



SCHOOL of
GRADUATE STUDIES
EAST TENNESSEE STATE UNIVERSITY

East Tennessee State University
Digital Commons @ East Tennessee
State University

Electronic Theses and Dissertations

Student Works

12-2019

The Effects of Grade Configuration on Sixth, Seventh, and Eighth Grade Students' TNReady English Language Arts and Math Achievement

Carmen Cristy Pendergrass
East Tennessee State University

Follow this and additional works at: <https://dc.etsu.edu/etd>



Part of the [Educational Assessment, Evaluation, and Research Commons](#)

Recommended Citation

Pendergrass, Carmen Cristy, "The Effects of Grade Configuration on Sixth, Seventh, and Eighth Grade Students' TNReady English Language Arts and Math Achievement" (2019). *Electronic Theses and Dissertations*. Paper 3675. <https://dc.etsu.edu/etd/3675>

This Dissertation - Open Access is brought to you for free and open access by the Student Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact digilib@etsu.edu.

The Effects of Grade Configuration on Sixth, Seventh, and Eighth Grade Students’
TNReady English Language Arts and Math Achievement

A dissertation

presented to

the faculty of the Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

by

Carmen Cristy Pendergrass

December 2019

Dr. Pamela Scott, Chair

Dr. William Flora

Dr. Stephanie Tweed

Dr. Heather Moore

Keywords: K-8 , Middle School, Grade Configuration, Standardized Testing, TNReady

ABSTRACT

The Effects of Grade Configuration on Sixth, Seventh, and Eighth Grade Students'

TNReady English Language Arts and Math Achievement

by

Carmen Cristy Pendergrass

The purpose of this study was to determine if a significant difference exists in the TNReady scores of Tennessee students who attend a kindergarten through eighth grade school (K-8) as compared to students who attend a middle school (6-8 grades). The results of the 2018-2019 TNReady, the state adopted standardized achievement test for Tennessee, were used as the data for the study. The relationship between grade configuration and the percent of students who scored on track or mastered in English language arts and math was analyzed using an independent samples t-test. Further disaggregating by specific grade levels, grade configuration and TNReady achievement data was analyzed to note the impact in English language arts and math in each grade. When a significant difference was discovered, the data was further analyzed with an analysis of variance to determine if a significant difference existed in gender and grade configuration.

DEDICATION

This work is dedicated to my husband, Brad, and children, Savannah and Sawyer. They have loved and supported me even when a book or computer obstructed my attention – in the car, on vacation, in front of the television, and even in a hunting blind. Many times they were required to pick up my slack so I could study. Without them, this journey would have been much more difficult. My hope is through this example they will continue to be lifelong learners and value the call to continued growth. To my parents, Gary and Sherida Black, I thank them for setting the expectation of working hard to achieve goals. They have always been in my corner encouraging me, which has motivated me to push myself harder and further. To my sister, I owe a thousand thank yous for being my willing editor of many papers throughout the years without one ounce of compensation – except for continued opportunities for more connection across the miles that separate us.

ACKNOWLEDGEMENTS

I would like to acknowledge and thank:

The members of my dissertation committee: Dr. Pamela Scott, Dr. William Flora, Dr. Stephanie Tweed, and Dr. Heather Moore.

Dr. Bethany Fillers, Dr. Wendy Smith, Dr. Jami Corwin, Dr. Sharon Cochran, and Laura Luna, five brilliant colleagues who never tired of questions I had about writing my dissertation. I will forever be grateful for their willingness to be thought partners and friends.

Mary V. Wheeler Elementary School, my own K-8 elementary, where I attended as a student, became a teacher, and later served as a principal. Those roots inspired me to ask the questions in this study, knowing the solid foundation it has provided me throughout my life.

TABLE OF CONTENTS

	Page
ABSTRACT	2
DEDICATION.....	3
ACKNOWLEDGEMENTS.....	4
LIST OF TABLES.....	8
LIST OF FIGURES	9
CHAPTER 1 INTRODUCTION	10
Statement of the Problem.....	11
Purpose Statement.....	11
Research Questions.....	11
Significance of the Study.....	13
Definitions of Terms.....	13
Delimitations and Limitations.....	14
Overview of the Study	15
CHAPTER 2 LITERATURE REVIEW	16
Introduction.....	16
Theoretical Framework.....	16
Standardized Testing in Education	17
Achievement Testing as Accountability	19
Achievement Testing in Tennessee	21
Factors Affecting Achievement	24
History of School Structure	27
Grade Configuration and Non-Achievement Variables.....	29
Grade Configuration and Achievement	31
Chapter Summary	36

CHAPTER 3 RESEARCH METHODOLOGY	38
Research Questions and Null Hypotheses	39
Population	41
Instrumentation	42
Data Collection	43
Data Analysis	44
Chapter Summary	45
CHAPTER 4 FINDINGS.....	46
Analysis of Research Questions.....	47
Research Question #1	47
Research Question #2	48
Research Question #3	49
Research Question #4	51
Research Question #5	53
Research Question #6	54
Research Question #7	56
Research Question #8	57
Research Question #9	58
Chapter Summary	63
CHAPTER 5 SUMMARY, RECOMMENDATIONS, AND CONCLUSION.....	65
Summary of Results.....	65
Recommendations for Practice	67
Recommendations for Further Research.....	68
Conclusion	69
REFERENCES	71
APPENDICES	81
APPENDIX A: K-8 Schools in ELA All Students Sample	81

APPENDIX B: Middle Schools in ELA All Students Sample.....	84
APPENDIX C: K-8 Schools in Math All Students Sample.....	87
APPENDIX D: Middle Schools in Math All Students Sample	89
APPENDIX E: K-8 Schools in ELA By Grade Sample.....	92
APPENDIX F: Middle Schools in ELA By Grade Sample.....	95
APPENDIX G: K-8 Schools in Math By Grade Sample.....	98
APPENDIX H: Middle Schools in Math By Grade Sample.....	100
APPENDIX I: Schools in Sixth Grade ELA Gender Sample.....	103
APPENDIX J: Schools in Eighth Grade Math Gender Sample.....	108
VITA	112

LIST OF TABLES

Table	Page
1. Sixth Grade Means and Standard Deviations with 95% Confidence Intervals of Pairwise Differences	60
2. Eighth Grade Means and Standard Deviations with 95% Confidence Intervals of Pairwise Differences	62

LIST OF FIGURES

Figure	Page
1. Boxplot of distribution of English language arts mean percent of all 6-8 students on track and mastered by grade configuration	48
2. Boxplot of distribution of math mean percent of all 6-8 students on track and mastered by grade configuration.....	49
3. Boxplot of distribution of English language arts mean percent of sixth grade students on track and mastered by grade configuration.....	51
4. Boxplot of distribution of math mean percent of sixth grade students on track and mastered by grade configuration	52
5. Boxplot of distribution of English language arts mean percent of seventh grade students on track and mastered by grade configuration.....	54
6. Boxplot of distribution of math mean percent of seventh grade students on track and mastered by grade configuration.....	55
7. Boxplot of distribution of English language arts mean percent of eighth grade students on track and mastered by grade configuration.....	57
8. Boxplot of distribution of math mean percent of eighth grade students on track and mastered by grade configuration.....	58
9. Boxplot of distribution of English language arts mean percent of sixth grade students on track and mastered by grade configuration and gender	60
10. Boxplot of distribution of math mean percent of eighth grade students on track and mastered by grade configuration and gender	62

CHAPTER 1

INTRODUCTION

A school as an open social system is a contemporary view of the educational process. In the open social system inputs, or students, enter the system where a transformational process occurs through the teaching and learning core, which is confined by the structural, cultural, political, and individual systems. One of the outputs of this system is achievement (Hoy & Miskel, 2013). Since the establishment of Title I of the Elementary and Secondary Education Act (ESEA) in 1965, a central educational platform has been “to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging state academic standards and state academic assessments” (U.S. Department of Education, 1965, para.2) and continued with the passage of the Every Student Succeeds Act (ESSA) in 2015 which “ensures that vital information is provided to educators, families, students, and communities through annual statewide assessments that measure students’ progress,” states, districts, and schools have been held to increasingly high standards of school accountability based upon standardized achievement scores (U.S. Department of Education, 2015). Due to the steady increase in achievement accountability, it is worth questioning the impact of school configuration on the output of student achievement from the open social system view of schools. Therefore, the purpose of this study was to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady.

Statement of the Problem

This research study was to determine if a significant difference exists in the TNReady scores of Tennessee students who attend a kindergarten through eighth grade school (K-8) as compared to students who attend a middle school. With the increased emphasis in Tennessee to measure school accountability based upon achievement, it was worth investigating school configuration as a variable that impacts student achievement. Currently, only a few Tennessee-specific studies exist on this topic; however, research that has been conducted is based upon an older state approved standardized assessment. Other state studies of grade configuration and the impact on achievement have resulted in mixed findings

Purpose Statement

The purpose of this study was to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady.

Research Questions

The following research questions guided this study:

1. Is there a significant difference in English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?

2. Is there a significant difference in math TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and math TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?
3. Is there a significant difference in English language arts TNReady scores of sixth grade students who attend a K-8 school and English language arts TNReady scores of sixth grade students who attend a middle school?
4. Is there a significant difference in math TNReady scores of sixth grade students who attend a K-8 school and math TNReady scores of sixth grade students who attend a middle school?
5. Is there a significant difference in English language arts TNReady scores of seventh students who attend a K-8 school and English language arts TNReady scores of seventh grade students who attend a middle school?
6. Is there a significant difference in math TNReady scores of seventh grade students who attend a K-8 school and math TNReady scores of seventh grade students who attend a middle school?
7. Is there a significant difference in English language arts TNReady scores of eighth grade students who attend a K-8 school and English language arts TNReady scores of eighth grade students who attend a middle school?
8. Is there a significant difference in math TNReady scores of eighth grade students who attend a K-8 school and math TNReady scores of eighth grade students who attend a middle school?

9. For any of the above research questions found to have a significant difference, as a post-hoc analysis, is the achievement difference in either English language arts or math by gender?

Significance of the Study

Across Tennessee, structures for separating sixth, seventh, and eighth grade students into schools fall into several categories, with the most predominant being a K-8 which houses prekindergarten and/or kindergarten through eighth grade students. The next most predominant framework is a middle school, which houses sixth through eighth grade students. With these emerging as the main configurations and considering the current focus on achievement tests as a measure of accountability, it was worthy of an investigation to determine if students in one school configuration outperform the other configuration, when considering achievement data. This study will lend to the current research on the relationship between grade level configuration and student achievement, will provide insight into the impact of grade configuration on gender, and will prompt further research on this topic. This study examined the English language arts and math TNReady results of Tennessee students in a K-8 setting as compared to those in a middle school setting, as disaggregated by the entire grade 6-8 population and as specific grade levels.

Definition of Terms

The following key terms serve as operational definitions to define the parameters of the words associated with this study.

1. Achievement: a student's categorization on the TNReady assessment as mastered grade level, on track for grade level, approaching grade level, or below grade level (Tennessee Department of Education, n.d.)
2. Grade configuration: the grade levels included within a school. For the purpose of this study, K-8 and middle school configurations were studied.
3. K-8: a school that houses students in kindergarten through eighth grade, which may or may not include a prekindergarten program
4. Middle School: a school that houses exclusively students in sixth, seventh, and eighth grades
5. TNReady: "part of the Tennessee Comprehensive Assessment Program (TCAP) and is designed to assess true student understanding, not just basic memorization and test-taking skills" (Tennessee Department of Education, 2018d, para.1)
6. Standardized Tests: "tests that require test-takers to answer the same set of questions in the same way, and that is scored in a "standard" or consistent way manner" (Glossary of Education Reform, 2015, para.1)

Delimitations and Limitations

The population of this study was delimited to Tennessee sixth, seventh, and eighth grade students who attend either a K-8 school or a middle school and took the math or English language arts subtest on TNReady. This pool of schools was further delimited by the Tennessee Department of Education suppression business rules. In the data set available for public release, if the number of valid tests for the group or subgroup equals less than 10, then the data is suppressed and removed from the data file. It is also suppressed at the school level if the

proficiency level is less than 5% or greater than 95% (Tennessee Department of Education, 2019a). The results of this test may not be generalizable to other states, other school configurations, or other standardized tests. Limitations of this study include the validity and reliability of the TNReady assessment as administered in each K-8 and middle school across the state. Other limitations include no availability of data to record the movement of the students in and out of K-8 schools and middle schools; the available data reflected the location of the student at the administration of the test.

Overview of the Study

This study is organized and presented in five chapters. Chapter 1 includes an introduction to grade configuration and the impact on student achievement, along with the statement of the problem, research questions, significance of the study, definition of the terms, and delimitations and limitations. Chapter 2 contains an overview of relevant research related to grade configuration, specifically theoretical framework; standardized testing; achievement testing as accountability; achievement testing in Tennessee; factors affecting achievement; history of school structure; grade configuration and non-academic variables; and grade configuration and achievement. Chapter 3 describes the methodology, including the research questions and null hypotheses, population, instrumentation, data collections, and data analyses. Chapter 4 presents the findings of this study in relationship to the research questions. Chapter 5 provides a summary and suggestions for practice and for future studies.

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this literature review was to provide an analysis and synthesis of relevant educational research related to the effects of K-8 school and middle school configurations on student achievement. Within this chapter, literature and research findings will be considered from the following areas: (a) theoretical framework, (b) standardized testing, (c) achievement testing as accountability, (d) achievement testing in Tennessee, (e) factors affecting achievement, (f) history of school structure, (g) grade configuration and non-academic variables, and (h) grade configuration and achievement.

Theoretical Framework

Hoy and Miskel (2013) sought to represent the educational system as a social system where the outputs are affected by the inputs and transformational process; internal and external feedback and the external environment influence all. They define inputs as the environmental constraints, human and capital resources, mission and board policy, and materials and methods introduced into a transformational process. The transformational process includes teaching and learning as the core with the structural, cultural, political, and individual systems surrounding and influencing the core. As a result of the transformational process, outputs are created: achievement, job satisfaction, absenteeism, dropout rate, and overall quality. The outputs provide external feedback on the effectiveness of the transformational process, which can be rejected or accepted by the systems to make adjustments to the transformational process with the intent of maintaining the current outputs or affecting the process for an alteration in outputs. In

context of this research, the Hoy and Miskel (2013) model served to frame the relationship between school configuration and the achievement of students. School configuration is situated within the transformational process as a structural system that impacts the output of achievement; achievement was used as feedback on the structural system.

Standardized Testing in Education

Standardized testing, as noted in The Glossary of Education Reform (2015), is: any form of test that (1) requires all test takers to answer the same questions, or a selection of questions from a common bank of questions, in the same way, and that (2) is scored in a “standard” or consistent manner, which makes it possible to compare the relative performance of individual students or groups of students (para.1).

The glossary also outlines five common forms of standardized testing: achievement, aptitude, college-admissions, international-comparison, and psychological.

The history of American standardized testing is rooted in Horace Mann’s 1845 vision for reforming Boston common schools. He instituted a change from an oral exam to a written exam, in an effort to obtain objective information about the quality of teaching and instruction, while also providing a way to compare schools based on achievement (Gallagher, 2003). Thorndike (1913) supported the use of standardized testing as a way of selecting and classifying individuals who were good, intelligent, and efficient continued the trajectory of the widespread use of standardized testing. Paralleling Thorndike’s work, Goddard introduced intelligence testing to the United States based on the work of French physiologist, Alfred Binet, which was subsequently used by William Stern to create an IQ formula. Stern’s model was a precursor to Stanford-Binet Test of Intelligence (Gallagher, 2003). Out of the necessity of assigning recruits

to army positions before and during World War I, standardized testing increased as almost two million men were administered the Army Alpha Test, developed by Arthur Otis and Robert Yerkes. The large-scale use and success of the test legitimized it as a model, which soon found its way into education (Rothman, 1995). By 1929 more than five million Stanford Achievement tests were given each year to elementary students as a way to determine the level of learning (Thorndike & Bregman, 1934). In 1929, the University of Iowa introduced the Iowa Test of Basic Skills and the Iowa Test of Educational Development, becoming the most popular nationally used achievement test for over fifty years (Peterson, 1983). Standardized testing expanded into college admissions in 1923 with the College Entrance Board Exam, which evolved by 1925 into the Scholastic Aptitude Test (SAT) and was joined by the American College Test (ACT) in 1959 (Walsh & Betz, 1995).

Since the introduction of standardized testing, critics have articulated concerns over their widespread use to make decisions about people. In a 1922 exchange of views on testing in the *New Republic*, Walter Lippman argued that the abstract tests are a “vain effort to discount training and knowledge” (as cited in Block & Dworkin, 1976). Criticism peaked in the late 1950s and the early 1960s, which paralleled the launch of Sputnik and the budgeting of funds by the National Defense Education Act for testing. Articles surfaced in national periodicals questioning the use of tests to identify academically-talented students: “Rash of Testing in Schools: Is it Being Overdone?”; “Testing: Can Everyone be Pigeonholed?”; “What the Tests Do Not Test”; and “Are We Developing a Robot Education?” (Haney, 1981). The debates occurring in the 1970s, regarding what standardized tests reveal concerning the differences between races, were spurred by an article in the *Harvard Educational Review* by Arthur Jensen (1967) entitled, “How Much Can We Boost IQ and Scholastic Achievement”. The truth in

testing mantra was extolled in the late 1970s and continued into the 1980s as educators pushed for test publishers' transparency of individual test results, as well as the process of test development and use of results (Haney, 1981).

Criticisms have continued with current concern over too much testing. In 2013, President Obama spoke to a group in Washington, D.C., expressing his concern that “too much testing makes education boring for kids”, and education should not be about learning to fill in bubbles and testing tricks (Werner, 2011). In response to educator concerns over testing, Tennessee Education Commissioner, Candice McQueen, convened an Assessment Task Force in 2015 whose mission was to inform the testing process in Tennessee through elevating and studying best practices, to ensure districts are using assessments to improve the outcomes of students, and to communicate to stakeholders about the assessment program used by Tennessee (Tennessee Department of Education, 2015). The task force has reconvened multiple times since the inaugural meeting to provide recommendations for testing concerns – many of which are currently being implemented, such as a reduction in the number of tests and improved reporting to stakeholders (Tennessee Department of Education, n.d.a).

