addition, subtraction, multiplication, and division of decimals through hundredths place.	6
5	**M.6.1.4.K2** **No Calc** 6M.NC.C.2	The student performs and explains these computational procedures: a. divides whole numbers through a two-digit divisor and a four-digit dividend and expresses the remainder as a whole number, fraction, or decimal. b. adds, subtracts, and multiplies fractions (including mixed numbers) expressing answers in simplest form.	8
6	**M.6.2.1.K4** 6M.A.P.4	The student states the rule to find the next number of a pattern with one operational change (addition, subtraction, multiplication, and division) to move between consecutive terms.	4
7	**M.6.2.2.A1** 6M.A.V.7	The student represents real-world problems using variables and symbols to write and/or solve one-step equations (addition, subtraction, multiplication, and division).	8
8	**M.6.3.1.K7** 6M.G.GFP.7	The student classifies a. angles as right, obtuse, acute, or straight. b. triangles as right, obtuse, acute, scalene, isosceles, or equilateral.	6
9	**M.6.3.2.A1** 6M.G.ME.9	The student solves real-world problems by applying these measurement formulas: a. perimeter of polygons using the same unit of measurement. b. area of squares, rectangles, and triangles using the same unit of measurement.	8
10	**M.6.3.2.K3** 6M.G.ME.3	The student converts within the metric system using the prefixes: kilo, hecto, deka, deci, centi, and milli.	6
11	**M.6.3.3.K1** 6M.G.TG.1	The student identifies, describes, and performs one or two transformations (reflection, rotation, translation) on a two-dimensional figure.	4
12	**M.6.3.4.K3** 6M.G.AP.3	The student uses all four quadrants of the coordinate plane to a. Identify the ordered pairs of integer values on a given graph. b. plot the ordered pairs of integer values.	6
13	**M.6.4.1.K2** 6M.D.P.2	The student lists all possible outcomes of an experiment or simulation with a compound event composed of two independent events in a clear and organized way.	6

14	**M.6.4.1.K4** 6M.D.P.4	The student represents the probability of a simple event in an experiment or simulation using fractions and decimals.	8