

The Difference between Grade Span Configuration and Student Achievement  
In Four Eastern States

Donna W. Warthan

Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State  
University in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION  
in  
Educational Leadership and Policy Studies

Carol Cash, Chairperson

Patricia Johnson, Committee Member

Ted Price, Committee Member

Travis Twiford, Committee Member

November 2, 2011

Virginia Beach, Virginia

Keywords: K-8 schools, student achievement, early adolescents, middle schools, junior  
high school

Copyright, 2011

The Difference between Grade Span Configuration and Student Achievement In Four Eastern States

Donna W. Warthan

ABSTRACT

The No Child Left Behind (NCLB) Act of 2001 was established to improve student achievement among all public schools. This federal legislation sets a proficiency goal of 100% for all students by the 2013-14 school year. Each state is required to provide parents and others interested in the public schools with information about school, district, and state-level data in a number of areas. The United States Department of Education requires that each state's report card include information pertaining to assessment data, accountability, and teacher quality. The state has an option to include other information such as: school attendance rate, average class size in each grade, and incidences of school violence, drug abuse, student suspensions, and student expulsions.

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. The data from the four eastern states was obtained from each state's Department of Education and includes public schools that are configured with a K-8 or 6-8 model.

The population in the quantitative study was one thousand one hundred and fifty-eight public schools from Virginia, Maryland, South Carolina, and North Carolina. This included 144 K-8 schools and 1,014 middle schools. The overriding research questions

were: (1) what is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for school with different grade span configurations?, (2) what is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations?, (3) what is the difference, if any, in English and mathematics pass on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations?, (4) what is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Course tests in North Carolina for schools with different grade span configurations?, (5) if differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

Eight *t*-tests were conducted to examine academic performance of eighth grade students in K-8 and 6-8 schools with a pre-determined alpha of .05. The results indicated mixed findings. Results from Virginia and South Carolina revealed that there was no significant difference in the pass rates between K-8 and 6-8 schools in English and mathematics. In North Carolina there was a significant difference in the pass rates, with K-8 schools obtaining a higher pass rate in both English and mathematics. Outcomes from Maryland disclosed that there was a significant difference between K-8 and middle schools, with middle schools obtaining a higher pass rate in both English and mathematics.

### **Acknowledgements**

I would like to thank the following individuals for their support and encouragement during the writing of this dissertation.

To Dr. Carol Cash, my committee chairperson: thank you for your encouragement and direction throughout this process. I shall be indebted to you for life and will forever be grateful for your leadership while on my dissertation journey.

To committee members, Dr. Patricia Johnson, Dr. Ted Price, and Dr. Travis Twiford: thank you for your honesty, direction, and ongoing words of encouragement. Your guidance has made this dissertation more than I ever thought it would be.

To Dr. Scott Bellows: thank you for your willingness to coach me through the statistics. You were so patient with me and I will be forever grateful for your knowledge and expertise.

To the 2008 Hampton Roads Center Doctoral Cohort: what a wonderful group of people. I am honored to have spent the past three years with each of you. Thanks for being a great support system and for being great friends.

To my Sissy: you have been my editor throughout the writing of this dissertation. I cannot thank you enough for taking time to read, proof, and reread this dissertation. Thank you for being my editor, but most importantly, thank you for being my sister.

To my big brother, Buddy: thank you for always sending me a text message when I needed it most. You have always been the calm voice on the phone, supporting and showing interest in whatever I chose to do. I couldn't have asked for a better brother!

To my Mom and Dad: thank you for having faith in me during those times when I had little faith in myself. You knew I would complete this dissertation and, with your love and encouragement, I did. I love you both so much!

To my son, Zachery: thank you for your love, support, and encouragement. I still remember the day that I was accepted into the program and couldn't wait to tell you and dad. Even while in the baseball dugout, you gave me your big smile, congratulations, and then turned to tell the rest of the team. That made me feel so special! Thanks for always cheering me on. I truly appreciate you allowing me to be a "student" along with you during your high school years. You are a loving, hardworking, and goal-oriented young man who makes me proud to be his mother.

To my husband, Tim: you never complained when I spent most of my weekends and spare time writing, researching, crying, and fussing during those frequent moments of utter frustration. Thank you for telling me what I needed to hear and not what I wanted to hear. Your support kept me motivated. You will never know how much I truly love you for believing in me.

## Table of Contents

Abstract.....	ii
Acknowledgements.....	iv
Table of Contents.....	vi
List of Tables.....	viii
List of Figures.....	ix
CHAPTER I: INTRODUCTION.....	1
Statement of the Problem.....	5
Research Questions and Hypotheses.....	6
Purpose of the Study.....	8
Significance of Study.....	9
Conceptual Framework.....	9
Definition of Terms.....	10
Limitations and Delimitations of the Study.....	11
Organization of Study.....	13
CHAPTER 2: LITERATURE REVIEW.....	14
Needs of the adolescent learner.....	14
Impacts of Transitions on the Adolescent Learner.....	19
Junior High Model.....	23
Middle School Model.....	29
K-8 School Model.....	37
Summary of Literature Review.....	49

CHAPTER 3: METHODOLOGY..... 51

    Research Questions.....51

    Population/Sample..... 53

    Data Collection..... 53

    Instrumentation..... 54

    Method of Analysis.....56

    Conclusion..... 57

CHAPTER 4: RESULTS..... 59

    Data Analyses Findings.....59

        Research Question 1 and Hypotheses.....62

        Research Question 2 and Hypotheses.....63

        Research Question 3 and Hypotheses.....65

        Research Question 4 and Hypotheses.....67

        Research Question 5.....68

    Summary.....69

CHAPTER 5: DISCUSSION..... 71

    Purpose of the Study..... 71

    Summary and Discussion of Findings.....72

    Implications of Findings.....78

    Suggestions for Further Studies.....81

    Reflections..... 83

References..... 84

Appendix A.....97

**List of Tables**

Table		Page
1	Cut Scores for English Assessment per State.....	55
2	Cut Scores for Mathematics Assessment per State.....	56
3	2009-2010 Number of Schools by Grade Configuration per State Included in the Study.....	61
4	Virginia K-8 and 6-8 Middle Schools' English Scores from 2009-2010.....	63
5	Virginia K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010.....	63
6	Maryland K-8 and 6-8 Middle Schools' English Scores from 2009-2010.....	64
7	Maryland K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010.....	65
8	South Carolina K-8 and 6-8 Middle Schools' English Scores from 2009-2010.....	66
9	South Carolina K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010.....	66
10	North Carolina K-8 and 6-8 Middle Schools' English Scores from 2009-2010.....	68
11	North Carolina K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010.....	68

**List of Figures**

Figure		Page
1	Conceptual Framework.....	10

## CHAPTER 1

### Introduction

*No Child Left Behind* or *NCLB* is the 2001 reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965. Initially proposed by the administration of President George W. Bush, the act gained bipartisan support of Congress. This legislative effort was established as a means of holding educators accountable for student achievement. *No Child Left Behind* requires each state to implement testing in grades 3-8 in English and mathematics. Schools that do not reach the set standard of proficiency are required to notify parents so that they can decide if they want to take advantage of other options. These options include such things as school choice and/or supplemental educational services. School choice is an option available to students who attend a Title I school in its first or second year of improvement, in corrective action, or in the planning year for restructuring. Supplemental Educational Services are free academic help to students who attend a Title I school that is designated in need of improvement. These services are typically offered in the areas of reading, mathematics, and language arts (January, 2001).

With this new federal legislation, states and school divisions worked intensely to identify best practices to ensure high levels of student success. Many reform efforts were investigated, including grade span configuration. Along with these discussions came the resurgence of the great debate regarding the best grade configuration in which to educate young adolescent learners. More specifically, what grade configuration works best?

Grade span configuration remains a hot topic in American education, as it has been since the turn of the 20th century (Jenkins & McEwin, 1992). Many studies have

been conducted to determine the structure that best meets the needs of adolescent learners. As early as 1909, educators in Columbus, Ohio and Berkeley, California recognized that this unique group of young people required something different, and the development of junior high schools began (Davis, 1998). The primary focuses behind the development of the junior high schools were concerns over soaring dropout rates and new ideas about adolescent development (Angus, et al., 1988). The dissatisfaction of this model began to grow by the 1950s. Many believed that junior highs fell short of their goal and that they merely duplicated high schools in the programs and policies they provided.

By the 1960s, advocates and scholars of the middle school movement sought to reorganize the grade configuration of schools and to make schools more developmentally appropriate for students. Alexander and Williams (1965), the leading middle school advocates, called for organizational structures that would create schools-within-schools to foster social ties between teachers and students, flexible scheduling, ungraded programs, and team teaching (Alexander & George, 1981).

According to Hough (1995), most middle school programs today are designed around the developmental needs of young adolescents (10-14 years old). Because the intellectual, social, physical, and emotional needs of early adolescents are different from either elementary or high school aged students, many believe that a unique educational program is necessary. The middle school is seen by some as the bridge between elementary school and high school (Hough, 1995), while others perceive it as a blend of an extended elementary school and modified high school. One practice of the middle school concept is interdisciplinary team teaching. A key component to this is common

planning time; where members of the team have the same free time so that they can plan and discuss instructional practices, common assessments, and student needs. These teams typically consist of teachers who have the same group of students every day. Their classrooms are clustered together in the same area of the building. The team consists of anywhere from two to four teachers. Together, teams teach core subjects of English/reading, mathematics, science, and social studies. The number of teams depends each year on the number of students in the school (The Middle School Concept, n.d.).

Many different configurations exist for grade-level offerings across the United States. Some schools include multiple ages; other schools are organized as middle schools, junior high schools, and high schools; and still others consist of students in just one grade, such as a kindergarten center or a ninth grade center. It should also be noted that some schools include pre-kindergarten (McIntyre, 2002).

According to the National Center for Educational Statistics (NCES), in 2005-2006, school districts reported:

- 480 preK and 149 kindergarten-only centers;
- 11,985 K-5, 11,471 preK-5, 6,995 K-6, and 5,332 preK-6 schools;
- 2,870 K-8 and 2,478 preK-8 schools;
- 9,199 grades 6-8 and 1,482 grades 5-8 middle schools;
- 2,601 junior high schools (grades 7-8);
- 141 ninth-grade-only schools; and
- 15,423 more traditional high school structures, with 11,987 of these grades 9-12

schools (NCES, Common Core of Data, 2006).

Howley (2002) wrote that much of the public debate about grade-span configuration had focused on middle level and which grade configuration best met the developmental needs of young adolescent learners. He cited two studies, one from Connecticut conducted by Tucker and Andrade, and the other from Maine conducted by Wihry, Coladarici and Meadows, both addressed the issue of whether these grades were best included with the elementary grades or with the secondary grades. These studies concluded that student achievement was higher in the sixth and seventh grades when they were included in the elementary school (Howley, 2002).

The transition from elementary to middle school often represents a stressful move from a protective, familiar environment with significant attention into a more impersonal and intimidating atmosphere. The transition to an often-larger school is normally accompanied by more rigorous standards, different social circles, peer pressure, and the beginning of adolescence (Berliner, 1993). The larger social groups in middle schools could result in declines in academic self-concept, especially for capable students who were no longer at the top of their class given this broad comparison group (Tonkin & Watt, 2003).

In various parts of the country, there have been demands for the return of the K-8/9-12 grade configuration, which is an eight-year elementary school followed by a four-year high school (Douglas, 1966). The recent interest in K-8 schools as the most effective grade configuration for educating early adolescents is due to many factors. The K-8 school offers students the opportunity to attend the same school through grade eight and helps to minimize the negative impact of transitioning from elementary to middle school. This enables students and parents the opportunity to develop the long-term bonds

with teachers, staff, and other families. K-8 schools also provide older students with the opportunity to serve as role models or mentors to younger students. Some of the K-8 schools cluster students into smaller learning communities: K-2, grades 3-5, and grades 6-8.

According to Hough (2005), K-8 grade span configurations are under consideration in states, such as Colorado, Connecticut, Georgia, Louisiana, Maine, and Texas. Urban school districts, such as Baltimore, Boston, Cincinnati, Cleveland, Louisville, Miami, New Orleans, and San Francisco have also considered this approach. The number of these public schools, dubbed “elemiddle” by Hough, has risen 17 percent since 1994 (versus a nine percent increase in pure elementary schools), though there are still only about 5,348 of them versus 67,032 public elementary schools as noted in the Digest of Education Statistics, 2009. According to Renchler (2000):

Hough credits recent research on “school programs, practices, and policies” with engendering a change in the educational perspectives on this student age group. While noting that empirical research has not identified an optimal grade configuration, Hough nevertheless believes that the philosophies of elementary school education contained within the elemiddle school may well serve the needs of young adolescents better than the newer middle school structure (grades 6-9) or the traditional junior- high structure (grades 7 and 8 or grades 7-9). (pp. 3-4)

### **Statement of the Problem**

Disturbed by the results from the Trends in International Mathematics and Science Study (TIMSS) and the follow-up Third International Mathematics and Science

Study Repeat (TIMMS-R), school systems began to rethink how best to educate adolescent students. These results, combined with the results from their own accountability testing, showed U.S. fourth grade students scoring on the same level with their international counterparts in mathematics and science achievement, only to fall far below the international average at the eighth grade level. This is predominantly true for African-American and Latinos, who persist in lagging behind their White peers even when their parents have attained comparable levels of education (RAND Education, 2004).

This study attempts to broaden the understanding of the impact of grade span configuration on student academic achievement. Although it could be a promising area of inquiry, comparatively little research has examined the topic in multiple states. The overall guiding research question for this study is the following: Does grade span configuration influence academic achievement in adolescent learners? Grade span configuration, for the purposes of this research study, refers to K-8 schools and 6-8 middle schools. This study focuses on studies that address grade span configuration and academic achievement.

### **Research Questions and Hypotheses**

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. The overall guiding research question for this study was "How does grade span configuration influence academic achievement in adolescent learners?" Multiple *t*-tests

were used to determine if grade span configuration affects academic achievement in English and mathematics. This study was conducted with eighth-grade students who attended K-8 and 6-8 middle public schools during the 2009-2010 school year.

This study addressed five overriding research questions:

1. What is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations?
2. What is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations?
3. What is the difference, if any, in English and mathematics pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations?
4. What is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations?
5. If differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

The following hypotheses stated in the null form were enumerated for testing:

*H<sub>01</sub>*: There is no significant difference in the English pass rates on the Standards of Learning in Virginia for schools with different grade span configurations.

*H02:* There is no significant difference in the mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations.

*H03:* There is no significant difference in the English pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations.

*H04:* There is no significant difference in the mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations.

*H05:* There is no significant difference in the English pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations.

*H06:* There is no significant difference in the mathematics pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations.

*H07:* There is no significant difference in the English pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations.

*H08:* There is no significant difference in the mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations.

### **Purpose of the Study**

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those

who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. In addition, if differences do exist in one state, to determine if similar results occur in all four states.