Achievement Testing as Accountability

Title I of the Elementary and Secondary Education Act (U.S. Department of Education, 1965) was an impetus for the current emphasis on achievement testing and accountability. In 1969, the National Assessment of Educational Progress (NAEP) was launched, in an effort to collect large-scale data on student achievement; it was initially a source of information gathering but has later evolved to an organization making alignment with accountability recommendations (Ryan & Shepard, 2008). Accountability steadily increased throughout the 1970s as school

leaders used test scores as their defense against loss of funding and their evidence of achievement to be eligible for incentive monies (Sacks, 1999). The release of *A Nation at Risk: The Imperative of Education* (National Commission on Education Excellence, 1983), with a focus on the decline in achievement of American students, further accelerated the push towards achievement as an accountability measure, citing the need for rigorous and measurable standards. Within three years of its release, thirty-five state leaders had embraced the call for more rigorous expectations for students and had begun a journey of educational reform (Orfield & Kornhaber, 2001). By 1989, forty-seven state leaders had expanded their testing programs by allocating more funds to testing and by coordinating curriculum to testing (Rothman, 1995). Accountability remained a focus in the 1990s under the Bush and Clinton administrations, as the press advocated for parents to stay informed on the progress of school by seeking achievement test results. Goals 2000: Educate America Act, under the Clinton Administration, attempted to clarify the accountability expectations of students and teachers, while continuing the emphasis on standardized testing (Heubert & Hauser, 1999).

No Child Left Behind (NCLB), signed into law by President Bush in 2002 contained provisions that required states to create achievement tests to monitor the academic performance of students in grades 3 through 8 with the goal of ensuring a high-quality education for all students. Additionally, a sample of fourth and eighth grade students was expected to participate every other year in NAEP. NCLB also imposed consequences, including rehabilitative action and restructuring, for districts and schools who received federal money but were consistently low performing. Conversely, schools with students who exhibited or surpassed objectives were eligible to receive awards for achievement excellence (U.S. Department of Education, 2002).

Under President Obama’s administration, the Every Student Succeeds Act (ESSA) was passed in 2015 as an iteration of NCLB. The passage of ESSA continued the focus on disadvantaged students, required the installment of high academic standards, ensured dissemination of achievement information to stakeholders, encouraged innovations for interventions, expanded access to high-quality preschools, and sustained achievement and graduation accountability (U.S. Department of Education, 2015). Foundationally, the Obama administration maintained the requirement of state standardized testing, while easing the concerns of over testing by providing flexibility for states to make some autonomous accountability decisions (Hess & Eden, 2017).

Achievement Testing in Tennessee

Tennessee educators have administered statewide testing since 1988 (SCORE, 2017). In 1992, the passage of the Education Improvement Act, with requirements of state leaders to monitor the growth of students from year to year, introduced the Tennessee Value-Added Assessment System (TVAAS) as part of accountability, beginning with the 1992-1993 school year (SCORE, 2014). Spurred by receiving a grade of F in the misalignment of Tennessee Comprehensive Achievement Program, TCAP, and NAEP in 2007 by the U.S. Chamber of Commerce, the Tennessee Department of Education began to overhaul the state standards, assessment, and accountability which led to aligning TCAP to the Tennessee Diploma Project standards and to joining the Common Core State Standards initiative in 2008. The receiving of the Race to the Top (RTTT) grant in 2009 transitioned Tennessee to state specific higher standards in 2013, followed by the alignment of the state assessment to the state standards (McQueen, 2017). RTTT also necessitated Tennessee to pass the First to the Top Act of 2010

that established an accountability system tying the evaluation system to student achievement (Riley, 2010). In that same year, the Tennessee Department of Education adopted new academic standards (Olson, 2018). Concerned with the role of the federal government, in 2014, Tennessee state educational leaders announced the decision to leave the Partnership for Assessment and Readiness for College and Career Readiness (PARCC), joined as a way to assess the Common Core State Standards. This action required the Tennessee Department of Education to begin creation of its own assessment (Educator Advisory Team, 2018). The current objectives for student assessment in Tennessee are focused on providing feedback about student progress and readiness for the workforce, opportunities for teachers to reflect on instruction and practices, and information on to what extent Tennessee is serving students (Tennessee Department of Education, 2018c).

In recent years, the Tennessee Department of Education administration has faced struggles with statewide achievement testing. In 2016, during the first day of online testing, the testing company, Measurement Inc., was not able to accommodate the number of student users, which led to the Education Commissioner of Tennessee requesting the company provide paper and pencil versions of the assessments. Unable to meet the demand, testing in grades 3-8 was suspended, and testing in high school had to be scored by a different company due to the state's firing of Measurement Inc. (Gonzales, 2016). The problems continued in 2017 when the new vendor, Questar, scored 9,400 of the approximately 600,000 TNReady assessments incorrectly, affecting about 70 schools in 33 districts. All the affected tests were high school level: English I, English II, and Integrated Math II. Teachers' rosters were also involved in inaccurate data during 2017, with about 1,700 teachers affected; the rosters were used to determine accountability data for teachers (Pignolet & Gonzales, 2017). A cyber attack on Questar on the

first day of testing in 2018 resulted in students who could not log into the testing site. Spurred by additional problems when the tests were resumed after the cyber attack, The Tennessee General Assembly voted to suspend accountability based upon the 2018 tests for students, teachers, and schools (Gonzales & Buie, 2018). The members of Tennessee's Third Task Force on Student Testing and Assessment released recommendations in 2018, which were affirmed by Dr. Candace McQueen, Tennessee's Commissioner of Education. The main focus of the recommendations was to lessen student testing during the 2018-19 school year by removing TNReady chemistry and English III, using the TNReady end-of-course U.S. History assessment as evidence for dual credit, halting stand-alone field testing for two years, and reducing the number of minutes grades 3 and 4 spend testing in English language arts (Tennessee Department of Education, 2018d). From a collection of feedback from a listening tour during the fall of 2018, the Educator Advisor Team submitted a report to outgoing governor, Bill Haslem, which highlighted assessment findings and themes from six roundtable discussions held across the state: restoring the credibility of TNReady, providing students access to technology, disseminating timely results, and aligning instructional resources to Tennessee standards. The writer of the report outlined further assessment recommendations for the incoming governor during the 2018-19 and 2019-2020 school years (Educator Advisory Team, 2018).

During the 2018-19 school year, students in grades 3-8, students in selected high school courses, and second grade students whose district chose to administer the optional second grade assessment took TNReady, as part of TCAP. The Tennessee Department of Education (2018e) provides four reasons for the achievement test:

develops skills that are in line with college and work expectations, allows students to show what they know in new ways, provides better information for teachers and parents, and promotes real-world problem solving (para.1).

In conjunction with the increase in achievement testing, Tennessee leaders have also developed an ever-evolving accountability system whose role is to articulate expectations and outcomes for Tennessee school districts. Currently the model focuses on six areas: grades 3-5 success rate, grades 6-8 success rate, grades 9-12 success rate, graduation rate, chronically out of school, and English language proficiency assessment. The performance in these areas are calculated based upon absolute performance and value added and are further disaggregated by all students, black/Hispanic/Native American, English learners, students with disabilities, and economically disadvantaged. Districts are assigned a final accountability determination of exemplary, advancing, satisfactory, marginal, or in need of improvement, based on an achievement calculation weighted 60% all students and 40% subgroups (Tennessee Department of Education, 2018a).

Factors Affecting Achievement

With the increased emphasis on achievement through federal and state laws and mandates, researchers have increasingly sought to isolate variables to determine a direct correlation to the achievement outcomes of students. Depending upon the research, many direct conclusions can be drawn about the impact of multiple factors on students' academic success. A model created by Bronfenbrenner (1979) represents the "whole child" in the context of four concentric circles. Moving in order from the center outward, the model includes the student personal microsystem, the interactive experiences mesosystem, the larger community exosystem,

and the climate and culture macrosystem. Achievement can be viewed, in context, by the effects of each system on the student. The student's personal microsystem consists of the elements in direct interaction with the student or the characteristics of the student, including a student's resiliency, abilities, health, and development (Bertolini, Stremmel, & Thorngren, 2012). The mesosystem factors surround a student (Bronfenbrenner, 1979). Research related to this system includes the impact of principals and teachers. The delineation of the positive impact of a principal's leadership has been teased out of the research to trace a backwards trail from student achievement to the principal (Hallinger & Heck, 1996; Pittner, 1988). Likewise, a teacher's relationship to students' achievement has been heavily analyzed from all possible angles. Positive correlations have been found between teachers and achievement in multiple dimensions possessed by the teacher and strategies employed by the teacher – most notably: instructional delivery, student assessment, learning environment, and personal qualities (Stronge, Ward, & Grant, 2011). Controlling for socioeconomic status, Hoy (2012) found three factors impacted the achievement of students: collective efficacy, collective trust in parents and students, and academic emphasis of the school, which built upon the work of Bryk and Schneider (2002) who identified four similar conditions: teachers' can-do attitude, outreach to and cooperation with parents, professional community, and commitment to community. Exosystem and macrosystem factors impacting achievement are large-scale systemic and societal considerations (Bronfenbrenner, 1979). After the passage of the Civil Rights Act of 1964, Coleman et al. (1966) investigated the impact of race and ethnicity on student outcomes; they surfaced the impossibility of assessing a student's achievement independent of the background and general social context. These findings were later validated with research that supported the strong

relationship between socioeconomic factors and student achievement (Jencks, Smith, Acland, & Bane, 1972).

Isolating school size as a variable impacting achievement has produced varied results. In a study of Welsh schools, Foreman-Peck (2006) concluded students in schools with a population of greater than 600 tended to have lower scores on achievement tests, and the size negatively impacted attendance of students. This same trend held true in research by Egalite and Kisida (2016). Using a longitudinal information of over one million students from the Northwest Evaluation Association, they determined as the population of a school increases math and reading achievement decreases. Conversely, Crispin (2016) analyzed the impact of school size and setting, urban, suburban, and rural, on the math achievement of students. She documented the highest achievement in rural and urban schools, using data from the National Educational Longitudinal Study of 1988. In a North Carolina study of fourth and fifth grades, no causal relationship was noted between school size and achievement; however, a negative impact of larger schools on socioeconomically disadvantaged students and students with disabilities surfaced (Gershenson & Langbein, 2015).

In recent years, John Hattie has conducted massive, ever evolving meta-analysis research to pinpoint the impact of the students, the teacher, teaching strategies on student performance, the home, the curricula, and the classroom. Originally released in 2009, the research was updated in subsequent years, and by 2018, contained nearly 1200 meta-analyses. Using the effect size of .40 as the hinge point benchmark, derived from the average effect size of all factors, Hattie ranked 252 factors related to student achievement. While the list and effect sizes have evolved from 2009 to 2018, Hattie has contended the underlying message of the importance of making learning visible for students has remained the same. The top ten factors, ranging from

a 1.57 to .93 effect size, affecting achievement on the 2018 list were: collective teacher efficacy, self-reported grades, teacher estimates of achievement, cognitive task analysis, response to intervention, Piagetian programs, jigsaw method, conceptual change programs, prior ability, and strategy to integrate prior knowledge (Visible Learning, n.d.).

History of School Structure

In 1901, John Dewey stated,

We think of the grouping of children in classes, the arrangement of grades, the machinery by which the course of study is made out and laid down, the method by which it is carried into effect, the system of selecting teachers, and of assigning them to their work, of paying and promoting them, as, in a way, matters of mere practical convenience and expediency. We forget that it is precisely such things as these that really control the whole system, even on its distinctively educational side (p.34).

John Dewey acknowledged the importance of school structure. School structure in America has evolved from the one-room schoolhouse in the 1800s to today's sprawling urban campuses, paralleling historical education reforms (Weisser, 2006). The traditional school organization of elementary students grouped into eight grades and high school students grouped into four grades was the predominate structure throughout the 1800s. By 1909 a new structure emerged, the junior high school, which housed three grades of students, grades 7-9. The middle school movement gained momentum during the last half of the twentieth century (Manning, 2000). Schaefer, Malu, and Yoon (2016), in a qualitative study, traced the evolution of the middle school movement through literature written between 1963- 2015. William M. Alexander is acknowledged as the founder of the movement in 1963, which saw great traction in the 1980s

with the development of new middle schools or the switch from junior high to middle schools, from 1,000 in 1968 to more than 5,000 by 1980. The middle school concept was greatly shaped by the 1982 release of *This We Believe: Keys to Educating Young Adolescents* by the National Middle School Association. The writer's of the position paper outlined four essential attributes of middle schools: developmentally responsive, challenging, empowering, and equitable – along with 16 key characteristics, grouped in three categories: curriculum, instruction, and assessment characteristics; leadership and organization characteristics; and culture and community characteristics. The authors concluded with a call to action to establish middle schools that embody the outlined attributes and characteristics. By 1990, 80% of students attended a middle school configuration (Schaefer et al., 2016). Statisticians from the National Center for Education Statistics (2018) documented a 462 percent increase in middle schools from 1970-71 to 2000-01 school years, but numbers in elementary schools remained consistent, due mostly from a change of junior highs to middle schools.

In the last couple of decades, a noted shift from middle schools to K-8 schools has occurred across the United States, in the ever-elusive quest to find the grade configuration that produces optimal achievement. Some notable examples include Cincinnati, Cleveland, Milwaukee, and New York City (National Forum to Accelerate Middle-Grades Reform, 2008). From 1995 to 2015, the number of K-8 schools in the United States increased from about 4,500 to 6,500 (Hanover Research, 2017). The transformation in grade structure has been spurred not only by achievement but also by the interest in improving safety and engagement while decreasing distractions (The Center for Education Reform, 2008).

In Tennessee during the 2016-17 school year, seventy unique grade level configurations, among preschool through twelfth grade, existed in the 1,965 schools across the state (Tennessee

Department of Education, 2017a). Interestingly, Tennessee Code Annotated 49-6-301 includes definitions for schools that do on encompass the scope of K-8 schools. The following definitions are used to delineate the differences in school configurations:

- (a) "Elementary schools" are schools serving any combination of kindergarten through grade six (K-6).
- (b) "Middle schools" are schools designed to serve grades five through eight (5-8) only, or any combination of grades five through eight (5-8).
- (c) "Elementary and secondary" and "elementary or secondary" include elementary, middle, and high school grades (para.1).

Grade Configuration and Non-Achievement Variables

Juvonen, Le, Kaganoff, Augustine, and Constant (2004) in their report, "Focus on the Wonder Years: Challenges Facing the American Middle School," gave middle schools the distinct title of "The Bermuda Triangle of education"- faulting these schools for increases in deviant conduct, teen isolation, lack of engagement, and low academic performance. The authors also recommended more robust research. Since the report's release, what has recent non-achievement research revealed about educating young teens in America?

Behavioral impacts of attending a middle or K-8 school have been documented. When reflecting on the suspension rates of sixth and seventh grade students in middle schools versus those who attend a K-8 school, students in middle schools are suspended at higher rates. The middle school expectation of higher self-regulation, establishment of more rules, and suspension used a priority punishment were hypothesized as contributing factors to the discrepancy (Arcia, 2007). Middle school students are also found to have a higher level of discipline problems; sixth

graders in middle school are twice as likely to be disciplined when compared to their counterparts in other grade configurations, an increase which lingers through at least ninth grade (Cook, MacCoun, Muschkin, & Vigdor, 2008). Keegan (2009), in a New Jersey study of fifth through eighth grade students, revealed K-8 students have fewer expulsions than middle school students. The researcher also documented New Jersey sixth through eighth grade students in K-8 schools have higher attendance rates than their middle school counterparts, but fifth grade students who attended middle schools had similar attendance as K-8 students (Keegan, 2009).

The prevailing climate of K-8 and middle school configurations has been investigated. Malone, Cornell, and Shukla (2016) researched schools' configuration impact on school climate in a Virginia study of over 39,000 students who attended 418 schools. In the sampling of seventh and eighth grade students, the authors documented students reported a lower disciplinary structure and a higher incidence of teasing and bullying in middle schools, as compared to the students who were grouped with younger students. Similarly, climate differences were noted in a 2014 study, which found a more negative experience reported by middle school students. They further showed perceptions of school climate are found to differ in administrators and teachers, with teachers and administrators in K-8 schools having a more positive view of the school social context, which is related to the students' cognizance of the climate –both social and academic (Kim, Schwartz, Cappella, & Seidman, 2014). Culture was also the focus in a study by Gomez, Marcoulides, and Heck (2011), where they found K-8 schools to have higher perceptions of parental support than middle schools. The opinion of Tennessee eighth grade students in small (districts with student populations of 1,000 to 2,500) K-8 schools has also been found to differ significantly from those students who attend small middle schools on four measures: quality of

instructional program, support for student learning, school climate/environment for learning, and student/school relationship (Melton, 2010).

Another notable area of discrepancy between middle schools and K-8 schools is the impact of students beyond the attendance in the particular structure. In a study by Bedard and Do (2005), students who attended a middle school setting had lower on-time high school graduation rates, approximately 1-3 percent. Because graduation rate is viewed as a measure of weaker student success, the authors interpreted from this data that the impact on lower performing students was greater on students who attended middle schools. Conley (2016) was unable to find a statistically significant difference in graduation percentages based on attendance at a K-8 or middle school; however, 10.2% of the students who attended a middle school dropped out, while only 7.6% of the students who attended a K-8 dropped out.

Grade Configurations and Achievement

In analyzing research on the relationship of grade configurations and achievement, the results can best be described as conflicting, with researchers providing evidence to support both ends of the continuum—some showing K-8 demonstrating better achievement while others support middle schools as the achievement winners, and still others report no discernible difference. The research provides no consensus as to which configuration is optimal for student achievement.

