The Effect of Grade Configuration on Sixth Grade Student Achievement in Missouri

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Abstract

The purpose of this study was to determine the extent of the differences between 6th grade student achievement in reading and mathematics by the grade configuration of the school in which students were enrolled. An additional purpose was to examine the extent to which 6th grade student academic achievement was affected by ethnicity, socioeconomic, and special education classifications of the schools that included 6th grade students in the state of Missouri, using the Missouri Assessment Program (MAP) communication arts and mathematics data during the 2012-2013 school year.

The results of this study showed no significant differences in academic achievement in communication arts or mathematics among grade configurations. However, the results of this study did indicate a marginally statistically significant interaction effect of ethnicity and grade configuration on academic achievement, as measured by the MAP communication arts assessment, and a statistically significant interaction effect of ethnicity classification and grade configuration on academic achievement, as measured by the MAP mathematics assessment. Additionally, SES did have a statistically significant main effect on academic achievement of 6th grade students in Missouri public schools.

The results of this study add to the current research on grade configuration. The results of this study suggest that academic achievement does not differ by grade configuration. Therefore, grouping 6th grade students into a particular grade configuration should not be a factor when districts are determining how to ensure higher academic achievement. Results of this study showed that ethnicity and grade configuration had an effect on academic achievement. As a result, administrators need to

consider the percentage of ethnicity in each grade configuration to ensure high academic achievement. Additionally, analyses showed that SES did have a significant main effect on student achievement, which suggest that administrators need to analyze the specific needs of the SES groups that are in their buildings and implement best practices to meet the needs of these students. Additionally, administrators would want to assign students to different buildings to ensure a more balance percentage of low SES students are in all buildings in the district.

Additional research is needed due to the mixed results of the current study. Since there were no significant differences in academic achievement on the MAP communication arts and mathematics assessments among grade configurations, exploring other variables could provide valuable insight. Therefore, it is recommended to conduct a study to examine the effects of grade configuration on attendance, grade point average, and behavior referrals.

Dedication

This dissertation is dedicated to my daughter. I want to thank her for inspiring me to finish this process.

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I am grateful to the faculty at Baker University for their help in the doctoral process. I would not have succeeded in the doctoral process without the support of my major advisor, Dr. Susan Rogers. She has encouraged me and provided many thoughtful critiques throughout this process. I would also like to thank the other members of my committee, Katie Hole, research analyst, Dr. Harold Frye, and Dr. Jim Robins for providing guidance and thoughtful feedback.

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Table of Contents

List of Tables

Chapter One

Introduction

Student achievement in middle schools is a concern for educational organizations. Adolescents from ages 10 to15 are undergoing a crucial social and physical development (McFarland, 2007). In the 1960s, the middle school was developed to meet the needs of adolescents. However, standardized test results show that students in these middle schools are not making academic gains as projected. The middle-level foundation that sets the course for students to be successful in secondary schools and beyond must be capitalized upon. Creating a learning environment that will produce the highest academic achievement for 6th grade students is an important goal that needs to be met so that every district in Missouri will meet adequate yearly progress (AYP). One method to create higher academic achievement would be to create a grade configuration that promotes academic achievement for all 6th grade students attending public schools in Missouri, where public schools have various grade configurations for 6th grade students.

Some research has shown that the middle school concept is not the answer to declining academic achievement and that restructuring is needed. In 1997, the Northwest Regional Educational Laboratory published *Grade Configuration: Who Goes Where*? in response to concerns regarding the declining academic achievement of students in a middle school setting (as cited in Paglin & Fager, 1997). One purpose of the report was to provide awareness that grade span configuration is an issue that needs to be addressed (Paglin & Fager, 1997). Paglin and Fager (1997) provided readers with the history and trends of grade configuration, tips and questions to be considered when configuring grades, and examples of the types of grade configurations that are found in the northwest

region of the United States. In 2005, the Thomas B. Fordham Institute published *Mayhem in the Middle: How Middle Schools Have Failed America—and How to Make Them Work,* which "advises the reader to abandon the middle school theory" (as cited in Yecke, 2005, p. 5). The report related the history of middle schools, the theory behind middle schools, and community transitions to K-8 models of education. This report also highlighted three cities (Milwaukee, Philadelphia, and Baltimore) that used the K-8 model of education. Milwaukee, Philadelphia, and Baltimore schools had higher academic achievement scores when compared with other schools that did not use the K-8 model.

More recently, Black (2013) wrote an article supporting the concept of transitioning to the K-8 model of education. This literature review suggested that students attending K-8 schools have advantages over students attending middle schools. According to Black (2013), 8th grade students in the New Orleans that attended K-8 schools were twice as likely to pass the state exam when compared to the students attending middle schools. The Miami-Dade District began to transition to the K-8 model in 1998. After one year of implementing the K-8 model, sixth grade students had better academic performance, fewer absences, and higher parent satisfaction (Black, 2013).

Districts have reconfigured middle schools into K-8 schools as a result of these publications and concerns about academic achievement. According to Yecke (2006), K-8 schools experience few behavior problems and high academic achievement. When transitioning to the K-8 model, there are strategies for administrators to consider. Yecke (2006) argued that parents must participate in all decisions, from curriculum to behavior expectations. Yecke (2006) suggested that these decisions include adding higher grades

to the elementary, one grade each year; attaining balance at all grade levels so that there are not too many older students or younger students in the building; making the transition year 6th grade; adhering to strict transfer policy; making modifications to the building; establishing high expectations for academics and behavior; establishing whether teachers will be departmentalized or self-contained; allowing students access to advanced courses; and providing extracurricular activities. Proponents of K-8 schools believe that being in the same building for nine years allows faculty and staff to know and counsel students more effectively. Communication is timely between all parties. Parents are more involved because they know the faculty and staff. Building transitions are limited, peer relations are more positive, and schools are safer (Look, 2001). The debate over where to place adolescents, whether in K-6, K-8, middle schools, or junior high schools, is ongoing.

Background

School districts in the state of Missouri decide which grade configuration best fits the needs of the district. Neither the Missouri Department of Elementary and Secondary Education (MODESE) nor the Missouri legislature dictate or regulate grade configuration. The most popular grade configurations in Missouri are elementary and middle schools (K-6, K-8, 4-6, 5-8, and 6-8). There are 1,235 elementary and 287 middle schools, compared to only 55 junior high schools (MODESE, 2011a). Rather than meeting student needs or promoting academic achievement, grade configuration is often determined by the size of the district and its location (DeYoung, Howley, & Theobald, 1995).

The debate about grade configuration for adolescents has been ongoing since the early 19th century (Manning, 2000). Districts have many variables to consider when determining the grade configuration for adolescents. Districts configure the middle grades according to available facilities, financial responsibilities, projected enrollments, transportation expenditures, and best practices for student learning (Howley, 2002). Early in the 20th century, the intent for grade configuration for adolescents was to reduce the dropout rate, make the curriculum more rigorous, and prepare students for future jobs (National Forum to Accelerate Middle-Grades Reform [NFAMGR], 2008). Junior high schools thrived until the 1960s and 1970s. During that time, students did not perform adequately on assessments (NFAMGR, 2008). The National Middle School Association and other organizations encouraged middle schools serving 6th through 8th grades to emerge during the 1970s and 1980s. Researchers, administrators, and district leaders hoped the 6-8 grade configuration would meet the developmental needs of adolescents better than a K-8 grade configuration. These middle schools were designed to create learning environments in which teachers knew a group of students during the entire middle school experience. These nurturing learning environments would have a core curriculum, guidance counselors, exploratory classes, and vocational and home economics. Sports would not be of a competitive nature (Manning, 2000).

In the late 1980s and early 1990s, middle schools came under scrutiny by the National Association of Secondary School Principals, the Carnegie Council on Adolescent Development, and the National Middle School Association (NFAMGR, 2008). These organizations developed reports about the characteristics of effective middle schools. Despite all the recommendations, middle school students had not made

academic progress as expected. Results from the Nations Report Card for Mathematics 2011 showed that 8th grade student scores in large districts were lower than the scores for the nation (National Center for Education Statistics [NCES], 2011a). When compared to the 2009 report card results, math scores of 8th grade students from large districts did not significantly change for 12 of the 21 districts that participated (NCES, 2011a). In 4th grade, 40% of the students taking the mathematics test scored at or above the *Proficient* level (NCES, 2011a). In the 8th grade, 35% of the students taking the mathematics test scored at or above the *Proficient* level (NCES, 2011a). This indicates that during the middle school years there was a decline in mathematic skills learned. In the 8th grade, reading scores were higher in one district among the 18 districts that participated in 2009 and 2011. This report indicated reading scores had not significantly changed since 2009 for most school districts in the nation (NCES, 2011b). In 4th grade, 34% of the students who took the reading test scored at or above the *Proficient* level (NCES 2011a). The 8th grade students did not show any gains in the percentage that scored at or above the *Proficient* level in 2011 (NCES, 2011a). This indicates that during the transition to the middle grades there appears to be no improvement in reading skills.

During the 2010-2011 school year, there were 609 public high schools, 55 junior high schools, 287 middle schools, and 1,235 elementary schools in the state of Missouri (MODESE, 2011a). The fall enrollment for the 2010-2011 school year for elementary schools in grades K-8 was 614,399 students (MODESE, 2011f). For grades 9-12, the enrollment was 275,536 students. The total enrollment was 889,935 students (MODESE, 2011f). In 2011-2012 school year, there were 609 public high schools, 55 junior high schools, 285 middle schools, and 1,236 elementary schools in the state of Missouri

(MODESE, 2012a). For the 2011-2012 school year, enrollment for grades K-8 in Missouri was 615,298, and the enrollment for grades 9-12 was 271,098 (MODESE, 2012a). The total enrollment for Missouri Public schools grades K-12 for 2011-2012 was 886,396 (MODESE, 2012a). In 2012-2013, there were 613 public high schools, 55 junior high schools, 286 middle schools, and 1,236 elementary schools in the state of Missouri (MODESE, 2014a). The fall enrollment for the 2012-2013 school year for elementary schools in grades K-8 was 618,034 students (MODESE, 2014). For grades 9-12, the enrollment was 270,213 students. The total enrollment was 888,247 for Missouri Public schools grades K-12 for the 2012-2013 school year (MODESE, 2014a). The total enrollment from 2010-2011 to 2011-2012 decreased by 3,539 students. From 2011-2012 to 2012-2013, total enrollment for Missouri increased 1,851 students. Enrollment in Kindergarten through 8th grade for the 2010-2011 to 2011-2012 school years increased 899 students and for grades 9-12 decreased by 4,438 students. The enrollment in Kindergarten through 8th grade for the 2011-2012 to 2012-2013 increased 2,736 students and for grades 9-12 decreased 885 students. There was a slight increase in the number of high schools from 2012 to 2013. Elementary, middle, and junior high schools in Missouri have been consistently the same from 2010-2011 to 2012-2013.

The average per-pupil expenditure for the school year 2010-2011 was $9,619, and the average per-pupil expenditure for 2011-2012 was $9,487 (MODESE, 2012b). During the 2012-2013 school year, the average per-pupil expenditure increased to $9,840 (MODESE, 2014b). The average per-pupil expenditure for the school years 2010-2011 to 2011-2012 decreased by $132 and from 2011-2012 to 2012-2013 increased $353.

Few of the available studies evaluated the effect of grade configuration on academic achievement of 6th grade students. The studies reviewed were inconclusive in reaching a consensus about what caused the academic achievement to change when a different grade configuration was implemented. Researchers could not agree if the change in academic achievement was due to grade configuration, location, SES, size, transitions, or other variables.

Statement of the Problem

While there have been studies about grade configuration and 6th grade academic achievement (Bell, 2010; Davis, 2008; Paglin & Fager, 1997), more research is needed to gain a better understanding about the differences in student achievement among grade configurations. According to Paglin and Fager (1997), most of the research on grade configuration is about classroom practices and effects on student achievement. According to the NAFAMGR (2008), more evidence is needed to document the academic outcomes of adolescent grade configurations. Paglin and Fager (1997) argue that most studies about grade configuration do not examine the cause-effect relationship between grade configuration and academic achievement, while controlling for other factors such as school size, SES, and special education classification. DeJong and Craig (2002) assert that the research on which grade configuration has the greatest impact on student achievement is evasive. According to DeJong and Craig (2002), the decision is sometimes driven by academic arguments or demographics and a current inventory of facilities. Throughout history, academic achievement for adolescents has been disappointing (NFAMGR, 2008). Since the passage of the No Child Left Behind Act of 2001 (NCLB) (U.S. Department of Education, 2003), increased accountability has been

placed upon states, schools, and districts. Missouri has an accountability plan for districts, and accreditation is linked to it. AYP must be met, or sanctions will occur against the district (MODESE, 2009). With the passage of the NCLB, district leaders have researched best practices to increase student achievement at all levels (Brown, 2011; Coladarci & Hancock, 2002; Cook, MacCoun, Muschkin, & Vigdor, 2007; DeJong & Craig, 2002). The Annual Performance Report from MODESE shows that in mathematics from 2010-2011 to 2012-2013 approximately 57% percent of students in Missouri have scored at the *Proficient* or *Advanced* levels. In communication arts for the same years, 50% of Missouri 6th grade students scored in the *Proficient* or *Advanced* levels. Missouri 6th grade students scoring in the *Proficient* and *Advanced* levels in communication arts indicate that scores increased 0.7% percent and in mathematics, scores increased 0.5%. The increase in scores for both communication arts and mathematics was minimal.

Purpose of the Study

The purpose of this study was to determine the extent of the differences between 6th grade student achievement in reading and mathematics by the grade configuration of the school in which students were enrolled. This study was conducted to also examine how academic achievement differed among the ethnicity, SES, and special education classifications of the schools that include 6th grade students in the state of Missouri, using the Missouri Assessment Program (MAP) communication arts and mathematics data from the 2012-2013 school year.

Significance of the Study

The state of Missouri is required to have all schools reach this standard level of AYP, as mandated by NCLB (MODESE, 2009). Schools and districts are challenged to have all students performing at a *Proficient* level. Determining the grade configuration in which 6th grade students are most successful is a priority for school districts. The current study expands on previous research to help determine the best practices for grade configuration. The current study was conducted to examine the effect of other school variables on grade configuration such as ethnicity, SES, and special education classifications. This study adds to the current literature about best practices for academic achievement and grade configuration. This study could provide evidence for future leaders on which grade configuration for 6th grade students will produce the highest levels of academic achievement in Missouri.

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 used in this study provide the maximum amount of complete and consistent data sets for analysis. The following delimitations were set for this study.

1. Missouri public schools were limited to those that enrolled 6th grade students.
2. The sample was from one state and therefore the results may not be easily generalized to all states.
3. The data used for this study were gathered from the 2012-2013 MAP test results in communication arts and mathematics reported to MODESE by each school district for 6th grade students.

4. Special education and charter schools were excluded from this study.

Assumptions

According to Lunenburg and Irby (2008), "assumptions are premises and propositions that are accepted as operational for purposes of the research" (p. 135). The following assumptions were made during this study.

1. The data retrieved from MODESE were accurate.
2. Teachers who administered the MAP assessment to students followed all test administration protocols.
3. Best effort was given on the MAP assessments by all students.
4. The percentages for ethnicity, SES, and special education classifications were assumed approximately the same across the grades in each school.

Research Questions

The following research questions were used to guide this study to determine the extent of differences in MAP achievement scores for 6th grade students.

RQ1. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations?

RQ2. To what extent do the differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

RQ3. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations?

RQ4. To what extent do the differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

Definition of Terms

The following terms were used throughout this study. Their definitions are presented to help the reader understand the content in this study.

Student achievement. Student achievement is defined as the percentage of students in a school at the *Proficient* and *Advanced* levels on the 6th grade MAP communication arts or mathematics assessments (MODESE, 2008).

Adequate yearly progress (AYP). AYP is the measure by which schools, districts, and states are held accountable for student performance under Title I of the No Child Left Behind Act of 2001 (U.S. Department of Education, 2003). Missouri has a timeline for ensuring that all students will meet or exceed the state's *Proficient* level of academic achievement in communication arts and mathematics no later than the 2013-2014 school year (MODESE, 2008, 2011c).

Socioeconomic status (SES). The American Psychological Association (APA) (2014) defines SES as the social standing of an individual or group. It is usually measured by the education, income, and occupation of the individual or group in question (APA, 2014). For the purpose of this study, low SES refers to the student population that qualifies for the free or reduced lunch program (U.S. Department of Agriculture, Food and Nutrition Service, 2014). Shown in Appendix A is the annual income level in relation to the household size for students who may qualify for free and reduced lunch within the 48 contiguous states, District of Columbia, Guam, and territories. If the

parent/guardian's annual income is less than the shown number for the household size, then the family qualifies for the service.