### **Significance of the Study**

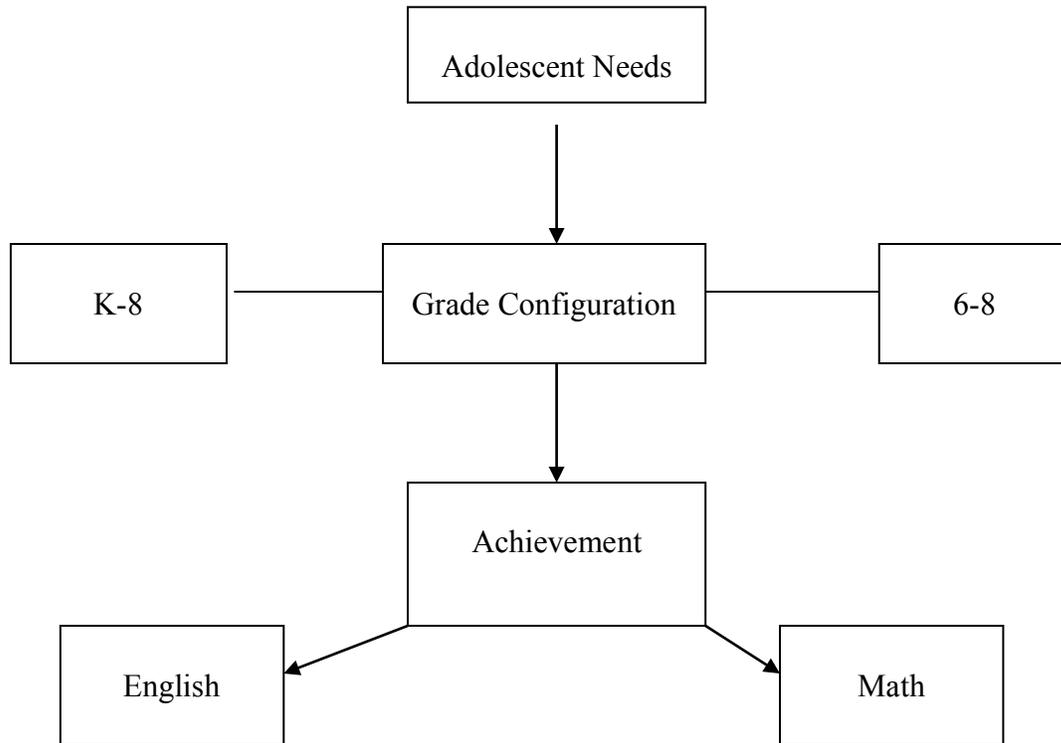
Academic achievement for all students is the focus of the No Child Left Behind Act (U.S. Department of Education, 2001). The Act requires states to develop assessments in basic skills to be given to all students in certain grades. Student results are reported to parents, teachers, and administrators annually. Because of this, it is crucial that school districts, school boards, superintendents, and school administrators know whether or not a particular grade span configuration has a positive or negative effect on academic achievement. Although some research has been conducted to determine the effects of grade span configuration on adolescent achievement, none exists that looks at the impact in multiple states. Therefore, this study was to determine if performance, as measured by state assessments in English/reading and mathematics, was different for eighth grade students enrolled in K-8 public schools from those enrolled in 6-8 public middle schools. This study was significant in that it used preexisting achievement data in English and mathematics to better understand the difference between grade span configuration and student achievement.

### **Conceptual Framework**

This research study explored the relationship between grade span configuration and student achievement in English and mathematics. The variables identified for this quantitative study were grade span configuration and student achievement on state assessments. For this study, student achievement was measured by each state's

assessments. These assessments are given in the spring of the eighth grade year.

Additional information on the structure of each assessment is found in Chapter Three of this study.



*Figure 1* Conceptual Framework

### **Definition of Terms**

The terms listed below are defined for the purposes of this study.

1. *ABCs End-of-Grade Tests* – North Carolina’s Criterion-Reference Assessment that addresses the areas of reading comprehension, mathematics, and science (North Carolina Department of Public Instruction, 2010).
2. *Academic performance* – Kneese (2002) defined students’ learning as their ability to maintain and improve educational achievement. The achievement used in this

study is students' scores as determined by the state's tests in English/reading and mathematics for grade 8 students in the four Eastern States.

3. *Grade Span Configuration* – also referred to as grade configuration, is the range of grades of which a school comprises (Coladarci & Hancock, 2002).
4. *K-8 school* – for the purpose of this study a K-8 school is defined as “a school with a continuous grade span that begins with pre-kindergarten or kindergarten and ends after the 8<sup>th</sup> grade in which the upper grade spans are implementing middle-level best practices.” (Hough, 1997).
5. *Maryland School Assessment (MSA)* – Maryland’s Criterion-Reference Assessment that addresses the areas of reading, mathematics, and science (Maryland State Department of Education, 2010).
6. *Middle School* – middle school is defined as a school that is configured with continuous grade spans that begin with grade six and end after the eighth grade.
7. *Palmetto-Assessment (PASS)* – South Carolina’s Criterion-Reference Assessment that addresses the areas of English/Language Arts, mathematics, science, social studies, and writing (South Carolina Department of Education, 2010).
8. *Standards of Learning Test (SOL)* – The Commonwealth of Virginia’s Criterion-Reference Assessment that addresses the areas of writing, reading, mathematics, social studies, and science (Virginia Department of Education, 2010)

### **Limitations and Delimitations of the Study**

Limitations are the natural conditions that may affect the outcome of a study (Charles, 1998). Although the researcher included students tested in the K-8 and 6-8 middle public schools that met the criteria, the findings may not allow the researcher to

make generalizations about students in other states as the population may not be reflective of the demographics from the other states in the United States. The difference in the number of school configurations included in this study (K-8 = 144, 6-8= 1,014) is another limitation. Additionally, each state's assessment does not test the same skills on both assessments: English and mathematics. Another limitation was that the level of difficulty and the proficient score for each test was determined by each state and approved by the United States Department of Education. Therefore, no comparison between states regarding quality of the test can be verified. As the researcher only had access to pass rate data, she was unable to determine beyond pass rate a level of performance based on student data. Furthermore, the researcher was unable to control for students transferring into and out of the schools involved in this study.

Charles (1998) defined delimitation (external threats) as restrictions imposed by the researcher to narrow the scope of the study. To be included in this study, schools had to (a) be a public school enrolling eighth grade students, (b) be located in one of the four eastern states, (c) have participated in the state assessment, and (d) be a public school that included a grade configuration of either a K-8 or 6-8 middle school during the 2009-2010 school year. Scores of eighth grade students were included to eliminate the effect that school-to-school transition may have on a young adolescent learner. The states selected for this study were selected for the following reasons. First, they were in close geographic proximity to each other. Secondly, they had both K-8 and 6-8 middle public schools. Additionally, although three of the states have had similar studies conducted, the researcher was unable to locate one that included Virginia. The results for each state's assessment for English and mathematics were the only data collected. Mathematic scores

only looked at eighth grade math, not all math courses offered eighth grade students. School size, school demographics, and SES population were not accounted for when comparing schools. In addition, this study only included one year of student achievement data. This wide range of factors provides delimitations for this study.

### **Organization of Study**

This study is organized into five chapters. Chapter 1 provides a context for the inquiry, background of the problem, purpose of the study, significance of the study, delimitations, limitations, and definitions. A review of the literature relating to grade span configuration and student achievement is presented in Chapter 2. Chapter 3 provides an explanation of the research methodology, including context of the participants, data collection procedures, and data analysis procedures. The data collected is presented in Chapter 4. A summary, findings, conclusions, implications, and recommendations for further research are presented in Chapter 5.

## Chapter II

### Literature Review

This literature review provides a synthesis of the research conducted on school configuration and student achievement. The review was conducted within the context of the two dependent variables and the independent variable proposed in this study. These dependent variables are English and mathematics achievement of eighth grade students in each state. The independent variable is grade span configuration, specifically K-8 and 6-8 middle schools.

Research regarding grade span configuration is plentiful. Initially one may believe that with such a large amount of information from which to draw, it would be easy to conclude which grade span configuration is best suited for student achievement. On the contrary; much of the research is inconsistent; therefore, decisions on choosing a particular grade span configuration are often made for reasons other than what may be best for the adolescent learner.

This review of literature is presented under five headings: Needs of the Adolescent Learner, Impacts of Transitions on the Adolescent Learner, Junior High Model, Middle School Model, and K-8 School Model.

#### **Needs of the Adolescent Learner**

Early adolescence is a period of change, not only in terms of physical and cognitive development, but also in terms of the changes that occur in the adolescents' social contexts (Peterson, 1987). This is best described by the National Middle School Association's (1997) *What Current Research Says to the Middle-Level Practitioner*. Lounsbury asserted:

Each age or developmental level has particular characteristics, which might seem to warrant the label of unique, but no other age level has so clear and legitimate claim to the designation of unique as does this period of transition between childhood and full-blown adolescence, roughly the ages 10 to 14 (1882, p. 3)

During this time, adolescents experience physical changes as well. Romano and Georgiady (1994) described the following physical changes:

1. The average height increase of young adolescents is from two to four inches per year.
2. The average weight increase is from eight to ten pounds per year.
3. Stamina of the body is decreased due to constant growth.
4. Have to adjust to having and using longer and larger arms and legs.
5. Clumsiness
6. Easily tired, eat more, and need more rest.
7. Experience apprehension due to the sudden body change

This period of change offers special challenges and opportunities for researchers to examine the relationship between individual development and contextual changes. The most dramatic “normal age-graded” change (Baltes & Nesselroade, 1979) that many American children face is the transition from elementary school to middle school or junior high school. This change can be considered “normative” in that most children experience it at a particular age or point in their development, often between the fifth and sixth grade (middle school) or the sixth and seventh grade (junior high school). The exact nature, timing, and number of these school transitions during adolescence vary. However,

most involve common structure and process changes, including going from a relatively small school to a larger, more departmentalized, impersonalized and complex school; and experiencing difference in grading practices, teacher expectations, and teacher behavior in general (Feldlaufer, Midgley, & Eccles, 1988; Simmons & Blyth, 1987).

Major psychological, biological, and social changes take place during the transition from childhood to early adolescence. Often due to lack of maturity that enables individuals to cope effectively with these changes, it is often difficult for one to navigate. Coleman's (1974) focal theory of change argues that the cumulative effects of multiple life changes in different aspects of one's life can be harmful to psychosocial functioning. Therefore, a more gradual adjustment to life's transitions, spread out over more time and confronted one at a time, can be beneficial. The theory suggests that the timing of adult-imposed changes on children ages 10-14, such as school transitions, should be considered carefully. "Early adolescence may be a life state of greater relative instability" (Larson, Moneta, Richards, & Wilson, 2002, p. 1154).

Young adolescents, research agrees, have universal needs at this stage of their development that schools need to meet. These needs are: 1) competence and achievement, 2) opportunities for exploration and self definition, 3) creative expression, 4) physical activity, 5) positive social interaction with adults and peers, 6) structure and clear limits, and 7) meaningful participation in family, school, and community activities (Jackson & Davis, 2000; NMSA, 2003). Characteristics of each need as found in the publication "Our Children at Risk: Children and Youth Issues (YMCA, 1998) are:

<b>Physical Activity</b>	Changing hormone levels produce periods of boundless energy & lethargy
	Desire to test new physical capabilities
	Normal variations in onset of puberty, rate of growth
	Vulnerability to injury due to rapid growth
<b>Competence &amp; Achievement</b>	Desire for personal recognition
	Desire for responsibility
	Desire to succeed
	Emergence of new interests, capabilities
	Emerging racial/cultural identity
	Emerging sexual identity
	“Imaginary audience”, self-consciousness
	Need for approval from adults
	Need for approval from peers
	Somewhat shaky self-esteem
	Vulnerability to adult expectations
<b>Self-Definition</b>	Emerging gender identity
	Emerging racial/cultural identity
	Emerging sense of personal future
	Emotionalism, mood swings
	New body image
	New reactions from others
	Onset of formal operations
<b>Creative Expression</b>	Desire to test new physical & mental capabilities
	Emerging racial/cultural identity
	Emerging sexual identity
	Onset of formal operations
<b>Positive Social Interactions with Peers &amp; Adults</b>	Continued importance of parents and other adults
	Imaginary audience”, self-consciousness
	Increasing importance of peers
	Maturing social skills
	Need for approval from adults
	Need for approval from peers
	Search for models, heroes, & heroines
<b>Structure &amp; Clear Limits</b>	Authoritarianism
	Desire for autonomy
	Desire to know & understand rules & limits
	Increasing importance of peers
	Lack of life experiences
	Need for continued adult guidance
	Need for security

	Onset of formal operations
	“Personal fable”, immunity to harm
<b>Meaningful Participation</b>	Desire for autonomy
	Desire to part of the “real” adult world
	Desire for personal recognition
	Desire for responsibility
	Emerging gender identity
	Emerging racial/cultural identity
	Lack of life experiences
	Maturing social skills
	Onset of formal operations
	Readiness to make commitments to ideals, activities, & people

“Our Children at Risk: Children and Youth Issues (YMCA, 1998)

Schools with environments that foster healthy relationships between teachers and students and among peers are best able to support adolescents’ social and emotional development and help them develop a healthy perception of their peer world at a time when relationships with peers become increasingly important. Young adolescents strive to develop closer relationships with peers and adults outside of the home (Eccles, 1999; Rubin, Bukowski, & Laursen, 2009). Peer relationships become increasingly important during early adolescence as an “in” or “popular” or “leading” crowd group emerges among students in school (Brown, 1990, 2004). Many do not find school to be a pleasant, inviting place where they feel a sense of connection (Juvonen, Le, Kaganoff, Augustine, & Constant, 2004).

It is challenging enough for adolescents to cope with the normative changes, without adults adding additional stressful events, such as a major change in environment (i.e., the transition from elementary to middle school). Often it just becomes too difficult for some young adolescents to cope with multiple major life transitions at once.

According to *This We Believe: Keys to Educating Young Adolescents*:

A successful school for young adolescents is an inviting, supportive, and safe place – a joyful community that promotes in-depth learning and enhances students’ physical and emotional well-being. In such a school, human relationships are paramount. (National Middle School Association [NMSA], 2010, p.33.)

On the contrary, in the study conducted by Thornburg and Glider, the researchers assessed the psychological characteristics of early adolescents in two K-6 and one 6-8 school located in the suburbs of Los Angeles. No difference was noted on the ten psychosocial dimensions by overall school configuration. They did, however, discover that age appears to explain the greatest number of significant results, more than either type of school configuration or grade in school.

### **Impacts of Transitions on the Adolescent Learner**

The school transitions at early adolescence are of special interest and concern because they coincide with the individual (e.g., puberty) and situational changes that may make this period a particularly challenging one (Hamburg, 1974; Petersen & Spiga, 1982). The transition from an often small and caring elementary school to an indifferent and frightening middle school is one of the most dramatic aspects of adolescent development. Coupled with the need to adjust to new, rigorous academic standards, and social roles and peer expectations, most students experience declines in self-esteem, grade point average, and participation in school and other activities (Berlin, 1993). The larger social groups in middle schools can result in declines in academic self-concept,

especially for capable students who are no longer at the top of the class given this broader comparison group (Tonkin and Watt, 2003).

A student's ability to cope with the transition to secondary school is likely to depend on several factors, including personal maturity and coping resources, the nature of the new school environment, and the level of preparation and social support available prior to and during the transition. The experience of having to adapt may have some impact on further development as well (Rutter, 1981).

Course grades and measures of self-perceptions, such as general self-esteem, are the indicators most commonly used to examine school transition effects. Course grades are a relatively objective indicator of how well adolescents are performing in the new school environment (Alspaugh and Harting, 1995). Self-perceptions indicate the extent to which disruptions in the school context affect students' feelings about their adjustment and competence more generally (Simmons and Blythe, 1987).