The body of research on the achievement of middle school students compared to K-8 students has often left researchers with no conclusive evidence to support one configuration over the other. Carolan and Chesky (2012) conducted research to determine if school configuration was related to math and reading achievement. In their study sponsored by the U.S. Department

of Education, Institute of Education Sciences, and the National Center for Education Statistics, they used data of approximately 6,290 eighth grade students from the Early Childhood Longitudinal Study, Kindergarten Class 1998-1999 (ECLS-K). They concluded attending a K-8 did not provide an achievement advantage in math and reading when compared to students who attended a 6-8 or 7-8 configuration. Similarly, in an Arkansas study that analyzed all sixth grade students in Arkansas in the years 2004- 2007, no significant difference was noted in literacy and math state benchmark scores between sixth grade students in a K-8 and those in a middle school (Dove, Pearson, & Hooper, 2010). Weiss and Kipnes (2006), focusing on Philadelphia schools, found grade configuration had no significant effect on grades and standardized test scores; however, their research supported the impact of school size on achievement. In 2009, a study on the achievement of Tennessee sixth graders, using the state achievement test, TCAP, as the data source, was conducted to determine if a significant difference was revealed in the students who attended a K-8 school versus those in a middle school; no conclusive evidence was generated to state that one configuration affected achievement more than the other (Ramsey, 2009). Conley (2016), in a district-wide study from North Carolina, documented analogous results in reading, exposing no significant difference between K-8 and middle school configurations on end of grade testing and high school end of course testing; however, a significant difference emerged in math assessment scores on the same aforementioned tests. Focusing on the academic and attendance improvements of students from their sixth grade year to their eighth grade year, MacArthur (2016), in a mid-western state study of 78 schools in urban districts, surfaced no significant difference in the improvements based on grade configuration.

Studies exist that support schools housing kindergarten through eighth grade students provide an advantage to students. Rockoff and Lockwood (2010) conducted research that

supports New York City students, who enter a middle school, experience achievement decreases in math and English by about 0.15 standard deviations, citing possible factors as larger cohort sizes, varied educational experiences, and diverse backgrounds. Similarly, Schwarz, Stiefel, Rubenstein, and Zabel's 2011 study of New York City Schools yielded the same conclusion, finding K-8 students and students from a K-4 and 5-8 pipeline outperform their traditional middle school counterpart; they cited four reasons for the difference: the number and timing of school changes, the size of the with-in school cohorts, and the stability of peer cohorts. Schwerdt and West (2012) extended Rockoff and Lockwood's research to Florida where they documented similar results. Florida sixth grade students entering a middle school encounter dramatic drops in reading and math achievement, and the decline continued throughout the residency in middle school. Using mixed-methods research, Billings (2014) added to the K-8 argument by documenting quantitative findings that support sixth through eighth grade students in a K-8 school performed significantly higher in English language arts and added qualitative findings to supply the proposed reasons: relationships with teachers and parental involvement. Interestingly, in a large empirical study of Philadelphia schools during a massive restructuring, the age of the K-8 schools mattered, as compared to middle schools and the newer formed K-8 counterparts; the older K-8 schools outperformed both in achievement. However, controlling for only school transition and average grade size – not age, no achievement difference was revealed (Byrnes & Ruby, 2007). Using the ACT/EXPLORE assessment as the achievement measure in Tennessee districts whose student populations ranged from 1,000 to 2,500, K-8 students performed significantly higher in the English, reading, and science reasoning subtests than middle school students; however, no statistical significance was noted in the math subtest. The researcher further revealed a lack of a significant difference in TVAAS gains between the respective groups

(Melton, 2010). Blair (2007), in a Middle Tennessee study, supported these same findings, providing evidence of no significant differences in TVAAS.

Statewide studies have yielded evidence to suggest K-8 schools offer an advantage over their middle school counterparts. In a North Carolina study, the negative impact of sixth graders attending a middle school was documented when factoring both discipline referrals and impact on end-of-year test scores (Cook et al., 2008). In research conducted by Budge (2017) on the impact of grade configurations on sixth grade students in Washington State schools, he noted students in sixth grade in K-8 schools performed significantly better on the state standardized ELA exam, Smarter Balance, but performed worse on the math portion of the exam. Clark, Slate, Combs, & Moore (2013), in a Texas study, generated comparable results in reading but contrasting findings in math. In this five-year study of 628 matched K-8 and middle schools, statistically significant data was discovered on all 15 reading comparisons (effect sizes small to large) and 11 of the 15 math comparisons (small effect sizes). The researchers concluded Texas students in K-8 outperformed middle school students by having higher passing rates on the TAKS, the state standardized achievement test. In a Maryland study, Adams (2015) reported eighth graders in 6-8 configurations were observed outperforming their K-8 and 7-8 counterparts on the state exam. Compounding the argument for the K-8 structure in New Jersey, Keegan (2009) documented K-8 eighth grade students outperforming middle school students on all the state performance indicators, while also surfacing the significantly higher number of middle school students who were performing below the proficiency level. In a study of Florida sixth graders, three grade configurations, PK-6, 6-8, and PK-8, were examined to determine if the grade arrangement affected achievement. It was concluded the PK-6 configuration influenced the highest performance based on the means of math and reading FCAT, Florida Comprehensive

Assessment Test, with the PK-8 structure achieving the second highest mean and the 6-8 structure having the lowest mean (Schafer, 2010).

The impact of grade configuration on the achievement of special education students has been investigated to determine if configuration can be linked to the academic performance of students in this population. Using data from the New Jersey Department of Education website, Nelson (2013) explored achievement of sixth and eighth grade using proficiency rates. Sixth graders in K-8 arrangements performed significantly higher on the state language arts and math assessment than those in middle school settings; however, this trend was not transferable in the data set to eighth grade special education students where no statistical significance was found. In a smaller study of special education students in Baltimore City Public Schools, a consistent conclusion was reached, determining sixth grade special education students in a K-8 outperformed middle school special education students in reading but not in math (Fink, 2010).

Some research supports the transition to middle school is the variable worth investigating. Hong, Zimmer, and Engberg (2018) found, while students who transition to a middle school experience an achievement dip in their sixth grade year, they carry no lasting effects beyond the transition year. These results conflict with those reached by two other studies whose authors found students who transition to a middle school do not overcome the transition dip; thus, eighth grade students who attend a K-8 have higher achievement than those who attend a middle school (Rockoff & Lockwood, 2010; Schwerdt & West, 2012). Schwerdt and West (2012) furthered the line of research by recognizing the transition effects on achievement from entering a middle school linger through grade 10, while the transition to ninth grade produces a smaller drop but does not have long lasting effects on performance. In a study by Starks (2016), the transition to middle school is further noted as having more detrimental effects on minority

students. Drawing upon others' research, Erb (2006) claims that middle school models are working in many configurations, contending research on smaller schools and fewer transitions should not cause unfounded conclusions. However, Starks (2016), in a Tennessee study focusing on the transition effects on sixth graders in 2012-2013 school year, supported the detrimental effects on minority sixth grade students who are required to transition to a new school.

Chapter Summary

Since the passage of Title I ESEA in 1965 (Ryan & Shepard, 2008) to the recent passage of ESSA under the Obama administration (Hess & Eden, 2017), school achievement and accountability has been at the forefront of educational dialogue; national policies have shaped Tennessee's achievement testing journey (SCORE, 2014). Researchers are continuously seeking to determine the variables affecting student achievement outcomes; one such variable is grade configuration. Grade configurations have evolved in America with K-8 schools and middle schools dominating the landscape for students in kindergarten through eighth grade (Schaefer et al., 2016). Data is mixed on the effects of grade configuration with some reporting no difference between K-8 and middle schools (Carolan & Chesky, 2012; Conley, 2016; Dove et al., 2010; MacArthur, 2016; Ramsey, 2009). The achievement advantage of attending a K-8 has been noted in several studies (Billings, 2014; Blair, 2007; Byrnes & Allen, 2007; Melton, 2010; Rockoff & Lockwood, 2010). Researchers of large-scale statewide studies in North Carolina, Washington, Texas, Maryland, New Jersey, and Florida have supported the advantage of attending a K-8 rather than a middle school (Budge, 2017; Clark et al., 2013; Cook et al., 2008; Keegan 2009; Schafer, 2010). The advantage for K-8 special education students has also surfaced (Fink, 2010; Nelson, 2013). Further, the act of transitioning to a middle school is found

noteworthy in multiple studies (Erb, 2006; Hong et al., 2018; Rockoff & Lockwood, 2010; Schwerdt & West, 2013; Starks, 2016;). With conflicting data on grade configuration, this area of research is worthy of further investigation.

CHAPTER 3

METHODOLOGY

The purpose of this study was to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady. The focus was on the analysis of the overall percentage of students scoring on track or mastered on the English language arts and math subtests on the TNReady statewide assessment. School achievement data are publicly released by the Tennessee Department of Education in district, school, and grade-level reporting. The results were disaggregated by content and into sixteen subgroups: all students, American Indian or Alaska Native; black or African American; black/Hispanic/Native American; economically disadvantaged; female; Hispanic; non-black/Hispanic/Native American; non-economically disadvantaged; non-English learners/transitional 1-4; non-students with disabilities; super subgroup; and white. The publically released data were suppressed if the percentage did not reach a designated threshold so most categories could not be used for this study. The design was a quantitative study using a non-experimental secondary data analysis to determine if achievement differences exist between students who attend a K-8 school and those who attend middle school configurations. Independent samples t-tests were used to determine if a significant achievement difference exists between the students attending the two school configurations while also considering if a difference exists at each specific grade level by content delineation. This chapter includes the research questions and null hypotheses, population, instrumentation, data collection, and data analysis.

Research Questions and Null Hypotheses

The following questions and null hypotheses were used to frame the research:

- RQ₁. Is there a significant difference in English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and English language Arts TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?
- H₀₁. There is no significant difference in English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a middle school.
- RQ₂. Is there a significant difference in math TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and math TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?
- H₀₂. There no significant difference in math TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and math TNReady scores of sixth, seventh, and eighth grade students who attend a middle school.
- RQ₃. Is there a significant difference in English language arts TNReady scores of sixth grade students who attend a K-8 school and English language arts TNReady scores of sixth grade students who attend a middle school?
- H₀₃. There is no significant difference in English language arts TNReady scores of sixth grade students who attend a K-8 school and English language arts TNReady scores of sixth grade students who attend a middle school.

- RQ₄. Is there a significant difference in math TNReady scores of sixth grade students who attend a K-8 school and math TNReady scores of sixth grade students who attend a middle school?
- H₀₄. There is no significant difference in math TNReady scores of sixth grade students who attend a K-8 school and math TNReady scores of sixth grade students who attend a middle school.
- RQ₅. Is there a significant difference in English language arts TNReady scores of seventh grade students who attend a K-8 school and English language arts TNReady scores of seventh grade students who attend a middle school?
- H₀₅. There is no significant difference in English language arts TNReady scores of seventh grade students who attend a K-8 school and English language arts TNReady scores of seventh grade students who attend a middle school.
- RQ₆. Is there a significant difference in math TNReady scores of seventh grade students who attend a K-8 school and math TNReady scores of seventh grade students who attend a middle school?
- H₀₆. There is no significant difference in math TNReady scores of seventh grade students who attend a K-8 school and math TNReady scores of seventh grade students who attend a middle school.
- RQ₇. Is there a significant difference in English language arts TNReady scores of eighth grade students who attend a K-8 school and English language arts TNReady scores of eighth grade students who attend a middle school?

- H₀₇. There is no significant difference in English language arts TNReady scores of eighth grade students who attend a K-8 school and English language arts TNReady scores of eighth grade students who attend a middle school.
- RQ₈. Is there a significant difference in math TNReady scores of eighth grade students who attend a K-8 school and math TNReady scores of eighth grade students who attend a middle school?
- H₀₈. There is no significant difference in math TNReady scores of eighth grade students who attend a K-8 school and math TNReady scores of eighth grade students who attend a middle school.
- RQ₉. For any of the above research questions found to have a significant difference, as a post-hoc analysis, is the achievement difference in either English language arts or math by gender?
- H₀₉. There is no significant difference in English language arts or math TNReady scores by gender of students who attend a K-8 school or a middle school.

Population

The target population for this research was sixth, seventh, and eighth grade students in Tennessee who attended a K-8 school or a middle school. In Tennessee during the 2018-19 school year, 174 schools were listed as a K-8 school, while 205 schools were listed as a school containing only sixth, seventh, and eighth graders (Tennessee Department of Education, 2019b; “SDE School Directory,” n.d.). The sample population was narrowed from the target population by using purposeful sampling, controlling for schools whose reported data was not suppressed by Tennessee Department of Education suppression rules. In the 2018-19 school year, 354 schools

met the criteria in English language arts and 347 schools met the criteria in math. When delineating by grade level, 353 schools met the criteria in English language arts and 350 schools met the criteria in math. Of the 353 schools in the English language arts sample, 339 met the data threshold for gender, and, of the 350 schools in the math sample, 320 met the data threshold for gender (Tennessee Department of Education, 2019b).

Instrumentation

TNReady, the instrument of this study, which is one component of the Tennessee Comprehensive Assessment Program (TCAP), includes several objectives – one of which is to “provide feedback about students’ academic progress and how it aligns with grade-level expectations” (Tennessee Department of Education, 2018c, para.2). TNReady is administered every spring to Tennessee students in grades second through 12. The population of this study, sixth, seventh, and eighth graders, was administered assessments in math, English language arts (ELA), social studies, and science (Tennessee Department of Education, 2017). During the 2018-19 school year, students in sixth, seventh, and eighth grades took math, ELA, and social studies on paper, with science being given online. The switch back to some content areas being assessed on paper after a move to online testing was in effort to improve the online testing issues from the 2017-18 school year and develop a multi-year transition to online testing (Tennessee Department of Education, 2018).

The areas of focus for this study, ELA and math, contained multiple testing subparts. The ELA assessment had four subparts, the first of which was writing focused, with the remaining parts focused on the ability to read and interpret complex text. Total ELA testing time for all subparts was 230 minutes in sixth, seventh, and eighth grades (Tennessee Department of

Education, 2018f). The math portion of the assessment included three subparts, with the first subpart deemed as a no calculator section. Students were expected to demonstrate deep conceptual understanding of grade-level mathematical concepts, aligned to State of Tennessee Math Standards. The math portion of the assessment was 125 minutes in length for all three grade levels (Tennessee Department of Education, 2018g). The on-going creation of the TNReady assessment is a joint collaboration between the Tennessee Department of Education, Tennessee teachers, and the selected assessment vendor. The Tennessee Department of Education sets the standards for the test through the communication of the Tennessee State Standards, and teachers and the vendor develop questions. Tennessee teachers and the Tennessee Department of Education review questions, and then the department and the vendor develop the final test (Tennessee Department of Education, 2018b).

Data Collection

The TNReady testing window for grades 3-8 was April 15- May 3, 2019. Students were assessed on English language arts, math, and social studies, with science as an online field test. Because science was a field test, no data was publicly reported. ELA had to be administered during the first week of testing due to the writing component.

During testing, security was tightly controlled at every level of contact with the test by policies and procedures to ensure valid results. Tennessee Code Annotated (T.C.A.) 49-1-607, the State of Tennessee Test Security Law, governs the administration of the test. Everyone involved in the administration of the test must sign a security agreement, along with a Testing Code of Ethics, which is specific to the role in administration: building test coordinator, test administrator, or proctor. TCAP testing books and answer sheets are monitored and documented

by a sign in/sign out procedure. Tests must be kept in a secure, locked area when not being administered (Tennessee Department of Education, n.d.). After completion of the tests, testing documents were returned to the Tennessee Department of Education for scoring.

Data collection was conducted by the Tennessee Department of Education as part of the TNReady assessment. The Tennessee Department of Education released the results of TNReady at intervals after the completion of the assessment in the spring. The statewide assessment results were released on August 15, 2019. The data were downloaded from the Tennessee Department of Education's page on the state website devoted to data downloads and requests. The data from the Tennessee Department of Education were reported in a spreadsheet as the percent of students scoring at each level of proficiency (below, approaching, on track and mastered) by grade level in each of the subject areas and then further disaggregated by sixteen subgroup such as gender, economically disadvantaged, ethnicity, and disabilities (Tennessee Department of Education, 2019b).

After the release of the data, the master spreadsheet was sorted to include only schools who tested students in grades six, seven, or eight. The delimited list was used as a master list of schools. Each school was searched on the SDE School Directory to determine if the school fell into one of the researched grade configurations: K-8 or middle school. The configuration was noted on the master spreadsheet.

Data Analysis

The data were analyzed using Statistical Package for Social Sciences (SPSS). An independent samples t-test, was used to analyze the impact of grade configuration, K- 8 and middle school, on students scoring on track and mastered, disaggregated by grade level. In this

study, the grouping variable was the school's grade configuration, while the percent of students scoring on track and mastered was the test variable. The data were analyzed at the 0.05 level of significance. When a difference was found, an analysis of variance was used to determine if a significant difference existed by gender.

Chapter Summary

The researcher conducted independent samples t-tests and analysis of variance using SPSS to determine if a significant difference existed between the TNReady scores of sixth, seventh, and eighth grade students who attended a K-8 school and students who attended a middle school. The TNReady assessment, the annual standardized test administered to Tennessee students, was used as the instrument, while the population was limited to schools whose data was not suppressed by the Tennessee Department of Education business rules. The percent of students who were on track and mastered was used as the achievement measure for each school, as determined by the Tennessee Department of Education. The researcher obtained the master data spreadsheet file from the Tennessee Department of Education in fall of 2019. The purpose of this study was to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady.