Middle school. A middle school is "a school offering a low grade of 4 to 7 and a high grade of 9 or lower" (U.S. Department of Education, 2008, p. 3).

Primary school. A primary school, also known as an elementary school, is any "school offering a low grade of prekindergarten to 3 and a high grade of 8 or lower" (U.S. Department of Education, 2008, p. 2).

Overview of the Methodology

The purpose of this quantitative study was to examine 2012-2013 data gathered from the MODESE website that demonstrated the academic achievement of 6th grade students. The population for this study was all 6th grade students attending Missouri public schools. The dependent variables were academic achievement as measured by scores on the MAP communication arts and mathematics assessments. The independent variables were grade configuration, ethnicity, SES, and special education classifications of the schools. Multivariate analyses of variance (MANOVAs) were used to determine the extent of the differences in 6th grade academic achievement among grade configurations. Additionally, the MANOVAs were used to determine whether academic achievement was affected by ethnicity, SES, and special education classifications in combination with grade configuration.

Organization of the Study

Chapter one included the introduction, background, statement of the problem, significance of the study, purpose statement, delimitations, assumptions, research questions, definitions of terms, and an overview of the methodology. Chapter two begins

with the characteristics of young adolescents, schools in early America, Missouri schools, and contains an in-depth review of the history of grade span configuration, trends and characteristics of junior high and middle school, and the K-8 model. The methodology of the study including the population and sample, sampling procedures, instrumentation, validity and reliability, data collection procedures, data analysis, and limitations are contained in chapter three. The results of the data analyses are discussed in chapter four. Chapter five includes the study summary, overview of the problem, purpose statement and research questions, review of the methodology, major findings related to the literature, conclusions, implications for action, recommendations for future research, and concluding remarks.

Chapter Two

Review of the Literature

This review of literature supports the purpose of this study to determine differences in academic achievement by grade configurations of 6th grade students. It also supports the purpose of this study to determine the differences that vary as a function of ethnicity, SES, or special education classifications of the schools. Academic achievements of middle school students have plagued researchers for decades (Alspaugh & Harting, 1995; Coulson, 2014; Seidman, Allen, Aber, Mitchell, & Feinman, 1994; Simmons, Black, & Zhou, 1991). With a variety of views in relation to increasing academic achievement for middle school students (Alspaugh, 1998; George & Alexander, 2003; National Middle Level Association, 2010), the K-8 grade configuration has reemerged as a theme for schools, districts, and researchers striving for higher academic performance of middle school students (Simmons, Burgeson, Carlton, & Blyth, 1987; Yecke, 2005). There is research and recommendations for grade configuration, but there are still contradictory findings in much of the research (Cook et al., 2007; NFAMGR, 2008). In this review of literature, the following areas are examined: the characteristics of young adolescents, schools in early America and Missouri, and the history of grade configuration, junior high, middle school, and K-8 schools.

Characteristics of Young Adolescents

Students entering into the middle level grades are typically between the ages of 10 and 15. During this young adolescent stage, profound and rapid cognitive, social, emotional, and physical changes take place (National Middle Level Association, 2010). Cognitive growth occurs gradually and sporadically during this time, and most adolescent

children still need concrete, experiential learning in order to achieve (National Middle Level Association, 2010). George and Alexander (2003) suggest that there are three stages to adolescence: early, middle, and late adolescence. Early adolescence, from 10 to 15 years, is usually the time when children are in middle school. According to George and Alexander (2003), early adolescence is a distinct developmental and pivotal stage during which adolescents are learning about themselves and their world, trying to gain more control over who they spend time with, and rapidly changing physically, emotionally, and cognitively. According to Wavering (1995), adolescents in the middle school years are in transition; they are unique and need unique programs to fit their needs.

According to Elkind (1998), the family nucleus and the economy help to shape societal views on childhood and adolescence, and this has a correlation to child-rearing and educational practices. At one time, the family consisted of two parents, one working and one staying home to rear the children. Usually the father was the parent who worked outside of the home and the mother stayed home. During this time, families that were different were considered inferior and often immoral. Elkind (1998) suggested that this era consisted of at least six premises: romantic love, maternal love, domesticity, togetherness, intuitive knowledge about rearing children, and the innocence of children. As a result, there was an increase in early childhood research some of which was conducted by Froebel, Montessori, Freud, Steiner, Piaget, Vygotsky, and Erikson (as cited in Elkind, 1998). Before World War II, parents rejected the idea of kindergarten and early childhood education. Parents tended to believe that young children should be taught at home and that early childhood was unique from other stages of growth (Elkind,

1998). Adolescents were viewed as smaller, weaker adults. They were to help on the farm and then as labor in the early factories. Education was not considered necessary for adolescents.

In Elkind's modern worldview, people believed in freedom for the White male, scientific discovery, and technological development. The family included the traditional model of two parents, one working and one staying at home, but also included a variety of other types, such as single-parent families, unmarried relationships, adoptive families, and remarried families. All these types of families were thought to give children what they needed to be successful. The most important aspect of the modern worldview was the emotional support of the family (Elkind, 1998). Due to the passing of child labor laws, adolescents were not needed in the workforce. They were expected to learn to read, write, and know basic skills in science and technology. They needed to be conditioned to work in the factories and schools were expected to do this (Elkind, 1998). During this time, schools included bells to signal that it was time to change classes, lunch and break-time, and beginning and ending of the day.

Major premises of the postmodern family are consensual love, shared parenting, urbanity, autonomy, the need to learn techniques to raise children, and viewing the child as competent and ready to take on challenges. Early childhood programs are widespread and have grown out of necessity of both parents often working. The emphasis is on differences in the way children develop through each of the developmental stages. There is an emphasis on including all students and multi-cultural curriculum with early childhood programs (Elkind, 1998). Elkind (1998) asserted that adolescents were again being denied a place where they have time, support, and guidance, to gain the knowledge

necessary to develop their inner self. In education, there is a strong move towards middle schools at this time. These schools designed to allow students to investigate their interests in careers, intramural sports, and a curriculum designed to meet their unique needs.

According to Elkind (1984), teenagers are supposed to take on life challenges as if they were middle-aged. This is detrimental to them in two important ways. One way is that they are unable to form a personal identity. Without this personal identity, they will not be ready to face stresses of daily life (Elkind, 1984). The identity of self is achieved either by differentiation and higher-order integration or by substitution. Creating an identity by differentiation and higher-order integration occurs when an adolescent is exposed to various social elements where there feelings, thoughts, and beliefs are similar and different from others. These adolescents are able to delay instant gratification, obtain long-range goals, and are directed from within (Elkind, 1984). Adolescents who use substitution are at a disadvantage because they are easily swayed and do not have a clear sense of self (Elkind, 1984). Elkind (1984) suggested that in society adolescents are exposed to more stressors that ever before. These stressors include that they have many more freedoms, that they are experiencing losses of security and expectations, and the frustration of school life itself. Adolescents between the ages of 10 and15 face many challenges that may affect their achievement. They are forced to make decisions that they may not be ready for developmentally. Adolescents have many stressors personally, socially, and educationally.

Physical characteristics are very important to young adolescents. According to Wavering (1995), physical characteristics and development have far-reaching

implications for the educational process. Some body parts grow faster than others do, and some girls develop body contours sooner than others do, which may cause self-esteem issues. Boys typically develop later than girls develop. According to Wavering (1995), comparisons within groups of girls or boys are a major preoccupation of members of the groups. These differences in physical maturity tend to leave adolescents with feelings of inadequacy (Wavering, 1995).

Peer acceptance is a major concern to the adolescent; everything the adolescent does needs to conform to the norms of peers (Hansen & Hearn, 1971). The adolescent at the middle school level learns social patterns from same-sex friendships at this time (Wavering, 1995). Friendships among adolescent girls or boys are often a result of similarity to self. Acceptance into social organizations is important in middle school. Wavering (1995) suggested that educators who do not recognize the social needs of adolescents are suppressing growth opportunities.

According to Piaget (1964), the cognitive development of adolescents ranges from concrete operations to formal operations. Many students remain in the concrete operations stage of cognitive development throughout the entire middle school years (Piaget, 1964). Educators must be able to assess the cognitive development of each student on this continuum and develop appropriate activities for each of them. Students who are in the concrete operational stage need activities and projects with an emphasis on "what if" scenarios using real people, places, and objects with which they have had previous experiences. Students who are in the formal operations stage can reason abstractly. These students are able to deal with problems about situations with which they have not had past experiences. Constructivist research suggests that middle school

students can play a major role in their own cognitive development and not wait passively to be able to think and act abstractly (George & Alexander, 2003). Teachers need to teach students to think about their thinking. Students need to know the difference between poor versus sound thinking. Students can teach and learn about situations together with the teacher as facilitator. As the facilitator, teachers can pose or set up problems and students can work together to find the best answer. George and Alexander (2003) assert that knowledge and cognitive development are the result of interactions with information, instruction, and students.

Schools in Early America

Before 1800, Gruhn and Douglas (1956) stated that education focused on the fundamentals—reading, writing, and arithmetic—and was provided through an informal system. These schools were referred to as dame schools (Gruhn & Douglas, 1956). There was no organized curriculum, and students did not attend on a regular basis. According to Gruhn and Douglas (1956), little classification was made according to age, ability, or achievement. The monitorial plan of organization of the elementary school became prominent between 1810 and 1830. In these schools, large groups of students were monitored by other students who were more capable and who had been taught by the teacher (Gruhn & Douglas, 1956). By 1860, the students were grouped according to age, and then a graded course of instruction was developed. By this time, the elementary school consisted of nine years in New England, seven years in the South, and eight years in other areas.

There were many different types of schools in the United States, depending upon where the population originated. In the southern states, families employed private tutors.

Some neighbors would join together and one of them would find a teacher who stayed with the families within the group and collected money from each family. Some churches formed parochial schools, which the pastor controlled. For the purpose of this study, an historical background of Missouri schools is presented.

Missouri schools. In Missouri during the 1800s, there was no organized school system (Phillips, 1911). In 1820, the Constitution of Missouri made provisions for townships to establish schools. The Act of 1825 established a school district within each township that would be governed by the county court. The Act of 1833 (as cited in Phillips, 1911) established a system of common and primary schools. The Act of 1853 (as cited in Phillips, 1911) was important because it was an attempt to revise the entire school system. This act was intended to establish uniformity across the state of Missouri, but it lacked the legal authority to tax property for school purposes, and thus it failed to implement these uniformity efforts. From 1860 to 1865 during the Civil War, schools were suspended in Missouri.

In 1865, the Missouri State Convention provided a new constitution that allowed all people in the state between the ages of five and 20 to attend school (Thomas, 2006). Until this happened, few opportunities existed for African Americans to attend school. In 1874, the Hiram Young School for African Americans was established in Independence, Missouri. African Americans, who lived in the area, were allowed to attend this school.

In rural Missouri, when no objections were made, African American students attended school with White children. In 1866, Hobo Hill School was opened in Jefferson City for African Americans. In 1870, only 21% of African American children attended school. In 1874, revisions were made to the old system that gave most of the power to

govern the school systems back to the local people. Normal schools were being established in larger communities. By 1875, there were 110 academies in Missouri, including female seminaries, boys' academies, military schools, and high schools. In 1853, the first high school, which had four years of coursework, was established in Missouri (Phillips, 1911).

In 1945, with the revised Missouri Constitution came the establishment of an appointed State Board of Education (Everett, 1991). This group appointed a commissioner of education. By 1949, there were 8,422 school districts in Missouri. Due to the lack of population in the northern parts of Missouri, many school districts either had no students or very few. In 1948, reorganizing school districts began to happen. By 1969, there were only 728 school districts in the state of Missouri. In 2002-2003 there were 530, and in 2010-2011 there were 520 (MODESE, 2011a). The Missouri constitution of 1945 allowed for separate schools for African-American and White students. The United States Supreme Court decision of 1954 abolished separate schools. In 1969, compensatory education laws were passed, which allowed for supplementary programs and services to help students at risk of school failure to succeed. SAT scores were used to predict the success of young adults entering college and have not changed since the 1970s in Missouri. The per pupil expenditures since the 1970s have increased 120%. There has been no correlation between what Missouri has spent on education and the success of 17-year-olds scoring on the SAT (Coulson, 2014).

Alspaugh (1998) conducted a study in rural Missouri schools. This study was ex post facto to determine the relationship between loss of achievement when transitioning from elementary to middle school and then from middle schools to high schools and the

dropout rate. There were 48 school districts in rural areas of Missouri in the sample for the study. The districts were divided into three groups. The first group had K-8 and 9-12 grade configurations. The second group had one elementary, one middle, and one high school. The third group consisted of two or three elementaries, one middle, and one high school. The results of this study indicated that achievement is lost when transitioning from the 6th grade elementary to middle school. The students who were in group 3 had the most academic achievement loss when attending middle school. Students in the K-8 setting experienced no academic loss when compared to the other two groups. The students who transitioned to middle school and transitioned for the second time to high school had a greater loss of academic achievement when compared to their K-8 counterparts. Alspaugh (1998) concluded that students in smaller cohort groups for longer periods of time tend to have more desirable education outcomes. These outcomes include higher scores on standardized tests, less transitioning problems, better attendance rates, and lower dropout rate (Alspaugh, 1998).

Adolescents face many transitions during the middle school years between ages 10 to 15. The school environment during the self-contained elementary years is nurturing and close relationships develop (Hough, 2005). In the middle school, the environment is such that close relationships do not often develop and less nurturing takes place. Researchers have found that during this transition from elementary to middle school there is a drop in academic scores on state assessments (Alspaugh & Harting, 1995; Seidman et al., 1994; Simmons et al., 1991).

History of Grade Span Configuration

Grade span configuration in the middle grades has been a concern for educators for many years. According to Paglin and Fager (1997), the decision about a grade span is one made by administration, but administrative considerations of enrollment trends, building costs, and distance are often the motivating factors. Paglin and Fager (1997) stated that what grades need to be grouped together, how many grades should be in one school, how many classrooms there should be in each grade level, and how many transitions students make during their K-12 years are all issues that must be considered when determining grade configuration. Paglin and Fager (1997) recommended the following five guidelines when starting a new grade configuration or reorganizing the current grade configuration within a school system.

1. Read grade configuration literature while keeping in mind that sound education practices are more important than grade span.
2. Visit or call other schools with the same configuration for information sharing about what works and what does not.
3. Consider what configuration fits best with community, geography, and values.
4. Be aware of developmental differences or similarities between students at different grade levels when developing curriculum, scheduling, and behavioral expectations; also consider how building layout and staff interests and training might best dovetail with these developmental characteristics.
5. Develop transition activities between all grades that are in different buildings within the district. (p. 41)

During the 19th and early 20th centuries, most schools were 8-year elementary schools and 4-year high schools (Gruhn & Douglas, 1956; Manning, 2000). The reorganization movement in upper elementary and secondary education began in 1890 and lasted until 1910. This reorganization movement allowed the junior high school to emerge. Increasing enrollments in the high schools and elementary schools between 1910 and 1930 caused over-crowded buildings (Gruhn & Douglas, 1956), encouraging many districts to form an intermediate school that would draw students from the elementary and the high schools. According to Wavering (1995), junior high schools continued to grow in popularity until the late 1950s. There were several reasons junior high schools began to lose momentum, including criticisms about the programs that were offered. According to Wavering (1995), the junior high school had turned into a miniature high school, and it was not fulfilling its functions to meet the needs of the students. During the 1960s and 1970s, society was changing. Technology and specialized knowledge became increasingly important due to the launch of Sputnik. Civil rights and desegregation mandates challenged traditional school systems. Elkind (1998) suggested that in the 1960s the women's movement, financial pressures, working mothers, and the civil rights movement established a foundation for expanding preschools, head start, and day cares for early childhood. Enrollment decreased in high schools at the same time it increased in early childhood and elementary schools. As a result, school district leaders were ready for reorganization to take place.

During this time, Eichhorn (1973) completed a landmark study of young adolescents that opened the doors for the concept of a six-three-three organizational movement (six years of elementary, three years of middle school, and three years of high

school), which began the middle school movement of the 1970s and 1980s. Many middle school organizations were formed, that initiated position statements filled with recommendations about how to develop a middle school that would meet the developmental needs of young adolescents. According to Wavering (1995), middle school education still lacked its own identity, and schools were slow to implement the recommendations of the middle school organizations to move away from the traditional teaching of the high school model.