Alspaugh's research (1998) looked at groups of students from 16 school districts to determine achievement loss related to transitions from elementary to middle school and from middle school to high school. A significant achievement loss was found during the elementary to middle/junior high school transition. Alspaugh also noted that the transition to high school often has the same negative effects on achievement. Although these declines in achievement were noted, he found that some students regain what is lost in the following years, so it would seem that students who make fewer transitions need fewer years to make up for achievement losses caused by transitions.

Franklin and Glascock (1998) looked at grade level data in elementary, middle, secondary, and combination (K-12) schools for grades 6, 7, and 9-12 in the state of

Louisiana. While considering school socioeconomic status (SES) and school size, the researchers found that sixth and seventh grade students performed better in both achievement and persistence in elementary and K-12 schools than in middle or secondary schools. Furthermore, the results showed that elementary and combination schools have lower incidences of suspensions and expulsions and higher attendance. It is presumed that these results may be related to the effects of the transition, the school organization, or school size.

In the 2003 study conducted by Wren, the effects of grade span configuration and school-to-school transition on student achievement were examined. Two hundred thirty-two schools from a large inner city public district in the Midwest represented the sample for this study. The Michigan Educational Assessment Program (MEAP) test from 2001 was used to collect data on student achievement. The results indicate that the more grade levels that a school services, the better the students perform. Additionally, the more transitions a student makes, the poorer the student performs.

Across the country, educators are grappling with the problems of school transitions on middle school students. In her New York Times article, Gootman (2007a) outlines ways that schools across the nation are attempting to improve this current learning environment. She argues that at this critical age of early adolescents, where students are faced with emotional, physical and social challenges, remaining in a K-8 setting is best. Although there does not appear to be significant evidence that it halts the learning loss seen in typical middle schools.

Some researchers have indicated that self-ratings of academic competence decline after changing educational environments. In the two studies conducted by Harter, et al.

(1992), the researchers sought to determine the effects transitions have on the young adolescent learner. They found that this change has been an indicator in lowered perceptions of academic competence, motivation, and interest in learning. However, the researchers do state that not all students experience these complications; it often depends on the resources the students bring with them to the new environment.

Family support can play a large role in the impact of school transitions on an early adolescent. In the study conducted by Seidman, et al. (2003), the researchers looked at a racially diverse group of students to determine the effects of the perceived family transactions of daily hassles, social support, and involvement with family in leisure activities have on the student's self-esteem, preparation for class, and GPA during the transition from junior high school to high school. They found that adolescents who perceived more daily hassles and little involvement with their families appeared to be more vulnerable to declines in self-esteem. Additionally, they found that the more pronounced these daily hassles, the greater impact on student success during the transition. They concluded that "it would seem important to educate families as to the normative difficulty of this school transitions so they can provide constructive assistance". (Seidman et al., p. 187)

Another study that looked at perceptions of actual and preferred decision-making opportunities both before and after a major school transition, Midgley and Feldlaufer's (1987) study focused on a large sample of students and teachers from eleven school districts. They concluded that seventh graders and their teachers in the first year of junior high school believe that students have fewer opportunities for decision-making after transitioning to junior high school than before the transition. This feeling of not having

control can be detrimental at early adolescence, a time when most students see themselves as entering adulthood.

In *The Revival of K-8 Schools*, Herman (2004) discusses the problem with the transition from elementary school to middle school for sixth grade students. He states that the following changes make the transition to middle school difficult:

1. Academic demands tend to be tougher than in elementary school.
2. Middle schools tend to be larger than elementary schools.
3. Students are accountable to different teachers for each subject in middle school.
4. Many students are experiencing the onset of puberty and awareness of the opposite sex.
5. Often students leave behind one group of friends to mix with a new group.
6. Students move from being the oldest in their elementary environment to being the youngest in middle school.
7. Behavioral standards are different than among elementary students. (p. 15)

### **Junior High School Model**

Junior high schools were established to help bridge the gap between elementary and high school phases of schooling. During the twentieth century, the economic demand of labor with secondary education skills rose due to the rise of big business and industrialism. Education in general moved away from a privilege to a societal necessity. As Manning (2000) shared, the junior high school was the first middle level school and was part of the ongoing development of middle level education.

The first three-year junior high school in the United States was created in 1909 in Columbus, Ohio. In January 1910, two three-year schools were opened in Berkeley,

California (Alexander, 1987; Manning, 2000). The trend at that time showed that most students remained in school through eighth grade but that fifty-two percent of the students dropped out before entering the tenth grade. It was hoped by school officials that by opening new schools consisting of grade seven through nine, a larger percentage of students would be better prepared for the rigors of high school and remain enrolled. Lounsbury suggests that the reason the dropout rate was so high was the vast difference between elementary and secondary education. By placing students in a six-year high school or a junior high school, it was felt that students could be exposed to future opportunities in vocational schools and college, and it was believed that instruction would improve with departmentalization (Moss, p. 5).

Advocates for the establishment of junior high schools included Bennett in 1919, Briggs in 1920, and Koos in 1927. According to Briggs, there were three major conceptions of the purpose of junior high schools. They are: first, that it should afford an earlier beginning of a more or less conventional secondary education; second, that it should furnish trade training for those who will soon enter work; and, third, that it should explore the interests, aptitudes, and capacities of pupils and start each upon studies leading to a suitable goal (Biggs, 1920). Additionally, it was believed that placing grade seven and eight in junior high would result in more challenging subject matter, better-qualified teachers, and more enriched student activities programs.

Gruhn and Douglass (1956) identified the following goals for the junior high school:

1. Integration of skills, interests, and attitudes that result in appropriate pupil behavior and a general education for all students.

2. Exploration of interests and abilities that would provide opportunities for students to develop cultural, social, civic and recreational interests.
3. Guidance concerning a student's educational and vocational future.
4. Differentiation of educational opportunities based on individual differences.
5. Socialization that prepares students to make decisions in a complex social order.
6. Articulation that helps students in making the transition from a pre-adolescent education to a program designed for adolescents. (p. 12)

With the endorsement of the National Education Association (1984), a swift change in the grade span of American public education came about, resulting in six years of elementary and six years of secondary schooling. Junior high school soon emerges, thus the division of the secondary school into a 3-3 grade span configuration (Toepfer, 1983).

Kaplan, Peck, and Kaplan (1994) conducted a survey of 3,148 Houston junior high students to explore the phenomenon of academic failure at the secondary level. Students filled out a 201-item questionnaire about behavior and answered epidemiological questions. Kaplan et al. conceptualized academic failure as a form of deviant behavior, which they stated was caused by a cycle of early school failure, self-rejection in the school environment, a disposition to deviance, and further academic failure. They stated that failure was a motivated behavior that involved withdrawal of effort and devaluation of the standards of school in a reaction against specific contexts in which students felt their self-esteem was in jeopardy and against which they could not defend themselves (1994).

In a study conducted by Vispoel and Austin (1995), the researchers studied 211 White junior high school students in Iowa. Researchers gave students a 96-item questionnaire, using a Likert scale of 1-6, asking them to recall personal academic achievement situations of success or failure in four subject areas (English, math, general music, and physical education). The results highlighted the context-specific nature of causal beliefs and their strong linkages to reported classroom achievement. Their factor analysis showed a systematic trend for external attributions to generalize across subject areas and for internal attributions to remain subject-area specific.

Simmons and Blyth (1987) conducted a three-year longitudinal study from 1974-1979 that included a “stratified random sample” of schools from Milwaukee’s K-8, K-6, and 7-9 (junior high) schools (p. 25). The study focused upon grade configuration’s impact on young adolescent and middle grades students’ academic achievement. The researchers stratified the sample into three groups of schools based on the percentage of minority students in the school. These groups were defined as having 0-20%, 21-42%, or 43-100% minority representation. As a result of the stratification, the sample included 18 total schools: six K-8 schools, eight comparable K-6 schools and four predominantly Black K-6 schools, out of 120 elementary schools and 22 junior high schools in Milwaukee Public Schools. A synopsis of the goals of this study follows:

It begins with a focus on the problematic transitional year at entry to adolescence. It first follows children from Grade 6 (the “last year of childhood”) into Grade 7 (early adolescence), thus covering a 5-year period. The short- as well as long-term consequences of the transition into early adolescence, therefore, can be studied, including the transition

into senior high school. (p. 8)

The findings of the study showed that students attending either a K-6 or a K-8 configured school received more effective psychological support in their transition into adolescence, exhibited greater self-esteem, and tended to participate more in extra-curricular activities than their counterparts who attended the classic 7-9 junior high school. In addition to temporary transition effects, Simmons and Blyth (1987) showed that students' problems during the transition predicted other problems during high school. Long-term consequences that measured student academic achievement in ninth and tenth grades, following attendance at a K-8 school, or a K-6 and then a 7-9 school, revealed a "general decrease in GPA as one goes up in grade level" (p. 248). Furthermore, "each school transition appears to be associated with a steeper decline" (p. 248). The researchers point out "that for boys the two cohorts are earning about the same GPA in Grade 9; whereas for Grade 9 girls, the K-8 cohort is doing considerably worse" (p. 248). Simmons and Blyth conclude their discussion of longitudinal academic achievement explaining "In Grade 10, it is the K-6/junior high/senior high cohort, who have just entered senior high school, who are showing a steeper decline in GPA" (p. 248). Therefore, findings are mixed on academic achievement data when comparing student academic achievement and grade configuration.

Mizell (2005) reinforced his dissatisfaction with the junior high model in its ability to meet the needs of young adolescents in the middle grades by reference to the findings of Juvonen, Le, Kagonff, Augustine, & Constant (2004). Juvonen et al. suggest that the junior high model fails to meet young adolescents' needs because it focuses on "content rather than exploration" and "departmentalization rather than integration"

amongst other reasons (p. 14). Junior high schools were seen as too much like a high school and were not providing the educational benefits and opportunities that young adolescents needed at this stage in their lives. However, Mizell highlights other reasons for the sudden popularity of the middle school model as opposed to the junior high model as the 20<sup>th</sup> century progressed. Mizell's reasons for the conversion to the increase in middle schools include "a rise in secondary school enrollments, the desire to push sixth grade out of elementary schools, and the need to address desegregation" (p. 15).

In the decade between the mid-1950s and the mid-1960s, several factors contributed to an emerging critique of the junior high schools. The clamor for changing education at the junior high level was increasing:

As the structure of modern American society grew more and more flexible, more complex, more urban, and more pluralistic, the stresses on all levels of education increased. The conflict between the ideal and the real in the American junior high school stood out most glaringly. The inadequacies of many junior high schools become more and more obvious. Both liberal and conservative philosophical positions described the mid-century junior high school in critical terms. Reform became increasingly urgent. (George et al., 1992, p.4)

While this dissatisfaction grew, secondary school enrollments were declining and elementary school enrollments were expanding both because of the birth cohorts and the increasing popularity of early childhood education and kindergarten (RAND Education, 2004). This resulted in a shortage of space and the elementary level that caused the sixth grade to be moved into the junior high level (Alexander, 1984). The number of U. S. seventh through eighth grade junior high schools decreased from 4,711 to 2,191 between

1970 and 1986, while the number of sixth through eighth grade middle schools increased from 1,662 to 4,329 (Alexander & McEwin, 1989)

The advantages of junior high school:

- Eases the transition of learners from childhood to adolescence
- Helps bridge the self-contained elementary classroom and the departmentalized program of high school
- Provides for the needs of the preadolescent
- Provides early introduction of prevocational work

In contrast, the disadvantages include:

- It is seen as a secondary school that follows the high school model rather than an in-between school bridging the gap between elementary and secondary education
- The emphasis on subject matter (as opposed to student centered program) is inappropriate for the developmental needs of the students
- Lack of flexible scheduling
- Organizes teachers in departments with no common approach to planning
- Emphasizes only cognitive development of students (Handley, 1982).

### **Middle School Model**

The first middle school opened in America in Bay City, Michigan, in 1950. However, the true middle school concept did not take hold until the early 1960s. Unlike the grade configuration of the junior high school, the middle school was structured to consist of students from grades six through eight. It was believed that the early middle school model was based upon the belief that sixth grade students were intellectually and

socially advanced beyond those of elementary school students, and that as they reached the age of puberty, it was appropriate to begin the transition from elementary to secondary education. “The middle school concept is about organizing and delivering developmentally appropriate programs for young adolescents” (article Middle School Journal, September, 2005; “The Making of a New Urban Myth” by Tom Erb).

Between 1970 and 1986, the number of junior high schools with a 7-8 grade configuration decreased by about 2,500, while there was a corresponding increase in the number of middle schools serving grades six through eight (RAND Corporation). The number of schools with a middle grades organization (i.e., grades 5-8 or 6-8) has grown from 23% in 1971 to 69% in 2000 (Valentine, 2000).

Gatewood and Dilg (1975) authored a report entitled *The Middle School We Need* for the Association for Supervision and Curriculum Development that listed 10 characteristics of a middle school. They reported that a middle school should have:

1. A unique program adapted to the needs of pre-adolescent and early adolescent students.
2. The widest possible range of intellectual, social, and physical experiences.
3. Opportunities for exploration and development of fundamental skills needed by all while making allowance for individual learning patterns. It should maintain an atmosphere of basic respect for individual differences.
4. A climate that enables students to find facts, weigh evidence, draw conclusions, determine values, and that keeps their minds open to new facts.
5. A staff that recognizes and understand the needs, interests, backgrounds, motivations, goals, stresses and fears of its students.

6. A smooth educational, emotional and physical transition between elementary and high school.
7. An environment that is child-centered ensuring student success for all.
8. Guidance in the development of mental processes and attitudes needed for constructive citizenship and the development of lifelong competencies and appreciation needed for effective use of leisure.
9. Competent instructional personnel who will strive to understand the students whom they serve and develop professional competencies, which are both unique and applicable to the transient student.
10. Facilities and time, which allow students and teachers an opportunity to achieve the goals of the program to their fullest capabilities. (p. 2)

The middle school program is designed to meet the individual needs of young adolescents. The instructional program is distinctively different from the elementary and high school. It offers a strong basic education and opportunities for students to explore various subjects so they can determine areas of future study. As Alexander writes:

“A clearly defined middle [school] unit should more easily have the other characteristics already described as desirable, than the typical junior high school:

1. A well-articulated...system of education
2. Preparation for, even transition to, adolescence
3. Continued general education; and
4. Abundant opportunities for exploration of interests, individualization of instruction, a flexible curriculum, and emphasis on values.” (Alexander, 1995, p. 24)

Additionally, Alexander and George (1981, p. 2) wrote in their book, *The Exemplary Middle School*, about the new middle school concept:

The concept of a bridging school is not enough, however, because children of middle school age have their unique characteristics and needs which cannot be subordinated to the impact of the elementary school or to the demands of the high school. An effective middle school must not only build upon the program on earlier childhood and anticipate the program of secondary education to follow, but it must be directly concerned with the here-and-now problems and interests of its students. Furthermore, the middle school should not be envisioned as a passive link in the chain of education below the college and university, but rather as a dynamic force in improving education.

Evolving middle schools were to be organized differently. Research studies suggest teaming is necessary to meet the needs of young adolescents and to achieve academic excellence, developmental responsiveness, and social equity (Erb, 2005; Flowers, Mertens, & Mulhall, 1999; Flowers, Mertens, & Mulhall, 2000; Jackson & Davis, 2000).