CHAPTER 4

FINDINGS

This chapter contains the results of the analysis of the independent samples t-tests as it relates to the research questions proposed in chapters 1 and 3. The proposed questions were used to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady. Data collection was conducted by the Tennessee Department of Education as part of the TNReady assessment. The data were downloaded from the Tennessee Department of Education's page on their website devoted to data downloads and requests. The data from the Tennessee Department of Education were reported in a spreadsheet as the percent of students scoring on track and mastered by grade level in each of the subject areas and then further disaggregated by each of the subgroups: all students, American Indian or Alaska native; black or African American; black/Hispanic/Native American; economically disadvantaged; female; Hispanic; non-black/Hispanic/Native American; non-economically disadvantaged; non-English learners/transitional 1-4; non-students with disabilities; super subgroup; and white. Grade configuration information for each school was obtained from the SDE Directory, an online website devoted to Tennessee schools' organizational structures. The data were analyzed using Statistical Package for Social Sciences (SPSS). The independent samples t-test was used to analyze the impact of a school's grade configuration, K- 8 and middle school, on students scoring on track and mastered in math and English language arts, disaggregated by grade levels to determine if grade configuration impacts students' achievement on TNReady. Chapter 4 was guided by nine research questions and correlated hypotheses.

Analysis of Research Questions

Research Question # 1

Is there a significant difference in English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and English Language Arts TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?

H₀₁. There is no significant difference in English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and English language arts TNReady scores of sixth, seventh, and eighth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of sixth, seventh, and eighth grade students scoring on track or mastered in ELA on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment was the test variable and the grouping variable was K-8 or middle school grade configuration. The test was not significant, $t(352) = -.960, p = .338$. Therefore, the null hypothesis was retained. Cohen's *d* was .10, which indicated a very small effect size. The percent of students in the K-8 configuration ($M = 31.44, SD = 11.16$) who were on track or mastered tended to be the same as those in a middle school configuration ($M = 32.72, SD = 13.57$). The 95% confidence interval for the difference in means was -3.90 to 1.34. Figure 1 shows the distributions for the two groups.

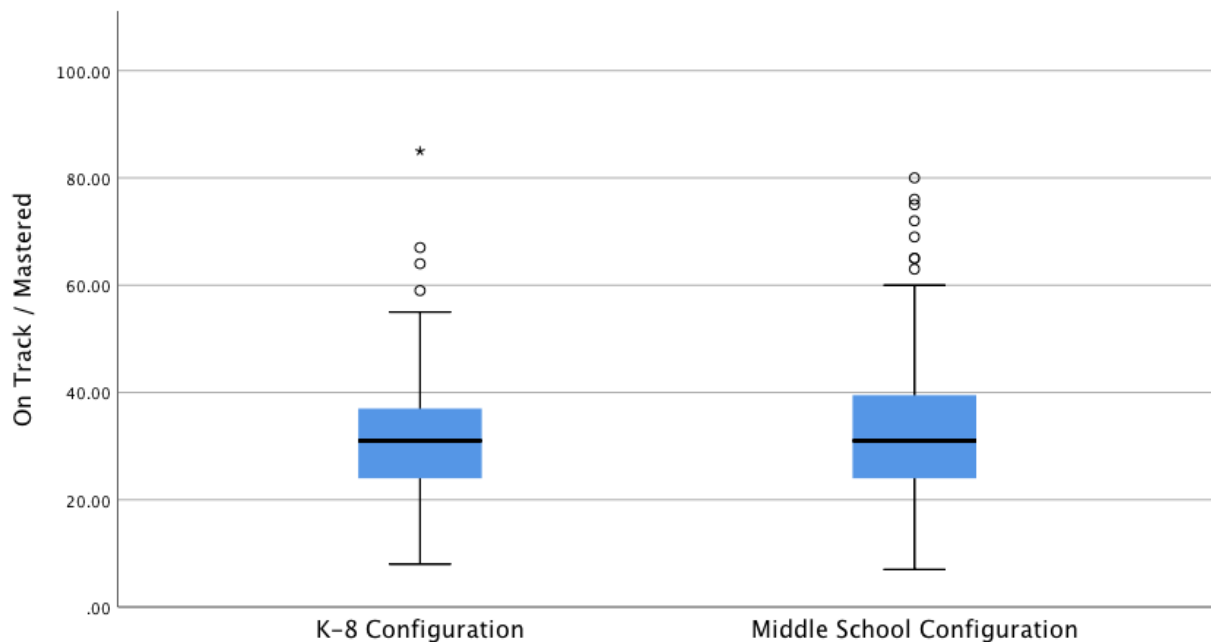


Figure 1. Boxplot of distribution of English language arts mean percent of all 6-8 students on track and mastered by grade configuration

Research Question #2

Is there a significant difference in math TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and math TNReady scores of sixth, seventh, and eighth grade students who attend a middle school?

H₀₂. There is no significant difference in math TNReady scores of sixth, seventh, and eighth grade students who attend a K-8 school and math TNReady scores of sixth, seventh, and eighth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of sixth, seventh, and eighth grade students scoring on track or mastered in math on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment

was the test variable and the grouping variable was K-8 or middle school configuration. The test was not significant, $t(345) = 1.493, p = .136$. Therefore, the null hypothesis was retained. The Cohen's d was 0.16, which indicated a very small effect size. The percent of students in a K-8 configuration ($M = 38.47, SD = 13.67$) who were on track or mastered tended to be the same as those in the 6-8 configuration ($M = 36.05, SD = 16.02$). The 95% confidence interval for the difference in means was $-.77$ to 5.60 . Figure 2 shows the distributions for the two groups.

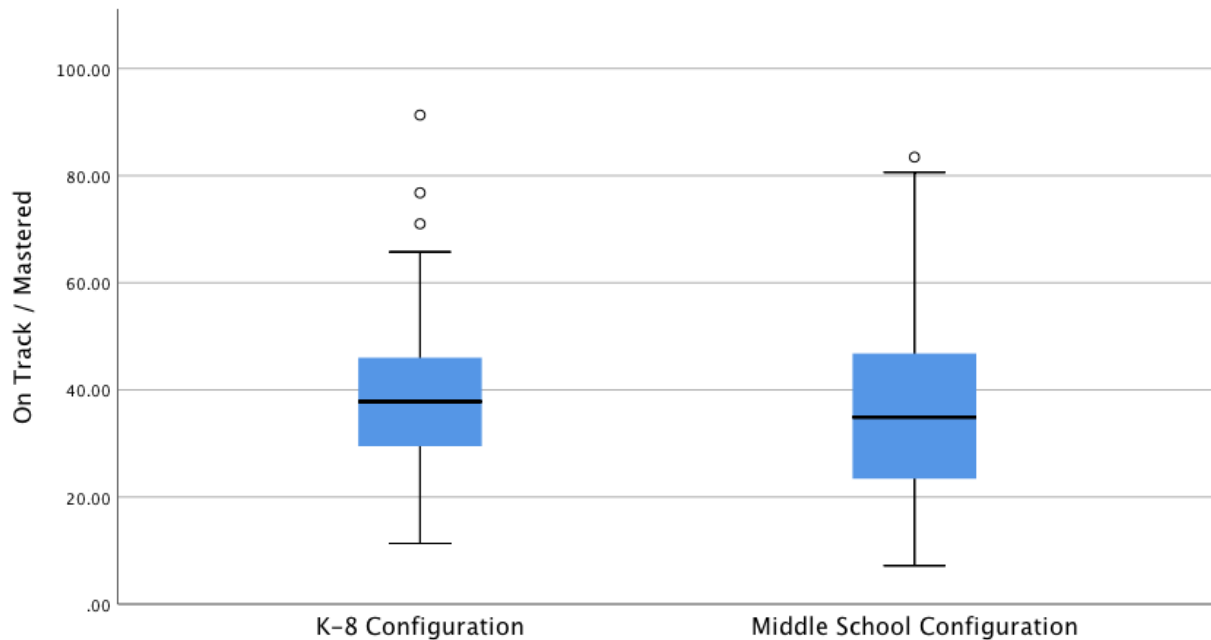


Figure 2. Boxplot of distribution of math mean percent of all 6-8 students on track and mastered by grade configuration

Research Question #3

Is there a significant difference in English language arts TNReady scores of sixth grade students who attend a K-8 school and English language arts TNReady scores of sixth grade students who attend a middle school?

H₀₃. There is no significant difference in English language arts TNReady scores of sixth grade students who attend a K-8 school and English language arts TNReady scores of sixth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of sixth grade students scoring on track or mastered in ELA on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The test was significant, $t(350) = -2.31, p = .022$. Therefore, the null hypothesis was rejected. Schools with a K-8 configuration ($M = 31.39, SD = 12.58$) tended to have less students on track and mastered than schools with middle school configurations ($M = 34.75, SD = 14.56$). The 95% confidence interval for the difference in means was -6.25 to -.50. Cohen's d was .25, which indicated a small effect size. More students in middle school configurations tended to be on track and mastered in English language arts than students in a K-8 configuration. Figure 3 shows the distributions for the two groups.

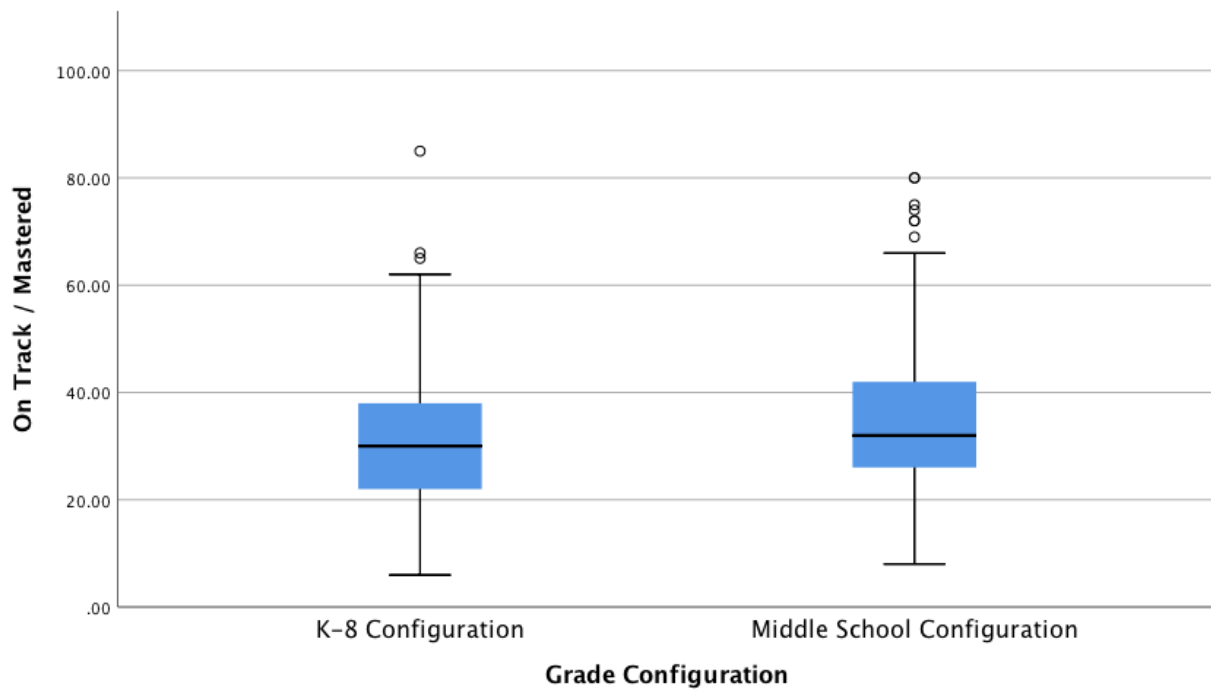


Figure 3. Boxplot of distribution of English language arts mean percent of sixth grade students on track and mastered by grade configuration

Research Question #4

Is there a significant difference in math TNReady scores of sixth grade students who attend a K-8 school and math TNReady scores of sixth grade students who attend a middle school?

H_{04} . There is no significant difference in math TNReady scores of sixth grade students who attend a K-8 school and math TNReady scores of sixth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of sixth grade students scoring on track or mastered in math on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment was the test variable and

the grouping variable was K-8 or middle school configuration. The test was not significant, $t(348) = -.449, p = .654$. Therefore, the null hypothesis was retained. Cohen's d was .05, which indicated a very small effect size. The percent of students in a K-8 configuration ($M = 38.80, SD = 16.27$) who were on track or mastered tended to be the same as those in the middle school configuration ($M = 39.62, SD = 17.77$). The 95% confidence interval for the difference in means was -4.44 to 2.80. Figure 4 shows the distributions for the two groups.

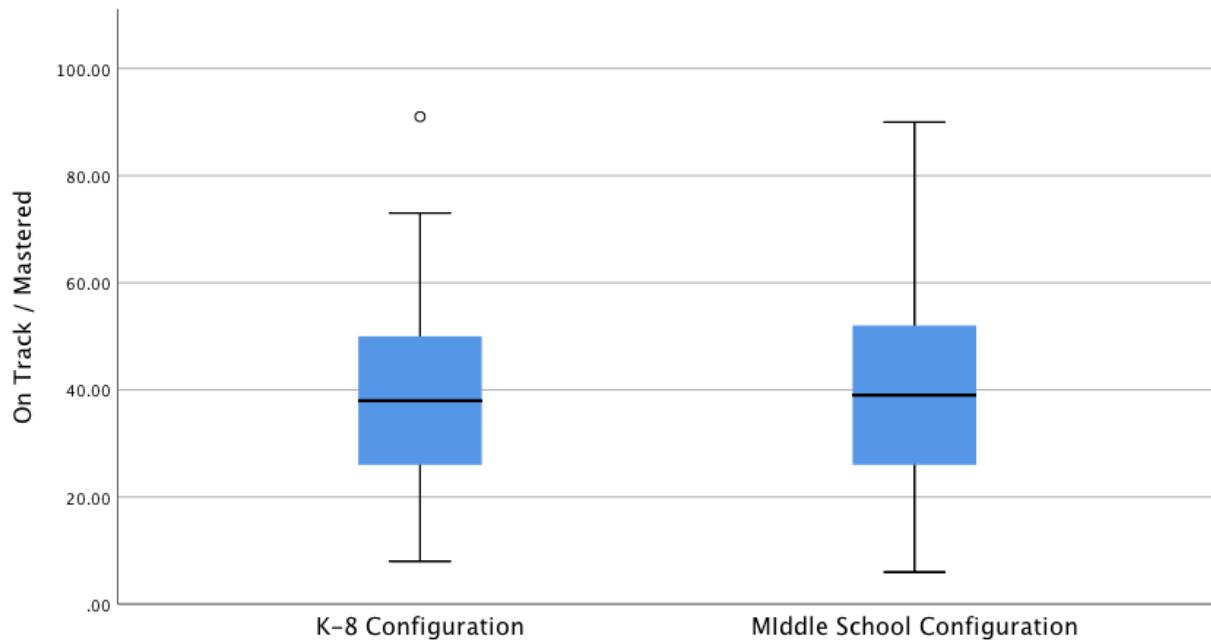


Figure 4. Boxplot of distribution of math mean percent of sixth grade students on track and mastered by grade configuration

Research Question #5

Is there a significant difference in English language arts TNReady scores of seventh grade students who attend a K-8 school and English language arts TNReady TNReady scores of seventh grade students who attend a middle school?

H₀₅. There is no significant difference in English language arts TNReady scores of seventh grade students who attend a K-8 school and English language arts TNReady scores of seventh grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of seventh grade students scoring on track or mastered in English language arts on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment was the test variable and the grouping variable was K-8 or middle school configuration. The test was not significant, $t(350) = -.257, p = .797$. Therefore, the null hypothesis was retained. Cohen's d was 0.03, which indicated a very small effect size. The percent of students in a K-8 configuration ($M = 35.86, SD = 14.96$) who were on track or mastered tended to be the same as those in the middle school configuration ($M = 36.26, SD = 13.86$). The 95% confidence interval for the difference in means was -3.42 to 2.63. Figure 5 shows the distributions for the two groups.

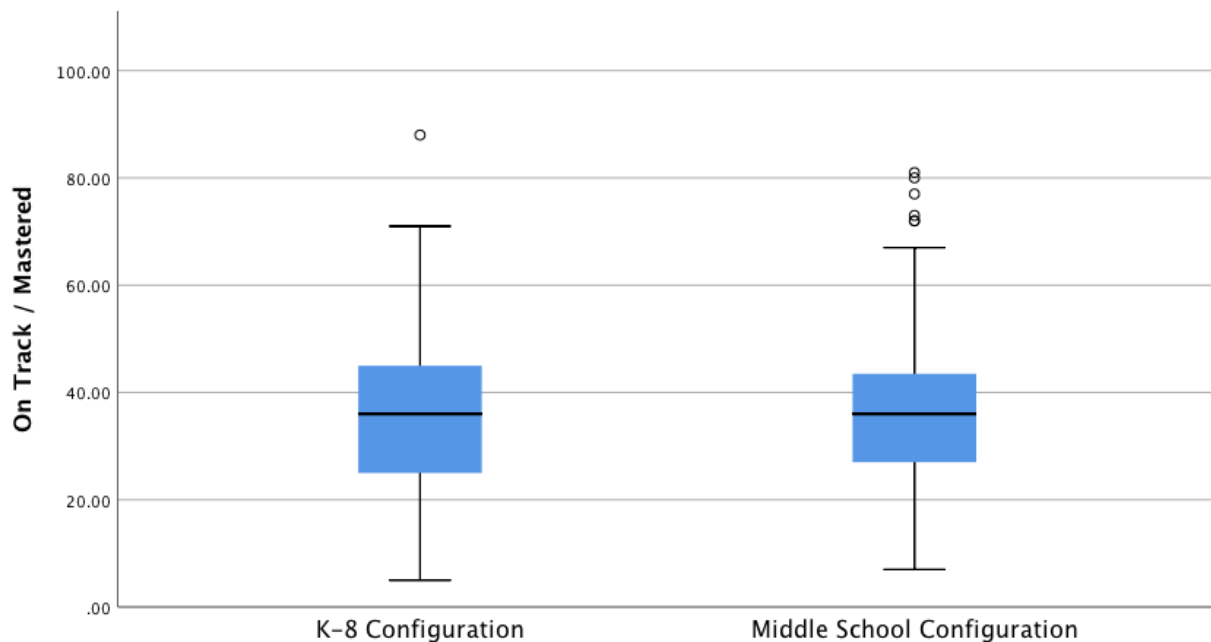


Figure 5. Boxplot of distribution of English language arts mean percent of seventh grade students on track and mastered by grade configuration

Research Question #6

Is there a significant difference in math TNReady scores of seventh grade students who attend a K-8 school and math TNReady scores of seventh grade students who attend a middle school?