A transition back to the K-8 model for young adolescents has been on the rise since the 1990s. According to Yecke (2006), school districts that did not establish middle schools found that students in the existing K-8 models exhibited fewer behavior problems and higher academic achievement. Yecke used three studies conducted in Milwaukee, Baltimore, and Philadelphia to suggest that students in K-8 schools performed better in academics, activities, and leadership skills and more were admitted to competitive high schools than students who attended middle schools. The Baltimore study was conducted in 1968 regarding the self-image of adolescent children. This study was a cross-sectional survey with a random sample of 25 schools. The results of this study were that when children entered 7^{th} grade, the transition year from elementary to junior high, their self-image dropped significantly (Yecke, 2006).

The Milwaukee study was developed to overcome the limitations of the Baltimore study. This study was a longitudinal design with two major phases. The first phase of the study followed students as they transitioned from a sixth grade elementary school setting to two types of seventh grade settings, either 7-9 or 6-8. The two grade configurations compared in this study were K-6 and the K-8 models. The second phase

was designed to study the transition between 9th and 10th grades in different settings over a 2-year period. Simmons, et al. (1987) found that students who attended the K-8 model had higher standardized test scores, showed higher leadership skills, and were more active in extracurricular activities when compared to the other groups. The Philadelphia study compared academic scores of students attending K-8 schools with students attending middle schools. The results of the study demonstrated that students attending the K-8 model had higher scores on standardized achievement tests and their scores remained higher after they went to high school (Offenberg, 2001).

Yecke (2005) asserted that since 1994 student achievement in K-8 schools increased by 17% (p. 2). There is an increased demand for high academic achievement for middle school students. The debate over how grade configuration affects student achievement is at the forefront for school administrators to find the answer to, so that adolescents will have high academic achievement.

The policy statement from the NFAMGR (2008) asserted that the real issue at hand is not about grade configuration but effective middle level practices. According to the NFAMG (2008), grade level configurations are usually based upon historical trends, community preferences, and conventional wisdom rather than research. The NFAMG (2008) made the following recommendations:

1. Regardless of grade configuration, focus on improving the schools that already serve the middle grades.
2. Review and apply current research about grade configuration.
3. Take steps to provide existing schools in the middle with research-based school improvement strategies. (p. 5)

Regardless of what type of grade configuration is employed, educators need to focus on what is happening in the classroom. Teachers need to use their expertise to meet the needs of their students using research-based practices. They must provide a rigorous curriculum, small learning communities, extra-curricular activities, and support for healthy emotional development.

The junior high school. During the 1800s, the one-room schoolhouse was needed to educate the students. In the early 1900s, with the use of steam and electrical power, the industrial period began. As populations grew due to the influx of immigrant children in the cities, schools became overcrowded. Schools at this time were very formal and did not address individual differences, and many students who found school difficult dropped out. Businesses wanted schools to implement vocational education or apprenticeships for students who were 14- to 16-years-old.

The child study movement began in the late 1800s, which was based on the work of Hall, a psychologist studying individual differences of adolescents. He believed that adolescents were social people and that schools should meet their developmental needs. Hall's work emphasized that adolescents between the ages of 12 and 18 experienced a period of radical changes in physical, emotional, mental, social, and moral growth (as cited in Wavering, 1995). New methods, schools, and curriculum were needed to meet the needs of this age group. Proponents asserted that the junior high school model would meet these unique needs of adolescents and embraced by the educational community at this time.

In the late 1800s, Eliot, the president of Harvard, criticized the 8-4 plan, which comprised eight years in elementary school and four years of high school (Gruhn &

Douglas, 1956). He noticed that the college entrance age of boys was becoming increasingly older. He wanted the school system to be shortened so that entrance into college could be one year earlier. After he expressed his concerns in 1892 during the National Education Association meeting, he was appointed to lead a committee comprised of like-minded college presidents, professors, headmasters, and a high school principal. In 1893, this Committee of Ten presented a report with recommendations that schools change curriculum and grade configurations.

The U.S. government established a Committee of Fifteen, comprised of 13 school superintendents, a college president, and the United States Commissioner of Education. This committee presented a report in 1899 that recommended changes in curriculum and opposed the reduction of the years spent in elementary school (the 6-6 plan: six years in elementary school and six in high school). It also recommended that better coordination and articulation between elementary and high school be implemented. Four additional groups supported this 6-6 plan: the Committee on College Entrance Requirements, the Standing Committee on Six-Year Courses of High School, the Committee on Economy of Time, and the Commission on the Reorganization of Secondary Education. The Commission on the Reorganization of Secondary Education also recommended that the high school years be divided into two 3-year blocks, or the 6-3-3 plan, which includes six years in elementary school, three years in the junior high, and three years in the high school. Increasing enrollments, advancement in technology and industrialization, the child study movement, and the recommendations from several national committees combined to force new curriculum and grade configurations in the early 1900s. As a result, the early junior high school was developed.

In 1920, there were 385 junior high schools in the United States, and by 1950, there were 3,225 (Howard & Stoumbis, 1970). By the 1950s, it was acknowledged by many education critics that junior high students were unique and there was a need to focus on a school program that met their needs during early adolescence. Attempts were made to meet the personal needs of the adolescent and basic general education as well as deleting the exploratory classes from the curriculum. There were many civil rights protests in the 1950s and 1960s. In the 1954 *Brown v. The Board of Education* case, the Supreme Court voted against segregation in schools. As a result, schools were being challenged to meet desegregation mandates. In 1957, when the Soviets launched Sputnik, people were becoming increasingly critical of the entire school system in the United States. At this time, money and attention were given to mathematics and science. Additionally, the literature and surveys of the 1960s suggested that the junior high schools had become miniature high schools. The junior high schools were not meeting the unique needs and interests of young adolescents. Conant (1960) and Moss (1969) agreed that 9th grade should be part of senior high. This articulation made sense because of the requirements for attending college and the need for a 4-year program based on Carnegie Units. By the 1970s, school districts were exploring different grade configurations to meet these needs. More students were entering schools, and population at the secondary level was decreasing. The concepts of early childhood and kindergarten education were gaining importance. School reorganization was on the forefront again.

The middle school. In the late 1960s, the Association for Supervision and Curriculum Development (ASCD) pulled together a group of people to work exclusively on middle level education. By 1973, this group had become known as the National

Middle School Association (NMSA). In 1975, ASCD published its position statement *The Middle School We Need*. This document contains recommendations for middle schools to implement so that students are successful.

In 1982, NMSA published the position paper *This We Believe*. This position paper includes four attributes and 16 characteristics for successful middle schools. The four attributes of successful middle schools are that schools must be developmentally appropriate, rigorous, empowering, and equitable (NMSA, 2009). The National Association of Secondary School Principals (NASSP) also published a statement on middle schools in 1985. These papers emphasized the development of middle school programs based on the needs and characteristics of the early adolescent. Finally, in 1989, with the publication of the Carnegie Council's *Turning Points: Preparing American Youth for the 21st Century*, and funding from the Carnegie Council, educators began to recognize middle level education as important. *Turning Points* includes five characteristics for adolescents and eight principles for successful middle schools. These principles include middle schools are small learning communities, all students are successful, all students are given a common core set of knowledge, teachers and principals are empowered, teachers are knowledgeable about how adolescent children learn, schools and communities are partners to educate and promote healthy students, and trust, respect, and communication are priorities for families and teachers (Carnegie Council on Adolescent Development, 1989).

According to Van Til, Vars, and Lounsbury (1967) and Lounsbury and Vars (1978), three factors led to the acceptance of the middle school. One factor is that there was dissatisfaction with the way that junior high schools evolved. In an effort to compete

with Russia, because of the launch of Sputnik, there was a push in the United States for more mathematics and science knowledge. The idea that young adolescents were maturing earlier played into the reorganization of grade configuration. Many organizations have offered position statements on the characteristics of effective middle schools, which have common themes. One idea is that adolescent children have unique emotional, physical, social, and cognitive characteristics not found in elementary students or high school students. There needs to be a broad curriculum with adolescents having some choice to meet their interests. Another theme is providing a bridge between the elementary and high school. Lastly, there must be adequate teacher and administrator support in order to implement these strategies in the middle school.

Early middle schools were structured as 5th grade through 8th grade or 6th grade through 8th grade. There is research that suggests these early middle schools were replicas of the junior high schools (Brooks, 1978; Educational Research Services, 1975; Gatewood, 1973). In the Carnegie group's publication *Turning Points 2000: Education Adolescents in the 21st Century*, there were two important conclusions: in many middle schools across the nation, developmentally appropriate practices were being implemented; and in the schools where developmentally appropriate practices were being implemented, positive outcomes were being produced (as sited in George & Alexander, 2003).

Many middle schools are criticized not because of the curriculum being implemented but because of the grade configuration. One question that is often asked is where is the best place for 6th grade students? If 6th grade students are kept in the elementary grades, they get the social and emotional contacts that they need at the

elementary level (George & Alexander, 2003). Proponents of having the 6th grade in the middle school claim that the curriculum that is offered to students by one teacher is a disservice. These adolescents need expertise from certified teachers who are experts in their field of study. They will gain insight on curriculum by experiencing a broader range of viewpoints of others.

Cook et al. (2007) ascertained that 6th grade students in the middle school were three times more likely to have a behavior incidence as compared to the 6th grade students that were in the elementary school. Cook et al. (2007) reviewed data from public school students in North Carolina for the 2000-2001 school year to determine if transitioning to a different grade configuration at 6th grade would have negative effects on behavior and academics. Cook et al. (2007) found that a 6th grade student who attended a middle school was 80% more likely to incur a behavior infraction, and the reading loss was 10% of a standard deviation. This research supports leaving 6th grade students at the elementary level. Cook et al. (2007) suggest that these disciplinary infractions are caused by transitioning, social control, and peer influence effects.

In the middle school setting, students are moving from classroom to classroom, and larger class sizes or enrollment make it harder for adults to supervise them. Due to this increased amount of freedom, students have increased exposure to a new environment and older, unruly students. Cook et al. (2007) suggest that when 6th grade is in the middle school, standardized achievement scores in reading and math were lowered as compared to their 5th grade reading and math scores. As this research suggests, having 6th grade in the middle school may not be the best solution to having high achievement scores and low behavior incidence rates.

Davis (2008) conducted a study in Mississippi during the 2006-2007 school year. Davis (2008) examined the effect of the implementation of the middle school concept on student achievement. Student achievement data was collected from the Mississippi Curriculum test, which is a performance-based test given yearly to students in 2nd-8th grades. There were 12 schools in the study. Six schools said they implemented the middle school concept and six schools stated that they did not implement the middle school concept. Davis (2008) found that there was no significant difference between the two groups in academic achievement for 6th grade. When comparing the mean scores for the two groups, the mean score was higher for those schools implementing the middle school concept in 6th grade.

A recent study was conducted by Zachary (2014) in South Carolina to determine if there was a difference in reading and mathematics achievement of middle grade students between schools with 6th-8th grade configurations and schools with K-8 grade configurations. The sample was all students who were enrolled in 5th-8th grades and who remained in the district from 2010-2013 school years. Zachary (2014) found that there was not a significant difference in reading growth when comparing grade configurations. The results of this study also showed that in mathematics achievement, the students attending the 6-8 middle schools achieved higher levels than students did who were attending the K-8 model schools

K-8 schools. For decades, numerous attempts have been made to establish a grade configuration that meets the social, emotional, and academic needs of students between the ages of 10 and 14 years of age. Critics cite poor self-esteem, behavior disturbances, and low test scores as reasons for reorganization. Many large school systems are making

the elementary schools larger by incorporating students in the middle grades. This type of elementary is the K-8 model.

In some K-8 models, middle school concepts are being implemented successfully. Teaming, inquiry-based learning, cross-age tutoring, cooperative learning, and intramural sports programs are being implemented continually. In K-8 models where students are being successful, teachers have elementary certification and are receiving continuous professional development. Pardini (2002) asserts that K-8 schools are popular overseas and were popular in the United States until the middle of the 20th century. Many school districts are returning to the K-8 model. Pardini (2002) suggested that Cincinnati, Philadelphia, Massachusetts, Tennessee, Baltimore, and Oklahoma City are moving toward a K-8 system. These districts restructured their systems to meet the needs of the students and communities and are committed to creating environments where staff know the students and families and address the dropout rates, and where the needs of all students are met.

In Tennessee, Baltimore, and Cleveland, the results have shown that these districts are moving in the right direction. Test scores have increased when compared to peers attending middle schools or junior high schools (Pardini, 2002). In Fayetteville, Tennessee, there are over 4,000 students in K-8 schools. The district is reconfiguring its elementary schools to address a high dropout rate. The superintendent wanted the elementary model to extend to 8th grade so that children go to schools closer to home and the school staff knows the students and their families (Pardini, 2002). In Baltimore, the superintendent wanted to create smaller learning communities by increasing the number of K-8 schools in the district (Pardini 2002). The superintendent examined attendance,

dropout rates, and student test scores of students attending K-8 and middle schools. Students attending the K-8 schools outscored the students attending middle schools on the standardized state assessment. The students attending K-8 schools had higher attendance rates than those who attended middle schools. The dropout rates were lower for students who attended the K-8 schools when compared to students attending middle schools (Pardini, 2002). In Cleveland, similar analysis of test scores on state standardized tests showed that 6th grade students attending K-8 schools outperformed students attending middle schools. Few large-scale studies have examined the relationship between grade configuration and academic achievement (Pardini, 2002).

Wihry, Coladarci, and Meadow (1992) conducted a study in 163 Maine public schools. They examined differences in 8th grade performance on the state test among grade configurations. Wihry et al. (1992) found that students attending K-8, K-9, or 3-8 schools scored higher on the state test when compared to students attending any type of middle grade configuration or junior high grade configuration. Franklin and Glascock (1996) examined the relationship between grade configuration and student performance in Louisiana. The data included a 6th grade sample from 234 schools in the 1992-1993 school year. The results were divided into 3 groups according to poverty levels established by percentage of students qualifying for free and reduced lunch. Students attending elementary schools or combination schools scored higher on the standardized tests when compared to students who attended middle schools.

Eccles et al. (1993) conducted a 2-year study about the effects of classroom environment on adolescent motivation. The teachers and students were from 12 middle to lower-middle income districts. Most of these students were transitioning from 6th

grade to 7th grade during the study. Students were administered questionnaires during 6th grade and 7th grade concerning their achievement related to their beliefs and values. The teachers were administered a questionnaire about their beliefs and attitudes about trust, respect, controlling and disciplining students, as well as other views about their teaching. Results showed that students moving from teachers who had high efficacy in math to teachers who had low efficacy in math experienced less success and thought math was hard. When low-achieving students moved from high to low efficacy teachers, they had a significant loss in their beliefs about how well they were doing in math. Students who moved from highly supportive teachers to teachers that were not supportive had a decrease in their intrinsic value of math. In contrast, students moving from teachers of low to highly supportive teachers in math increased their intrinsic value of math. Eccles et al. (1993) found that ability grouping students over time showed a negative effect on students as opposed to students who were not ability grouped. Eccles et al. (1993) also reported that students who moved from classrooms where they were allowed to be part of the decision making process to classrooms where they had very little or no decision making powers showed a decline in the interest in the subject matter.

Adolescents often transition from elementary school where they have an abundance of decision-making opportunities, highly trained teachers, and heterogeneous groupings, to a middle school environment where these things are less likely to occur. Eccles et al. (1993) study supports the theories that in the middle school setting there is less empowerment given to students, there is more tracking, and teachers are subject area experts.

Seidman et al. (1994) used Adolescent Pathways Project (APP) data from 5th and 6th grade students attending schools in Baltimore, Washington, DC, and New York City. Data involving self-esteem, motivation, grade point average, behavior, and perceived microsystem transactions were collected before and then again after the transition to a new school configuration. Seidman et al. (1994) found that the perceived microsystem transactions, affective, and behavioral domains declined after the transition to a new grade configuration. The study supported the work of Eccles et al. (1993) and Simmons et al. (1987) that transition for early adolescents increases the possibility for school disengagement. DeJong and Craig (2002) suggest that one of the reasons for districts to embrace the K-8 model is to have fewer transitions and to keep students in their neighborhood school. Early adolescents are very impressionable and are not best served by being around older students who will subject them to rebellious behaviors that are against school rules. Elementary parents often suggest that the young adolescent needs more structure that is offered by the elementary school when compared to going to dances and hanging out with 8th graders (DeJong & Craig, 2002).