1. Teachers would work in academic teams to provide a collaborative and supportive work group; usually four teachers represent a team with each one teaching a separate discipline – language arts, math, social studies, and science. While other middle schools have a two teacher team with one teaching math and science and the other language arts and social studies.
2. Teachers had an identifiable group of students as their sole responsibility.

3. Students would be part of a small definable group as opposed to the much larger school community, offering stable relationships with teachers and peers.
4. Instruction would be both thematic and integrated.
5. Well-developed advisor/advisee program, providing the student with an advocate who knew him/her on a personal level.
6. Exploratory programs, exposing students to a range of academic, vocational, and recreational subjects for career options, community service, enrichment, and enjoyment. (Flowers, et al., 2000, p. 53).

The five commonly accepted goals of effective middle schools, issued by the National Middle School Association, are:

1. Every student should be well known as a person by at least one adult in the school who accepts responsibility for his/her guidance.
2. Every student should be helped to achieve optimum mastery of the skills of continued learning together with a commitment to their use and improvement.
3. Every student should have ample experiences designed to develop decision-making and problem solving skills.
4. Every student should acquire a functional body of fundamental knowledge.
5. Every student should have opportunities to explore and develop interests in aesthetic, leisure, career, and other aspects of life. (National Middle School Association [NMSA], 2003, p. 16).

Several large scale and comprehensive studies demonstrate that young adolescents who attend middle schools that use essential programs and practices like

interdisciplinary teaming have higher achievement scores (Felner, Jackson, Kasak, Mulhall, Brand, & Flowers, 1997; Lee & Smith, 1993; Mertens, Flowers, & Mulhall, 1998). Lee and Smith conducted a study that looked at the impact of school restructuring on students achievement and related outcomes. After looking at data from over 8,800 eighth grade students in 377 schools, they concluded that elements of restructuring were positively associated with academic achievement and engagement. Specifically, they found modest increases in academic achievement in reading and mathematics, an increase in student engagement pertaining to homework, feeling bored, and being prepared for class, as well as greater equity of student outcomes.

Felner, et al. assessed and evaluated the impact of Turning Points' recommendations on middle grades reform (achievement, social-emotional, and behavioral). They used survey and achievement data from 31 Illinois schools in 1990-1992. They found that students in more highly implemented schools had higher achievement in language arts, reading, and mathematics, as well as lower levels of behavior problems. Furthermore, students in highly implemented schools had higher levels of self-esteem and lower levels of worry and fear.

The 1997 Chicago Consortium Study looked at the relationship of student social support (relationships students have with people in and out of the school) and academic press (the extent to which school members, students, and teachers experience a strong emphasis on academic success and conformity to standards of achievement) to gains in student achievement. Survey and achievement data from sixth and eighth grade students and teachers in 304 Chicago schools were used. Results showed that levels of both social support and academic press are positively related to gains in achievement. Specifically,

social support and academic press impact student achievement in the areas of reading and mathematics, and the combined effect produces the greatest achievement gains. It was also noted that students attending the least racially integrated, lowest achieving, economically poorest, and largest schools are least likely to experience the combined impact of support and press known to impact student achievement.

In their study *Programs and Practices in K-8 Schools: Do They Meet the Educational Needs of Young Adolescents?*, McEwin, Dickinson, and Jacobson (2004) discussed the findings on which grade organization plan best serves young adolescents:

Based on results from this study and the existing middle level knowledge base, the most accurate answer may be that the typical middle school is much more likely to meet the educational and developmental needs of young adolescents than is the typical K-8 school. Results from the status studies of K-8 schools and middle schools reveal no reason to support the idea that placing sixth, seventh, and eighth grade students in elementary schools is a sound educational idea or is justified by research.

Based on the information gathered in the two national surveys and in a thorough investigation of the middle level knowledge base, the authors conclude that the separately organized middle school is the best option when a choice is possible. Educators at middle schools understand this age group and are able to focus all their efforts on serving them and more frequently have in place programs and practices that are recognized as essential in middle level schools. (p. 60)

The potential move away from the middle grade configuration has been written extensively on by David. L. Hough (1995). He questions individuals who support the

middle school model as the only option for organizing young adolescents within a school. Hough defends his unwillingness to support one particular existing grade configuration (middle school or K-8) for middle grades students over another, explaining,

While it is important to note that grade spans are less indicative of a school's educational philosophy than its programs, policies, and practices, there is no national consensus on appropriate spans for the middle grades. (p. 8)

Instead, Hough suggests his "elemiddle school", as the best grade configuration for middle grades students. Hough explains the "elemiddle school" is

One that attends to the needs of young adolescents, aged 10 to 14, in any combination of grades 5 through 8, but is also part of an organizational structure that includes lower grades. (p. 7)

By nearly a decade, Hough's "elemiddle school" precedes the rise in popularity of the K-8 grade configuration that is now seen throughout the nation. For the first time, Hough, however, defines the concept of grade configuration as one of the most important factors to be considered when establishing the best school for young adolescents. Hough contends that a move to an "elemiddle school" grade configuration would "more easily facilitate the child-centered programs conducive to young adolescent learners (p. 8). He concludes his argument on the "elemiddle school" by suggesting,

But while it appears that elemiddle schools hold great promise as facilitators of reform efforts, the organization of middle grades schools will probably remain a function of decision makers' personal preferences, community needs, and economic necessity. (p. 9)

The advantages of middle schools:

- Provide for interdisciplinary teaming
- Provide opportunities for flexible scheduling
- Provide an organizational structure that supports meaningful relationships and learning
- Provide curriculum enrichment and exploratory programs
- Have multifaceted guidance and support services

In contrast, the disadvantages include:

- The focus is not on standards and achievement. The purpose for moving to a middle school design and structure is to provide the students a more effective learning environment and instruction which better matches their developmental needs (Branlow, 2001)
- More transitions that can be stressful for students
- Large and impersonal
- Often not in students' own community, thus travel distance to school may be longer for students (Handley, 1982).

### **K-8 School Model**

With the growing displeasure of middle schools in the United States, school districts in many states are returning to a model that was introduced more than a century ago in the one room schoolhouse. The K-8 model reform is underway in Maryland, North Carolina, New York, Ohio, Pennsylvania, and Tennessee, and in other districts across the United States. George (2005) suggested one reason for the increase in popularity of the K-8 grade configuration in urban areas was to close “troubled 6-8 middle schools” (p. 6)

As cited in Herman (2004), Look reports a number of advantages to K-8 schools:

1. K-8 schools may be a viable alternative to the large middle schools that struggle to be more than “factory models of education.”
2. K-8 schools can enhance social capital and give at-risk students, in particular, greater opportunities at success by building relationships with staff over nine years.
3. Parent involvement improves because younger and older siblings are enrolled in the same building and because parents usually are happiest with their children’s elementary school experiences.
4. Middle school students in a K-8 school behave differently than they do in a middle school. They take on a role of protector and role model, as opposed to having to establish new reputations on entering a large middle school.
5. K-8 schools can incorporate the same distinct, developmentally appropriate, academically challenging programs found in traditional middle schools.
6. K-8 schools can enhance teacher collaborations and creative approaches better than large middle schools.
7. Internal accountability for promoting children in K-8 schools runs more smoothly than in large middle schools.
8. K-8 schools are a better option than is a large middle school when financial resources are limited. (pp. 29-30)

In contrast, the disadvantages include:

- Fewer academic, sports and extracurricular activity options (Stevos, 2006)
- Resistance on the part of older students to remain in an elementary setting

- May add to the resegregation of urban schools
- Social needs of each grade level may not be met in a developmentally appropriate manner (Jenkins & McEwin, 1992)
- Increase potential for negative role models for younger students
- Less likely to help middle level students prepare for high school (Handley, 1982).

Grade-span configuration (the grades a school includes) may also influence achievement, according to Wihry, Coladarci, and Meadow (1992). Controlling for SES, these researchers compared the performance of eighth-grade students in various configurations and concluded that eighth grade total achievement was significantly higher in K-8, K-9, and 3-8 schools than in schools configured around the middle grades or those having a junior/senior high school configuration.

Howley (2002) wrote that much of the public debate about grade-span configuration has focused on middle level and which grade configuration best meets the developmental needs of young adolescent learners. More specifically, the focus was on where the sixth and eighth grades should be placed. In a Connecticut study conducted by Tucker and Andrada (1997), the researchers found that sixth graders attending K-6 or K-8 schools made greater gains in achievement, as measured by the Connecticut Mastery Test than sixth graders tested after having moved from a K-5 to a 6-8 school. The researchers attributed the difference to the fact that the K-6 and K-8 schools felt more accountable for their students' progress than the new school. That could affect such things as how a school's curriculum is designed or how its resources are deployed. Another possibility, according to Tucker, is that student achievement was negatively affected by the students' transition to a new, bigger school.

In their 2002 study that examined differences in student achievement and student attendance in K-8 versus K-5 or 6-8 configured schools in Baltimore City, Connolly, et al. (2001) used a mixed-methods design throughout this study. Connolly et al. explained that:

A longitudinal cohort design was used to follow a single group of students through BCPSS' schools. The cohort was designed to include students who should have entered ninth grade during 2001-02. In addition, students who were enrolled in BCPSS in the first grade during 1993-94 were included... (p. 30)

According to the researchers, the cohort was divided into two subgroups for comparison. One group contained students who attended a K-5 elementary school and then a middle school. The second group contained students who attended one K-8 school. In addition, "the cohort was composed of only those students who remained consistently in the designated grade configured school" (p. 30). Gender, race/ethnicity, and free/reduced lunch were identified as the control variables of the study.

The findings by Connolly, et al. (2002) from this study lean in favor of higher student achievement from attendance at K-8 schools as opposed to separate K-5 (elementary) schools followed by 6-8 middle schools in BCPSS. The researchers summarize their findings explaining that:

Results from MANCOVA and Ordinary Least Squares analyses indicate that students in K-8 schools had significantly higher TerraNova reading, language arts, and mathematics scores than students from K-5, 6-8 schools, after controlling for identified variables such as baseline

student achievement. (p. 33-34)

It was also concluded from the data “that K-8 students were more likely to pass the Maryland Functional Testing Program” (p. 34). In fact, Connolly et al. noted that “the difference in mathematics was statistically significant” (p. 34).

Connolly et al. (2002) also administered a survey to principals and teachers within the study they conducted in the BCPSS in the spring and summer of 2001 to gather data on “parental and principal perceptions” of K-8 schools as opposed to K-5 and 6-8 schools (p. 30). A sample of 168 principals yielded a 93.9 percent response rate whereas a sample of 775 parents yielded a 27.3 percent response rate. Connolly et al. analyzed the results “by grade configuration to allow comparisons of perceptual data on schooling experiences” (p. 30).

Offenberg (2001) examined the success of young adolescents who attended public K-8 schools as opposed to public middle schools in Philadelphia. The object of the study was to determine the effects of young adolescent’s attendance in public K-8 schools as opposed to middle schools on eighth and ninth grade academic achievement. Offenberg collected student achievement data from “37 to 42 middle schools and 40 to 43 K-8 schools” (p. 25).

Using the data from 1996 until 1999, Offenberg (2001) used regression models throughout his study “that control for the differences in the socioeconomic status of schools in Philadelphia and then to find statistically reliable variations, if any, in the performance of K-to-8 schools and middle grades schools” (p. 25). In the study “the socioeconomic variable that was controlled for was the Title I Eligibility Poverty Index, which is based on the percentage of students who receive public assistance and are

eligible for reduced price lunch” (p. 25). In the end, Offenberg concluded that “all the analysis lead to the conclusion that the better SAT-9 scores of K-to-8 schools were not merely artifacts of the social class of the student bodies they served” (p. 25).

Offenberg (2001) converted this study into a longitudinal study as well by following K-8 and middle school alumni into their prospective high schools. Once the students entered high school, he collected data that would reflect their academic achievement at the conclusion of their ninth grade to determine if there might have been a significant effect on the ninth grade academic achievement in relation to whether they attended a K-8 or middle school the previous three years. From this study he uncovered:

With the unique character of the high schools and the poverty levels of middle grade schools controlled, the analyses showed that the K-to-8 alumni’s GPA was about one tenth of a letter grade higher than the middle grades school alumni’s GPA, a statistically significant difference ( $p < .02$ ). (p. 27)

Hence, Offenberg concluded, “ninth grade GPAs, credits earned, and standardized reading, math, and science scores all tended in the direction favoring K-to-8 alumni” (p. 26).

In the large-scale empirical study conducted by Byrnes and Ruby (2007), the researchers studied whether there was a difference in student achievement in schools that implement the K-8 model and those that do not with respect to the eighth-grade scores in reading and mathematics on the Pennsylvania State System of Assessment (PSSA). The sample for this study runs from the 1999-2000 school year to the 2003-04 school year in 39 middle schools to which they compared 42 old K-8 schools (created prior to the start

of the study) and 14 newly formed K-8 schools (created in the last five years as part of the district's reform policy). Results from the K-8 conversion experiment are mixed. While students in long-established K-8 schools generally outperformed students in middle schools, students in newly converted K-8 schools did not significantly outperform those in middle schools or match the gains found in older K-8 schools.

Christopher Weiss and Lindsay Kipnes (2006) performed a study that looked to determine if there was a relationship between student outcomes and schooling form (K-8 and middle schools) in Philadelphia. They obtained longitudinal data through the Philadelphia School District that included grades, standardized test scores, attendance and discipline problems. Additional information was gathered through phone interviews with students and parents. Findings indicate that there is little difference in student performance based on the type of school they attended. However, there is a statistically significant difference in the realms of self-esteem and threat based on the type of school a student attended.

Similar studies have been done in other states. Aubrey Noble (2008) looked at the comparative performance of 8th grade students who attended a K-8 school and those who attended a 6-8 school to determine their level of academic achievement on the N.C. End-of-Grade test. The data in this study revealed statistical significance in student achievement by grade configuration for White students in 6-8 schools in both reading and mathematics. Other results are stable by race and gender subgroups. Additionally, while Whites outperform Blacks and females outperform males, they do so by margins comparable in both K-8 and 6-8 settings.

In his study of 19 schools in New York City, Moore (1984) found that both 7th and 8th grade reading achievement was higher for students in K-8 schools than in schools having a 6-8 configuration. Better attendance, more positive attitudes toward school, and higher self-esteem also were reported for 7th and 8th graders in K-8 schools.

With a sample of 163 Maine schools, Wihry, Coladarci, and Meadow (1992) examined the influence of grade span on 8th grade student performance on the state achievement test. They found that 8th grade total achievement was significantly higher in K-8, K-9, and 3-8 schools than in schools configured around the middle grades or those having a junior/senior high school configuration.

In Louisiana, Franklin and Glascock (1998) examined the relationship between grade configuration and student performance (attendance/suspensions) and academic achievement in rural schools. The researchers studied the effects of a school's grade configuration on both student behavior and academic achievement for grades six, seven, ten, and eleven. Their results suggest that at grades six and seven, the learning environment in elementary (grades K-7, 7) and unit (grades K-12) schools are more beneficial to students with regards to academic achievement as well as behavior than the middle school (grades 6/7-8/9) environment. The researchers also concluded that at grade ten, the unit school environment is more beneficial than the secondary (grades 7/8/9-12) school environment. They write that the unit school appears to have positive effects on the academic performance of students in grades six and seven, whereas middle and secondary schools have a detrimental effect on the same grade levels.