H_{06} . There is no significant difference in math TNReady scores of seventh grade students who attend a K-8 school and math TNReady scores of seventh grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of seventh grade students scoring on track or mastered in math on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment was the test variable

and the grouping variable was K-8 or middle school configuration. The test was not significant, $t(348) = .049, p = .961$. Therefore, the null hypothesis was retained. Cohen's d was .01, which indicated a very small effect size. The percent of students in a K-8 configuration ($M = 33.88, SD = 16.18$) who were on track or mastered tended to be the same as those in the middle school configuration ($M = 33.79, SD = 16.48$). The 95% confidence interval for the difference in means was -3.37 to 3.54. Figure 6 shows the distributions for the two groups.

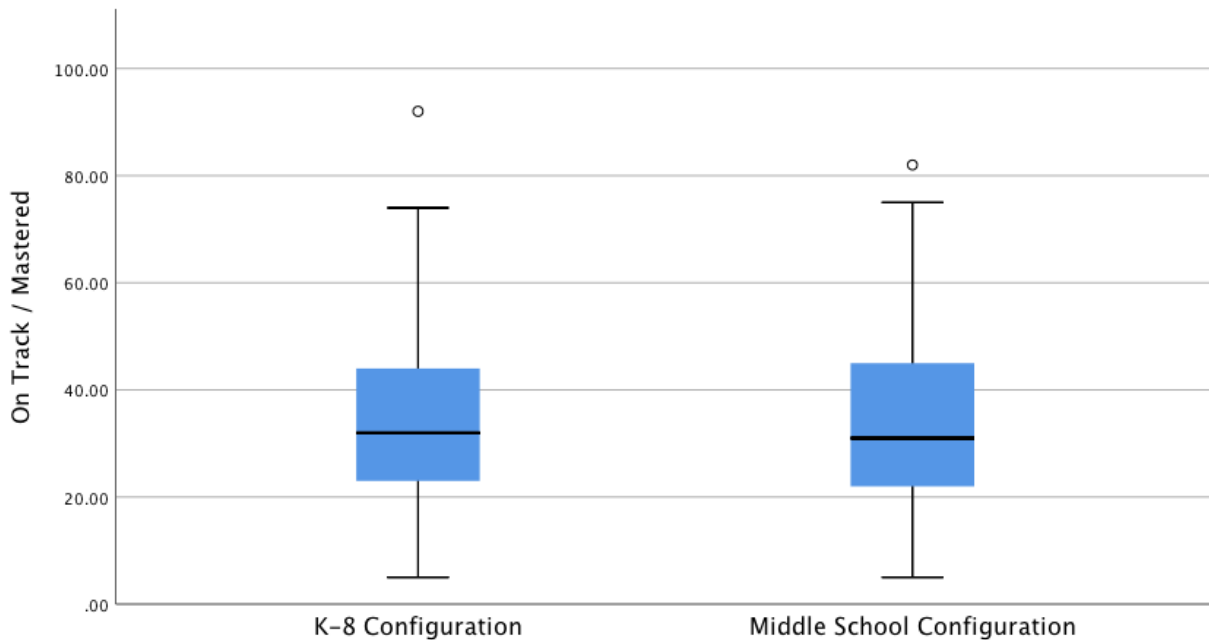


Figure 6. Boxplot of distribution of math mean percent of seventh grade students on track and mastered by grade configuration

Research Question #7

Is there a significant difference in English language arts TNReady scores of eighth grade students who attend a K-8 school and English language arts TNReady scores of eighth grade students who attend a middle school?

H₀₇. There is no significant difference in English language arts TNReady scores of eighth grade students who attend a K-8 school and English language arts TNReady scores of eighth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of eighth grade students scoring on track or mastered in English language arts on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The percent of students on track or mastered on the TNReady assessment was the test variable and the grouping variable was K-8 or middle school configuration. The test was not significant, $t(350) = -.191, p = .849$. Therefore, the null hypothesis was retained. Cohen's d was .02, which indicated a very small effect size. The percent of students in a K-8 configuration ($M = 26.94, SD = 12.11$) who were on track or mastered tended to be the same as those in the middle school configuration ($M = 27.20, SD = 13.54$). The 95% confidence interval for the difference in means was -2.98 to 2.45. Figure 7 shows the distributions for the two groups.

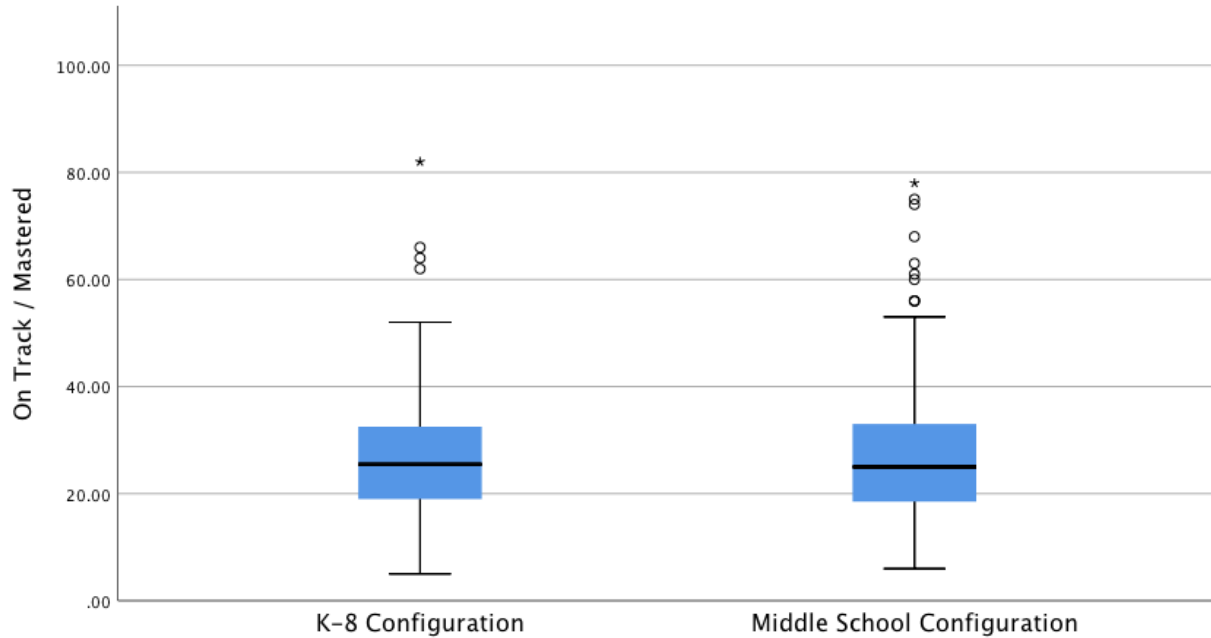


Figure 7. Boxplot of distribution of English language arts mean percent of eighth grade students on track and mastered by grade configuration

Research Question #8

Is there a significant difference in math TNReady scores of eighth grade who attend a K-8 school and math TNReady scores of eighth grade students who attend a middle school?

H₀₈. There is no significant difference in math TNReady scores of eighth grade students who attend a K-8 school and math TNReady scores of eighth grade students who attend a middle school.

An independent samples t-test was conducted to evaluate whether the mean percent of eighth grade students scoring on track or mastered in math on TNReady differed based upon the students' attendance at a school with a K-8 configuration or a middle school configuration. The test was significant, $t(348) = 3.659, p = .000$. Therefore, the null hypothesis was rejected.

Schools with a K-8 configuration ($M = 41.16, SD = 17.18$) tended to have more students on track

and mastered than schools with middle school configurations ($M = 34.39$, $SD = 17.22$). The 95% confidence interval for the difference in means was 3.13 to 10.40. Cohen's d was .40, which indicated a small effect size. More students in K-8 configurations tended to be on track and mastered in math than students in a middle school configuration. Figure 8 shows the distributions for the two groups.

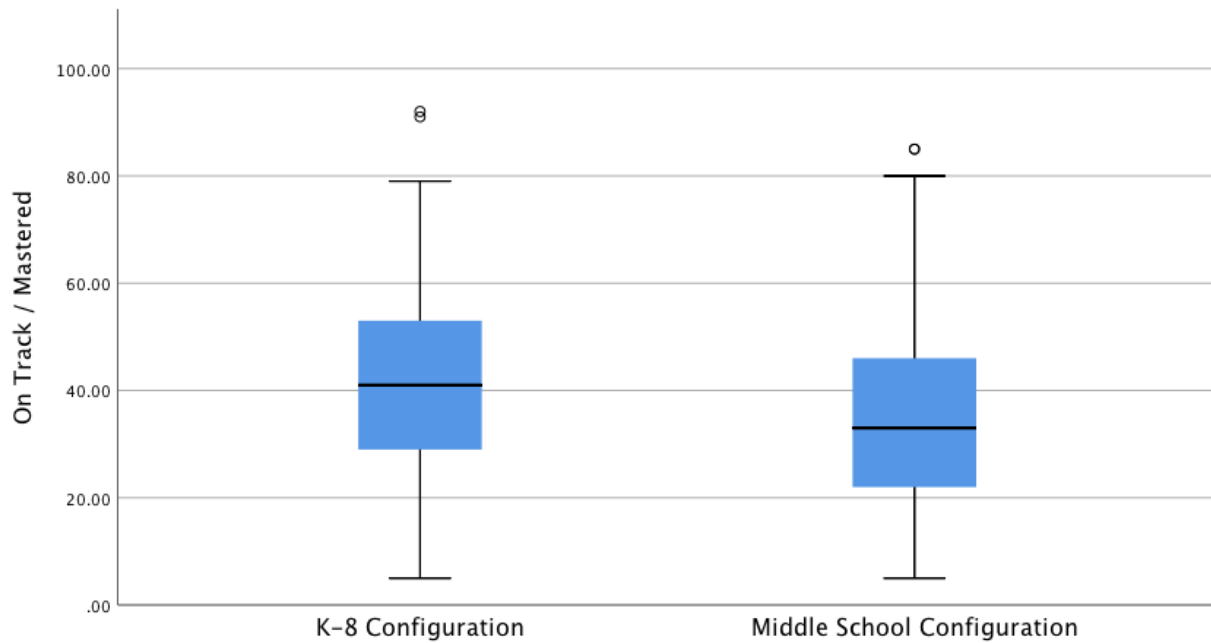


Figure 8. Boxplot of distribution of math mean percent of eighth grade students on track and mastered by grade configuration

Research Questions #9

For any of the above research questions found to have a significant difference, as a post hoc analysis, is the difference in either the English language arts or math by gender?

H₀₉. There is no significant difference in English language arts or math TNReady scores by gender of students who attend a K-8 school or a middle school.

Due to the significant difference in sixth grade students in English language arts, a one-way analysis of variance was conducted to evaluate the relationship between grade configuration (K-8 or middle school), gender, and percent on track and mastered of sixth graders in English language arts. The factor variables, gender and grade configuration, included four levels: K-8 female, K-8 male, middle school female, and middle school male. The dependent variable was the percent of students who were on track and mastered. The ANOVA was significant, $F(3,674) = 18.10, p = .000$. Therefore, the null hypothesis was rejected. The strength of the relationship between grade configuration and gender, as assessed by η^2 , was medium (.08) (University of Cambridge, 2018).

Because the overall F test was significant, post hoc multiple comparisons were conducted to evaluate pairwise difference among the means of the four groups of sixth grade students. A Tukey Kramer procedure was selected for the multiple comparisons because equal variances were assumed. There was a significant difference in the means between K-8 females and K-8 males ($p = .000$), between K-8 females and middle school males ($p = .001$), between the K-8 males and middle school females ($p = .000$) and between middle school females and middle school males ($p = .000$). However, there was not a significant difference between the K-8 females and middle school females ($p = .679$) and between K-8 males and middle school males ($p = .478$). It appeared more females scored on track or mastered than their male counterparts regardless of grade configuration. The 95% confidence intervals for the pairwise differences, as well as, the means and standard deviations for the four gender variables, are reported in Table 1. Figure 9 shows the distributions for the four groups.

Table 1

Sixth Grade Means and Standard Deviations with 95% Confidence Intervals of Pairwise Differences

On track and Mastered	N	M	SD	K-8 Female	K-8 Male
K-8 Female	137	35.52	14.87		3.94 to 13.46
K-8 Male	137	26.82	14.11		
Middle School Female	202	37.41	16.54	-6.25 to 2.47	6.23 to 14.95
Middle School Male	202	29.25	15.07	-10.63 to -1.91	-1.93 to 6.79

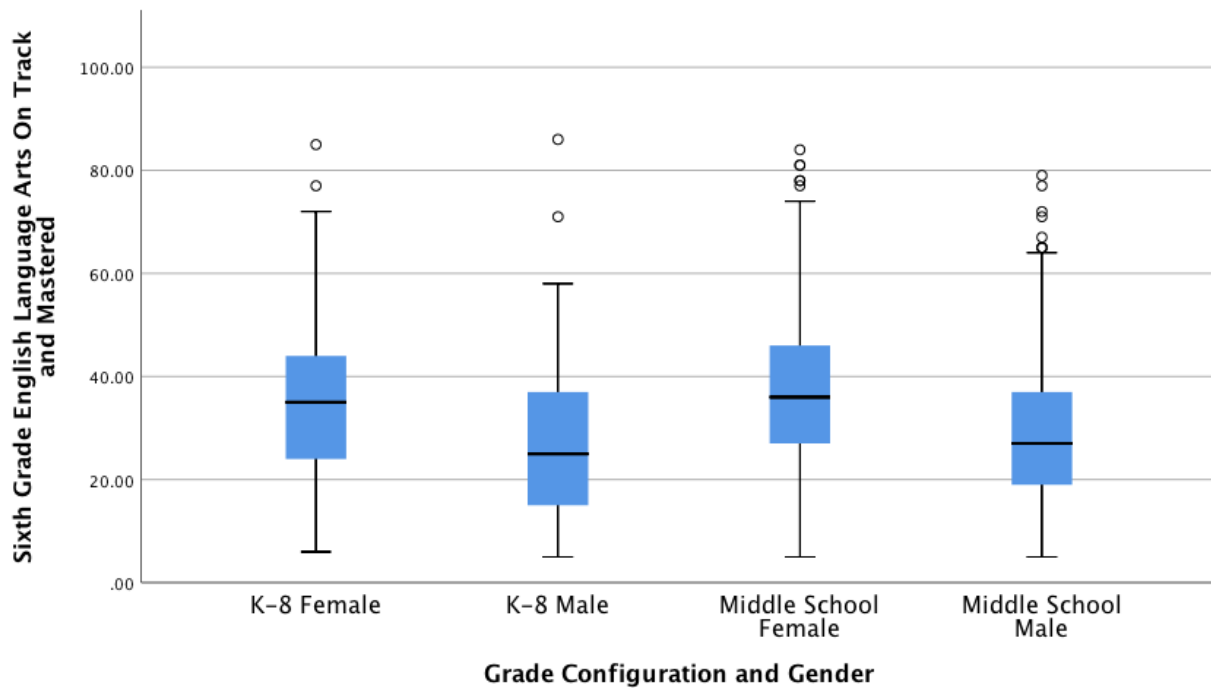


Figure 9. Boxplot of distribution of English language arts mean percent of sixth grade students on track and mastered by grade configuration and gender

Due to the significant difference in eighth grade students in math, a one-way analysis of variance was conducted to evaluate the relationship between grade configuration (K-8 or middle school), gender, and percent on track and mastered of eighth graders in math. The factor variables, gender and grade configuration, included four levels: K-8 female, K-8 male, middle school female, and middle school male. The dependent variable was the percent of students who were on track and mastered. The ANOVA was significant, $F(3,636) = 13.52, p = .000$. Therefore, the null hypothesis was rejected. The strength of the relationship between grade configuration and gender, as assessed by η^2 , was medium (.06) (University of Cambridge, 2018).

Because the overall F test was significant, post hoc multiple comparisons were conducted to evaluate pairwise differences among the means of the four groups of eighth grade students. A Tukey Kramer procedure was selected for the multiple comparisons because equal variances were assumed. There was a significant difference in the means between K-8 females and K-8 males ($p = .014$), between K-8 females and middle school males ($p = .000$), between middle school females and middle school males ($p = .003$), between the K-8 females and middle school females ($p = .008$) and between K-8 males and middle school males ($p = .016$). However, there was not a significant between the K-8 males and middle school females ($p = .999$). It appeared that more K-8 females scored on track or mastered regardless of gender and grade configuration when compared to the remaining three groups, more K-8 males scored on track and mastered than middle school males, K-8 males and middle school females had similar on track and mastered means, and middle school males scored lower than all three groups. The 95% confidence intervals for the pairwise differences, as well as, the means and standard deviations for the four gender variables, are reported in Table 2. Figure 10 shows the distributions for the four groups.