Howley (2002) analyzed two studies that were conducted in Louisiana and Maine. The studies from Louisiana and Maine suggest that academic achievement of 6th and 7th grade adolescents were higher if they were attending an elementary configuration when compared to those attending a middle school, junior, or senior high. According to Howley (2002), these results were inconclusive due to the sampling methods used. Wren (2003) examined data from schools to investigate the effects of transition and grade span on student achievement based on results from standardized tests given to students as required by NCLB. The sample was 232 public schools in the inner city. The results of

the study suggest that there is a significant relationship between grade span configuration and student achievement. It also reported a negative correlation between transition and student achievement. When transition and grade configuration were regressed on at the same time, transition was the significant predictor of student achievement (Wren, 2003). The results of this study further supports the theory that the longer a student stays in one setting the better academic success the student will have. Hough (2003) asserts that the impact of middle-grades education on student achievement has yet to be addressed on a national level. Hough (2005) argued that elemiddles (K-8 schools) that fully implement middle-school concepts into the K-8 model would create an atmosphere where students will be successful as evidenced by higher test scores on achievement tests. The Institute for School Improvement researchers reviewed several school system studies in their national study of a stratified random sample of 500 schools in the United States. They concluded that K-8 models were having the most desirable outcomes in student achievement, dropout rates, behavior incidents, and well-adjusted student learners (Hough, 2005). These K-8 schools applied the middle school philosophy, which included practices such as teaming, inquiry based learning, cooperative learning, peer tutoring, professional development for teachers, and a child-center environment (Hough, 2005). Hough (2005) asserted that many elementary teachers had been implementing these best practices for years. The climate for teaching middle students is already in place in K-8 schools. The K-8 program has a nurturing environment, maintains stability of student attrition through the grade levels, and helps students transition to young adolescence without disruption (Hough, 2005).

Transitioning from one school to another is inevitable. When students transition, they are faced with many unknowns. They are concerned about being the youngest in the school setting, grades, attendance, being lost, being picked on by others, and being sent to the office for misbehaviors (Hough, 2005). Weiss and Kipnes (2006) used data from the Philadelphia Education Longitudinal Study (PELS) to determine the differences in transitioning in 9th grade students who attended K-8 compared with those who attended middle schools. Weiss and Kipnes (2006) found that students who attended K-8 schools had higher attendance rates and passing grades when compared to the students who attended the middle schools.

According to Weiss and Kipnes (2006), little research has been conducted that compares the academic outcomes of middle school students who attended different grade configurations. The authors compared student outcomes with grade configuration in Philadelphia schools. Grade average, rate of class failure, poor attendance, and safety concerns were higher for students in the middle schools than for students in K-8 schools. When the authors compared these results using a multivariate framework, they found few differences in outcomes on performance for students in middle schools when compared to K-8 student results (Weiss & Kipnes, 2006). Weiss and Kipnes (2006) reviewed various studies to determine if in fact grade configuration makes a difference in student outcomes. They found few studies that compared a group of students in one form of grade configuration to another group of students in another form of grade configuration. Weiss and Kipnes (2006) asserted that there are many studies that examined student behaviors in the middle school compared to K-8 students. They suggest that self-esteem, peer involvement, interpersonal relationship, extracurricular activities, grading practices,

and school safety have been supported by research to have negative effects on students in middle schools as compared to students attending K-8 schools.

During the 2005-2006 school year, a study was conducted in North Carolina public schools by Wyant and Mathis (2007). The purpose of the study was to examine the growth on the North Carolina standardized tests in mathematics and reading of students based on grade configuration. Two types of schools were examined: Group A consisted of schools that were mostly 6-8 and Group B schools were K-6 or K-8. It was concluded that the average growth for all groups during the 2005-2006 school year in mathematics was negative. The average growth for reading in both A and B groups was positive (Wyant & Mathis, 2007).

Byrnes and Ruby (2007) conducted a study that examined the academic achievement of public schools in Philadelphia. The study was conducted to examine the academic achievement of students who attended the K-8 model and compared their scores on the Pennsylvania standardized state tests in mathematics and reading with peers who attended middle schools. There were 56 K-8 schools and 39 middle schools in the study. During the five years the study was conducted, the district was transitioning many schools to the K-8 model. The researchers divided these schools into two categories. One category was the older K-8 models and the newer K-8 models. The older K-8 models had more teacher and student advantages than the newer K-8 models. Some of the advantages of the older K-8 models were more teachers were certified, teacher experience was more than three years, teachers had less absenteeism, students had higher levels of achievement in 5^{th} and 8^{th} grades, and these schools had a lower student population that was considered high-poverty. Patton (2005) asserted that the results

revealed that overall K-8 schools made significant academic achievement when compared to their middle school counterparts. The newer K-8 schools did not perform significantly higher than the middle schools. Patton (2005) suggested that the implications for the study were significant for schools to consider during the grade configuration process. In Philadelphia, there were more certified K-8 teachers compared to the district's middle school teachers. Retention rates of K-8 teachers were better, compared to the retention rates of middle school teachers. Class sizes were smaller, there was less isolation, and peers were more helpful, kind, and accepting in Philadelphia K-8 schools compared to middle schools (Patton, 2005).

A recent study by Bell (2010) was to determine if grade configuration has an effect on the academic achievement of 5th and 6th grade students in reading or mathematics. The grade configurations that were assessed were 3-6, 5-6, 5-8, PK-6, PK-8, and PK-12. The sample population for 2005 and 2006 was from 278 schools. The Texas state standardized test was the assessment instrument for both years. Bell (2010) found that in 2005 the data showed a significant difference between the mathematics achievement of students attending PK-8, 3-6, 5-8, and PK-6 grade configurations. The data showed that students attending the PK-8 schools scored lower on the Texas achievement test in mathematics when compared to the students attending 3-6, 5-8, and PK-6 attendance centers. Bell (2010) asserted that for 2006 school year there was a significant difference between the reading achievement of 5th and 6th grade students in PK-6 and PK-12 grade configurations. The 5th and 6th grade students attending the PK-12 grade configurations performed better than the students did who were attending the PK-6 grade configurations.

Clark, Slate, Combs, and Moore (2013) conducted a study to determine the effect of grade span configuration on academic achievement in Texas, specifically to compare the academic performance of 6th grade students in mathematics and reading in K-8 schools and 6-8 schools. Of the 628 schools in the study, 314 were middle schools and 314 were K-8 schools. The state assessment, Texas Assessment of Knowledge and Skills (TAKS), was used to measure student achievement in reading and mathematics. The assessment results that were analyzed covered a 5-year period from the 2006-2011 school years. Clark et al. (2013) found that for all 5 years, all categories of reading showed statistically significant student performance for students attending K-8 schools when compared to students attending 6-8 schools. During four out of the five years, 6th grade students attending K-8 schools demonstrated significant achievement in mathematics when compared to students attending middle schools. The study further supported the research by others that demonstrated positive relationships between students attending grade span configurations of K-8 settings over middle school settings (Byrnes & Ruby, 2007; Franklin & Glascock, 1996; Offenberg, 2001).

The Association for Middle Level Education (AMLE) has firmly established research-based best practices for adolescents. Where these practices are fully implemented is where student success is found. Hough (2005) suggested that schools with nurturing learner-centered environment, staffed by competent teachers implementing best practices, would have positive student achievement. Swain (2004) purported that good programs can be found in many different grade configurations. "The important thing is focusing on what's right for kids from 10 to 14 years of age" (Swain, 2004, p. 3).

Summary

In this chapter, research was reviewed that was relevant to this study. Within the literature review were summaries regarding the turbulent years of the young adolescent as well as the history of schools in the United States and Missouri. Next, there was an examination of the history of grade span configuration and the impact that research had on grade configuration for the young adolescent. Finally, advantages and disadvantages of academic achievement when compared to the grade span attended by young adolescents were presented. Through the research presented in this chapter, connections were made between grade span configurations and academic achievement. The inconsistent findings in this review of literature warrants further research. Discussed in chapter three are the topics of research design, population and sample, sampling procedures, instrumentation, demographics, data collection procedures, data analysis and hypothesis testing, and limitations of the current study.

Chapter Three

Methodology

The focus of this study was to determine if 6th grade students' academic achievement was different for students who attended various grade configurations in the state of Missouri. Academic achievement was measured by the MAP communication arts and mathematics assessments. This study was also conducted to determine if academic achievement and grade configuration was affected by the schools' ethnicity, SES, and special education classifications.

Chapter three begins with a description of the research design. This chapter includes the methodology and procedures that were used to address the research questions included in chapter one. The chapter is organized into the following sections: research design, population and sample, sampling procedures, instrumentation, data collection, data analysis and hypothesis testing, and limitations.

Research Design

This study utilized a quantitative research design to examine the differences in academic achievement of 6th grade students who attended schools with various grade configurations in Missouri. The independent variable, grade configuration, was determined by each district level administration and reported to the MODESE in the Core Data Collection System. Additionally, the differences in student achievement among grade configurations and the schools' levels of ethnicity, SES, and special education classifications on academic achievement were compared. The independent variables were grade configurations, ethnicity, SES, and special education classifications of the

schools. The dependent variables were academic achievement of 6th grade students in Missouri as measured by the MAP communication arts and mathematics assessments.

Population and Sample

The population for this study included all public elementary and middle schools in Missouri school districts (n = 717) that included 6th grade students during the 2012-2013 school year. The aggregated data for this study were 6th grade students' academic performance on the MAP communication arts and mathematics assessments that were obtained from the MODESE website. The sample for this study consisted of all school districts for which all inclusion criteria were reported.

Sampling Procedures

For the purpose of this study, purposive sampling was used. Schools were selected for this study if they met the following criteria:

1. The school included 6th grade.
2. The school reported 2012-2013 MAP data to MODESE.
3. The school was a public non-charter school in Missouri.
4. The school reported data for ethnicity, SES, and special education classifications.

Instrumentation

The instrument used to measure 6th grade student achievement was the MAP. The MAP test is a standardized, criterion-referenced test that is aligned to the Missouri state standards and grade-level expectations. The criterion-referenced items are developed by local educators and CTB/McGraw-Hill, which is the contractor for the assessments. A series of steps is included in developing criterion-referenced items for the test, including

a workshop where the initial item writing and passage selection takes place. Next, there was a pilot study, followed by a content and bias review in which items were refined, followed by another field study. Finally, operational testing occurred (MODESE, 2009). The MAP is administered annually in the spring to all students in 3rd through 8th grades in the areas of communication arts and mathematics. The MAP also includes selected-response questions that are administered along with the criterion-referenced items each year through multiple testing sessions (MODESE, 2012a). These selected-response items are taken from a nationally normed test developed by CTB/McGraw-Hill called TerraNova®.

The communication arts and mathematics grade-level assessments require "3 to 5 hours to administer" (MODESE, 2011c, p. 1). When the testing is completed, each district sends the tests to MODESE for scoring. The tests are scored by educators that receive training from MODESE (2009). The results are used by MODESE to determine if districts meet the AYP criteria that has been mandated by NCLB (U.S. Department of Education, 2011). There were three types of test items on the MAP: selected-response, constructed-response, and performance events. The selected-response questions are followed by three to five options from which students can choose. The constructed-response questions require students to write a response. Performance events require students to apply what they have learned to a real life problem. In communication arts, students read and evaluate fiction and nonfiction texts; identify the author's purpose; supporting details; point of view; interpret figurative language; make inferences and predictions; and write formally and informally with an emphasis on grammar, punctuation, spelling, and capitalization (MODESE, 2008). In mathematics, there were

five sub strands: number and operations, data and probability, measurement, algebraic, and geometric and spatial relationships (MODESE, 2008). Students estimate and convert measurements, solve algebraic equations, apply formulas, determine and interpret data collection methods, and solve problems (MODESE, 2008).

Measurement. Selected-response or multiple-choice items present an item with three to five response options (MODESE, 2011c). The constructed response items require students to write a response instead of selecting a given option. This type of response format demonstrates student content knowledge and provides information about how students arrive at their responses (MODESE, 2012a). Students who complete the MAP receive a scale score for both communication arts and mathematics. The scale score represents a student's level of achievement: the higher the score, the higher the achievement (MODESE, 2009). A collaborative effort between Missouri educators and citizens recommended four levels of achievement within each subject area (MODESE, 2009). These levels are *Below Basic*, *Basic*, *Proficient*, and *Advanced*. These proficiency levels can be used to determine student achievement, curriculum, and accountability programs (see Table 1).

Table 1

MAP Grade-Level Assessment Scale Score Ranges and Achievement Levels

Assessment	Below Basic	Basic	Proficient	Advanced
6th Grade Communication Arts	505-630	631-675	676-703	704-855
6th Grade Mathematics	495-627	628-680	681-720	721-845

Note. Missouri Assessment Program grade-level assessments: Technical report 2009. Missouri Department of Elementary and Secondary Education.(2009), p. 25

Performance of a student who is at the *Proficient* or *Advanced* levels is considered to be at or above grade level. For this study, student achievement was measured by the percentage of students who scored in the *Proficient* and *Advanced* levels in mathematics or communication arts.

Validity and reliability. According to Lunenburg and Irby (2008), reliability is "the degree to which an instrument consistently measures whatever it is measuring" (p. 182), and validity is "the degree to which an instrument measures what it purports to measure" (p. 181). There is research-based evidence of reliability and validity of the MAP communication arts and mathematics grade-level assessments. MODESE formed a partnership with CTB/McGraw-Hill to design and perform research to ensure the content assessments were valid and reliable.

In 2009, MODESE worked with CTB/McGraw-Hill to publish a technical report providing evidence of the reliability and validity of the MAP and its content areas. To ensure that the MAP's mathematics items were measures of only mathematics achievement and the MAP's communication arts items were measures of only communication arts achievement, MODESE performed analyses of the internal structure of the test for evidence of construct validity. Classification accuracy and classification consistency provide evidence of the validity of the MAP and its content areas. The 6th grade mathematics classification accuracy cut point in *Proficiency* and *Advanced* was 0.94 (MODESE, 2009). The 6th grade communication arts classification accuracy cut point in *Proficiency* and *Advanced* was 0.93 (MODESE, 2009). The 6th grade mathematics classification consistency cut point in *Proficiency* and *Advanced* was 0.91 (MODESE, 2009). The 6th grade communication arts classification consistency cut point

in *Proficiency* and *Advanced* was 0.90, which is indicative of MAP test scores accurately measuring the appropriate content.

Reliability of the MAP scores was evaluated using Cronbach's alpha coefficient. Cronbach's alpha coefficients range from 0 to 1 to determine the reliability of the assessments at each grade level. "The closer the coefficient is to 1, the more consistent are the scores" (MODESE, 2009, p. 136). The coefficients of .90 and .92 for communication arts and mathematics, respectively, are evidence of internal consistency: the MAP consistently measures the communications arts and mathematics knowledge of 6^{th} grade students.

Demographics

Ethnicity for 2012-2013 was "measured by the percentage of students in the schools who were classified as white and non-white as reported to DESE by each district" (U.S. Department of Education, 2011, p. 83). For the current study, it was assumed the percentage was equivalent across grades. Ethnicity data was reported to MODESE in October 2012 as the number of students in each ethnicity category. Ethnicity was divided into three categories: *Lowest-Minority* represents schools in which up to 2% of students were classified non-white compared to the population of the school*; Moderate-Minority* represents schools in which 3 to 22% of the students were classified non-white compared to the population of the school; and *Highest-Minority* represents schools in which 23% or more of the students were classified non-white compared to the population of the school (U.S. Department Education, 2011).

The SES classification for 2012-2013 was measured by the percentage of students in the school who were eligible for the free or reduced lunch program. The assumption

was made that the percentage was equivalent across grades. In order to qualify for the free or reduced lunch program, families must meet the federal eligibility guidelines. SES data were retrieved from MODESE, which had been reported in October 2012 by Missouri school districts. For this study, SES was classified into three categories using the ranges established by the U.S. Department of Education (2011):

> *Low SES* represents schools in which up to 31% of the students are eligible for free or a reduced price lunch; *Mid SES* represents schools in which 32 to 62% of the students are eligible for free or a reduced price lunch; and *High SES* represents schools in which 63% or more of the students are eligible for free or a reduced price lunch. (p. 145)

Special education was measured for 2012-2013 by the percentage of students in the school who qualified for special education services. MODESE provided special education data that was reported as those students with an individualized education plan during 2012-2013 in Missouri school districts. For the current study, it was assumed that the percentage was equivalent across grades. Special education was classified into three categories: *Lowest-Special Education* represents schools in which 0 to 9.02% of students were classified as special education compared to the population of the school; *Moderate-Special Education* represents schools in which 9.03 to 17.51% of the students were classified as special education compared to the population of the school; and *Highest-Special Education* represents schools in which 17.52% or more of the students were classified as special education compared to the population of the school (U.S. Department Education, 2011).