Cook, MacCoun, Muschkin, & Vigdor (2007) report that students who attend middle schools are more than twice as likely to be disciplined when compared to their

counterparts in K-8 school settings. They attribute this phenomenon to the middle school emphasis on academics and discipline rather than building relationships. However, it is noted that the increase of discipline referrals could be attributed to students' lack of familiarity with the new school environment and expectations, which is not experienced by students housed in K-8 settings. This opinion is supported by the same Cook, et al. (2007) research that demonstrates a decline of discipline referrals in the seventh grade in middle schools (6-8).

In a recent study conducted by Rockoff and Lockwood (2010), the researchers look at achievement and attendance data for New York City school children that were in grades three through eight during the 1998-1999 through 2007-2008 school years. In the study, New York Public school students who attended middle schools scored lower on math and reading tests than they would have had they attended a K-8 school. The same study found that middle school students also miss approximately two additional days of school per year than K-8 students.

Many researchers have examined the topic of grade configuration and the numerous factors to consider when making decisions. It is often not simply meeting the needs of the adolescent learner, but how will this impact the school division, community, and families. In their study *Grade Configuration: Who Goes Where?*, Paglin and Fager (1997) looked at eight schools in the Northwest United States with seven different grade spans. The authors concluded that grade configuration has not supplied ideal answers to the countless questions about the subject. They suggest what educators should think about when considering the topic of grade configuration:

1. Will the configuration increase or decrease transportation costs? How far will

students have to travel? This may be a more important issue in a community with a very dispersed population.

2. Will the configuration likely increase or decrease parent involvement? The proximity and size of the school may be factors, as well as the motivation and interest level of the parents.
3. How many students will be enrolled at each grade level and what implications does this have for course offerings and instructional groupings?
4. Are any data available that suggest whether the configuration might boost achievement scores for a significant portion of the community's students or depress the performance of others? For instance, some studies suggest that some middle-level students – low socioeconomic background sixth graders in Pennsylvania, and eighth graders in Maine, a predominantly rural state – benefit significantly from an elementary rather than middle school setting.
5. Will the configuration lead to the loss of a neighborhood school or the closing of other schools in the system?
6. How many points of transition and articulation will occur in the K-12 system? How will these be addressed? What mechanisms or channels of communication will be used to ensure that students move smoothly through the system, in terms of both academics and social and emotional adjustment?
7. Does the configuration allow for interactions between a range of age levels and a variety of grouping options? A school with more than one or two grade levels has the opportunity to increase the self-esteem and responsibility of older students by using them as tutor or mentors for younger students.

8. How will the presence or absence of older students affect younger students in a particular school? A school with few grade levels may benefit because older students are not present to model negative behaviors associated with their age group; on the other hand it may suffer from the lack of older role models for academic excellence and leadership.
9. Is the design of the school building(s) suited to managing students in the selected grade span? For instance, does it have several wings, useful for dividing a large middle school into “houses” or for keeping younger students in self-contained classrooms? (pp. 10-11)

Herman (2004) also reports that many factors must be taken into consideration when deciding which grade configuration best suits the needs of any community. Among the considerations are:

1. Number of students
2. Transportation costs
3. Socio-economic status of the student population
4. School system goals for student achievement
5. Effect on other schools
6. Number of transitions for affected students
7. School building layout and design
8. Budget considerations (p.12)

Coladarci and Hancock (2002) discuss the importance of looking at the relationship between grade span and academic achievement due to the current era of accountability. They state:

“Our focus is on the relationship between grade span and academic achievement. To be sure, there are other considerations that influence a school or district, such as those related to fiscal constraints, political tensions, or geographical realities. We do not mean to impugn their importance by not addressing these constraints here. But what ultimately matters – or should matter – to educators, policymakers, businesspersons, and the general public is how much students learn. This is particularly true in the present era of educational reform in which student performance on standards-aligned achievement assessments has become the veritable bottom line. So, what ‘is’ known about the effects of grade span on academic achievement? (p. 110)

Seller (2004) also explored the topic of grade configuration. However, this research examined the best grade configuration for students in all grades kindergarten through twelfth. Seller noted that there are two competing factors that school district administrators must consider when choosing grade configurations for the schools in their districts. Seller explained, “even though what is best for the student is central to the decision, administrative issues related to finances, transportation, space usage, and others can affect the final decision” (p. 2). Seller identified “many purposes” that should be considered when determining the best grade configuration for middle grades students (p. 5). As noted previously, school administrators, when selecting the best grade configuration for young adolescents, should consider student and administrative factors. Student factors to be considered by administrators, according to Seller, when selecting the best grade configuration for these students included “academic achievement, social adjustment, high school preparation, increased parental involvement, and beneficial

effects on the community” (p. 6). Administrative factors that influence administrators’ selection of grade configuration for middle grades students included “cost effectiveness, transportation efficiency, building usage, and personnel deployment” (p. 6). Seller concluded that “there is not a single grade span configuration that will serve all purposes” (p. 2).

### **Summary of the Literature Review**

There are advantages and disadvantages to both the K-8 and 6-8 grade configurations as discussed in the review of literature. These factors and others must be addressed when determining the best grade configuration for the adolescent learner. Based on the literature, the advantages of the K-8 model are that it offers the student the opportunity to attend the same school through eighth grade, thus minimizing the negative impact of transitions; it helps to develop long-term bonds between the students, parents, and staff; and it provides older students with the opportunity to serve as role models and/or mentors. The advantages of the middle school model are that students are part of a small definable group, it fosters ties between students and the teachers they work with, it provides for flexible scheduling, it offers more elective opportunities, and instruction is thematic and integrated. The K-8 grade configuration is increasing throughout the United States and the advantages related to achievement, attendance, and discipline appear to be the catalyst, according to the literature.

Disadvantages exist in both K-8 and 6-8 schools. According to the literature, fewer academic, sports and extracurricular activity options are afforded students in the K-8 configured school. In addition, there may be resistance on the part of older students to remaining in an elementary type setting and an increase potential for negative role

models for younger students. The disadvantages of the middle school model are that it requires more school-to-school transitions that can be stressful for students; they are often large and impersonal; and it is often not in a student's own community, thus travel distance to school may be longer for students.

To date the literature on grade configuration and the academic achievement of adolescent learners does not consistently support one grade configuration over another. Both K-8 and 6-8 middle school types are available in the present data set to allow for an examination of this issue in four states. Chapter 3 discusses the methods that were used to test both grade level configurations and student achievement in English and mathematics.

## **Chapter III**

### **Methodology**

This chapter explains the research topic and the research questions. It also provides details on the data collection procedures, the methodology, and the population for study. The sampling procedures are outlined and a detailed description of the sample is provided.

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. The data from the four eastern states were obtained from each state's Department of Education and included all public schools that enrolled eighth grade students during the 2009-2010 school year and met other specified criteria. The two dependent variables for this study were English and mathematics pass rate on the eighth grade assessments in each state. The results of this study were used to determine if there was a difference in the outcome with the different grade configuration, K-8 or 6-8 middle schools.

### **Research Questions**

Research questions frame a study and are the core of the research. Good research questions provide answers to the gaps in research on a particular topic (Lauer, 2006). They also identify the data and method of analysis that are projected. The overall guiding research question for this study was the following: How does grade span configuration influence academic achievement in adolescent learners? Grade span configuration, for this study, referred to public K-8 schools and middle schools (grades 6-8). The

research questions for this study were:

1. What is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations?
2. What is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations?
3. What is the difference, if any, in English and mathematics pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations?
4. What is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations?
5. If differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

The answers to these research questions provide valuable information for public school leaders as they continue to develop appropriate environments to promote academic excellence among adolescent learners. Knowledge of factors that directly impact the achievement of adolescent learners will allow educators to initiate the most effective grade configuration for students in these grade levels.

**Population/Sample**

The population for this study included public schools in Virginia, Maryland, South Carolina, and North Carolina that contained grade eight, met the definition of a K-8 school and middle school as defined in this dissertation, were not identified as magnet or charter schools, and participated in state assessments during the 2009-2010 school year. There were seven K-8 schools in Virginia with six that included Pre-Kindergarten. Maryland had 55 K-8 schools that all contained Pre-Kindergarten, while North Carolina had 66 K-8 schools with 48 that included Pre-Kindergarten. Finally, South Carolina had 16 K-8 schools with 14 that included Pre-Kindergarten. The number of middle schools in each state is larger than the number of K-8 schools in the same state. Virginia has 268 6-8 schools, there are 198 in Maryland, 361 in North Carolina and 187 in South Carolina. Since the entire population of public K-8 and middle schools in each state participated in this study, the population represented urban, suburban, and rural school districts.

**Data Collection**

Prior to collecting data, the researcher obtained written permission from the Virginia Polytechnic Institute and State University International Review Board (IRB). The Initial Review Application and Request for Exempt Review are included in Appendices A and B.

After receiving permission to conduct the study, the researcher created an alphabetized list of all K-8 and middle schools (6-8) in each of the four eastern states. Data from each school's report card that provided the percentage of students scoring

below, at, or above the proficient level in English and mathematics were used to measure student performance.

All performance data were obtained through public domain. Student SOL performance results for the selected K-8 and middle schools were available via the Virginia Department of Education's website at <http://www.doe.virginia.gov/>. MSA performance results for the selected schools were available via the Maryland State Department of Education's website at <http://www.marylandpublicschools.org/msde>. The South Carolina State Department of Education's website at <http://ed.sc.gov/> provided the results of the PASS for selected K-8 and middle schools and the Public Schools of North Carolina's website at <http://www.ncpublicschools.org/> provided the results of the ABCs End-of Course assessment for the selected schools. The data used from each state's Department of Education were school level data and no information from individual students was released. This study used achievement data from the 2009-2010 school year.

Descriptive information on each school was reported in the study; however, no school names or school divisions were identified in this study. The descriptive information provided an understanding of the public schools in each of the four eastern states that are included in the study and thus provided a framework for understanding the population analyzed.

### **Instrumentation**

The instrument used to collect these student achievement data (quantitative) were each state's school report card. Results come from each state's assessment that are a series of criterion-referenced tests in the areas of English, mathematics, writing, and

science. These tests are based on academic standards that describe what each student in a specific grade level should know and be able to do. The data for this study were collected and aggregated from the Virginia Department of Education (VDOE), the Maryland State Department of Education (MSDE), the South Carolina State Department of Education (SCDOE), or the North Carolina Department of Public Instruction (NCDPI). Achievement data for each selected school were reported by percent of student scores at or above proficient level. These data were used to compare the academic achievement of eighth grade students in K-8 public schools and those attending public 6-8 middle schools in the same state. States in this study had a broad variation in cut scores for each assessment. Table 1 illustrates cut scores required to meet or exceed the proficient level on the English assessment for each state.

Table 1

*Cut Scores for English Assessment by State*

State	English Cut Score	
	Proficient	Exceeds
Virginia	400-499	500+
Maryland	396-428	429+
South Carolina	600-648	649+
North Carolina	254-265	266+

*Note.* From data collected from Virginia Department of Education, Maryland State Department of Education, South Carolina State Department of Education, and North Carolina Department of Public Instruction

The broad variation of cut scores between states is evident when one reviews those set for mathematics. Table 2 illustrates cut scores required to meet or exceed the proficient level on the mathematics assessment for each state.

Table 2

*Cut Scores for Mathematics Assessment by State*

State	Mathematics Cut Score	
	Proficient	Exceeds
Virginia	400-499	500+
Maryland	407-443	444+
South Carolina	600-656	657+
North Carolina	357-367	268+

*Note.* From data collected from Virginia Department of Education, Maryland State Department of Education, South Carolina State Department of Education, and North Carolina Department of Public Instruction

**Method of Analysis**

Descriptive analyses were done to determine the mean, standard deviation, and percent of students who scored at or above the proficient level on their state's assessment. Seven PK-8 and 268 middle schools represented Virginia, 66 represented North Carolina PK-8 schools and 361 middle schools, 16 PK-8 and 187 middle schools represented South Carolina, and 55 PK-8 and 198 middle schools represented Maryland. The overall means and standard deviations of the grade 8 achievement scores for English and mathematics were analyzed for K-8 and middle public schools during the 2009-2010

school year. The predetermined alpha was .05. According to Huck (2000), an alpha is used for assessing internal consistency. An alpha of .05 means that the probability of error will occur 5 times out of 100. If the probability of the observed statistical value was .05, the hypothesis of no difference would be rejected, and the conclusion would be made that there was a difference in the means of the K-8 schools and the middle schools. On the other hand, if the probability of the observed statistical value was greater than .05, the hypothesis of no difference would fail to reject.

The ANOVA was originally proposed, but the data were not suitable to be analyzed with an ANOVA. After further examination, the *t*-test were used instead of the ANOVA statistical tests to test the research hypothesis “Eighth grade students who were attending a school with a particular grade configuration had higher achievement in English and mathematics as measured by the 2009-2010 state assessment.” The researcher decided to use this method of assessment because it allowed her to compare students’ performance in the K-8 school and the 6-8 middle schools from the same state. The significance level of .05 was used in every statistical analysis test to validate the significance of the difference between grade level configurations.

### **Conclusion**

This study was designed to determine if academic achievement in the areas of English and mathematics differ among eighth grade students who attended a middle school (grades 6-8) and those who attended a K-8 school, as evidenced by their state’s data. In addition, if differences did exist, to determine if those differences were significant. Results from the state’s 2009-2010 high stakes assessment were used to

measure student achievement in the content areas of English/reading and mathematics.

The data are discussed in Chapter 4.

## Chapter IV

### Results

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. The academic data in English and mathematics from school year 2009-2010 for this study were collected and aggregated from each school's report card located on the Virginia Department of Education (VDOE), the Maryland State Department of Education (MSDE), the South Carolina State Department of Education (SCDOE), or the North Carolina Department of Public Instruction (NCDPI). For statistical purposes the researcher combined the pass and pass advanced scores to calculate the percent passing each assessment. The Standards of Learning achievement of students on the English and mathematics tests in Virginia include the percentage of students who demonstrated proficiency and advanced proficiency. Achievement data reports for the Maryland School Assessment report the percent of students proficient and advanced. South Carolina's Palmetto Assessment of State Standards reports the percentage of students who scored met or exemplary. The North Carolina school report card reports the percent of students at or above. Students are considered at or above if they receive a score of Level III or IV on the state's assessment. It should be noted that according to school report cards in North Carolina, "to protect student privacy, any percentage that is higher than 95 appears as >95%, and any percentage that is lower than 5 appears as <5%. In these cases the results are shown as >95% or <5% for the group" (North Carolina

Department of Public Instruction). Therefore, for the purposes of this study, any school that received a score of >95%, the researcher denoted the scores as 96% when analyzing data. Data concerning academic achievement were analyzed to determine the difference in mean scores on the English and mathematics assessments between K-8 and middle schools by state. The data were analyzed using *t*-tests. An ANOVA was originally proposed, but the data were not suitable to be analyzed with an ANOVA. After further examination, *t*-tests were used instead of an ANOVA statistical test. The significance level of .05 was used in every statistical analysis test to validate the significance of the difference between K-8 and 6-8 middle schools and achievement in English and mathematics. The following research questions guided this study:

1. What is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations?
2. What is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations?
3. What is the difference, if any, in English and mathematics pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations?
4. What is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations?

- 5. If differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

Data for one thousand one hundred and fifty-eight schools were retrieved from the four eastern states’ Department of Education website. This included seven K-8 and 268 6-8 middle schools in Virginia, 66 K-8 and 361 6-8 middle schools in North Carolina, 55 K-8 and 198 6-8 middle schools in Maryland, and 16 K-8 and 187 6-8 middle schools in South Carolina (Table 3). The schools were selected based on the following criteria: (a) was a public school that included eighth grade students, (b) were located in one of the four eastern states, (c) students took the state assessment, and (d) included grade configuration of either a K-8 or 6-8 middle public school, not magnet or charter schools, during the 2009-2010 school year. Data are reported by research question.