Table 2

Eight Grade Means and Standard Deviations with 95% Confidence Intervals of Pairwise Differences

On track and Mastered	N	M	SD	K-8 Female	K-8 Male
K-8 Female	125	44.66	20.00		1.00 to 12.62
K-8 Male	125	37.86	16.97		
Middle School Female	195	38.10	18.17	-11.83 to -1.30	-5.02 to 5.51
Middle School Male	195	31.77	16.51	-18.16 to -7.63	-11.35 to -.82

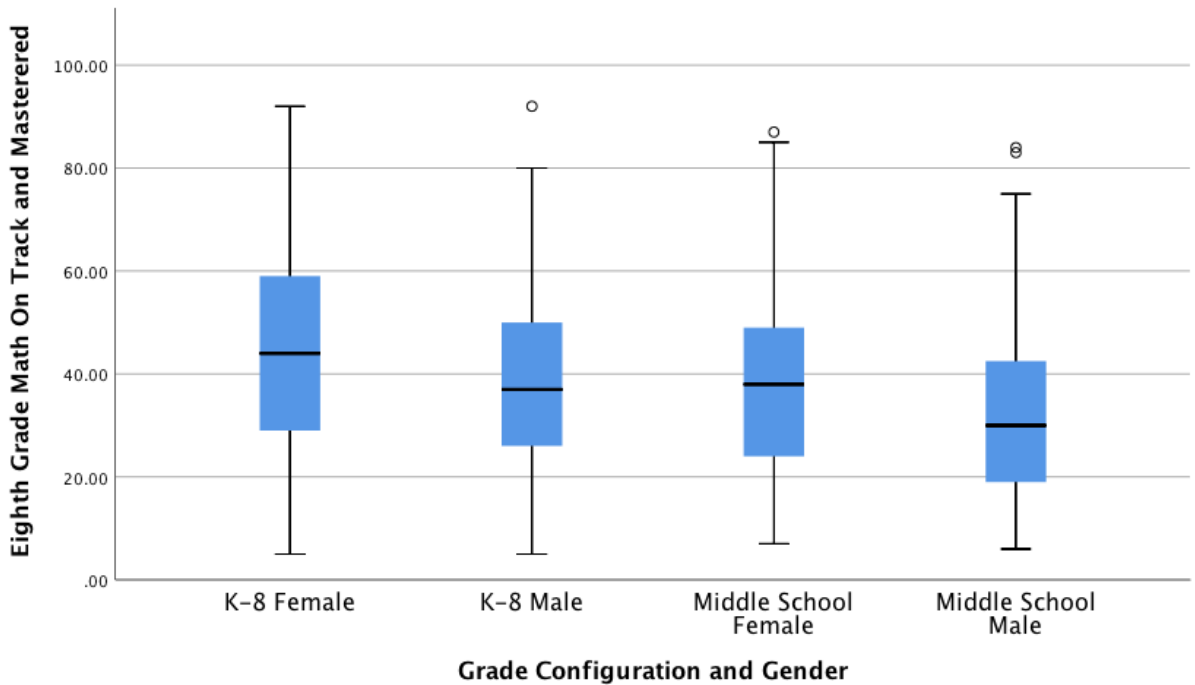


Figure 10. Boxplot of distribution of math mean percent of eighth grade students on track and mastered by grade configuration and gender

Chapter Summary

The purpose of this study was to determine if a clear delineation exists on the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady. Nine research questions and null hypotheses were used to guide the analysis of released Tennessee Department of Education achievement data. Eight questions were tested using independent samples t-tests to determine if a significant difference exists between the percent of on track and mastered in English language arts and math in K-8 configurations and middle school configurations, and for the ninth question, an analysis of variance was used to determine if a significance exists in achievement based upon gender and grade configuration.

Research Questions 1 and 2 were focused on an aggregate of the percent of students on track and mastered of all sixth, seventh, and eighth grade students. No significant difference was found in either content areas – English language arts or math. The percentage of students who were on track or mastered tended to be the same when analyzing an aggregate of the sixth through eighth grade span.

Research Questions 3 and 4 examined the achievement results of sixth grade students in English language arts and math. No significant difference was found in math; however, a significant difference was found in English language arts. The percentage of sixth grade students in a middle school configuration who scored on track and mastered in English language arts tended to be higher than in a K-8 configuration.

Research Questions 5 and 6 examined the achievement results of seventh grade students in English language arts and math. No significant difference was found in English language arts or math achievement for this grade level. The percentage of students in seventh grade who

achieved on track or mastered in English language arts and math tended to be the same for both school configurations.

Research Questions 7 and 8 examined the achievement results of eighth grade students in English language arts and math. No significant difference was found in English language arts; however, a significant difference was found in math. The percentage of eighth grade students in a K-8 configuration who scored on track and mastered in math tended to be higher than in a middle school configuration.

Research Question 9 examined the differences in achievement results based upon gender in sixth grade English language arts and in eighth grade math due to a significance found in Research Questions 3 and 8. A significant difference was found in sixth grade English language arts: more females tended to be on track and mastered than males regardless of grade configuration and gender. Eighth grade math also showed a significant difference when gender and grade configuration were analyzed. K-8 males and females tended to outperform their middle school counterparts, with K-8 females outperforming all groups in math.

CHAPTER 5

SUMMARY, RECOMMENDATIONS, AND CONCLUSION

The purpose of this study was to determine if a clear delineation existed between the academic effects of attending a Tennessee K-8 school versus a middle school as measured by the state standardized testing instrument, TNReady. State released data were analyzed using independent samples t-tests to determine if a statistically significant difference exists between K-8 and middle schools on TNReady achievement scores of sixth, seventh, and eighth grade students.

Summary of Results

Independent samples t-tests were conducted to determine if achievement of sixth, seventh, and eighth grade students was significantly different in relationship to the grade configuration attended by the student. The results of the analyses revealed a significant difference in sixth grade English language arts and eighth grade math. However, no significant difference was found in the aggregate of sixth, seventh and eighth grade English language arts; aggregate of sixth, seventh and eighth grade math; sixth grade math; seventh grade English language arts; seventh grade math; and eighth grade English language arts. In general, sixth grade students in a middle school configuration tended to score higher on the TNReady assessment in English language arts than those in a K-8 configuration. Also, eighth grade math students who attended a K-8 configuration tended to score higher than those in a middle school configuration. When a significant difference was discovered in these two grades, an analysis of variance was used to determine if a significant difference existed when gender was a factor. In

sixth grade more females tended to score on track or mastered that their male counterparts regardless of grade configuration, while eighth K-8 males and females tended to outperform their middle school counterparts, with K-8 females outperforming all groups in math.

The results of this study are now a contributing part of the conflicting pool of research on the topic of grade configuration and achievement. The significant difference uncovered in this study in English language arts achievement favoring sixth graders in middle school configurations counters the data uncovered in several similar large achievement studies. Rockoff and Lockwood (2010) and Schwarz, Stiefel, Rubenstein, and Zabel (2011), in two New York City studies, found students who enter middle schools score significantly lower than those in K-8 configurations. Similarly, Schwerdt and West (2012), in a Florida study, revealed sixth graders entering middle schools encounter dramatic drops in reading and math achievement. Specific to English language arts, Budge (2017), in a Washington state study noted students attending K-8 schools in sixth grade performed significantly higher on the state standardized test ELA assessment. Clark, Slate, Combs, and Moore (2013) found Texas students in K-8 schools outperformed middle schools students by having higher passing rates on state standardized achievement tests. In a Tennessee specific study in 2009, no significant difference was found in the achievement of sixth graders on the state standardized assessment (Ramsey, 2009).

The analysis of Research Question 8 provides contradiction and confirmation for other investigations into the connection between grade configuration and achievement. The findings of this research indicate K-8 students in eighth grade tended to score better in math on the Tennessee statewide assessment when compared to the eighth grade students in middle schools. This finding challenges several previous studies where no significant difference was noted in the grade configurations and achievement (Carolan & Chesky, 2012; Conley 2016; Weiss & Kipnes,

2006). Conversely, the results of this study partially support Keegan's (2009) results. Keegan found New Jersey eighth grade students in K-8 outperformed students on all state indicators, while this study only surfaced a significant difference in eighth grade math.

The results documented for Research Questions 1, 2, 4, 5, 6, and 7, where no significant difference emerged between achievement in K-8 and middle school configurations, validated several other previous investigations into the topic (Carolan & Chesky, 2012; Conley 2016; Dove, Pearson, & Hooper, 2010; Ramsey, 2009; Weiss & Kipnes, 2006;).

Recommendations for Practice

Research on achievement and school configurations remains conflicting, and the findings in this research does not contribute to an overall delineation of whether one configuration provides an achievement advantage for students – especially considering the no significant difference results on Research Questions 1 and 2, focusing on the mean percentage of all sixth, seventh, and eighth grade students in both English language arts and math. Based upon the findings of this study, the researcher suggests these recommendations for practice:

1. School districts should conduct internal investigations in their own systems to determine the impact of grade configuration on student achievement when making decisions about the building of new schools or the reconfiguration of existing schools.
2. Because school districts have access to their own non-suppressed data, Tennessee school districts containing both grade configurations should conduct deeper analyses of subgroup data to determine if one configuration provides achievement advantages to specific subgroups.

3. Administrators and teachers should become knowledgeable on the impact grade configuration could have on achievement and work to mitigate grade configuration as an achievement factor.
4. Parents should be made aware of the possible impact of school configuration on student achievement to prepare to make informed decisions about choosing schools for their child.
5. Policy makers should be aware that research on this topic is conflicting. A thorough up-to-date review of the research is necessary to draw any conclusions.

Recommendations for Further Research

Because the results of the study did not provide a clear delineation on grade configuration impacting the achievement of students, the researcher suggests further investigations regarding the impact of attending a K-8 school or a middle school:

1. Repeat the study in multiple years to determine if the results are consistently achieved during different testing years.
2. Conduct a similar study in other states to determine if findings remain consistent when the scope of the data is extended.
3. Investigate if a significant achievement difference exists between students who attend a middle or K-8 for all three years (sixth, seventh, and eighth grades) – not exclusive to the year of testing.
4. Utilize the Tennessee Educator Survey to determine if the culture in the K-8 and middle schools impacts TNReady achievement.

5. Conduct a study to determine the achievement impact on students who attend a K-8 school for all their school years – not just sixth, seventh, and eighth grades.
6. Use qualitative data from exit surveys of eighth grade students in both configurations to determine the perception of the impact of configuration on achievement.
7. Use qualitative data from surveys of teachers in both configurations to determine the perception of the impact of configuration on achievement.
8. Extend the current study to determine if schools which have teachers teaching the same subject for multiple years to the same students (eg. having the same math teacher for sixth, seventh, and eight grades) impacts the achievement of students.
9. Conduct further studies to determine the factors in each grade configuration that impact achievement.
10. Investigate the number of eighth graders choosing to take Algebra I and consider the impact it has on existing eighth grade math TNReady data.
11. Review past historical Tennessee testing data to determine if the results are replicable.
12. Conduct further studies on the impact of grade configuration on gender.

Conclusion

Hoy and Miskel's (2013) model of the educational system as a social system served as the theoretical framework underpinning this research. Achievement, as the output of grade configuration, was investigated. Existing data and research on the effects of grade configuration on achievement of sixth, seventh, and eighth grade students is conflicting, with the results of this

study only adding to the ambiguity of the collection of studies. While this research found a tendency for middle school sixth graders to achieve higher in English language arts and for K-8 eighth graders to achieve higher in math, when considering the overall impact on an aggregate of all students, no significance was found in the English language arts and math achievement of the grade configurations. Further inquiry is needed on multiple factors to determine the impact grade configuration has on students. Using the Hoy and Miskel framework, job satisfaction, absenteeism, dropout rate, and overall quality of each grade configuration are worthy of future investigations to determine if one grade configuration provides advantages for students. While achievement is a powerful output measure of the social system, other factors can also provide feedback on grade configurations.

REFERENCES

- Adams, J. N. (2015). *A comparison of middle-level grade span configurations, student academic achievement, and stakeholder perceptions of school climate* (Doctoral dissertation). Retrieved October 20, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search.proquest.com/docview/1896120630?accountid=10771>
- Arcia, E. (2007). A comparison of elementary/K-8 and middle schools' suspension rates. *Urban Education, 42*(5), 456-469. doi: [10.1177/0042085907304879](https://doi.org/10.1177/0042085907304879)
- Bedard, K., & Do, C. (2005). Are middle schools more effective?: The impact of school structure on outcomes. *The Journal of Human Resources, XL*(3), 660-682. doi: [10.3368/jhr.XL.3.660](https://doi.org/10.3368/jhr.XL.3.660)
- Bertonlini, K., Stremmel, A., & Thorngren, J. (2012). *Student achievement factors*. South Dakota State University College of Education and Human Sciences Department of Teaching, Learning and Leadership. Retrieved February 2, 2019, from <https://files.eric.ed.gov/fulltext/ED568687.pdf>
- Billings, T. J. (2014). *Middle school configuration relationship with eighth grade achievement with administrator perceptions of strengths and weaknesses* (Doctoral dissertation). Retrieved October 20, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/1540788915?accountid=10771>
- Blair, N. C. (2007). *A comparative study of the effect of grade configuration on middle school and K-8 school value added scores* (Doctoral dissertation). Retrieved January 19, 2019, from <https://search-proquest-com.iris.etsu.edu:3443/docview/304728259?pq-origsite=primo>
- Block, N., & Dworkin, G. (1976). *The IQ controversy*. New York: Pantheon.^[1]
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. London: Harvard University Press.
- Bryk, A. S. and Schneider, B. (2002). *Trust in schools: A core resource for improvement*. New York: Russell Sage Foundation.
- Budge, B. W. (2017). *A casual-comparative study: K-8 vs. 6-8 grade-span configuration in Washington state* (Doctoral dissertation). Retrieved January 12, 2019, from <https://login.iris.etsu.edu:3443/login?url=https://search.proquest.com/docview/2034277623?accountid=10771>
- Byrnes, V. & Ruby, A. (2007). Comparing achievement between K-8 and middle schools: A large-scale empirical study. *American Journal of Education, 114*(1), 101-135. doi: [10.1086/520693](https://doi.org/10.1086/520693)

- Carolan, B., & Chesky, N. (2012). The relationship among grade configuration, school attachment, and achievement. *Middle School Journal*, 43(4), 32-39. doi: [10.1080/00940771.2012.11461818](https://doi.org/10.1080/00940771.2012.11461818)
- Center for Education Reform. (2008). The K-8 solution: The retreat from middle schools. Retrieved February 19, 2019, from <https://edreform.com/edreform-university/resource/the-k-8-solution-the-retreat-from-middle-schools-2008/>
- Clark, D. M., Slate, J. R., Combs, J. P., & Moore, G. W. (2013). Math and reading differences between 6-8 and K-8 grade span configurations: A multiyear, statewide analysis. *Current Issues in Education*, 16(2), 1-16. Retrieved January 19, 2019, from <https://login.iris.etsu.edu:3443/login?url=https://search.proquest.com/docview/1509085829?accountid=10771>
- Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D. and York, R. L. (1966). *Equality of Educational Opportunity*. US Government Printing Office, Washington, DC. Retrieved February 1, 2019, from https://www.ssc.wisc.edu/wlsresearch/publications/files/public/Sewell-Marascuilo-Pfautz_Review.Symposium.C.et.al.pdf
- Cook, P. J., MacCoun, R., Muschkin, C., & Vigdor, J. (2008). The negative impacts of starting middle school in sixth grade. *Journal of Policy and Analysis*, 27(1), 104-121. doi: [10.1002/pam.20309](https://doi.org/10.1002/pam.20309)
- Conley, J. (2016). *The effect of elementary school size, grade span, and transition on student achievement and graduation* (Doctoral dissertation). Retrieved January 19, 2019, from <https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=2364&context=doctoral>
- Crispin, L. M. (2016). School size and student achievement: Does one size fit all? *Eastern Economic Journal*, 42(4), 630-662. doi:10.1057/ej.2015.2
- Dewey, J. (1901). The situation as regards the course of study. *Educational Review*. 22, 26-49.
- 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. doi: [10.1177/1932202x1002100205](https://doi.org/10.1177/1932202x1002100205)
- Educator Advisory Team. (2018, October 2). TNReady Listening Feedback Report. Retrieved January 19, 2019, from https://www.tn.gov/content/dam/tn/governoroffice-documents/TNReadyListeningTourReport_EAT_10.02.18.pdf
- Egalite, A. J., & Kisida, B. (2016). School size and student achievement: A longitudinal analysis. *School Effectiveness and School Improvement*, 27(3), 406-417. doi: <https://doi.org/10.1080/09243453.2016.1190385>

- Erb, T. O. (2006). Middle school models are working in many grade configurations to boost student performance. *American Secondary Education*, 34(3), 4-13. Retrieved October 20, 2018 from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/195184341?accountid=10771>
- Fink, L. L. (2010). *A comparison of grade configuration on urban sixth to eighth grade outcomes in regular and special education*. (Doctoral dissertation). Retrieved January 21, 2019, from <https://search.proquest.com/docview/762381225?accountid=10771>
- Finn, C. E., McGuinn, P. J., & Manna, P. (2013). *Education governance for the twenty-first century: Overcoming the structural barriers to school reform*. Washington, DC: Brookings Institution Press.
- Foreman-Peck, J. (2006). Should schools be smaller? The size-performance relationship in Welsh schools. *Economics of Education Review*, 25(2), 157-171. Retrieved February 23, 2019, from <https://doi.org/10.1016/j.econedurev.2005.01.004>
- Gallagher, C. J. (2003). Reconciling a tradition of testing with a new learning paradigm. *Educational Psychology Review*, 15(1), 83-99. Retrieved February 2, 2019, from https://www.jstor.org/stable/23361535?mag=short-history-standardized-tests&seq=5#metadata_info_tab_contents
- Gershenson, S., & Langbein, L. (2015). The effect of primary school size on academic achievement. *Educational Evaluation and Policy Analysis*, 37(1), 135-155. doi: <https://doi.org/10.3102/0162373715576075>
- Glossary of Education Reform. (2015). *Standardized test*. Retrieved February 2, 2019, from <https://www.edglossary.org/standardized-test/>
- Gomez, M. O., Marcoulides, G. A., & Heck, R. H. (2012). Examining culture and performance at different school level structures. *International Journal of Educational Management*, 26(2), 205-222. doi: [0.1108/09513541211202004](https://doi.org/10.1108/09513541211202004)
- Gonzales, J. (2016, April 30). Tennessee disregarded red flags with TNReady testing firm. *The Tennessean*. Retrieved January 19, 2019, from <https://www.tennessean.com/story/news/education/2016/04/30/tnready-test-company-had-early-warning-signs/83647544/>
- Gonzales, J., & Buie (2018, April 19). TNReady results won't count against students, teachers, Tennessee lawmakers decide. *The Tennessean*. Retrieved January 19, 2019, from <https://www.tennessean.com/story/news/education/2018/04/19/tennessee-schools-report-tnready-issues-others-able-test/532389002/>
- Hallinger, P., & Heck, R. (1996). The principal's role in school effectiveness: an assessment of methodological progress, 1980-1995. *International Handbook of Educational Leadership and Administration, Part 2*. Kluwer Academic Publishers, Dordrecht, 723-84.