Data Collection Procedures

Prior to collecting data, a Proposal for Research was submitted in January 2013 to the Baker University Institutional Review Board (IRB) requesting an exempt review due to the use of non-personally identifiable data (see Appendix B). Approval was granted by the IRB committee in accordance with Baker University's requirements for conducting research under the exempt status (see Appendix C). Data collected for the purpose of this study were obtained from the MODESE. These data are public information and were downloaded into a Microsoft Excel spreadsheet from the Missouri Comprehensive Data System website (MODESE, 2012a). The grade configuration was downloaded from MODESE as a Microsoft Excel spreadsheet from the School Directory files. A request for data was sent to MODESE about the number of 6th grade students who qualified for special education services for the 2012-2013 school year, as reported in October 2012. This spreadsheet was merged with the grade configuration spreadsheet. School demographics and MAP data were downloaded from MODESE website and merged with the other Microsoft Excel spreadsheet by matching the data based on school building IDs. The final Microsoft Excel spreadsheet combined all data needed for the purpose of this study and was moved to the IBM® SPSS® Faculty Pack 22 for Windows for data analyses.

Data Analysis and Hypothesis Testing

This study used quantitative methods of data collection and data analysis. Each of the research questions' hypotheses was tested to determine if statistically significant differences in 6th grade student achievement existed, as measured by the MAP

assessments in communication arts and mathematics, among schools with different grade configurations.

RQ1. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations?

H1. There is a difference in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations.

RQ2. To what extent do the differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

H2. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by ethnicity classification.

H3. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by SES classification.

H4. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by special education classification.

RQ3. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations?

H5. There is a difference in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations.

RQ4. To what extent do the differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

H6. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by ethnicity classification.

H7. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by SES classification.

H8. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by special education classification.

A MANOVA was conducted to determine the extent of any main effects of the independent variable of grade configuration (hypotheses 1 and 5), ethnicity classification (hypotheses 2 and 6), SES classification (hypotheses 3 and 7), and special education classification (hypotheses 4 and 8) on the dependent variables of academic achievement, as measured by the MAP communication arts and mathematics assessments, among Missouri 6th grade students. Additionally, these analyses were conducted to determine the extent of any interactions between any combination of the independent variables of grade configuration, ethnicity, SES, and special education classifications on the dependent variables of academic achievement for hypotheses 5, 6, 7, and 8. The Tukey

HSD procedure was chosen as the follow-up test to be conducted if any statistically significant main effects occurred in the analyses. To control for Type I error, this procedure was used to evaluate any pairwise differences among the means of the independent variables.

Limitations

Lunenburg and Irby (2008) stated "Limitations are the factors that may have an effect on the interpretation of the findings or on the generalizability of the results" (p. 133). The limitations for this study included:

1. It was unknown whether the instruction of 6th grade students prior to testing was a traditional secondary model, middle school model, departmentalized model, or a team teaching model.
2. Errors in data entry by school districts and MODESE were unknown.

Summary

Provided in this chapter was an overview of this quantitative study. The research questions, hypotheses, selection of participants, and instrumentation, including its measurement, validity, and reliability, were presented and explained in this chapter. A purposive sample was used and conditions for including schools were explained. Data collection procedures and data analyses of the hypotheses were presented. Limitations of the study were identified and explained. The findings of this study are presented in chapter four.

Chapter Four

Results

The purpose of this study was to determine the extent of the difference between 6th grade student achievement in communication arts and mathematics among the grade configuration of the school in which students were enrolled. Additionally, this study was conducted to examine how academic achievement was affected by grade configuration and the ethnicity, SES, and special education classifications of the schools that include 6th grade students in the state of Missouri, using the MAP communication arts and mathematics data from the 2012-2013 school year. Presented in this chapter are the results of the data analysis for each hypothesis associated with the research questions posed for this study.

Descriptive Statistics

The population in this study included all 6th grade students enrolled in public schools in Missouri that reported MAP results in communication arts and mathematics for the 2012-2013 school year. Table 2 displays the total number of schools and percentages in each of the original grade configurations for this study (n = 717).

Table 2

Descriptive Statistics for the Original Grade Configurations

Configuration	*F*	%
2-6	2	.3
3-6	4	.6
3-8	3	.4
4-12	2	.3
4-6	13	1.8
4-8	2	.3
5-12	1	.1
5-6	25	3.5
5-7	1	.1
5-8	52	7.3
6	4	.6
6-12	24	3.3
6-7	3	.4
6-8	193	27.0
K-12	3	.4
K-6	160	22.3
K-8	63	8.8
PK-6	125	17.4
PK-7	1	.1
PK-8	36	5.0
Total	717	100.0

Table 3 includes all grade configurations that were included in the data analysis. Schools that were configured as PK-6 (n = 125) were added to the K-6 group, and those configured as PK-8 (n = 36) were added to the K-8 group. The "Other" group includes all the grade configurations that had less than 10 schools each. This includes 2-6, 3-6, 3-8, 4-12, 4-8, 5-12, 5-7, 6, 6-7, K-12, and PK-7.

Table 3

Descriptive Statistics for Combined Grade Configurations

Configuration	*F*	%
4-6	13	1.8
5-6	25	3.5
5-8	52	7.3
6-12	24	3.4
6-8	193	26.9
K-6	285	39.7
K-8	99	13.8
Other	26	3.6
Total	717	100.0

Table 4 includes schools' SES percentage levels: *Low* (0 to 31.49), *Mid* (31.5 to 62.49), and *High* (62.50 and above). As shown in Table 4, 693 schools reported their SES percentages. The schools' percentages of free and reduced lunch students were used to classify schools' SES classification.

Table 4

Descriptive Statistics for SES Percentage Levels

SES Level	*F*	%
Low SES	91	12.7
Mid SES	314	43.8
High SES	288	40.2
Missing	24	3.3
Total	717	100.0

Table 5 includes schools' special education percentage levels: *Lowest* (0 to 9.02), *Moderate* (9.03 to 17.51), and *Highest* (17.52 and above). The IEP percentage data was used to classify schools' special education classification. As shown in Table 5, the largest group was at the moderate level with 350 schools. The total schools reporting special education information was 666; 51 schools were missing this data.

Table 5

Descriptive Statistics for Special Education Classification

SPED	*F*	%
Lowest	117	16.3
Moderate	350	48.8
Highest	199	27.8
Missing	51	7.1
Total	717	100.0

Table 6 includes schools' ethnicity percentage levels: *Lowest* (0 to 2.49), *Moderate* (2.5 to 22.49), and *Highest* (22.50 and above). Percentages of minority students of each school were added together to calculate the ethnicity percentage. Most schools were in the moderate level for ethnicity classification. The total number of schools that had reported ethnicity was 693; data was missing for 24 schools.

Table 6

Descriptive Statistics for Ethnicity Classification

Ethnicity	*F*	%
Lowest	188	26.2
Moderate	358	49.9
Highest	147	20.5
Missing	24	3.4
Total	717	100.0

In 6th grade communication arts, the minimum score for *Proficient* and *Advanced* students was .00; the maximum score was 118.00. The average communication arts score was 50.46 (*SD* = 15.105). In mathematics, the minimum score was 2.30; the maximum score was 100.00. The average mathematics score was 56.09 (*SD* = 17.859).

Hypothesis Testing

This section contains results from data analyses to determine differences in student achievement, as measured by the MAP communication arts and mathematics assessments, among grade configurations, as well as the effects of ethnicity, SES, and special education classifications. The Tukey HSD analyses were used to follow-up if any statistically significant main effects occurred in the analyses. To control for Type I error,

the Tukey HSD procedure was used to evaluate any pairwise differences among the means of the independent variables.

RQ1. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations?

H1. There is a difference in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations.

The results of the analysis indicated there was not a statistically significant main effect of grade configuration on academic achievement, as measured by the MAP communication arts assessment, $F = 1.293$, $df = 7, 497$, $p = .252$. See Table 7 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. The communication arts scores, on average, do not differ across the grade configurations. This does not support H1.

Table 7

Descriptive Statistics for the Results of the Test for H1

Grade Configuration	*M*	*SD*	*n*
4-6	53.67	13.044	13
5-6	54.18	9.715	25
5-8	48.05	8.542	51
6-12	53.73	16.788	22
6-8	51.55	13.951	192
K-6	48.88	17.231	265
K-8	50.73	15.351	83
Other	55.52	9.466	20
Total	50.46	15.105	671

RQ2. To what extent do the differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

H2. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by ethnicity classification.

The results of the analysis indicated a marginally statistically significant interaction effect of grade configuration and ethnicity on academic achievement, as measured by the MAP communication arts assessment, $F = 1.717$, $df = 13, 497$, $p = .054$.

See Table 8 for the means and standard deviations for this analysis. No follow-up post hoc was warranted.

Table 8

Descriptive Statistics for the Results of the Test for H2

Configuration	Ethnicity	*M*	*SD*	*n*
4-6	Lowest	74.30	-	1
	Moderate	56.78	5.265	9
	Highest	37.47	16.120	3
	Total	53.67	13.044	13
5-6	Moderate	57.26	8.541	19
	Highest	46.06	5.524	5
	Total	54.93	9.165	24
5-8	Lowest	47.57	9.245	17
	Moderate	49.00	7.556	27
	Highest	45.20	11.992	6
	Total	48.06	8.628	50
6-12	Lowest	62.30	8.669	8
	Moderate	50.02	20.771	11
	Highest	45.90	8.344	2
	Total	54.30	16.977	21
6-8	Lowest	51.52	10.848	21
	Moderate	54.94	9.174	115
	Highest	44.43	20.183	52
	Total	51.65	14.005	188
K-6	Lowest	51.11	14.809	79
	Moderate	55.80	13.844	113
	Highest	35.19	17.703	64
	Total	49.20	17.273	256
K-8	Lowest	52.94	13.758	36
	Moderate	50.99	13.797	38
	Highest	42.10	20.939	6
	Total	51.20	14.438	80
Other	Lowest	55.80	5.940	2
	Moderate	57.02	7.882	9
	Highest	63.03	9.681	4
	Total	58.46	8.148	15
Total	Lowest	51.94	13.526	164
	Moderate	54.39	11.869	341
	Highest	40.65	18.726	142
	Total	50.75	15.053	647

The results of the analysis indicated there was not a statistically significant main effect of ethnicity on academic achievement, as measured by the MAP communication arts assessment, $F = 1.624$, $df = 2, 497$, $p = .198$. See the Total rows in Table 8 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. The communication arts scores, on average do not differ across ethnicity classifications.

H3. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by SES classification.

The results of the analysis indicated there was not a statistically significant interaction effect of grade configuration and SES on academic achievement, as measured by the MAP communication arts assessment, $F = 0.577$, $df = 13, 497$, $p = .873$. See Table 10 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. Communication arts scores for 6th grade students during the 2012-2013 school year did not differ among SES and grade configuration groups. This does not support H3.

Table 9

Descriptive Statistics for the Results of the Test for H3

Configuration	SES	*M*	*SD*	*n*
4-6	Mid	59.19	8.225	8
	High	44.84	15.286	5
	Total	53.67	13.044	13
5-6	Low	66.55	7.317	4
	Mid	54.90	7.425	14
	High	47.25	5.668	6
	Total	54.93	9.165	24
5-8	Low	58.60	6.505	2
	Mid	49.89	8.883	28
	High	44.45	6.874	20
	Total	48.06	8.628	50
6-12	Low	63.80	-	1
	Mid	54.55	18.487	17
	High	49.77	8.470	3
	Total	54.30	16.977	21
6-8	Low	65.65	6.635	46
	Mid	51.09	9.579	93
	High	39.57	14.470	49
	Total	51.65	14.005	188
K-6	Low	66.44	10.280	21
	Mid	55.36	12.289	102
	High	41.75	17.671	133
	Total	49.20	17.273	256
K-8	Low	68.80	13.227	6
	Mid	53.04	12.471	29
	High	47.66	14.077	45
	Total	51.20	14.438	80
Other	Low	69.70	3.936	3
	Mid	58.19	4.825	8
	High	50.58	5.980	4
	Total	58.46	8.148	15
Total	Low	66.08	8.127	83
	Mid	53.41	11.402	299
	High	42.96	15.634	265
	Total	50.75	15.053	647

However, the results of the analysis indicated a statistically significant main effect of SES on academic achievement, as measured by the MAP communication arts assessment, $F = 16.05$, $df = 2, 497$, $p < .001$. See the Total rows in Table 9 for the means and standard deviations for this analysis. A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. All pairwise comparisons were statistically significant (see Table 10).

Table 10

Post Hoc Results for H3

SES Level	Mean Difference	*P*
Low SES – Mid SES	12.908	< .001
Low SES – High SES	19.942	< .001
Mid SES – High SES	7.034	< .001

H4. The differences in 6th grade academic achievement, as measured by the MAP communication arts assessment, among Missouri grade configurations are affected by special education classification.

The results of the analysis indicated there was not a statistically significant interaction effect of grade configuration and special education on academic achievement, as measured by the MAP communication arts assessment, $F = 0.418$, $df = 4, 497$, $p = .969$. See Table 11 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. The communication arts scores, on average, do not differ across special education and grade configuration groups. This does not support H4.

Table 11

Descriptive Statistics for the Results of the Test for H4

Configuration	SPED	*M*	*SD*	*n*
4-6	Lowest	57.38	6.751	5
	Moderate	59.32	8.831	5
	Highest	38.07	17.155	3
	Total	53.67	13.044	13
5-6	Lowest	64.26	11.470	5
	Moderate	51.56	8.093	17
	Highest	52.23	5.254	3
	Total	54.18	9.715	25
5-8	Lowest	45.90	8.933	7
	Moderate	48.90	9.036	29
	Highest	47.40	7.670	15
	Total	48.05	8.542	51
6-12	Lowest	59.78	13.624	4
	Moderate	51.00	12.036	7
	Highest	43.90	8.920	6
	Total	50.56	12.327	17
6-8	Lowest	54.20	10.931	33
	Moderate	52.00	13.961	127
	Highest	47.00	15.932	32
	Total	51.55	13.951	192
K-6	Lowest	50.93	21.041	47
	Moderate	51.05	14.160	115
	Highest	44.23	16.401	90
	Total	48.59	16.679	252
K-8	Lowest	50.28	10.245	9
	Moderate	49.82	16.946	37
	Highest	49.96	17.177	26
	Total	49.93	16.166	72
Other	Lowest	62.30	6.432	4
	Moderate	55.82	9.138	10
	Highest	50.48	9.897	6
	Total	55.52	9.466	20
Total	Lowest	53.09	15.971	114
	Moderate	51.37	13.586	347
	Highest	46.03	15.410	181
	Total	50.17	14.779	642

The results of the analysis indicated there was not a statistically significant main effect of special education on academic achievement, as measured by the MAP communication arts assessment, $F = 0.795$, $df = 2, 497$, $p = .452$. See Total rows in Table 11 for the means and standard deviations for this analysis. Thus, special education did not affect differences in communication arts scores for grade 6 students during the 2012-2013 school.

Other interactions for RQ2. The results of the analysis indicated a statistically significant interaction effect of SES and ethnicity on academic achievement, as measured by the MAP communication arts assessment, $F = 4.567$, $df = 4, 497$, $p < .05$. See Table 12 for the means and standard deviations.

Table 12

Other Interactions for RQ2

SES	*M*	*SD*	*n*
Low SES	66.08	8.127	83
Mid SES	53.40	11.402	299
High SES	42.96	15.634	265
Total	50.75	15.053	647

RQ3. To what extent is there a difference in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations?

H5. There is a difference in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations.

The results of the analysis indicated there was not a statistically significant main effect of grade configuration on academic achievement, as measured by the MAP mathematics assessment, $F = 1.579$, $df = 7, 497$, $p = .139$. See Table 13 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. Math scores, on average do not differ across grade configurations. This does not support H5.

Table 13

Descriptive Statistics for the Results of the Test for H5

Configuration	*M*	*SD*	*n*
4-6	61.87	14.424	13
5-6	62.06	11.482	25
5-8	52.03	14.059	51
6-12	56.91	19.051	22
6-8	55.59	15.350	192
K-6	56.09	20.298	265
K-8	55.73	19.884	83
Other	60.62	9.411	20
Total	56.09	17.859	671

RQ4. To what extent do the differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations vary as a function of ethnicity, SES, or special education classifications of the schools?

H6. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by ethnicity classification.

The results of the analysis indicated a statistically significant interaction effect of ethnicity and grade configuration on academic achievement, as measured by the MAP mathematics assessment, $F = 1.749$, $df = 13, 497$, $p < .05$. See Table 14 for the means and standard deviations for this analysis. Mathematics scores of 6th grade students, on average, differed across ethnicity and grade configuration groups in Missouri for the 2012-2013 school year. This supports H6.