Table 3  
*2009-2010 Number/Percentage of Schools by Grade Configuration per State Included in the Study*

State	K-8	Percent	6-8 Middle School	Percent
Virginia	7	2.5%	268	97.4%
North Carolina	66	15.4%	361	84.5%
Maryland	55	21.7%	198	78.3%
South Carolina	16	7.9%	187	92.1%
Total	144	12.4%	1,014	87.6%

*Note.* From data collected from Virginia Department of Education, Maryland State Department of Education, South Carolina State Department of Education, and North Carolina Department of Public Instruction

*Research Question 1*

What is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations? Research Question 1 was addressed by testing the following hypotheses:

*H<sub>01</sub>:* There is no significant difference in the English pass rates on the Standards of Learning in Virginia for schools with different grade span configurations.

*H<sub>02</sub>:* There is no significant difference in the mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations.

Overall, of the 275 Virginia schools in the study, there were seven K-8 and 268 6-8 middle schools. K-8 schools had the highest percent of students who demonstrated proficiency and advanced proficiency on the English SOL ( $M = 91.286$ ). The researcher conducted a *t*-test to compare the English scores of eighth grades students on the Standards of Learning assessment between K-8 and 6-8 middle schools. Based on the data provided, there was no significant difference in English scores between the two grade configurations. Therefore, *H<sub>01</sub>* was accepted.

Table 4

*Virginia K-8 and 6-8 Middle Schools' English Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	7	91.286	6.047	0.705
6-8 Middle	268	90.541	5.109	

\*p&lt;.05

Mathematics scores in Virginia for the 2009-2010 school year are presented in Table 5. As with the English group, 275 schools were included. K-8 schools had the highest percent of students who demonstrated proficiency and advanced proficiency on the mathematics SOL (M=89.714). However, results of the *t*-test show that there is no significant difference between K-8 and 6-8 middle schools in Virginia ( $P = 0.630$ ,  $df = 273$ ,  $t = 0.482$ ). Therefore,  $H_02$  was accepted.

Table 5

*Virginia K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	7	89.714	9.587	0.630
6-8 Middle	268	88.160	8.389	

\*p&lt;.05

*Research Question 2*

What is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations? Research Question 2 was addressed by testing the following hypotheses:

$H_03$ : There is no significant difference in the English pass rates on the

Maryland School Assessment in Maryland for schools with different grade span configurations.

*H04:* There is no significant difference in the mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations.

Table 6, illustrates the data of Maryland scores in English. The total number of schools reported was 253, with 55 representing K-8 schools and 198 representing 6-8 middle schools. Six to eight grade middle schools had a higher percent of students scoring at the proficient and advanced level on the Maryland School Assessment. Therefore, based on the overall results of this analysis, *H03* was rejected.

Table 6

*Maryland K-8 and 6-8 Middle Schools' English Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	55	68.604	13.513	.001
6-8 Middle	198	81.823	12.879	

\* $p < .05$

In Table 7, the percent of students scoring at the proficient and advanced level in mathematics for each grade configuration in the state of Maryland are presented.

Students in the 6-8 middle schools had a higher percent scoring at the proficient and advance level; therefore, they obtained the highest mean score  $M = 68.333$  ( $SD = 18.957$ ). As with the state's English results, there is a significant difference in the percent of students scoring at the proficient and advance level for mathematics between K-8 and

6-8 middle schools ( $P < 0.001$ ,  $df = 251$ ,  $t = -6.088$ ). Based on the overall results of this analysis,  $H_04$  was rejected.

Table 7

*Maryland K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	55	50.745	18.944	.001
6-8 Middle	198	68.333	18.957	

\* $p < .05$

*Research Question 3*

What is the difference, if any, in English and mathematics pass rates on the Palmetto Assessment of State Standards in South Carolina for schools with different grade span configurations? Research Question 3 was addressed by testing the following hypotheses:

*H<sub>05</sub>*: There is no significant difference in the English pass rates on the Palmetto Assessment of State Standards in South Carolina for schools with different grade span configurations.

*H<sub>06</sub>*: There is no significant difference in the mathematics pass rates on the Palmetto Assessment of State Standards in South Carolina for schools with different grade span configurations.

Table 8 shows the data of South Carolina scores on the Palmetto Assessment of State Standards in English. The number of schools, mean percent achieving at the met and exemplary, standard deviation, and the  $t$ -test results were used to illustrate the academic achievement variables for each grade level configuration. The total number of

schools participating was 203, 16 representing K-8 schools and 187 representing 6-8 middle schools. Students from the 6-8 middle schools obtained the highest percent of students scoring at the met and exemplary level on the English assessment ( $M = 62.33$ ). Nevertheless, there was no significant difference in English scores between K-8 and 6-8 middle schools in South Carolina ( $P = 0.062$ ,  $df = 201$ ,  $t = 1.877$ ). Based on the results of this analysis,  $H_05$  was accepted.

Table 8

*South Carolina K-8 and 6-8 Middle Schools' English Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	16	55.78	17.97	0.062
6-8 Middle	187	62.33	12.95	

\* $p < .05$ 

Data of South Carolina mathematics scores are shown in Table 9. Once again students from the 6-8 middle schools obtained the highest percent of students scoring at the met and exemplary level on the mathematics assessment ( $M = 62.38$ ). However, there is no significant difference in mathematics scores between K-8 and 6-8 middle schools in South Carolina ( $P = 0.119$ ,  $df = 201$ ,  $t = -1.567$ ). Based on the overall results of this analysis,  $H_06$  was accepted.

Table 9

*South Carolina K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	55	56.23	21.73	0.119
6-8 Middle	198	62.38	14.39	

\* $p < .05$

*Research Question 4*

What is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations? Research Question 4 was addressed by testing the following hypotheses:

*H<sub>07</sub>*: There is no significant difference in the English pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations.

*H<sub>08</sub>*: There is no significant difference in the mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for school with different grade span configurations.

For the 2009-2010 school year, the percent of students scoring at Level III and IV level in English for each grade configuration in the state of North Carolina are presented in Table 10. In total, there were 427 schools, by far the largest number of K-8 and 6-8 middle schools among the four eastern states. The mean score, representing the percent of students scoring at level III and IV, was 75.732 with a standard deviation of 11.995, signifying that K-8 students obtained a higher percentage scoring at level III and IV than their 6-8 middle school counterparts. This indicates that there is a significant difference in the percent of students scoring at level III and IV between the K-8 and 6-8 middle schools in North Carolina ( $P < 0.001$ ,  $df = 425$ ,  $t = 4.495$ ). Based on the overall results of this analysis, *H<sub>07</sub>* was rejected.

Table 10

*North Carolina K-8 and 6-8 Middle Schools' English Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	66	75.732	11.995	.001
6-8 Middle	361	68.057	12.887	

\* $p < .05$

In Table 11 the data of North Carolina scores in mathematics are displayed. The number of schools, mean percent achieving at level III and IV, standard deviation, and the *t*-test results were used to illustrate the academic achievement variables for each grade level configuration. Students from the K-8 schools obtained a higher percentage scoring at level III and IV on the mathematics assessment ( $M = 88.047$ ). Results indicate that there is a significant difference in the percent of students scoring at level III and IV between the K-8 and 6-8 middle schools in North Carolina ( $P < 0.000$ ,  $df = 425$ ,  $t = 3.711$ ). Based on the overall results of this analysis,  $H_0$  was rejected.

Table 11

*North Carolina K-8 and 6-8 Middle Schools' Mathematics Scores from 2009-2010*

Grade Configuration	N	<u>M</u>	SD	Sig.
K-8	66	88.047	8.446	.000
6-8 Middle	361	83.404	9.498	

\* $p < .05$

#### *Research Question 5*

If differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

Data obtained for the 2009-2010 school year indicate that there is no consistent difference in the English and mathematics pass rates for schools with different grade span configurations in all four states. After conducting *t*-tests to compare the English scores and mathematics scores in Virginia and South Carolina, there was no significant difference in scores between the two grade configurations. The *t*-tests conducted to compare the English scores and mathematics scores in Maryland and North Carolina provided differing results. In Maryland, students in 6-8 middle schools obtained higher mean scores, whereas in the state of North Carolina data signified that K-8 students obtained higher mean scores.

### **Summary**

In Chapter IV, the descriptive analyses as related to the research questions were presented and analyzed. The research questions referred to whether there was a difference in the percent of students scoring at or above the proficient level, as determined by that state's Department of Education in English and mathematics on state assessments for schools with different grade configurations. The data revealed that although Virginia K-8 schools obtained a higher percentage of eighth grade students scoring at proficient and advanced proficiency, on both the English and mathematics Standards of Learning assessment, there was no significant difference from the state's 6-8 middle schools. The percent of students scoring at the proficient and advanced levels for Maryland indicated a significant difference between K-8 and 6-8 middle schools with the 6-8 middle schools having the highest percent of eighth grade students at the proficient and advanced levels on the Maryland School Assessment in both English and mathematics. Data from the Palmetto Assessment of State Standards in South Carolina

revealed no significant difference in the percent of students obtaining met or exemplary between K-8 and 6-8 middle schools on the English and math assessments, although the 6-8 middle schools had the highest percent of eighth grade students obtaining met or exemplary. Results of the ABC's End-of-Grade assessments showed a significant difference in percent of students reaching level III or IV between K-8 and 6-8 middle schools with K-8 schools obtaining the highest percent in both English and mathematics. The findings presented will serve as a base for summary of this study, analysis of data, discussion of the findings, and recommendations for future studies, which will be presented in Chapter 5.

## Chapter V

### Purpose of the Study

The purpose of this quantitative research study was to determine if there was a difference between grade span configuration with respect to the academic achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. The following research questions were investigated: (1) What is the difference, if any, in English and mathematics pass rates on the Standards of Learning in Virginia for schools with different grade span configurations? (2) What is the difference, if any, in English and mathematics pass rates on the Maryland School Assessment in Maryland for schools with different grade span configurations? (3) What is the difference, if any, in English and mathematics pass rates on the Palmetto-Assessment of State Standards in South Carolina for schools with different grade span configurations? (4) What is the difference, if any, in English and mathematics pass rates on the ABC's End-of-Grade tests in North Carolina for schools with different grade span configurations? (5) If differences do exist in English and mathematics pass rates for schools with different grade span configurations, are the results consistent in all four states?

The researcher collected assessment data from one thousand one hundred and fifty-eight schools from the four eastern states. This included seven K-8 and 268 6-8 middle schools in Virginia, 66 K-8 and 361 6-8 middle schools in North Carolina, 55 K-8 and 198 6-8 middle schools in Maryland, and 16 K-8 and 187 6-8 middle schools in South Carolina.

### Summary and Discussion of Findings

Based on the data, the researcher reported the following findings for the research study:

*Finding 1:* There is no statistically significant difference in the percent of eighth grade students achieving at the proficiency or advanced proficiency level for English or mathematics between K-8 schools and 6-8 middle schools in Virginia.

Data included in this study for Virginia represented the percent of eighth grade students that scored at the proficient or advanced proficient level on the English and mathematics Standards of Learning assessment. A *t*-test was conducted to compare the English results between K-8 and 6-8 middle schools. The analysis of the *t*-test found that there was no statistically significant difference in the percent achieving at the proficient or advanced proficient level of the K-8 schools ( $M=91.29$ ) and 6-8 middle schools ( $M=90.54$ ). To compare the mathematics results between K-8 and 6-8 middle schools, a *t*-test was performed. Once again, there was no statistically significant difference in the percent achieving at the proficient or advanced proficient level of the K-8 schools ( $M=89.71$ ) and 6-8 middle schools ( $M=88.16$ ).

Paglin and Fager's (1997) findings were similar to the findings in this study based on their analysis. They concluded that no particular sequence of grade spans is perfect or in itself guarantees students' achievement and social adjustment. Similarly, Christopher Weiss and Lindsay Kipnes (2006) found that there was little difference in students' performance based on type of school they attend. More interesting are the results of Thornburg and Glider (1984), who found that age produced more significant effects than either school configuration or grade. In 2004, Pacopella reported the following:

According to the National Forum to Accelerate Middle-Grades Reform, it doesn't matter if adolescent children are taught in a K-8 building or a 6-12 school or even a 6-8 school. What matters is whether or not students are given middle grade education. 'The issue is not about grade configuration, but about the practices that go on in the school building,' says Deborah Kasak, the forum's executive director. (p. 14)

*Finding 2:* Six to eight grade public middle schools obtained a higher pass rate in both English and mathematics in Maryland.

Data included in this study for Maryland represented the percent of eighth grade students that scored at the proficient or advanced level on the English and mathematics Maryland School Assessment. A *t*-test was conducted to compare the English results between K-8 and 6-8 middle schools. There was a statistically significant difference in the percent achieving at the proficient or advanced level of the K-8 schools (M= 68.60) and 6-8 middle schools (M=81.823). Students enrolled in the 6-8 middle schools had a higher percent of eighth grade students scoring at the proficient or advanced level. To compare the mathematics results between K-8 and 6-8 middle schools, a *t*-test was performed. Once again, students attending a 6-8 middle school (M = 68.33) had a higher percent of eighth grade students scoring at the proficient or advanced level than did their K-8 counterparts (M = 50.75).

There have been several large scale and comprehensive studies conducted that demonstrate that young adolescents who attend middle schools that use essential programs and practices like interdisciplinary teaming have higher achievement scores (Felner, Jackson, Kasak, Mulhall, Brand, & Flowers, 1997; Lee & Smith, 1993; Mertens,

Flowers, & Mulhall, 1998). Felner, et al. assessed and evaluated the impact of Turning Points' recommendations on middle grades reform (achievement, social-emotional, and behavioral). They found that students in more highly implemented schools had higher achievement in language arts, reading, and mathematics, as well as lower levels of behavior problems.

In A National Survey of Middle School Effectiveness, George and Oldaker (1986) reported the following in regards to middle schools and academic achievement:

Our survey results dispute earlier opinions that academic achievement is either unaffected or only modestly improved by a move to middle school organization. Sixty-two percent of the respondents described consistent academic improvement. An additional twenty-eight percent supplied specific results demonstrating increased scores on state assessment tests, the California Achievement Test, Iowa Test of Basic Skills, and similar tests. Eighty-five percent observed that teacher confidence in student abilities had increased, which, many suggested, led to higher expectations and greater student productivity. Other aspects of reorganized programs positively affecting student learning included coordination of skills and subjects by interdisciplinary teams as well as greater teacher awareness of pre-adolescent needs and abilities. Clearly, the experience of the most highly acclaimed middle schools is that academic achievement can be expected following reorganization. (p. 80)

*Finding 3:* There is no statistically significant difference in the percent of eighth grade students achieving at the met or exemplary level for English and mathematics between K-8 schools and 6-8 middle schools in South Carolina.

Date included in this study for South Carolina represented the percent of eighth grade students that scored at the met or exemplary level on the English and mathematics Palmetto Assessment of State Standards. The analysis of the *t*-test found that there was no statistically significant difference in the K-8 (M=55.78) and 6-8 middle schools (M=62.33) grade configurations and students' English results. To compare the mathematics results between K-8 and 6-8 middle schools, a *t*-test was performed. Again, there was no statistically significant difference in the K-8 (M=56.23) and 6-8 middle schools (M=62.38) grade configurations and students' mathematics results.