- Haney, W. (1981). Validity, vaudeville, and values: A short history of social concerns over standardized testing. *American Psychologist*, 36(10), 1021-1034.
- Hanover Research. (2017). Academic outcomes for K-8 grade configuration. Retrieved February 18, 2019, from <http://www.gocruisers.org/Downloads/Academic%20Outcomes%20for%20K-8%20Grade%20Configurations.pdf>
- Hess, F. M. & Eden. (2017). *Every student succeeds act: What it means for schools, systems, and states*. Massachusetts: Harvard Education Press.
- Heubert, J., & Hauser, R. (1999). *High stakes: Testing for tracking, promotion, and graduation*. Washington, DC: National Academic Press.
- Hong, K., Zimmer, R., & Engberg, J. (2018). How does grade configuration impact student achievement in elementary and middle school grades? *Journal of Urban Economics*, 105, (1). doi: [10.1016/j.jue.2018.02.002](https://doi.org/10.1016/j.jue.2018.02.002)
- Hoy, W. (2012). School characteristics that make a difference for the achievement of all students: A 40-year odyssey. *Journal of Educational Administration*, 50(1), 76-97. Retrieved on February 1, 2019, from <https://www-emeraldinsight-com.iris.etsu.edu:3443/doi/pdfplus/10.1108%2F09578231211196078>
- Hoy, W., & Miskel, C. (2013). *Educational administration: Theory, research, and practice (9th ed.)*. New York: McGraw Hill.
- Jencks, C., Smith, M., Acland, H., & Bane, M.J. (1972). *Inequality: A reassessment of the effects of family and schooling in America*. New York: Basic Books.
- Jensen, A. (1969). How much can we boost IQ and scholastic achievement. *Harvard Educational Review*, 39(1), 1-123. doi: [10.17763/haer.39.1.13u15956627424k7](https://doi.org/10.17763/haer.39.1.13u15956627424k7)
- Juvonen, J., Le, V., Kaganoff, T., Augustine, C., & Constant, L. (2004). *Focus on the wonder years: Challenges facing the American middle school*. Santa Monica, CA: RAND Corporation. doi: [10.1037/e658722010-001](https://doi.org/10.1037/e658722010-001)
- Keegan, E. W. (2009). The influence of grade-span configuration on student performance in K-8 schools and middle schools in New Jersey (Doctoral dissertation). Retrieved January 21, 2019 from <https://search.proquest.com/central/docview/814947247/9777C8F9BD5A4EA9PQ/3?accountid=1077>

- Kim, H. Y., Schwartz, K., Cappella, E., & Seidman, E. (2014). Navigating middle grades: Role of social contexts in middle grade school climate. *American Journal of Community Psychology*, 54, 28 – 45. Retrieved October 27, 2018, from <http://dx.doi.org/10.1007/s10464-014-9659-x>
- Kliebard, H. (2002). *Changing course: American curriculum reform in the 20th century*. New York: Teachers College Press.
- MacArthur, C. A. (2016). The influence of building configuration on academic achievement, attendance, and demographic variable in selected midwestern school districts (Doctoral dissertation). Retrieved January 21, 2019, from <https://search.proquest.com/central/docview/1846123446/9777C8F9BD5A4EA9PQ/6?accountid=10771>
- Malone, M., Cornell, D., & Shukla, K. (2016). Association of grade configuration with school climate for 7th and 8th grade students. *School Psychology Quarterly*, 32(3), 350-366. doi: <http://dx.doi.org/10.1037/spq0000174>
- Manning, M. L. (2000). A brief history of the middle school. *Clearing House*, 73(4), 192. Retrieved October 13, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/62434047?accountid=10771>
- McQueen, C. (2017). *2017 LEAD conference: Leading the new normal* [PowerPoint slides]. Retrieved October 13, 2018, from https://www.tn.gov/content/dam/tn/education/documents/co/co_LEAD_2017_Presentation.pdf
- Melton, M. (2010). *A comparison of achievement in K-8 schools and 6-8 schools* (Doctoral dissertation). Retrieved November 14, 2018, from <https://search.proquest.com/central/docview/760107084/84FAC1F0162C4390PQ/1?accountid=10771>
- National Center for Education Statistics. (2018.) *Fast facts educational institutions* [Graph illustration]. Retrieved October 13, 2018, from <https://nces.ed.gov/fastfacts/display.asp?id=84>
- National Commission on Excellence in Education. (1983). *A national at risk: The imperative of educational reform*. Retrieved October 20, 2018, from <https://www2.ed.gov/pubs/NatAtRisk/risk.html>
- National Forum to Accelerate Middle-Grades Reform. (2008). Policy statement on grades configuration. Retrieved February 18, 2019, from <https://files.eric.ed.gov/fulltext/ED528788.pdf>
- National Middle School Association. (1982). *This we believe: Keys to educating young adolescents*. Association for Middle Level Education.

- Nelson, D. E. (2013). *The effect of grade configuration on the academic achievement of special needs students: the case of New Jersey* (Doctoral dissertation). Retrieved January 21, 2019, from <https://search.proquest.com/central/docview/1461492962/9777C8F9BD5A4EA9PQ/4?accountid=10771>
- Olson, L. (2018). *Scaling reform: Inside Tennessee's statewide teacher transformation*. FutureEd. Retrieved October 20, 2018, from <https://www.future-ed.org/scaling-reform-tennessees-statewide-teacher-transformation/>
- Orfield, G. & Kornhaber, M.L. (2001). *Raising standard of raising barriers: Inequality and high-stakes testing in public education*. New York: Century Foundation.
- Peterson, J. (1983). *The Iowa testing programs*. Iowa: University of Iowa Press.
- Pignolet, J., & Gonzales, J. (2017, October 13). Thousands of TNReady tests scored incorrectly. Commercial Appeal. Retrieved January 19, 2019, from <https://www.commercialappeal.com/story/news/education/2017/10/13/thousands-tnready-tests-scored-incorrectly/762142001/>
- Ramsey, W. J. (2009). *A quantitative examination of school configurations in Tennessee using sixth grade math, reading, science, and social studies standardized test scores* (Doctoral dissertation). Retrieved October 20, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/304882558?accountid=10771>
- Riley, R. (2010, May). Tennessee's race to the top application: Key provisions. Retrieved October 10, 2019, from https://comptroller.tn.gov/content/dam/cot/orea/documents/orea-reports-2010/2010_OREA_RTKeyProvisions.pdf
- Rockoff, J. E. & Lockwood, B. B. (2010). Stuck in the middle; impacts of grade configuration in public school. *Journal of Public Economics*, 94 (11-12), 1051-1061. DOI: doi.org/10.1016/j.jpubeco.2010.06.017
- Rothman, R. (1995). *Tests of significance*. California: Jossey-Bass.
- Ryan, K. E. & Shephard, L. A. (2008). *The future of test-based educational accountability*. New York, NY: Routledge.
- Sacks, F. (1999). *Standardized minds*. Massachusetts: Perseus Books.
- Schaefer, M. B., Malu, K. F., & Yoon, B. (2016). An historical overview of the middle school movement, 1963-2015. *RMLE Online*, 39(5), 1-27. Retrieved October 13, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/1788524826?accountid=10771>

- Schafer, K. L. (2010). The Impact of grade configuration on sixth grade academic achievement in Florida Public Schools (Doctoral dissertation). Retrieved January 21, 2019, from <https://search.proquest.com/central/docview/733910123/9777C8F9BD5A4EA9PQ/7?accountid=10771>
- Schwerdt, G., & West, M.R. (2012). The impact of alternative grade configurations on student outcomes through middle and high school. *Journal of Public Economics*, 97, 308–326. doi: [10.1016/j.jpubeco.2012.10.002](https://doi.org/10.1016/j.jpubeco.2012.10.002)
- Schwarz, A. E., Stiefel, L., Rubenstein, R., & Zabel, J. (2011). The path not taken: How does school organization affect eighth-grade achievement? *Educational Evaluation and Policy Analysis*, 33(3), 293-317. doi: [10.3102/0162373711407062](https://doi.org/10.3102/0162373711407062)
- SCORE, State Collaborative on Reforming Education. (2014). *Measuring student growth in Tennessee: Understanding TVAAS*. Retrieved October 20, 2018, from <https://education-consumers.org/pdf/Measuring-Student-Growth-in-Tennessee-Understanding-TVAAS.pdf>
- SCORE, State Collaborative on Reforming Education. (2017). *Excellence for all: How Tennessee can lift our state to best in the nation*. Retrieved October 20, 2018, from http://scoreexcellenc.wpengine.com/wp-content/uploads/2017/12/TN-SCORE-ExcellenceForAll_17P556_digital-FINAL.pdf
- SDE School Directory. (n.d). Retrieved August 29, 2019, from <https://k-12.education.tn.gov/SDE/default.asp>
- Starks, S. L. (2016). *The effects of school grade span configuration on student achievement in middle school-aged children* (Doctoral dissertation). Retrieved October 20, 2018, from <https://login.iris.etsu.edu:3443/login?url=https://search-proquest-com.iris.etsu.edu:3443/docview/1887157904?accountid=10771>
- Stronge, J. H., Ward, T. J., & Grant, L. W. (2011). What makes good teachers good? A cross-case analysis of the connection between teacher effectiveness and student achievement. *Journal of Teacher Education*, 62(4), 339-355. Retrieved February 1, 2019, from <https://journals.sagepub.com/doi/pdf/10.1177/0022487111404241>
- Tennessee Code Annotated. § 49-6-301, Retrieved January 26, 2019, from <https://advance.lexis.com/documentpage/?pdmfid=1000516&crd=1980539a-4f39-4bd3-8bd3-cb832ecf4b3c&pdistocdocslideraccess=true&config=025054JABIOTJjNmIyNi0wYjI0LTRjZGEtYWE5ZC0zNGFhOWNhMjFINDgKAFBvZENhdGFsb2cDFQ14bX2GfyBTal9WcPX5&pddocfullpath=%2fshared%2fdocument%2fstatutes-legislation%2furn%3acontentItem%3a4X55-GPR0-R03K-S4FS-00008-00&pdcomponentid=234180&pdtoenodeidentifier=ABXAAGAADAAB&ecomp=8gqfk&prid=293348c2-8c02-4c17-b670-e40f635b25c9>

- Tennessee Department of Education (n.d.). Assessment logistics. Retrieved February 18, 2019, from http://www.livebinders.com/play/play?id=2244559&mc_cid=78ae7a4869&mc_eid=5fc5563de8
- Tennessee Department of Education (n.d.a). *Assessment task force*. Retrieved February 9, 2019, from <https://preprod.tn.gov/education/assessment/assessment-task-force.html>
- Tennessee Department of Education. (2015). *Tennessee task force on student testing and assessment*. Retrieved February 9, 2019, from https://preprod.tn.gov/content/dam/tn/education/testing/tst_assessment_task_force_report.pdf
- Tennessee Department of Education. (2015a). *Defining economically disadvantaged subgroup for accountability*. Retrieved October 27, 2018, from https://gallery.mailchimp.com/b28b453ee164f9a2e2b5057e1/files/ED_Definition_for_Accountability_Memo.pdf
- Tennessee Department of Education. (2017). *2017-18 Assessment FAQ*. Retrieved October 13, 2018, from <https://www.tn.gov/education/assessment/tnready/assessment-faq.html>
- Tennessee Department of Education. (2017a). *School directory* [Data file]. Retrieved October 13, 2018, from <https://www.tn.gov/content/tn/education/data/data-downloads.html>
- Tennessee Department of Education (2018). *2018 TNReady scores – additional information*. Retrieved October 13, 2018, from <https://www.tn.gov/education/assessment/tnready.html>
- Tennessee Department of Education (2018a). *District accountability: ESSA updates for 2018-19*. Retrieved January 26, 2019, from https://www.tn.gov/content/dam/tn/education/cpm/essa/ESSA_district_accountability_fact_sheet.pdf
- Tennessee Department of Education. (2018b). *How is TNReady created for Tennessee students?* Retrieved October 13, 2018, from https://www.tn.gov/content/dam/tn/education/documents/How_TNReady_is_Created_FINAL.pdf
- Tennessee Department of Education. (2018c). *Student assessment in Tennessee*. Retrieved October 20, 2018, from <https://www.tn.gov/education/assessment.html>
- Tennessee Department of Education. (2018d). *TDOE announces new steps to reduce testing*. Retrieved January 19, 2019, from <https://www.tn.gov/education/news/2018/4/9/t DOE-announces-new-steps-to-reduce-testing.html>

- Tennessee Department of Education. (2018e). *TNReady*. Retrieved October 13, 2018, from <https://www.tn.gov/education/assessment/tready.html>
- Tennessee Department of Education. (2018f). *TNReady English language arts*. Retrieved October 13, 2018, from <https://www.tn.gov/content/tn/education/assessment/tready/tready-ela.html>
- Tennessee Department of Education. (2018g). *TNReady Math*. Retrieved October 13, 2018, from <https://www.tn.gov/education/assessment/tready/tready-math.html>
- Tennessee Department of Education. (2019a). *Accountability files*. Retrieved August 28, 2019, from <https://www.tn.gov/education/data/data-downloads.html>
- Tennessee Department of Education. (2019b). *Assessment files*. Retrieved September 20, 2019, from <https://www.tn.gov/education/data/data-downloads.html>
- Thorndike, E. L. (1913). *Introduction to theory of mental and social measurement*, New York: Columbia University Press.
- Thorndike, E. L., & Bregman, E. O. (1934). *Measurement of intelligence*. New York: Columbia University Press.
- University of Cambridge. (2018). *Rules of thumb on magnitudes of effect sizes*. Retrieved October 13, 2019 from <http://imaging.mrc-cbu.cam.ac.uk/statswiki/FAQ/effectSize>
- U.S. Department of Education. (1965). *Title I - Improving the academic achievement of the disadvantaged*. Retrieved October 27, 2018, from: <https://www2.ed.gov/policy/elsec/leg/esea02/pg1.html>
- U.S. Department of Education. (2002). *No child left behind desktop reference*. Retrieved October 20, 2018, from: <http://www2.ed.gov/admins/lead/account/nclbreference/reference.pdf>
- U.S. Department of Education. (2015). *Every student succeeds act*. Retrieved October 27, 2018, from: <https://www.ed.gov/essa>
- Visible Learning [Website]. (n.d.). Retrieved February 1, 2019 from <https://visible-learning.org/hattie-ranking-influences-effect-sizes-learning-achievement/>
- Walsh, W. B., & Betz, N. (1995). *Tests and Assessment*. New Jersey: Prentice-Hall.
- Weiss, C., & Kipnes, L. (2006). 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. doi: [10.1086/498996](https://doi.org/10.1086/498996)

Weisser, A. S. (2006). Little red school house, what now? Two centuries of American Public School Architecture. *Journal of Planning History*, 5(3), 196-217. Retrieved October 20, 2018, from <https://doi-org.iris.etsu.edu:3443/10.1177/1538513206289223>

Werner, E. (2011, March 28). Obama says too much testing makes education boring. Retrieved February 9, 2019, from http://archive.boston.com/news/nation/articles/2011/03/28/obama_says_too_much_testing_makes_education_boring/

APPENDICES

APPENDIX A

K-8 Schools in ELA All Students Sample

Allardt Elementary	E.E. Jeter Elementary/Middle
Allons Elementary	Edgemont Elementary
Auburn Elementary	Elk Valley Elementary
Baileyton Elementary	Elkton Elementary
Bargerton Elementary	Emerald Academy
Barret's Chapel Elementary/Middle	Englewood Elementary
Beaver Elementary	Ethridge Elementary
Bethel Springs Elementary	Etowah Elementary
Black Oak Elementary	Fairview Elementary
Blanche School	Fall Branch Elementary
Bridgeport Elementary	Flintville School
Bulls Gap School	Forge Ridge School
Burchfield Elementary	Forks River Elementary
Calhoun Elementary	Frank P. Brown Elementary
Camp Creek Elementary	Glenn Martin Elementary
Carroll Oakland Elementary	Glenwood Elementary
Catons Chapel Elementary	Grandview Elementary School
Celina K-8	Granville T. Woods Academy of
Centertown Elementary	Innovation Charter School
Centerview Elementary	Grassy Fork Elementary
Central Elementary	Gray Elementary School
Chattanooga School For The Liberal Arts	Hampton Elementary
Coalmont Elementary	Henry Elementary
Community Montessori School	Hermitage Springs Elementary School
Cosby Elementary	Highland Rim School
Covington Integrated Arts Academy	Hilham Elementary
Crab Orchard Elementary	Hillcrest Elementary
Dayton City Elementary	Hillsboro Elementary/ Middle School
Debusk Elementary	Homestead Elementary School
Defeated Elementary	Hornsby Elementary
DeKalb West Elementary	Hunter Elementary
Del Rio Elementary	Ida B. Wells Academy ES/MS
Dodson Branch Elementary	Irving College Elementary
Dorothy And Noble Harrelson School	J. P. Freeman Elementary/Middle
Douglass Elementary/Middle	Jellico Elementary
Dyer Elementary	Keensburg Elementary
E K Baker Elementary	Lake Road Elementary