Table 14

Descriptive Statistics for the Results of the Test for H6

Configuration	Ethnicity	*M*	*SD*	*n*
4-6	Lowest	77.60	-	1
	Moderate	65.18	12.617	9
	Highest	46.70	9.663	3
	Total	61.87	14.424	13
5-6	Moderate	65.08	9.283	19
	Highest	55.92	11.682	5
	Total	63.17	10.277	24
5-8	Lowest	50.64	16.294	17
	Moderate	50.50	10.705	27
	Highest	64.47	17.540	6
	Total	52.23	14.133	50
6-12	Lowest	67.79	16.278	8
	Moderate	50.16	19.923	11
	Highest	45.65	.919	2
	Total	56.45	19.392	21
6-8	Lowest	55.95	12.849	21
	Moderate	59.44	12.321	115
	Highest	47.65	18.822	52
	Total	55.79	15.278	188
K-6	Lowest	60.89	19.235	79
	Moderate	63.52	16.469	113
	Highest	39.04	16.979	64
	Total	56.59	20.194	256
K-8	Lowest	58.99	18.659	36
	Moderate	56.21	18.452	38
	Highest	44.07	24.663	6
	Total	56.55	19.153	80
Other	Lowest	62.55	2.758	2
	Moderate	64.00	8.199	9
	Highest	61.53	13.795	4
	Total	63.15	9.000	15
Total	Lowest	59.24	18.049	164
	Moderate	60.01	15.044	341
	Highest	44.96	18.590	142
	Total	56.51	17.732	647

H7. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by SES classification.

The results of the analysis indicated there was not a statistically significant interaction effect of grade configuration and SES on academic achievement, as measured by the MAP mathematics assessment, $F = 1.137$, $df = 13, 497$, $p = .324$. See Table 15 for the means and standard deviations for this analysis. No post hoc was warranted. The mathematics scores, on average, do not differ across SES and grade configuration groups. This does not support H7.

Table 15

Descriptive Statistics for the Results of the Test for H7

Configuration	SES	*M*	*SD*	*n*
4-6	Mid SES	66.09	13.972	8
	High SES	55.12	13.783	5
	Total	61.87	14.424	13
5-6	Low SES	72.38	11.765	4
	Mid SES	63.58	8.513	14
	High SES	56.08	9.262	6
	Total	63.17	10.277	24
5-8	Low SES	70.60	.707	2
	Mid SES	51.23	11.686	28
	High SES	51.78	16.848	20
	Total	52.23	14.133	50
6-12	Low SES	75.00	-.	1
	Mid SES	55.54	19.809	17
	High SES	55.43	20.994	3
	Total	56.45	19.392	21
6-8	Low SES	69.06	7.853	46
	Mid SES	55.85	11.084	93
	High SES	43.20	16.898	49
	Total	55.79	15.278	188
K-6	Low SES	70.61	10.827	21
	Mid SES	65.68	16.516	102
	High SES	47.41	19.527	133
	Total	56.59	20.194	256
K-8	Low SES	70.68	12.973	6
	Mid SES	56.47	17.479	29
	High SES	54.72	20.358	45
	Total	56.55	19.153	80
Other	Low SES	73.53	.208	3
	Mid SES	61.05	9.187	8
	High SES	59.55	6.648	4
	Total	63.15	9.000	15
Total	Low SES	70.00	8.913	83
	Mid SES	59.59	15.155	299
	High SES	48.82	18.923	265
	Total	56.51	17.732	647

However, the results of the analysis indicated a statistically significant main effect of SES on academic achievement, as measured by the MAP mathematics assessment, $F = 8.903$, $df = 2, 497$, $p < .001$. See the Total rows in Table 15 for the means and standard deviations for this analysis. A follow-up post hoc was conducted to determine which pairs of means were different using Tukey's HSD. All pairwise comparisons were statistically significant (see Table 16).

Table 16

Post Hoc Results for H7

SES	Mean Difference	*p*
Low SES – Mid SES	13.183	< .001
Low SES – High SES	17.503	< .001
Mid SES – High SES	4.320	< .05

H8. The differences in 6th grade academic achievement, as measured by the MAP mathematics assessment, among Missouri grade configurations are affected by special education classification.

The results of the analysis indicated there was not a statistically significant interaction effect of grade configuration and special education classification on academic achievement, as measured by the MAP mathematics assessment,, $F = 0.579$, $df = 14, 497$, $p = .882$. See Table 17 for the means and standard deviations for this analysis. No post hoc was warranted. Math scores, on average, do not differ across special education and grade configuration groups. This does not support H8.

Table 17

Descriptive Statistics for the Results of the Test for H8

Configuration	Special Education	*M*	*SD*	*N*
4-6	Lowest	65.44	16.027	5
	Moderate	66.18	10.681	5
	Highest	48.73	13.008	3
	Total	61.87	14.424	13
5-6	Lowest	71.52	11.978	5
	Moderate	59.06	10.886	17
	Highest	63.30	6.696	3
	Total	62.06	11.482	25
5-8	Lowest	50.13	19.154	7
	Moderate	54.29	14.063	29
	Highest	48.56	11.306	15
	Total	52.03	14.059	51
6-12	Lowest	62.30	20.098	4
	Moderate	53.41	15.992	7
	Highest	51.08	14.339	6
	Total	54.68	15.999	17
6-8	Lowest	57.95	13.370	33
	Moderate	56.49	14.829	127
	Highest	49.60	18.090	32
	Total	55.59	15.350	192
K-6	Lowest	59.72	22.016	47
	Moderate	57.96	18.827	115
	Highest	51.54	19.640	90
	Total	56.00	19.952	252
K-8	Lowest	52.87	18.784	9
	Moderate	55.50	20.045	37
	Highest	54.17	20.551	26
	Total	54.69	19.826	72
Other	Lowest	64.93	11.064	4
	Moderate	60.83	7.696	10
	Highest	57.40	11.365	6
	Total	60.62	9.411	20
Total	Lowest	59.12	18.421	114
	Moderate	57.02	16.457	347
	Highest	51.66	18.258	181
	Total	55.88	17.527	642

The results of the analysis indicated there was not a statistically significant main effect of special education on academic achievement, as measured by the MAP mathematics assessment, $F = 1.234$, $df = 2, 497$, $p = .292$. See the Total rows in Table 17 for the means and standard deviations for this analysis. No follow-up post hoc was warranted. Mathematics scores, on average, do not differ across special education classifications.

Other interactions for RQ4. The results of the analysis indicated a statistically significant interaction effect of SES and ethnicity on academic achievement, as measured by the MAP mathematics assessment, $F = 3.086$, $df = 4, 497$, $p < .05$. See Table 18 for the means and standard deviations for this analysis.

Table 18

SES and Ethnicity Interaction for RQ4

SES	Ethnicity	*M*	*SD*	*n*
Low SES	Lowest	66.53	10.563	8
	Moderate	69.57	8.775	63
	Highest	74.58	7.376	12
	Total	70.00	8.913	83
Mid SES	Lowest	60.55	16.568	92
	Moderate	60.11	14.889	176
	Highest	53.77	10.787	31
	Total	59.59	15.155	299
High SES	Lowest	56.45	20.417	64
	Moderate	53.93	15.369	102
	Highest	38.62	16.816	99
	Total	48.82	18.923	265
Total	Lowest	59.24	18.049	164
	Moderate	60.01	15.044	341
	Highest	44.96	18.590	142
	Total	56.51	17.732	647

The results of the analysis indicated a statistically significant interaction effect of SES, ethnicity, and grade configuration on academic achievement, as measured by the

MAP mathematics assessment, $F = 3.649$, $df = 10, 497$, $p < .001$. See Appendix D for the means and standard deviations for this analysis.

The results of the analysis indicated a statistically significant interaction effect of SES, special education, ethnicity, and grade configuration on academic achievement, as measured by the MAP mathematics assessment, $F = 1.79$, $df = 6, 497$, $p < .05$. See Appendix E for the means and standard deviations for this analysis.

Summary

Provided in chapter four were the findings of the MANOVA to determine if statistically significant differences in the MAP 6th grade communication arts and mathematics scores existed among the grade configurations in Missouri schools included in the study. These results were used to address each of the research questions. Results of hypothesis testing indicated that there was no difference in academic achievement among grade configurations. However, the results of the analysis indicated a statistically significant interaction effect of ethnicity and grade configuration on academic achievement, as measured by the MAP communication arts and mathematics assessments, and a main effect of SES for both assessments. Chapter five begins with a brief summary of the study, overview of the problem, and purpose and research questions. A review of the methodology is then presented. Major findings and findings related to literature are discussed. Conclusions, implications, and recommendations are stated. Chapter five ends with concluding remarks.

Chapter Five

Interpretation and Recommendations

In chapter one of this study, the introduction, background, statement of the problem, purpose statement of the study, significance of the study, delimitations, assumptions, research questions, definition of terms, overview of the methodology, and organization of the study were introduced. Presented in chapter two was a review of literature relevant to this study that included growth of the young adolescent, history of American and Missouri schools, the history of grade configuration, the impact that research had, and the advantages and disadvantages of academic achievement when compared to the grade configuration attended. In the third chapter, the methodology for this study, which included the research design, population and sample, including sampling procedures, instrumentation, measurement, validity and reliability, demographics, data collection procedures, data analysis and hypothesis testing, and limitations, was explained. In the fourth chapter, descriptive statistics and the results of the hypothesis testing related to the research questions were presented. In this chapter, a review of the problem, purpose, research questions, methodology, and major findings are discussed. Additionally, findings related to the literature, implications for action, and recommendations for further research are addressed.

Study Summary

This section includes a condensed summary of the current study. Included is a review of the problem, the purpose of this study, and the research questions. Additionally, a review of the methodology and major findings of the study are included.

Overview of the problem. School configuration has long been a controversial issue with researchers and school reformers (Bell, 2010; Black, 2013; Davis, 2008; DeJong & Craig, 2002; Gruhn & Douglas, 1956; Howley, 2002; Look, 2001; Manning, 2000; NFAMGR, 2008; Paglin & Fager, 1997; Yecke, 2006). At the beginning of the 20th century, K-8 and 9-12 schools began to change to K-6, 7-9, and 10-12 schools in hopes that students would complete high school and continue to college. Junior high schools continued to thrive until society began to change. During the 1960s, society began to focus on the middle years of the adolescent. A demand for meeting the unique needs of the young adolescent by researchers helped to change the grade configuration to K-5, 6-8, and 9-12 (Eichhorn, 1973). During this time, the focus was on creating a culture and curriculum that would support and meet the unique needs of these adolescents. Despite attempts at education reform in the middle school years, adolescents are not performing at grade-level proficiency (NCES, 2011b). NAEP reading and math scores for 13-year-olds have remained stagnant since 1994 (NCES, 2011a, 2011b). Consequently, districts have adopted various grade configurations intended to improve academic achievement of young adolescents.

Purpose statement and research questions. The purpose of this study was to determine the extent of the difference between 6th grade student achievement in reading and mathematics by the grade configuration of the school in which students were enrolled. This study was also conducted to examine how academic achievement was affected by the ethnicity, SES, and special education classifications of the schools that include 6th grade students in the state of Missouri, using the MAP communication arts

and mathematics data from the 2012-2013 school year, in combination with grade configuration.

Review of the methodology. This study included all public schools in the state of Missouri meeting criteria for inclusion in the study and reporting MAP student achievement data for the 2012-2013 school year. Archived data from MODESE was used for the study. MAP grade-level communication arts and mathematics assessment scores of 6th grade students in Missouri were used as the dependent variables of student achievement. MAP reading and mathematics assessment scores included the percentage of students scoring at *Proficient* and *Advanced* levels.

Independent variables included each school's grade configuration and the ethnicity, SES, and special education classifications. Ethnicity was defined as the percentage of non-white (Hispanic, Black, Asian, and Indian) students enrolled in a school. SES was the percentage of students enrolled in a school eligible for free or reduced meals. Special education included the percentage of students enrolled in a school with an individualized education plan.

A MANOVA was used to address the research questions to determine the extent of any main effects of the independent variable of grade configuration on the dependent variable of academic achievement in communication arts and mathematics. The analysis was also used to address the research questions to determine the interaction effects between grade configuration and ethnicity, SES, and special education classifications on the dependent variables of academic achievement in communication arts and mathematics. Tukey's HSD was utilized for all follow-up post hoc analyses.

Major findings. The results of this study showed the extent to which differences existed among grade configurations in student achievement in 6th grade communication arts and mathematics. The findings were consistent in both communication arts and mathematics for 6th grade students in Missouri public schools for 2012-2013 school year. There were no significant differences in academic achievement among grade configurations.

However, K-8 schools performed better than K-6 and 5-8 schools in communication arts. The data also show that K-8 schools performed better than 5-8 schools in communication arts. Schools with the grade configurations 4-6, 5-6, 6-12, 6-8, and Other had higher mean scores than K-8 schools in communication arts. Schools that were in the Other had the highest mean score for communication arts. Results from this study show that the grade configuration with the lowest mean for communication arts was the 5-8 grade configuration schools.

Schools with the grade configurations K-6, 4-6, 5-6, 6-12, and Other had higher means than the K-8 schools in mathematics. Schools with the grade configuration 5-6 had the highest mean score in mathematics. The data show that schools with the grade configuration 5-8 had the lowest mean score in mathematics.

The results of the analysis indicated a marginally statistically significant interaction effect of grade configuration and ethnicity on academic achievement, as measured by the MAP communication arts assessment. Schools with the grade configuration 4-6 and *Lowest* ethnicity classification had the highest score in communication arts when compared to all other grade configurations with a *L*owest ethnicity classification. Schools with the grade configuration 5-8 and the *L*owest

ethnicity classification scored the lowest in communication arts when compared to all other grade configurations. Schools with 5-6 grade configurations and *M*oderate ethnicity scored highest on the communication arts assessment when compared to all other grade configurations with a *Moderate* ethnicity classification. Schools with the grade configuration of 5-8 and *M*oderate ethnicity classification scored the lowest on the communication arts assessment when compared to all other grade configurations with a *Moderate* ethnicity classification. The Other grade configuration with a *Highest* ethnicity classification had the highest average scores compared to the other grade configurations with a *Highest* ethnicity classification. Schools with the configuration of 4-6 with a *Highest* ethnicity classification had the lowest score when compared to all other grade configurations with a *Highest* ethnicity classification.

Additionally, ethnicity classification and grade configuration affected academic achievement in mathematics. Schools with the grade configuration of 4-6 and in the *Lowest* ethnicity classification had the highest mean score when compared to all other schools with a *Lowest* ethnicity classification. Schools with a *Lowest* ethnicity classification with the lowest mean score were schools with the grade configuration of 5-8 as compared to all other schools in the *Lowest* ethnicity classification. Schools in the 4-6 grade configuration a *Moderate* ethnicity classification had the highest mean scores in mathematics when compared to all other grade configurations with a *Moderate* ethnicity classification. Schools with the grade configuration 6-12 and in the *Moderate* ethnicity classification scored the lowest on the mathematics assessment than all other schools with a *Moderate* ethnicity classification. Schools with the 5-8 grade configuration and in the *Highest* ethnicity classification scored the highest than all other schools that were in the

Highest ethnicity classification. Schools in the *Highest* ethnicity classification and grade configuration of K-6 scored the lowest on the mathematics assessment than all other schools in the *Highest* ethnicity classification. The schools that had the highest total mean score in mathematics were the schools in the Other category. The 5-8 grade configuration schools had the lowest total mean score in mathematics.

SES and grade configuration did not affect academic achievement in communication arts and mathematics; however, the results of this study indicated a statistically significant main effect of SES on academic achievement, for both the MAP mathematics and communication arts assessments. In communication arts, schools with the *Low* SES classification had the highest mean score when compared to schools with the *Mid* SES classification or *High* SES classification. The *Mid* SES classification schools outperformed the schools with *High* SES classification. *High* SES classification schools had the lowest mean score in communication arts. In mathematics, schools with the highest mean scores were those schools with the *Low* SES classification. The schools with *Mid* SES classification had higher mean scores in mathematics than those schools that had *High* SES classification. The *High* SES classification schools had the lowest mean score in mathematics when compared to schools with *Low* SES and *Mid* SES classifications.