In the study conducted by Aubrey Nobles (2008), the researcher looked at the performance of eighth grade students who attended a K-8 and those who attended a 6-8 school to determine the level of academic achievement. Although she found a statistically significant difference in student achievement for White students in 6-8 schools, all other results are stable by gender and race subgroups.

Some studies have found that schools with more grade levels per building evidenced higher academic achievement regardless of socioeconomic status. One study on this topic did find inconclusive results (Vaccaro, 2000), and another found no relationship between grade span configuration and academic achievement as measured by the Arkansas Benchmark Examination for sixth grade students (Dove, et. al, 2010).

These studies concur with the findings of the present study in regards to the difference between grade span configuration and academic achievement as measured by the state's test. There was no statistically significant difference in the percent of eighth grade students achieving at the met or exemplary level on either the English or mathematics assessments.

*Finding 4:* K-8 grade public schools obtained a higher pass rate in both English and mathematics in North Carolina.

Data included in this study for North Carolina represented the percent of eighth grade students that scored at the proficient level on the English and mathematics End-of-Grade Tests. A *t*-test was conducted to determine the difference between K-8 and 6-8 middle schools in the area of English. There was a statistically significant difference in the percent achieving at level III or IV in the K-8 schools ( $M = 75.73$ ) and 6-8 middle schools ( $M = 68.06$ ). Students enrolled in the K-8 schools had a higher percent of eighth grade students scoring at level III or IV. To determine the difference between mathematics results of K-8 and 6-8 middle schools, a *t*-test was performed. Once again, students attending a K-8 school ( $M = 88.05$ ) had a higher percent of eighth grade students scoring at the proficient or advanced level than did their 6-8 middle school counterparts ( $M = 83.40$ ).

Research (Berlin, 1993) supports the fact transitions can be frightening for students moving from an elementary school to a middle school. Not only is the middle school typically larger, but the need to adjust to new, rigorous academic standards and peer expectations can result in declines in self-esteem, grade point average, and participation in school activities. Other studies found that students in combination schools (K-8, K-9) perform better in achievement than in the middle grades or secondary schools (Franklin & Glascock, 1998; Wren, 2003; Wihry, Coladarci, & Meadow, 1992). Studies conducted by Connolly, et al. (2001) and Rockoff and Lockwood (2010) also looked at achievement data and concluded that students in K-8 schools had significantly higher reading and mathematics scores than did students in a 6-8 middle school. The

study by Moore (1984) provided similar results. In this study, both seventh and eighth grade reading achievement was higher for students in K-8 schools than in schools with a 6-8 configuration.

*Finding 5:* No grade configuration consistently provided higher achievement outcomes as measured by state assessments in English and mathematics.

Information from this study provided mixed results. Although K-8 schools obtained a higher percentage of students reaching the proficient or advance level on the state assessments for English and mathematics in North Carolina, the opposite occurred in Maryland. When looking at findings from Virginia and South Carolina, there was no difference in K-8 schools and 6-8 middle schools students' English and mathematics test results. Howley (2002) reported on studies in Connecticut and Maine that had similar results.

Even though student achievement was higher in the sixth and seventh grades when they were included in the elementary school, he warned that the findings are not conclusive as situations in different states and regions vary. Byrnes and Ruby (2007) studied whether there was a difference in student achievement in schools that implemented K-8 model and those that do not with respect to the eighth grade scores in reading and mathematics on the Pennsylvania State System of Assessments. Results of this study are also mixed. Although students attending K-8 schools that had been in existence for a longer period of time generally performed better than students in middle school, the students in the newly created K-8 schools did not significantly outperform students in middle school or match the gains found in the longer established K-8 schools.

*Finding 6:* There are more 6-8 middle schools than K-8 schools in each of the four states.

Paglin and Fager (1997) summarize the trend of grade configuration with the following:

Despite this diversity, some trends have emerged. The major changes in grade organization in the 20<sup>th</sup> century are clearly the rise and decline of the junior high (typically grades seven through nine) and the rise of the middle school (typically grades six through eight). Junior highs, which emerged in the first few decades of the century, grew in number until the early 1970s (as cited by Hough, 1995). In 1920, four out of five high school graduates had attended a K-8 elementary school and a four-year high school. By 1960, four out of five had attended an elementary school, a three-year junior high, and a three-year senior high (as cited in Alexander & McEwin, 1989). The decline of the junior high coincided with the rise of the middle school, which came on the scene in the mid 1960s. Today, the middle school is the dominant form of middle grades education in terms of numbers of students enrolled. (p. 2)

### **Implications of Findings**

The purpose of this quantitative study was to determine if there was a difference between grade span configuration with respect to achievement scores of eighth grade students in four eastern states who attended 6-8 public middle schools and those who attended K-8 public schools, as evidenced by their state's 2009-2010 achievement data. K-8 and 6-8 middle schools do not consistently make a significant difference in the English and mathematics scores on the state assessments in Virginia, Maryland, South Carolina, and North Carolina. Equally, they did not consistently have a negative impact. Many educators believe that if a student has the advantage of attending a school that

provides high-quality curriculum and instruction that focuses on rigor and relevance, provides him with adults with whom he can develop personal relationships, and a positive and supportive school environment, then she or he is in the best environment to meet his personal and academic development. Therefore, the results of this study have implications for administrators, school boards, school staff, and parents in neighborhood communities.

In the study conducted by Paglin and Fager (1997), the researchers point out that: “Research has not provided definitive answers to the myriad of possible questions about grade span, but the questions have never gone away. They are questions which arise whenever school reform, increasing and declining enrollment, or financial deliberations bring about a restructuring of existing schools, the building of new ones, or consolidation of district” (p. 2). Similarly, Herman (2004) stated that researchers need to remember, “No grade configuration is as important as instructional leaders, skilled and creative teachers, high and reasonable expectations for students, visionary central office staff, strong parental involvement, community support and equitable fiscal resources” (p. 36). In addition, Coladarci and Hancock (2002) found that available research does not answer with any degree of certainty regarding the relationship between grade configuration and academic performance. They do encourage researchers to “continue to disentangle grade span from its corollaries” and to “become smarter about how and why” (p. 191).

Because grade configuration did not consistently result in increased academic performance, school districts should concentrate instructional programs that focus on improving English and mathematics skills for early adolescents. Since no curriculum model results in higher academic achievement alone, additional curriculum materials

should be implemented that will strengthen student performance and result in students better prepared for their future.

Because grade configuration did not consistently result in increased academic performance, school divisions and school leaders should develop staff development programs that improve classroom instruction skills of teachers who consistently produce low student achievement. According to a study by researchers at the University of Virginia, Birkbeck University in London, RTI International, University of Michigan, and members of the National Institute of Child Health and Human Development's Early Child Care Research Network, classroom instruction is inconsistent and varies from classroom to classroom. Robert Pianta, Ph.D., the study's primary writer said that even the same grade using the same curriculum to teach a certain subject, across classrooms students' opportunities to learn that subject were dramatically different (Pianta, et al., 2007). Teachers who deliver engaging lessons and activities, create opportunities for higher-level thinking and reasoning, and offer frequent feedback assist in extending students' learning. Policy makers at the state and federal level need to reevaluate the term "highly qualified" to determine if it is truly related to the quality of classroom instruction and not just a teacher's degree status and performance on a test. In addition, there must be adequate professional development for teachers to effectively deal with young adolescent students.

MacIver and Epstein sum up the debate over which grade configuration is best in their research. They suggest:

Existence of modest grade-span effects on school programs and student outcomes, the wide variation in practices and outcomes found among schools with identical

grade spans suggest that there is no one ‘most responsive’ grade span for schools that serve early adolescents. As a result, there is an ever-growing consensus among researchers and practitioners that the hard work of developing excellent programs in the middle grades is not accomplished by changing grade spans, but by implementing practices that support the social, personal, and academic development of early adolescents. (pp. 521-522)

### **Suggestions for Further Study**

The study’s analysis of the difference between grade span configuration and student achievement left a number of questions unanswered. Therefore, there are several possibilities for further study in this area. They include:

- It is recommended that this study be replicated using student performance data instead of pass rates.
- It is recommended that a longitudinal study of an urban, rural and suburban district using sixth grade achievement data of students attending a K-8 or 6-8 middle schools to determine if there is a significant difference in the students’ eighth grade achievement or if their achievement is comparable.
- It is recommended that this study be replicated using the student achievement data on statewide assessment tests by race/ethnicity as the independent variable.

- It is recommended that this study be replicated using the student achievement data on statewide assessment tests by SES as the independent variable.
- It is recommended that a qualitative study be conducted involving focus groups of teachers, students, parents, and building administrators across a selected state to determine if their perceptions of how grade configuration impacts student achievement. The focus group discussions should be coupled with observations of instruction to compare responses with observed behaviors.
- It is recommended that a qualitative study be conducted to determine if parents are stronger advocates for K-8 schools versus 6-8 middle schools.
- It is recommended that this study be replicated to explore the impact specific components of middle schools philosophy on student achievement in English and mathematics.
- It is recommended that this study be replicated to determine the impact grade configuration has on gender.
- It is recommended that this study be replicated using school divisions that are similar in size and SES.
- It is recommended that this study be replicated on the national level using the National Assessment of Education Progress (NAEP) assessment instead of statewide assessments.

- It is recommended that there be a follow-up study on the population in this study to assess long-term changes related to high school academic performance and behavior patterns.

### **Reflections**

In 2008, the School Board of Hampton City Schools gave me the opportunity to become the principal of one of the first PK-8 schools in our district. In fact, the principal of one of the first urban PK-8 schools in the Commonwealth of Virginia. Participating in this research study was an enlightening experience for various reasons. First, as a new PK-8 principal, the literature review provided information regarding various grade configurations and why districts select a particular model. The outcomes of the studies reviewed showed mixed results on the most effective for adolescent learners.

Conducting this study provided me with the opportunity to analyze student achievement data from schools across four eastern states and to gain familiarity with the wide-range of state assessments and report cards. This was beneficial to me not only as a school administrator but an administrator in a PK-8 school. Although results from each state of this study were mixed, it should be noted that although a state's 6-8 middle schools may make a difference in a student's achievement scores, every 6-8 school in that state might not make a difference. Every state has schools that can improve. Therefore, no particular sequence of grade spans is perfect or in itself guarantees student achievement and social adjustment. With thought and effort, effective practices can be implemented in a variety of grade configurations.

### References

- Abella, R. (2005). The effects of small K-8 centers compared to large 6-8 schools on student performance. *Middle School Journal*, 37(1), 29-35.
- Alexander, W. (1984). The middle school emerges and flourishes. In J. Lounsbury (Ed.), *Perspectives: Middle school education, 1964-1984* (pp. 14-29). Columbus, Ohio: National Middle Schools Association.
- Alexander, W.M. & McEwin, C.K. (1989). *Schools in the Middle: Status and Progress*. Columbus, Ohio: National Middle School Association.
- Alexander, W.M. & George, P.S. (1981). *The Exemplary Middle School*. New York: Holt, Rinehart and Winston.
- Alexander, W. M. (1995). The Junior High School: A Changing View. *Middle School Journal*, 26(3), 21-24.
- Alspaugh, J.W. & Harting, R.D. (1995). Transition effects of school grade-level organization on student achievement. *Journal of Research and Development in Education*, 28(3), 145-149.
- Alspaugh, J. W. (1998). Achievement Loss Associated with the Transition to Middle School and High School, *Journal of Educational Research*, 92(1), 20-25.
- Angus, D. L., Mirel, J. E., & Vinovskis, M.A. (1988). *Historical development of ages stratification in schooling*. *Teachers College Record*, 90(2), 211-236.
- Arcia, E. (2007). A comparison of elementary/k-8 and middle schools' suspension rates. *Urban Education*, 42(5), 456-469.
- Balfanz, R., Spiridakis, K., & Neild, R. (2002). Will converting high-poverty middle schools to K-8 schools facilitate achievement gains?: Research Brief for the

School District of Philadelphia.

- Baltes, P.B. & Nesselroade, J.R. (1979). History and rationale of longitudinal research. In J.R. Nesselroade & P.B. Baltes (Eds.), *Longitudinal research in the study of behavior and development* (pp. 1-39). New York: Academic Press.
- Beane, J. & Lipka, R. (2006). Guess again: Will changing the grades save middle-level education? *Educational Leadership*, 63(7), 26-30.
- Becker, H.G. (1987). *Addressing the needs of different groups of early adolescents: Effects of varying school and classroom organizational practices on students from different social backgrounds and abilities* (Report No. 16)/Baltimore, MD: Center for Research on Elementary and Middle Schools, The John Hopkins University. (ERIC Document Reproduction Service No. ED291506).
- Boe, E.E.& Shin, S. (2005). Is the United States really losing the international horse race in academic achievement? *Phi Delta Kappan*, 86(9), 688-695.
- Branlow, R. (2001). The misdirection of middle school reform. *Educational Digest*, 64, 30-34.
- Briggs, T. (1920). *The Junior High School*. Cambridge, MA: The Riverside Press.
- Brown, E. (2004). The Effect of Number of School Transitions on District Performance (Doctoral dissertation, Ohio University, 2004). *Dissertation Abstracts*, 1(1), 131.
- Byrnes, V. & Ruby, A. (2007). Comparing Achievement between k-8 and middle Schools: A large-empirical study. *American Journal of Education*, 114(1), 101-135.
- Charles, C.M. (1998). *Introduction to Educational Research*. Third Edition. Longman.
- Coladarci, T., & Hancock, J. (2002). *Grade-span configurations: The (limited) evidence*

*Regarding effects on academic achievement* (Occasional Paper No. 41). Orn, ME: College Education & Human Development at the University of Maine.

Coleman, J.C. (1974). *Relationships in adolescence*. Boston, MS: Routledge & Kegan Paul.

Connolly, F., Yakimowski, M.E., & Russo, C. (2002) An examination of K-5, 6-8, and K-8 grade configurations. *ERS Spectrum*, 20, 28-37.

Cook, P.J., MacCoun, R., Muschkin, C., & Vigdor, J. (2007). Should six grade be in elementary or middle school? An analysis of grade configuration and student behavior. Durham, NC: Terry Sanford Institute of Public Policy.

Cook, P.J., MacCoun, R., Muschkin, C., & Vigdor, J. (2008). The negative impacts of starting middle school in sixth grade. *Journal of Policy Analysis and Management*, 27(1), 104-121.

Cromwell, S. (2005). Where does sixth grade belong? Education World. [www.educationworld.org/admin/admin/admin060shtml](http://www.educationworld.org/admin/admin/admin060shtml).

David, R. (Ed.). (1998). *Moving forward from the past: Early writing and current reflections of middle school founders*. Columbus, OH: National Middle School Association.

Devos, J. & Saleh, A. (2007). Middle grades configurations and small schools. *Academic Exchange Quarterly*.

Digest of Education Statistics, 2009.

Dove, M.J., Pearson, L.C., & Hooper, H. (2010). Relationship between Grade Span Configuration and Academic Achievement. *Journal of Advanced Academics*, 21(2), 272-298.

- Eccles, J. & Midgley, C. (1989). Stage/environment fit: Developmentally appropriate classrooms for early adolescents. In R.E. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp.139-186). New York: Academic Press.
- Eccles, J.S., Lord, S., & Midgley, C. (1991). "What Are We Doing to Early Adolescents? The Impact of Educational Context on Early Adolescents." *American Journal of Education*, 99(4), 521-542.
- Epstein, J.L. & MacIver, D. J. (1990). The middle grades: Is grade span the most important issue? *Educational Horizons*, 68(2), 88-94.
- Erb, T.O. (1994). The middle school: Mimicking the success routes of the information age. *Journal for the Education of the Gifted*, 17(4), 385-406.
- Erb, T.O. (2005, September). The making of a new urban myth. *Middle School Journal*, 37(4), 194-200.
- Erwin, J. (2004). *The classroom of choice: Giving students what they need and getting what you want*. Alexandria, VA: Association of Supervision and Curriculum Development.
- Feldlaufer, H., Midgley, C., & Eccles, J.S. (1988). Student, teacher, and observer perceptions of the classroom environment before and after the transition to junior high school. *Journal of Early Adolescence*, 8, 133-156.
- Felner, R., Jackson, A., Kasak, D., Mulhall, P., Brands, S., & Flowers, N. (1997). The impact of school reform for the middle years: A longitudinal study of a network engaged in *Turning Points*-based comprehensive school transformation, *Phi Delta Kappan*, 78(7), 528-532, 541-550.
- Flowers, N., Mertens, S.B., & Mulhall, P.F. (1999). The impact of teaming: Five

- research-based outcomes. *Middle School Journal*, 31(2), 57-60.
- Flowers, N., Mertens, S.B., & Mulhall, P.F. (2000). How teaming influences classroom practices. *Middle School Journal*, 32(2), 52-59.
- Franklin, B.J. & Glascock, C.H. (1998). The relationship between grade configuration and student performance in rural schools. *Journal of Research in Rural Education*, 14(3), 149-153.
- Freeman, C.T. (2005). A Comparison of K-8 Schools, Junior High Schools, and Middle Schools with Respect to Student Academic Achievement and Attendance in North Carolina. Updated doctoral dissertation, Western Carolina University.
- Gatewood, T.E. & Dilg, C.A. (1975). *The middle school we need*. Alexandria, VA: Association for Supervision and Curriculum Development.
- George, P.S. (2005). K-8 or not? Reconfiguring the middle grades. *Middle School Journal*, 37(1), 6-8.
- George, Paul S., Stevenson, Chris, Thomason, Julia, & Beane, James (1992). *The middle school – and beyond*. Alexandria, VA: Association for Supervision and Curriculum Development.
- George, P.S., & Oldaker, L.L. (December 1985/January 1986). A national survey of middle school effectiveness. *Educational Leadership*, 79-85.
- Gewertz, G. (2004, May 19). City districts embracing k-8 schools. *Education Week* 23(37), 20-23.
- Gootman, E. (2007a, January 3). Trying to find solutions in chaotic middle schools. *The New York Time*.
- Gootman, E. (2007b, January 24). Taking middle schoolers out of the middle, *New York*

Times, A1. Retrieved March 26, 2011, from

<http://www.nytimes.com/2007/01/22/education/22middle.html>

Gruhn, W., & Douglass, H. (1956). *The modern junior high school*, 2<sup>nd</sup> ed., New York: Roland Press.

Handley, W. Harold, & Utah State Office of Education, Salt Lake City. Division of Curriculum and Instruction (1982). *Summary of Readings on Advantages and Disadvantages of the Junior High School and of the Middle School (Research And Literature in General) [microform]/W. Harold Handley* Distributed by ERIC Clearinghouse, [Washington, D.C.]

Harter, S., Whitesell, N.R., & Kowalski, P. (1992). Individual Differences in the Effects of Educational Transitions on Young Adolescent's Perceptions of Competence and Motivational Orientation. *American Educational Research Journal*, 29(4), 777-807.

Herman, B.E. (2004). The revival of K-8 schools. Fastback 519, Bloomington, IN: Phi Delta Kappa Educational Foundation

Hopkins, G. (2006). Grade Configuration: Who goes where? *Education World*.

Hough, David L., (1995, January). The elemiddle school: A model for middle grades reform. *Principal*, 74(3), 7-9.

Hough, D.L. (1997). "A Bona Fide Middle School: Programs, Policy, Practices, and Grade Span Configuration." In J.L Irwin (Ed.), *What Current Research Says to the Middle Level Practitioner*, pp. 285-294.

Hough, D.L. (2005, March). The rise of the 'elemiddle' school. *The School Administrator*, 62(3), 10-14.

- Hough, D.L. (2004). *Grade span does make a difference* [Policy Brief]. Springfield, MO: Southwest Missouri State University, Institute for School Improvement. Retrieved February 20, 2011, from [http://education.missouristate.edu.isi/Grade\\_Span\\_Policy\\_Brief2004.pdf](http://education.missouristate.edu.isi/Grade_Span_Policy_Brief2004.pdf)
- Howley, C.B. (2002, March). Grade-span configurations. *School Administrator*, 59(3), Retrieved February 25, 2009 from ProQuest Education Complete database.
- Huck, S.W. (2000). *Reading Statistics and Research*. Third Edition. Longman, Inc. 91-92.
- Jackson, A.W. & Davis, G.A. (2000). *Turning points 2000: Educating adolescents in the 21<sup>st</sup> century*. New York: Teachers College Press.
- Jenkins, D.M. & McEwin, C.K. (1992). "Which School for the Fifth Grade? Programs And Practices on Three Grade Organizations." *Middle School Journal* 23(4): 8-12.
- Juvonen, J., Le, V., Kagonoff, T., Augustine, C., & Constant, L. (2004). *Focus on the wonder years: Challenges facing the American middle school*. Santa Monica, CA: RAND Corporation.
- Kaplan, D.S., Peck, B.M., & Kaplan, H.B. (1994). Structural relations model of self-rejection, disposition to deviance, and academic failure. *Journal of Educational Research*, 87, 166-173.
- Koos, L. (1920). *The Junior High School*. New York: Harcourt, Brace, and Howe.
- Larson, R., Moneta, G., Richards, M., & Wilson, S. (2002). Continuity, stability, and change in daily emotional experiences across adolescence. *Child Development*, 73(4), 1151-1165.

- Lauer, P. (2006). *An education research primer: How to understand, evaluate, and use it* (1st ed.). San Francisco: Jossey-Bass.
- Lee, Smith, Perry, & Smylie. (1999). *Social Support, academic press, and student Achievement: A view from the middle grades in Chicago*. Chicago: Consortium On Chicago School Research, University of Chicago.
- Lee, V.E. & Smith, J.B. (1993, July). Effects of school restructuring on the achievement of middle-grade students. *Sociology of Education*, 66(3), 164-187.
- Lounsbury, J. (Ed.). (1982). *This we believe*. Columbus, OH: National Middle School Association.
- MacIver, D.J., & Epstein, J.L. (1993). Middle grades research: Not yet mature, but No longer a child. *The Elementary School Journal*, 93(5), 519-533.
- Manning, M.L. (2000). A brief history of the middle school. *Clearing House*, 73(4), 192.
- McEwin, C.K., Dickinson, T.S., & Jacobson, M.J. (2004). Programs and practices in K-8 Schools: Do they meet the educational needs of young adolescents? Westerville, Ohio: National Middle School Association.
- McIntyre, N. (2002). *Configuration in K-12 Schools* (Clearinghouse on Early Education and Parenting). Champaign: University of Illinois at Urbana-Champaign-College of Education. Retrieved January 25, 2011, from Clearinghouse on Early Education and Parenting Web site: <http://ceep.cru.uiuc.edu>
- Mertens, S. B., Flowers, N., & Mulhall, P.F. (1998). *The middle start initiative, phase I: A longitudinal analysis of Michigan middle-level schools*. University

of Illinois, Center for Prevention Research and Development.

Midgley, C. & Feldlaufer, H. (1987). Students' and Teachers' Decision-Making Fit

Before and After the Transition to Junior High School. *The Journal of Early Adolescence*, 7(2), 225-241.

Mizell, H. (2005). Grade configurations for educating young adolescents are still crazy after all these years. *Middle School Journal*, 37(1), 24-28.

Moore, D. (1984). *Impact of school grade-organization patterns on seventh and eighth grade students in k-8 and junior high schools*. Paper presented at the annual meeting of the England Educational Research Organization, Rockport, ME. Retrieved from ERIC database. (ED245346).

Moss, T.C. (1969). *Middle School*. Boston, MA: Houghton Mifflin Company.

National Center for Educational Statistics (NCES). (2006). Common Core of Data, 2005-2006. Data file retrieved from <http://www.nces.ed.gov/ccd/pubschuniv.asp> 2006-2007.

National Education Association. (1984). *Report of the Committee of Ten on Secondary Studies*. New York: American Book.

National Middle School Association. (2003). *This We Believe: Successful schools for young adolescents* Westerville, OH: Author.

Nobles, A. R. (2008). Grade Configuration and the Achievement of 8th Grade Students On the North Carolina End of Grade Tests in Reading and Mathematics. Unpublished Doctoral dissertation, East Caroline University.

No Child Left Behind Act of 2001. (2002, January 7). 20 USC 6301. Retrieved February 19, 2011 from

<http://www2.ed.gov/policy/elsec/leg/esea02/index.html>

- Offenberg, R. M. (2001). The efficacy of Philadelphia's K-to-8 schools compared to middle grades schools. *Middle School Journal*, 32(4), 23-29.
- Office of Program Policy Analysis & Government Accountability. (2005). K-8 schools May help school districts improve student performance. *Report No. 05-02*.
- Our Children at Risk (YMCA). (1998). Retrieved January 29,2011 from <http://www.fhfi.org/youthdevneeds.php>
- Paglin, C. & Fager, J. (1997, July). Grade configuration: Who goes where? Portland, OR: Northwest Regional Education Laboratory.
- Patton, C. (2005). The k-8 bunch. *District Administration*, 41(2), 44-51.
- Pedhazur, E.J. & Schmelkin, L.P. (1991). *Measurement, Design, and Analysis: An Integrated Approach*. New Jersey: Lawrence Erlbaum Associates Inc.
- Petersen, A.C. & Spica, R. (1982). Adolescence and stress. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects*. New York: MacMillan.
- Pianta, R. C., Belsky, J., Houts, R. & Morrison, F. (2007). Opportunities to Learn in America's Elementary Classrooms, *Science* 30, 1795-1796.
- Poncelet, P. & Associates, M. (2004). Restructuring schools in Cleveland for the social, emotional, intellectual development of early adolescents. *Journal of Education for Students Placed at Risk*, 9(2), 81-96.
- Renchler, Ron. (2000, Spring). "Grade Span." *Research Roundup: The National Association of Elementary School Principals*, 16(3), 5-8.
- Rockoff, J.E. & Lockwood, B.B. (2010, Fall). How and why middle schools harm

student achievement. *Education Next*, 10(4), 68-75.

Romano, L.G., & Georgiady, N.P. (1994) *Building an effective middle school*.

Madison, WI: Brown & Benchmark Publishers

Roosevelt, M. (2007, June 13). New k-8 schools in Pittsburgh see discipline problems, exits. *Education Week*, 26(41), 6.

Rubin, K.H, Bukowski, W., & Laursen, B. (Eds). (2009). *Handbook of Peer*

*Interactions, Relationships, and Groups*. New York: Guilford.

Seidman, E., Lambert, L.E., Allen, L, & Aber, J.L. (2003). Urban Adolescents'

Transition to Junior High School and Protective Family Transactions. *Journal of Early Adolescence*, 23(2), 166-193.

Simmons, R.G. & Blyth, D.A. (1987). *Moving into adolescence: The Impact of Pubertal*

Change and School Context. New York: Aldine De Gruyter

Sowell, E. J. (2001). *Educational Research an integrative introduction*. New York:

McGraw-Hill.

The Middle School Concept (n.d.). Retrieved October 7, 2008 from

<http://www.angelfire.com>

Thorneburg, H.D. & Glider, P. (1984). Dimensions of Early Adolescent Social

Perceptions and Preferences. *The Journal of Early Adolescence*, 4(4), 387-406.

Tooper, C.F. (1982). *Encyclopedia of Educational Research* (5th ed., Vol. 2). New

York: Harcourt Brace.

- Tonkin, S.E. & Watt, H.M.G. (2003). Self-concept over the transition from primary to Secondary school: A case study on a program for girls. *Issues in Educational Research, 13*(2), 27-54.
- Tucker, C.G., & Andrada, G.N. (1997) *Accountability works: Analysis of performance by grade span of school*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- Urduan, T. & Klein, S. (1998, May). *Early adolescence: A review of the literature*. A paper prepared for the U.S. Department of Education Office of Educational Research and Improvement for the Conference on Early Adolescence.
- U.S. Department of Education, National Center for Education Statistics. (2011). *Digest of Education Statistics, 2010* (NCES 2011-015), Chapter 2.
- Vaccaro, D.A. (2000). A comparative study of middle school and K-8 school value-added gains in the areas of reading, language, math, science, and social studies. *Dissertation Abstracts International, 61*(6), 2175.
- Viadero, D. (2006, March 1). K-8 structure gives no academic boost, analysis finds. *Education Week, 25*(25), 5-7.
- Vispoel, W.P., & Austin, J.R. (1995). Success and failure in junior high school: A Critical incident approach to understanding students' attributional beliefs. *American Educational Research Journal, 32*, 377-412.
- Weiss, C.C. & Kipnes, L. (2006, February). Reexamining middle school effects: A comparison of middle grades students in middle schools and K-8 schools. *American Journal of Education, 112*(2), 239-272.
- Whitley, J., Lupart, J., & Beran, T. (2007). Differences in achievement between

adolescents who remain in a k-8 school and those who transition to a junior high school. *Canadian Journal of Education*, 30(3), 649-669.

Wihry, D.F., Coladarci, T., & Meadow, C. (1992, Summer). Grade span and eighth-grade academic achievement: Evidence from a predominantly rural state. *Journal of Research in Rural Education*, 8(2), 58-70.

Wren, S.D. (2004). The effects of grade span configuration and school-to-school transition on student achievement. *Journal of At-Risk Issues*, 10(1), 7-9.

Yecke, C. (2005). *Mayhem in the middle school: How middle schools have failed America – and how to make them work*, p. 65). Washington, DC: Thomas B. Fordam Institute.

Youth Development Programs & Outcomes (1996). Retrieved March 26, 2011, from <http://www.nydic.org/nydic/programming/whatis/outcomes.htm>

Zemike, K. (2007, January 7). The preteen: Betwixt and bedeviled. *The New York Times*, A1. Retrieved March 3, 2011, from <http://www.thefreelibrary.com>

## Appendix A



**Office of Research Compliance**  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24060  
540/231-4606 Fax 540/231-0959  
e-mail [irb@vt.edu](mailto:irb@vt.edu)  
Website: [www.irb.vt.edu](http://www.irb.vt.edu)

### MEMORANDUM

**DATE:** July 11, 2011

**TO:** Carol Cash, Donna Warthan

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)

**PROTOCOL TITLE:** The Difference Between Grade Span Configuration and Student Achievement in Four Eastern States

**IRB NUMBER:** 11-620

Effective July 11, 2011, the Virginia Tech IRB PAM, Andrea Nash, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

### PROTOCOL INFORMATION:

Approved as: **Exempt, under 45 CFR 46.101(b) category(ies) 4**

Protocol Approval Date: **7/11/2011**

Protocol Expiration Date: **NA**

Continuing Review Due Date\*: **NA**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

### FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

*An equal opportunity, affirmative action institution*