Findings Related to the Literature

Comparing and contrasting some of the results of this study to the studies in previous literature revealed similarities and differences. In this study, when examining academic achievement for communication arts, schools with grade configurations 4-6, 5-6, 6-12, 6-8, and Other had higher mean scores than K-8 schools. However, K-8 schools

performed better than K-6 and 5-8 schools. This is in contrast to Byrnes and Ruby (2007), Wyant and Mathis (2007), and Clark et al. (2013). Byrnes and Ruby (2007) determined that K-8 schools produced higher levels of student achievement when compared to middle schools in Philadelphia. The results of this study support Wyant and Mathis (2007) and Clark et al. (2013). Wyant and Mathis (2007) determined that students attending K-6 and K-8 grade configurations had higher scores in reading when compared to students attending 6-8 grade configurations. Clark et al. (2013) also found that for reading achievement in Texas for five years, the growth was higher for students attending K-8 grade configurations.

In addition, this study showed mixed results for academic achievement for mathematics when comparing middle school grade configurations with elementary grade configurations. While the middle school grade configurations of 4-6, 5-6, 6-8, and 6-12 all had higher mathematics mean scores, the K-6 and K-8 scores were higher than the 5-8 grade configurations. These findings are in contrast to studies by Simmons et al. (1987), Franklin and Glascock (1996), Bell (2010), and Clark et al. (2013). Simmons et al. (1987) and Franklin and Glascock (1996) determined that K-8 schools performed better on mathematics assessments when compared to middle schools. Bell (2010) found that 5-8, 3-6, and PK-6 grade configurations scored higher on mathematics assessments than PK-8 schools. Clark et al. (2013) found that for mathematics growth, four out of five years demonstrated higher scores for students attending the K-8 grade configurations.

The results of this study suggest there is no significant difference in academic achievement among grade span configurations. This is similar to Alspaugh's (1998) study. The results of the study conducted by Alspaugh (1998), which suggested that

grade configuration does not have an effect on academic achievement when comparing 6-8 to K-8 grade configurations. Alspaugh (1998) asserted that there are other variables that affected academic achievement, such as transitioning, attendance rates, dropout rates, and school size. The results of this study support Alspaugh (1998) because a marginally statistically significant interaction effect of grade configuration and ethnicity on academic achievement as measured by the MAP communication arts assessment was determined. Additionally, the results indicated a statistically significant interaction effect of grade configuration and ethnicity on academic achievement as measured by the MAP mathematics assessment.

Additionally, the results of this study showed that SES did have a statistically significant main effect on academic achievement in communication arts and mathematics. The results of this study showed that schools with *Low* SES classification had the highest mean scores in communication arts and mathematics when compared to schools that had *Mid* or *High* SES classification. Additionally, schools with *High* SES classification had the lowest mean scores in both communication arts and mathematics. These findings concur with Wihry et al.'s (1992) findings that the students that were in *Low* SES schools had higher test scores on standardized tests. Furthermore, this concurs with Wyant and Mathis' (2007) findings that the percentage of students in poverty had a negative effect on student achievement in communication arts and mathematics.

Conclusions

As stated in chapter one, district administrators face challenging decisions about academic achievement and grade configuration. As required by federal law, buildings and districts must meet performance standards or face financial constraints. The research

that district administrators rely upon to make these decisions often has mixed results and does not meet the unique needs of the district. In this section, implications for action, recommendations for future research, and concluding remarks are presented.

Implications for action. School districts are faced with the need to increase academic achievement of students in order to meet federal requirements. They also must find ways to be efficient due to the state and federal government's declining financial support. The results of this study suggest that academic achievement does not significantly differ by grade configuration. Therefore, grouping 6th grade students into a particular grade configuration should not be a factor when districts are determining how to ensure higher academic achievement.

The results of this study indicated that high academic achievement was found in elementary and middle school grade configurations. The variables of SES and special education classification with grade configuration did not have a significant interaction on student achievement. Therefore, it is important for all stakeholders to evaluate their own districts and schools to make the best decision about grade configurations that will meet the needs of all students.

Additionally, the results of the analysis indicated a marginally statistically significant interaction effect of grade configuration and ethnicity on academic achievement, as measured by the MAP communication arts assessment, and a statistically significant interaction effect on mathematics achievement. This would suggest that administrators should analyze the ethnicity of schools that include 6th grade students and ensure an equal distribution of students by ethnicity.

Furthermore, the results of this study showed that SES did have a significant main effect on student achievement. This would suggest that administrators need to analyze the specific needs of the SES groups that are in their buildings and implement best practices to meet the needs of these groups of students. Additionally, administrators may want to assign students to different buildings to ensure a more balance percentage of low SES students are in all buildings in the district.

In this study, there were no conclusive data that suggested one grade configuration is superior over the others. The mixed results imply that there are other variables affecting student achievement. One implication for action for school and district leaders is to analyze current facilities, use student population projections, and examine the unique needs of the community when determining which grade configuration is best for 6th grade students. Another implication for action for school and district leaders wanting to improve student achievement is to examine instructional and transitioning practices. Research shows that adolescents between the ages of 10-15 who go through several transitions show a decline in academic achievement (Alspaugh & Harting, 1995; Seidman et al., 1994; Simmons et al., 1991). Additionally, implementing research based best practices will improve student achievement regardless of the grade configuration (George & Alexander, 2003; Paglin & Fager, 1997).

Recommendations for future research. This study was conducted to examine differences in academic achievement among grade configurations. Additionally, the effect of ethnicity, SES, and special education classifications, and grade configuration on academic achievement of 6th grade students in Missouri public schools was studied. Additional research is needed due to the mixed results of the current study:

1. Since there were no differences in academic achievement on the MAP communication arts and mathematics assessments among grade configurations, exploring other variables could provide valuable insight. Therefore, it is recommended to conduct a study to examine the effects of grade configuration on attendance, grade point average, and behavior referrals.
2. Replicate the current study using data from other states to determine if findings would be similar. Conducting this research would improve the generalizability of the results.
3. In the current study, only one year of data was analyzed. Results showed that the grade configuration with the lowest mean for communication arts and mathematics was 5-8 grade configuration schools. A study could be conducted similar to the current study using longitudinal data to determine if the findings would be the same over time.
4. Conduct a mixed method study to determine whether there are differences in teacher, student, and parent perceptions of grade configurations and its effect on student achievement. Teachers, students, and parents would be surveyed and with selected group members interviewed.

Concluding remarks. This study was conducted to examine how academic achievement was affected by grade configuration and the ethnicity, SES, and special education classifications of the schools that include 6th grade students in the state of Missouri, using the MAP communication arts and mathematics data from the 2012-2013 school year. In this study, there were no statistically significant results that one grade

configuration produces higher academic achievement than does another. Additionally, the data analysis of special education classifications showed no interaction effect on academic achievement.

The results of the analysis indicated a statistically significant interaction effect of ethnicity and grade configuration on academic achievement, as measured by the MAP communication arts and mathematics assessments. Communication arts and mathematics scores of 6th grade students, on average, differed across ethnicity and grade configuration groups in Missouri for the 2012-2013 school year. Furthermore, the results of this study showed that SES did have a significant main effect on student achievement, indicating differences among SES levels. All pairwise comparisons were statistically significant.

School districts, local boards of education, government leaders, and communities need to assess the unique needs of the 6th grade students in order to determine the grade configuration that would produce the highest academic scores for the local school community. What makes a high achieving school for adolescents between the ages of 10-15 is uncertain. School grade configuration alone cannot ensure academic success. This study has shown that grade configuration has no effect on academic achievement of 6th grade in Missouri as measured by the MAP communication arts and mathematics assessments. Success in school is analogous to the saying it takes a village to raise a child. To ensure academic success of 6th grade students, many school variables must be added at just the right time and in the correct amount. There needs to be just the right amount of technology, curriculum, teachers, counselors, administrators, and extra-curricular programs introduced in a safe environment to produce successful students.

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Appendices

Appendix A: Qualifications for Free and Reduced Lunch

Table A1

Household Size and Income Level to Qualify for Free or Reduced Lunch Status 2009-2011

Household Size	Annual Income for Reduced Cost Meals	Annual Income for Free Meals
1	$20,036	$14,079
2	$26,955	$18,941
3	$33,874	$23,803
4	$40,793	$28,665
5	$47,712	$33,527
6	$54,631	$38,389
7	$61,550	$43,251
8	$68,469	$48,113
Each Additional Member	+$6,919	+$4,862

Note. Adapted from "Federal Register," by the U.S. Department of Agriculture, 2009, p. 13412.

Appendix B: IRB Application

BAKER UNIVERSITY

School of education
Graduate department

Date:

IRB PROTOCOL NUMBER _____
(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. Susan Rogers	Susan Rogers	Major Advisor
2.	Katie Hole	Katie Hole	Research Analyst
3.	Dr. Susan Lindahl		University Committee Member
4.			External Committee Member

Principal Investigator: Rolinda E. Ford Rolinda E. Ford
Phone: 816-812-5602
Email: rford_1@hotmail.com
Mailing address: 830 NE 46th Terrace, Kansas City, MO 64116

Faculty sponsor: Dr. Susan Rogers
Phone: 913-344-1226
Email: susan.rogers@bakeru.edu

Expected Category of Review: _x_Exempt ___ Expedited _ __Full

II: Protocol: The Effect of Grade Configuration on Sixth Grade Student Achievement in Missouri

Summary

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

The purpose of this study is to examine the extent to which a relationship exists between school configuration and academic achievement of sixth grade students in Missouri as measured by the Missouri Assessment Program (MAP) Communication Arts and Mathematics assessments. Another purpose of the study is to determine if the relationship is affected by the schools' poverty level, ethnicity, and special education status.

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

There are no conditions or manipulations included in the 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.
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.

Student achievement will be measured by the 2011 MAP Communication Arts and Mathematics data that is available to the public and can be retrieved from the Missouri Department of Elementary and Secondary Education website. The subjects will not encounter any risk of psychological, social, physical or legal risk in this study.

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

The subjects will not encounter any stress in this study.

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

No subjects will not be deceived or misled in any way in this study.

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

The information used in this study does not require any personal or sensitive information to be collected.

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

No subjects in this study 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?

No time will be demanded of any subjects of this study.

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 in this study were all public school buildings in the state of Missouri. There will be no additional written or oral solicitation.

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?

All public schools in the state of Missouri must provide demographic and achievement data to the Missouri Department of Elementary and Secondary Education. No additional participation is needed for this study.

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.

For this study, a written consent form will not be used. All data is public information that is available on the Missouri Department of Elementary and Secondary Education website.

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.

For this study, no aspect of the data will be part of any permanent record that can be identified with any 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.

Data for this study is archival. No data will 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?

All data given to the researcher will remain confidential and only viewed by the researcher and the researcher's committee. The data will be stored on the hard drive of the researcher's computer. The data will be stored as long as it takes for the researcher to complete the study. The researcher will destroy the data at the completion of three years.

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 this study.

Will any data from files or archival data be used? If so, please describe.

All data that will be used for this study is archival data from the Missouri Department of Elementary and Secondary Education and is available from their web site.

Appendix C: IRB Approval

BAKER UNIVERSITY
Own Confidence

March 11, 2013

Rolinda E. Ford
830 NE 46th Terrace
Kansas City, MO 64116

Dear Ms. Ford:

The Baker University IRB has reviewed your research project application (M-0161-0228-0311-G) and approved this project under Exempt 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.

The Baker University IRB requires that your consent form must include the date of approval and expiration date (one year from today). Please be aware of the following:

1. At designated intervals (usually annually) until the project is completed, a Project Status Report must be returned to the IRB.
2. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
3. Notify the OIR about any new investigators not named in original application.
4. Any injury to a subject because of the research procedure must be reported to the IRB Chair or representative immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform Office of Institutional Research (OIR) or myself when this project is terminated. As noted above, you must also provide OIR with an annual status report and receive approval for maintaining your status. If your project receives funding which requests an annual update approval, you must request this from the IRB one month prior to the annual update. Thanks for your cooperation. If you have any questions, please contact me.

Sincerely,

Carolyn Doolittle, EdD
Chair, Baker University IRB

Appendix D: Interaction Effect of SES, Ethnicity, and Grade Configuration for RQ4

Table D1

Interaction Effect of SES, Ethnicity, and Grade Configuration for RQ4

SES	Ethnicity	Grade Configuration	*M*	*SD*	*n*
Low SES	Lowest	5-8	70.60	.707	2
		6-12	75.00		1
		6-8	54.80		1
		K-6	62.07	14.258	3
		K-8	75.00		1
		Total	66.53	10.563	8
	Moderate	5-6	72.38	11.765	4
		6-8	68.23	7.175	36
		K-6	72.04	9.948	18
		K-8	66.65	14.354	4
		Other	73.70	.	1
		Total	69.59	8.775	63
	Highest	6-8	73.96	8.136	9
		K-8	82.50	.	1
		Other	73.45	.212	2
		Total	74.58	7.375	12
	Total	5-6	72.38	11.765	4
		5-8	70.60	.707	2
		6-12	75.00	.	1
		6-8	69.06	7.853	46
		K-6	70.61	10.828	21
		K-8	70.68	12.973	6
		Other	73.53	.208	3
		Total	70.00	8.913	83
Mid SES	Lowest	4-6	77.60	.	1
		5-8	46.91	9.912	9
		6-12	64.62	17.904	6
		6-8	53.82	12.207	15
		K-6	67.94	15.412	44
		K-8	51.59	16.036	16
		Other	60.60	.	1
		Total	60.55	16.568	92
	Moderate	4-6	64.44	14.231	7
		5-6	64.19	8.774	11
		5-8	52.05	11.755	17

		6-12	51.01	20.791	10
		6-8	56.86	11.062	63
		K-6	66.09	16.980	50
		K-8	62.47	17.907	13
		Other	65.72	7.372	5
		Total	60.11	14.889	176
	Highest	5-6	61.33	8.749	3
		5-8	63.70	14.142	2
		6-12	46.30	.	1
		6-8	53.66	10.110	15
		K-6	50.65	12.913	8
		Other	49.60	1.414	2
		Total	53.77	10.787	31
	Total	4-6	66.09	13.972	8
		5-6	63.58	8.513	14
		5-8	51.23	11.686	28
		6-12	55.54	19.809	17
		6-8	55.85	11.084	93
		K-6	65.68	16.516	102
		K-8	56.47	17.479	29
		Other	61.05	9.187	8
		Total	59.59	15.155	299
High SES	Lowest	5-8	49.58	22.507	6
		6-12	79.60	.	1
		6-8	62.54	15.245	5
		K-6	51.09	20.455	32
		K-8	64.38	19.209	19
		Other	64.50	.	1
		Total	56.45	20.417	64
	Moderate	4-6	67.75	6.435	2
		5-6	60.23	4.089	4
		5-8	47.87	8.556	10
		6-12	41.70	.	1
		6-8	49.80	14.665	16
		K-6	57.26	15.933	45
		K-8	50.34	17.977	21
		Other	57.90	7.068	3
		Total	53.93	15.369	102
	Highest	4-6	46.70	9.663	3
		5-6	47.80	13.152	2

		5-8	64.85	21.106	4
		6-12	45.00	.	1
		6-8	35.98	14.301	28
		K-6	37.39	16.929	56
		K-8	36.38	17.810	5
		Total	38.62	16.816	99
	Total	4-6	55.12	13.783	5
		5-6	56.08	9.262	6
		5-8	51.78	16.848	20
		6-12	55.43	20.994	3
		6-8	43.20	16.898	49
		K-6	47.41	19.527	133
		K-8	54.72	20.358	45
		Other	59.55	6.648	4
		Total	48.82	18.923	265
Total	Lowest	4-6	77.60	.	1
		5-8	50.64	16.294	17
		6-12	67.79	16.278	8
		6-8	55.95	12.849	21
		K-6	60.89	19.235	79
		K-8	58.99	18.659	36
		Other	62.55	2.758	2
		Total	59.24	18.049	164
	Moderate	4-6	65.18	12.617	9
		5-6	65.08	9.283	19
		5-8	50.50	10.705	27
		6-12	50.16	19.923	11
		6-8	59.44	12.321	115
		K-6	63.52	16.469	113
		K-8	56.21	18.452	38
		Other	64.00	8.199	9
		Total	60.01	15.044	341
	Highest	4-6	46.70	9.663	3
		5-6	55.92	11.682	5
		5-8	64.47	17.540	6
		6-12	45.65	.919	2
		6-8	47.65	18.822	52
		K-6	39.04	16.983	64
		K-8	44.07	24.663	6
		Other	61.53	13.795	4

	Total	44.96	18.590	142
Total	4-6	61.87	14.424	13
	5-6	63.17	10.277	24
	5-8	52.23	14.133	50
	6-12	56.45	19.392	21
	6-8	55.79	15.278	188
	K-6	56.59	20.194	256
	K-8	56.55	19.153	80
	Other	63.15	9.000	15
	Total	56.51	17.732	647

Appendix E: Interaction Effect of Special Education, Ethnicity, and Grade Configuration for RQ4

Table E1

Interaction Effect of SES, Special Education, Ethnicity, and Grade Configuration for RQ4

SES	Special Education	Ethnicity	Grade Configuration	*M*	*SD*	*n*
Low SES	Lowest	Moderate	5-6	81.15	3.041	2
			6-8	65.46	4.667	7
			K-6	78.85	7.482	6
			K-8	75.80	.	1
			Other	73.70	.	1
			Total	73.12	8.531	17
			6-8	71.97	13.769	3
			Other	73.60	.	1
			Total	72.38	11.272	4
		Total	5-6	81.15	3.041	2
			6-8	67.41	8.157	10
			K-6	78.85	7.482	6
			K-8	75.80	.	1
			Other	73.65	.071	2
			Total	72.98	8.796	21
	Moderate	Lowest	5-8	70.10	.	1
			6-12	75.00	.	1
			K-6	54.20	5.940	2
			Total	63.38	11.314	4
		Moderate	5-6	63.60	9.900	2
			6-8	69.08	8.128	25
			K-6	69.01	9.262	8
			K-8	72.20	7.920	2
			Total	68.94	8.208	37
		Highest	6-8	73.92	5.019	5
			K-8	82.50	.	1
			Other	73.30	.	1
			Total	75.06	5.255	7
		Total	5-6	63.60	9.899	2
			5-8	70.10	.	1
			6-12	75.00	.	1
			6-8	69.88	7.843	30
			K-6	66.05	10.472	10

		K-8	75.63	8.168	3
		Other	73.30	.	1
		Total	69.36	8.446	48
Highest	Lowest	5-8	71.10	.	1
		6-8	54.80	.	1
		K-8	75.00	.	1
		Total	66.97	10.716	3
	Moderate	6-8	67.83	2.111	4
		K-6	67.88	11.267	4
		K-8	46.40	.	1
		Total	65.47	10.020	9
	Highest	6-8	80.10	.	1
		Total	80.10	.	1
	Total	5-8	71.10	.	1
		6-8	67.70	8.168	6
		K-6	67.88	11.267	4
		K-8	60.70	20.223	2
		Total	66.94	10.106	13
Total	Lowest	5-8	70.60	.707	2
		6-12	75.00	.	1
		6-8	54.80	.	1
		K-6	54.20	5.940	2
		K-8	75.00	.	1
		Total	64.91	10.294	7
	Moderate	5-6	72.38	11.765	4
		6-8	68.23	7.175	36
		K-6	72.04	9.948	18
		K-8	66.65	14.354	4
		Other	73.70	.	1
		Total	69.57	8.775	63
	Highest	6-8	73.96	8.136	9
		K-8	82.50	.	1
		Other	73.45	.212	2
		Total	74.58	7.375	12
	Total	5-6	72.38	11.765	4
		5-8	70.60	.707	2
		6-12	75.00	.	1
		6-8	69.06	7.853	46
		K-6	70.26	10.979	20
		K-8	70.68	12.973	6

			Other	73.53	.208	3
			Total	69.91	8.925	82
Mid SES	Lowest	Lowest	5-8	37.40	3.593	3
			6-12	77.55	2.333	2
			6-8	49.73	17.645	4
			K-6	77.88	21.105	5
			K-8	44.30	14.425	2
			Total	59.01	22.511	16
		Moderate	4-6	67.53	17.706	4
			5-6	71.60	1.414	2
			5-8	41.80	.	1
			6-12	47.05	16.617	2
			6-8	60.40	9.559	11
			K-6	62.80	21.473	11
			K-8	55.10	.	1
			Other	61.80	.	1
			Total	61.25	15.781	33
		Highest	5-6	52.10	.	1
			K-6	56.53	12.190	4
			Other	50.60	.	1
			Total	54.80	9.824	6
		Total	4-6	67.53	17.706	4
			5-6	65.10	11.303	3
			5-8	38.50	3.667	4
			6-12	62.30	20.098	4
			6-8	57.55	12.484	15
			K-6	65.32	20.528	20
			K-8	47.90	11.955	3
			Other	56.20	7.920	2
			Total	59.90	17.364	55
	Moderate	Lowest	4-6	77.60	.	1
			5-8	52.00	9.351	5
			6-12	68.30	.	1
			6-8	56.74	7.551	7
			K-6	68.95	12.714	24
			K-8	50.43	12.835	8
			Other	60.60	.	1
			Total	62.17	13.810	47
		Moderate	4-6	60.33	9.641	3
			5-6	61.56	8.978	8

		5-8	59.79	11.028	7
		6-12	37.95	2.051	2
		6-8	56.82	11.749	44
		K-6	65.94	17.991	27
		K-8	66.17	21.554	6
		Other	61.90	9.617	2
		Total	60.29	14.593	99
	Highest	5-6	69.50	.	1
		5-8	63.70	14.142	2
		6-12	46.30	.	1
		6-8	52.72	10.343	13
		K-6	49.40	9.714	3
		Total	53.84	10.868	20
	Total	4-6	64.65	11.683	4
		5-6	62.44	8.805	9
		5-8	57.56	10.898	14
		6-12	47.63	14.383	4
		6-8	55.98	11.080	64
		K-6	66.36	15.871	54
		K-8	57.17	18.241	14
		Other	61.47	6.841	3
		Total	60.05	14.115	166
Highest	Lowest	5-8	50.00	.	1
		6-12	40.90	.	1
		6-8	52.83	15.046	4
		K-6	60.20	15.961	13
		K-8	38.90	14.722	3
		Total	54.61	16.240	22
	Moderate	5-6	70.40	.	1
		5-8	47.18	9.640	9
		6-12	47.00	3.470	3
		6-8	52.21	7.811	8
		K-6	69.43	8.776	12
		K-8	65.60	17.081	4
		Other	71.50	3.677	2
		Total	58.78	13.485	39
	Highest	5-6	62.40	.	1
		6-8	59.75	7.849	2
		K-6	30.90	.	1
		Other	48.60	.	1

		Total	52.28	13.659	5
	Total	5-6	66.40	5.657	2
		5-8	47.46	9.132	10
		6-12	45.48	4.163	4
		6-8	53.46	9.849	14
		K-6	63.33	14.873	26
		K-8	54.16	20.538	7
		Other	63.87	13.475	3
		Total	56.90	14.440	66
Total	Lowest	4-6	77.60	.	1
		5-8	46.91	9.912	9
		6-12	66.08	17.393	4
		6-8	53.83	12.207	15
		K-6	67.31	15.490	42
		K-8	46.82	13.228	13
		Other	60.60	.	1
		Total	59.62	16.466	85
	Moderate	4-6	64.44	14.231	7
		5-6	64.19	8.774	11
		5-8	52.05	11.755	17
		6-12	44.43	8.386	7
		6-8	56.86	11.062	63
		K-6	66.09	16.980	50
		K-8	64.95	18.181	11
		Other	65.72	7.372	5
		Total	60.13	14.525	171
	Highest	5-6	61.33	8.749	3
		5-8	63.70	14.142	2
		6-12	46.30	.	1
		6-8	53.66	10.110	15
		K-6	50.65	12.913	8
		Other	49.60	1.414	2
		Total	53.77	10.787	31
	Total	4-6	66.09	13.972	8
		5-6	63.58	8.513	14
		5-8	51.23	11.686	28
		6-12	51.80	15.241	12
		6-8	55.85	11.084	93
		K-6	65.37	16.529	100
		K-8	55.13	17.893	24

			Other	61.05	9.187	8
			Total	59.29	14.866	287
High SES	Lowest	Lowest	5-8	80.10	.	1
			6-8	48.90	.	1
			K-6	51.48	18.093	4
			K-8	62.47	21.201	3
			Total	58.03	18.311	9
		Moderate	5-8	41.30	.	1
			6-8	47.33	18.674	4
			K-6	69.82	6.292	6
			Total	59.05	16.747	11
		Highest	4-6	57.10	.	1
			5-8	75.50	.	1
			6-8	45.57	1.060	3
			K-6	36.62	18.038	11
			K-8	34.45	9.122	2
			Total	41.17	17.402	18
		Total	4-6	57.10	.	1
			5-8	65.63	21.198	3
			6-8	46.86	12.297	8
			K-6	48.93	20.910	21
			K-8	51.26	21.932	5
			Total	50.34	19.113	38
	Moderate	Lowest	5-8	42.90	31.113	2
			6-8	64.43	18.297	3
			K-6	51.07	18.093	10
			K-8	58.45	18.213	8
			Other	64.50	.	1
			Total	55.08	18.422	24
		Moderate	4-6	72.30	.	1
			5-6	60.23	4.089	4
			5-8	48.29	9.288	8
			6-12	41.70	.	1
			6-8	52.48	16.071	8
			K-6	57.89	11.118	17
			K-8	55.14	15.255	8
			Other	59.20	9.475	2
			Total	55.20	12.358	49
		Highest	5-6	38.50	.	1
			5-8	61.30	24.343	3

		6-8	38.68	12.997	18
		K-6	38.08	18.487	18
		K-8	37.67	24.219	3
		Total	39.93	17.263	43
	Total	4-6	72.30	.	1
		5-6	55.88	10.341	5
		5-8	50.46	16.486	13
		6-12	41.70	.	1
		6-8	45.15	16.525	29
		K-6	48.45	17.997	45
		K-8	53.77	18.398	19
		Other	60.97	7.366	3
		Total	49.51	17.175	116
Highest	Lowest	5-8	43.87	14.937	3
		6-12	79.60	.	1
		6-8	70.50	.	1
		K-6	48.56	18.572	14
		K-8	66.74	24.747	5
		Total	53.97	20.686	24
	Moderate	4-6	63.20	.	1
		5-8	51.10	.	1
		6-8	46.93	9.260	4
		K-6	52.07	19.495	19
		K-8	49.45	18.663	11
		Other	55.30	.	1
		Total	51.10	17.371	37
	Highest	4-6	41.50	4.950	2
		5-6	57.10	.	1
		6-12	45.00	.	1
		6-8	24.90	15.173	7
		K-6	38.18	16.719	24
		Total	36.45	16.620	35
	Total	4-6	48.73	13.008	3
		5-6	57.10	.	1
		5-8	45.68	12.721	4
		6-12	62.30	24.466	2
		6-8	36.04	19.467	12
		K-6	45.36	18.894	57
		K-8	54.85	21.542	16
		Other	55.30	.	1

			Total	46.47	19.399	96
	Total	Lowest	5-8	49.58	22.507	6
			6-12	79.60	.	1
			6-8	62.54	15.245	5
			K-6	49.87	17.702	28
			K-8	61.79	19.805	16
			Other	64.50	.	1
			Total	55.08	19.104	57
		Moderate	4-6	67.75	6.435	2
			5-6	60.23	4.088	4
			5-8	47.87	8.556	10
			6-12	41.70	.	1
			6-8	49.80	14.665	16
			K-6	56.96	15.985	42
			K-8	51.84	17.098	19
			Other	57.90	7.068	3
			Total	54.07	15.021	97
		Highest	4-6	46.70	9.663	3
			5-6	47.80	13.152	2
			5-8	64.85	21.106	4
			6-12	45.00	.	1
			6-8	35.98	14.301	28
			K-6	37.82	17.272	53
			K-8	36.38	17.810	5
			Total	38.89	16.984	96
		Total	4-6	55.12	13.783	5
			5-6	56.08	9.262	6
			5-8	51.78	16.848	20
			6-12	55.43	20.994	3
			6-8	43.20	16.898	49
			K-6	47.10	18.842	123
			K-8	53.89	19.629	40
			Other	59.55	6.648	4
			Total	48.47	18.349	250
Total	Lowest	Lowest	5-8	48.08	21.551	4
			6-12	77.55	2.333	2
			6-8	49.56	15.286	5
			K-6	66.14	23.220	9
			K-8	55.20	19.385	5
			Total	58.66	20.706	25

		Moderate	4-6	67.53	17.706	4
			5-6	76.38	5.844	4
			5-8	41.55	.354	2
			6-12	47.05	16.617	2
			6-8	59.63	11.833	22
			K-6	68.82	16.648	23
			K-8	65.45	14.637	2
			Other	67.75	8.415	2
			Total	64.16	15.205	61
		Highest	4-6	57.10	.	1
			5-6	52.10	.	1
			5-8	75.50	.	1
			6-8	58.77	16.893	6
			K-6	41.93	18.636	15
			K-8	34.45	9.122	2
			Other	62.10	16.263	2
			Total	48.55	18.755	28
		Total	4-6	65.44	16.027	5
			5-6	71.52	11.978	5
			5-8	50.13	19.154	7
			6-12	62.30	20.098	4
			6-8	57.95	13.370	33
			K-6	59.72	22.016	47
			K-8	52.87	18.784	9
			Other	64.93	11.064	4
			Total	59.12	18.421	114
	Moderate	Lowest	4-6	77.60	.	1
			5-8	51.99	16.085	8
			6-12	71.65	4.738	2
			6-8	59.05	11.234	10
			K-6	63.17	16.149	36
			K-8	54.44	15.775	16
			Other	62.55	2.758	2
			Total	59.97	15.514	75
		Moderate	4-6	63.33	9.887	4
			5-6	61.47	7.482	14
			5-8	53.65	11.424	15
			6-12	39.20	2.606	3
			6-8	60.35	12.711	77
			K-6	63.78	15.294	52

		K-8	61.41	17.697	16
		Other	60.55	7.949	4
		Total	60.67	13.720	185
	Highest	5-6	54.00	21.920	2
		5-8	62.26	18.655	5
		6-12	46.30	.	1
		6-8	48.65	16.434	36
		K-6	39.70	17.787	21
		K-8	48.88	29.893	4
		Other	73.30	.	1
		Total	47.42	18.457	70
	Total	4-6	66.18	10.681	5
		5-6	60.54	9.331	16
		5-8	54.71	14.131	28
		6-12	51.20	16.300	6
		6-8	56.82	14.676	123
		K-6	58.94	18.514	109
		K-8	56.92	18.354	36
		Other	62.94	7.390	7
		Total	57.70	16.108	330
Highest	Lowest	5-8	50.54	15.834	5
		6-12	60.25	27.365	2
		6-8	56.10	13.646	6
		K-6	54.16	18.033	27
		K-8	58.38	24.102	9
		Total	55.05	18.296	49
	Moderate	4-6	63.20	.	1
		5-6	70.40	.	1
		5-8	47.57	9.173	10
		6-12	47.00	3.470	3
		6-8	54.79	10.576	16
		K-6	59.83	17.638	35
		K-8	53.29	18.574	16
		Other	66.10	9.708	3
		Total	56.14	15.649	85
	Highest	4-6	41.50	4.950	2
		5-6	59.75	3.748	2
		6-12	45.00	.	1
		6-8	37.39	24.402	10
		K-6	37.89	16.432	25

		Other	48.60	.	1
		Total	39.44	17.978	41
	Total	4-6	48.73	13.008	3
		5-6	63.30	6.696	3
		5-8	48.56	11.306	15
		6-12	51.08	14.339	6
		6-8	49.60	18.089	32
		K-6	51.77	19.517	87
		K-8	55.12	20.383	25
		Other	61.73	11.806	4
		Total	51.93	18.249	175
Total	Lowest	4-6	77.60	.	1
		5-8	50.64	16.294	17
		6-12	69.82	14.738	6
		6-8	55.95	12.849	21
		K-6	60.16	18.198	72
		K-8	55.75	18.546	30
		Other	62.55	2.758	2
		Total	58.13	17.416	149
	Moderate	4-6	65.18	12.617	9
		5-6	65.08	9.283	19
		5-8	50.50	10.705	27
		6-12	44.09	7.823	8
		6-8	59.44	12.321	115
		K-6	63.58	16.515	110
		K-8	57.83	18.038	34
		Other	64.00	8.199	9
		Total	60.15	14.717	331
	Highest	4-6	46.70	9.663	3
		5-6	55.92	11.682	5
		5-8	64.47	17.540	6
		6-12	45.65	.919	2
		6-8	47.65	18.822	52
		K-6	39.50	17.236	61
		K-8	44.07	24.663	6
		Other	61.53	13.795	4
		Total	45.29	18.640	139
	Total	4-6	61.87	14.424	13
		5-6	63.17	10.277	24
		5-8	52.23	14.133	50

6-12	53.93	16.211	16
6-8	55.79	15.278	188
K-6	56.52	19.830	243
K-8	55.76	18.927	70
Other	63.15	9.000	15
Total	56.33	17.375	619