Lakeview Elementary
Lamar Elementary
Lara Kendall Elementary
Leoma Elementary
Liberty Elementary
Little Milligan
Lobelville Elementary
Mary Hughes School
McDonald Elementary
Michie Elementary
Midway Elementary
Minor Hill School
Monteagle Elementary
Morrison Elementary
Mosheim Elementary
Mountain View Elementary
New Center Elementary
New Prospect Elementary
Newport Grammar School
Niota Elementary
Nolachuckey Elementary
Normal Park Museum Magnet School
North Cumberland Elementary
North Elementary
Northwest Elementary
Ottway Elementary
Palmer Elementary
Parrottsville Elementary
Pelham Elementary
Philadelphia Elementary
Pi Beta Phi Elementary
Pickett County Elementary
Pickwick Southside School
Pin Oak Elementary
Pine Haven Elementary
Pine View Elementary
Pittman Center Elementary
Pleasant Hill Elementary
Powell Valley Elementary
Ramer Elementary
Riceville Elementary
Rickman Elementary
Ridgemont Elementary

Ridgeview Elementary School
Riverdale Elementary School
Robbins Elementary
Rogers Creek Elementary
Rogersville Elementary
Rose Hill School
Rural Vale Elementary
Rush Strong Elementary
Rutherford Elementary
Scotts Hill Elementary
Sharon School
Short Mountain Elementary
Smoky Mountain Elementary
Snowden Elementary/Middle
South Central Elementary
South Cumberland Elementary
South Fentress Elementary School
South Haven Elementary
South Lawrence Elementary
South Lincoln School
South Side Elementary
Southside Elementary
Spring Hill Elementary
Stone Elementary
Sullivan Gardens K-8
Sulphur Springs Elementary
Swiss Memorial Elementary
Thurman Francis Arts Academy/
Magnet School for the Arts
Toone Elementary
Tracy Elementary
Tuckers Crossroads Elementary
Unaka Elementary
Union Heights Elementary
Unity School
Wearwood Elementary
West Pines Elementary
West Side Elementary
West View School
Westover Elementary
White Pine Elementary
Whiteville Elementary
Wilson Elementary

Winfield Elementary
Woodbury Grammar
Woodland Elementary

Wynn Habersham Elementary
York Elementary
Yorkville Elementary

APPENDIX B

Middle Schools in ELA All Students Sample

Alcoa Middle School	Crockett County Middle School
Appling Middle School	DeKalb Middle School
Arlington Middle	Dexter Middle
Athens City Middle School	DuBois Middle of Leadership Public Policy
Bearden Middle School	Dyersburg Middle School
Bellevue Middle	E O Coffman Middle School
Blackman Middle School	Eagleton Middle School
Bledsoe County Middle School	East Hickman Middle School
Bolivar Middle School	East Jr. High School
Bon Lin Middle School	East Middle School
Brentwood Middle School	East Ridge Middle School
Bridgeforth Middle School	East Ridge Middle School
Brighton Middle School	Elmore Park Middle School
Brown Middle School	Fairview Middle School
Camden Jr High School	Farragut Middle School
Carpenters Middle School	Fred J Page Middle School
Carter Middle School	Ft Loudoun Middle School
Cascade Middle School	Germantown Middle
Cedar Bluff Middle School	Gibbs Middle School
Central Middle School	Grassland Middle School
Charlotte Middle School	Greeneville Middle School
Chattanooga Charter School of Excellence Middle	Gresham Middle School
Cherokee Middle School	H Maynard Middle School
Chester County Junior High School	Halls Middle School
Chilhowee Middle School	Hardin County Middle School
Christiana Middle School	Hardin Valley Middle School
Chuckey Doak Middle School	Harriman Middle School
Cleveland Middle	Harris Middle School
Clinton Middle School	Haywood Middle School
Coffee County Middle School	Heritage Middle School
Collierville Middle School	Heritage Middle School
Colonial Heights Middle	Hickman Co Middle School
Colonial Middle	Highland Oaks Middle
Community Middle School	Hixson Middle School
Cordova Middle	Holston Middle School
Craigmont Middle	Holston Middle School
Crestview Middle School	Holston Valley Middle School
	Houston Co Middle School

Houston Middle School	Northview Middle School
Hunter Middle School	Northwest Middle School
Jacksboro Middle School	Norwood Middle School
Jefferson Middle School	Oakhaven Middle
Jim Satterfield Middle School	Oakland Middle School
Joe Shafer Middle School	Ocoee Middle School
John Sevier Middle School	Oliver Springs Middle
Karns Middle School	Oneida Middle School
Kate Bond Middle School	Ooltewah Middle School
Kenwood Middle	Portland East Middle School
Kingsbury Middle	Portland West Middle School
Knox Doss Middle School at Drakes Creek	Powell Middle School
Lafollette Middle School	Power Center Academy Middle
Lake City Middle School	Power Center Academy Middle –
Lake Forest Middle School	Southeast
Lakewood Middle School	Red Bank Middle School
LaVergne Middle School	Rhea Middle School
Lewis County Middle School	Richview Middle
Lexington Middle School	Ridgeway Middle
Lincoln Heights Middle School	Ripley Middle School
Loftis Middle School	Robert E Ellis Middle
Macon County Junior High School	Rock Springs Middle School
Madisonville Middle School	Rockvale Middle School
Martin Middle School	Rockwood Middle School
Maury Middle School	Rocky Fork Middle School
Maxine Smith STEAM Academy	Rogersville Middle School
McEwen Jr. High School	Ross N. Robinson Middle School
Meadowview Middle School	Rossvie Middle
Meigs Middle School	Rucker Stewart Middle
Midway Middle School	Sevierville Middle School
Mill Creek Middle School	Siegel Middle School
Millington Middle School	Smyrna Middle School
Montgomery Central Middle	Soddy Daisy Middle School
Mt. Juliet Middle School	South Doyle Middle School
Mt. Pisgah Middle	South Middle School
Munford Middle School	Spring City Middle School
New Providence Middle	Spring Station Middle School
Norris Middle School	Springfield Middle School
North Middle School	Station Camp Middle School
North Middle School	Stewart County Middle School
North Parkway Middle School	Stewarts Creek Middle School
Northeast Middle	Sunset Middle School
Northeast Middle School	T A Dugger Junior High School

T. W. Hunter Middle School
Thompson's Station Middle School
Three Oaks Middle School
Treadwell Middle School
Unicoi Co Middle School
Union Grove Middle School
V G Hawkins Middle School
W James Middle School
W O Inman Middle School
Walter J. Baird Middle School
Warren County Middle School
Watertown Middle School
West Collierville Middle School
West Creek Middle
West Junior High School

West Middle School
West Valley Middle School
West View Middle School
West Wilson Middle School
West-Bemis Middle School
Westmoreland Middle School
Westwood Middle School
White Co Middle School
White Station Middle
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Winfree Bryant Middle School
Woodland Middle School

APPENDIX C

K-8 Schools in Math All Students Sample

Allardt Elementary	Elk Valley Elementary
Allons Elementary	Elkton Elementary
Auburn Elementary	Emerald Academy
Baileyton Elementary	Englewood Elementary
Bargerton Elementary	Ethridge Elementary
Barret's Chapel Elementary/Middle	Etowah Elementary
Beaver Elementary	Fairview Elementary
Bethel Springs Elementary	Fall Branch Elementary
Black Oak Elementary	Flintville School
Blanche School	Forge Ridge School
Bridgeport Elementary	Forks River Elementary
Bulls Gap School	Frank P. Brown Elementary
Burchfield Elementary	Glenn Martin Elementary
Calhoun Elementary	Glenwood Elementary
Camp Creek Elementary	Grandview Elementary School
Carroll Oakland Elementary	Grassy Fork Elementary
Catons Chapel Elementary	Gray Elementary School
Celina K-8	Hampton Elementary
Centertown Elementary	Henry Elementary
Centerview Elementary	Hermitage Springs Elementary School
Central Elementary	Highland Rim School
Coalmont Elementary	Hilham Elementary
Community Montessori School	Hillcrest Elementary
Cosby Elementary	Hillsboro Elementary/ Middle School
Covington Integrated Arts Academy	Homestead Elementary School
Crab Orchard Elementary	Hornsby Elementary
Dayton City Elementary	Hunter Elementary
Debusk Elementary	Ida B. Wells Academy ES/MS
Defeated Elementary	J. P. Freeman Elementary/Middle
DeKalb West Elementary	Keensburg Elementary
Del Rio Elementary	Lake Road Elementary
Dodson Branch Elementary	Lakeview Elementary
Dodson Branch Elementary	Lamar Elementary
Dorothy And Noble Harrelson School	Lara Kendall Elementary
Douglass Elementary/Middle	Leoma Elementary
Dyer Elementary	Liberty Elementary
E K Baker Elementary	Lobelville Elementary
E.E. Jeter Elementary/Middle	Mary Hughes School
Edgemont Elementary	McDonald Elementary

Michie Elementary
Midway Elementary
Minor Hill School
Monteagle Elementary
Morrison Elementary
Mosheim Elementary
Mountain View Elementary
New Center Elementary
New Prospect Elementary
Newport Grammar School
Nolachuckey Elementary
Normal Park Museum Magnet School
North Cumberland Elementary
North Elementary
Ottway Elementary
Palmer Elementary
Parrottsville Elementary
Pelham Elementary
Philadelphia Elementary
Pi Beta Phi Elementary
Pickett County Elementary
Pickwick Southside School
Pin Oak Elementary
Pine Haven Elementary
Pine View Elementary
Pittman Center Elementary
Pleasant Hill Elementary
Powell Valley Elementary
Ramer Elementary
Riceville Elementary
Rickman Elementary
Ridgemont Elementary
Ridgeview Elementary School
Riverdale Elementary School
Riverview Elementary/Middle
Robbins Elementary
Rogers Creek Elementary
Rogersville Elementary
Rural Vale Elementary
Rush Strong Elementary

Rutherford Elementary
Scotts Hill Elementary
Sharon School
Short Mountain Elementary
Smoky Mountain Elementary
Snowden Elementary/Middle
South Central Elementary
South Cumberland Elementary
South Fentress Elementary School
South Haven Elementary
South Lawrence Elementary
South Lincoln School
South Side Elementary
Southside Elementary
Spring Hill Elementary
Stone Elementary
Sullivan Gardens K-8
Sulphur Springs Elementary
Swiss Memorial Elementary
Thurman Francis Arts Academy/
Magnet School for the Arts
Toone Elementary
Tracy Elementary
Tuckers Crossroads Elementary
Unaka Elementary
Union Heights Elementary
Unity School
Wearwood Elementary
West Pines Elementary
West Side Elementary
West View School
Westover Elementary
White Pine Elementary
Whiteville Elementary
Wilson Elementary
Winfield Elementary
Woodbury Grammar
Woodland Elementary
York Elementary
Yorkville Elementary

APPENDIX D

Middle Schools in Math All Students Sample

A. Maceo Walker Middle	DeKalb Middle School
Alcoa Middle School	Dexter Middle
Appling Middle School	Dyersburg Middle School
Arlington Middle	E O Coffman Middle School
Athens City Middle School	Eagleton Middle School
Bearden Middle School	East Hickman Middle School
Bellevue Middle	East Jr. High School
Blackman Middle School	East Lake Academy Of Fine Arts
Bledsoe County Middle School	East Middle School
Bolivar Middle School	East Ridge Middle School
Bon Lin Middle School	East Ridge Middle School
Bridgeforth Middle School	Elmore Park Middle School
Brighton Middle School	Fairview Middle School
Brown Middle School	Farragut Middle School
Camden Jr High School	Fred J Page Middle School
Carpenters Middle School	Ft Loudoun Middle School
Carter Middle School	Germantown Middle
Cascade Middle School	Gibbs Middle School
Cedar Bluff Middle School	Grandview Heights Middle School
Charlotte Middle School	Grassland Middle School
Chattanooga Charter School of Excellence Middle	Greenbrier Middle School
Cherokee Middle School	Greeneville Middle School
Chester County Junior High School	Gresham Middle School
Chilhowee Middle School	H Maynard Middle School
Christiana Middle School	Halls Middle School
Chuckey Doak Middle School	Hardin County Middle School
Cleveland Middle	Hardin Valley Middle School
Clinton Middle School	Harriman Middle School
Coffee County Middle School	Harris Middle School
Collierville Middle School	Havenview Middle
Colonial Heights Middle	Haywood Middle School
Colonial Middle	Heritage Middle School
Community Middle School	Heritage Middle School
Cordova Middle	Hickman Co Middle School
Craigmont Middle	Hickory Ridge Middle
Crestview Middle School	Highland Oaks Middle
Crockett County Middle School	Hixson Middle School
Dalewood Middle School	Holston Middle School
	Holston Middle School

Holston Valley Middle School
Houston Co Middle School
Houston Middle School
Hunter Middle School
Jacksboro Middle School
Jefferson Middle School
Jim Satterfield Middle School
Joe Shafer Middle School
John Sevier Middle School
Karns Middle School
Kate Bond Middle School
Kenwood Middle
Kingsbury Middle
Knox Doss Middle School at Drakes Creek
Lafollette Middle School
Lake City Middle School
Lake Forest Middle School
Lakewood Middle School
LaVergne Middle School
Lester Prep
Lewis County Middle School
Lexington Middle School
Lincoln Heights Middle School
Loftis Middle School
Macon County Junior High School
Madisonville Middle School
Martin Middle School
Maury Middle School
Maxine Smith STEAM Academy
McEwen Jr. High School
Meadowview Middle School
Meigs Middle School
Midway Middle School
Mill Creek Middle School
Millington Middle School
Montgomery Central Middle
Mt. Juliet Middle School
Mt. Pisgah Middle
Munford Middle School
New Providence Middle
Norris Middle School
North Middle School
North Parkway Middle School

Northeast Middle
Northeast Middle School
Northview Middle School
Norwood Middle School
Oakhaven Middle
Oakland Middle School
Ocoee Middle School
Oneida Middle School
Ooltewah Middle School
Portland East Middle School
Portland West Middle School
Powell Middle School
Power Center Academy Middle
Power Center Academy Middle –
Southeast
Red Bank Middle School
Rhea Middle School
Richview Middle
Ridgeway Middle
Ripley Middle School
Robert E Ellis Middle
Rock Springs Middle School
Rockvale Middle School
Rockwood Middle School
Rocky Fork Middle School
Rogersville Middle School
Ross N. Robinson Middle School
Rossvie Middle
Rucker Stewart Middle
Sevierville Middle School
Sherwood Middle
Siegel Middle School
Smyrna Middle School
Soddy Daisy Middle School
South Doyle Middle School
South Middle School
Spring City Middle School
Spring Station Middle School
Springfield Middle School
Station Camp Middle School
Stewart County Middle School
Stewarts Creek Middle School
Sunset Middle School

T A Dugger Junior High School
T. W. Hunter Middle School
Thompson's Station Middle School
Three Oaks Middle School
Treadwell Middle School
Tyner Middle Academy
Unicoi Co Middle School
Union Grove Middle School
V G Hawkins Middle School
W James Middle School
W O Inman Middle School
Walter J. Baird Middle School
Warren County Middle School
Watertown Middle School
West Collierville Middle School
West Creek Middle

West Junior High School
West Middle School
West Valley Middle School
West View Middle School
West Wilson Middle School
West-Bemis Middle School
Westmoreland Middle School
Westwood Middle School
White Co Middle School
White Station Middle
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Winfree Bryant Middle School
Wooddale Middle School
Woodland Middle School

APPENDIX E

K-8 Schools in ELA by Grade Sample

Allardt Elementary	Elk Valley Elementary
Allons Elementary	Elkton Elementary
Auburn Elementary	Emerald Academy
Baileyton Elementary	Englewood Elementary
Bargerton Elementary	Ethridge Elementary
Barret's Chapel Elementary/Middle	Etowah Elementary
Beaver Elementary	Fairview Elementary
Bethel Springs Elementary	Fall Branch Elementary
Black Oak Elementary	Flintville School
Blanche School	Forge Ridge School
Bridgeport Elementary	Forks River Elementary
Bulls Gap School	Frank P. Brown Elementary
Burchfield Elementary	Glenn Martin Elementary
Calhoun Elementary	Glenwood Elementary
Camp Creek Elementary	Grandview Elementary School
Carroll Oakland Elementary	Granville T. Woods Academy of
Catons Chapel Elementary	Innovation Charter School
Celina K-8	Grassy Fork Elementary
Centertown Elementary	Gray Elementary School
Centerview Elementary	Hampton Elementary
Central Elementary	Henry Elementary
Chattanooga School For The Liberal Arts	Hermitage Springs Elementary School
Coalmont Elementary	Highland Rim School
Community Montessori School	Hilham Elementary
Cosby Elementary	Hillcrest Elementary
Covington Integrated Arts Academy	Hillsboro Elementary/ Middle School
Crab Orchard Elementary	Homestead Elementary School
Dayton City Elementary	Hornsby Elementary
Debusk Elementary	Hunter Elementary
Defeated Elementary	Ida B. Wells Academy ES/MS
DeKalb West Elementary	Irving College Elementary
Del Rio Elementary	J. P. Freeman Elementary/Middle
Dodson Branch Elementary	Jellico Elementary
Dorothy And Noble Harrelson School	Keensburg Elementary
Douglass Elementary/Middle	Lake Road Elementary
Dyer Elementary	Lakeview Elementary
E K Baker Elementary	Lamar Elementary
E.E. Jeter Elementary/Middle	Lara Kendall Elementary
Edgemont Elementary	Leoma Elementary

Liberty Elementary
Little Milligan
Lobelville Elementary
Mary Hughes School
McDonald Elementary
Michie Elementary
Midway Elementary
Minor Hill School
Monteagle Elementary
Morrison Elementary
Mosheim Elementary
Mountain View Elementary
New Center Elementary
New Prospect Elementary
Newport Grammar School
Niota Elementary
Nolachuckey Elementary
Normal Park Museum Magnet School
North Cumberland Elementary
North Elementary
Northwest Elementary
Ottway Elementary
Palmer Elementary
Parrottsville Elementary
Pelham Elementary
Philadelphia Elementary
Pi Beta Phi Elementary
Pickett County Elementary
Pickwick Southside School
Pin Oak Elementary
Pine Haven Elementary
Pine View Elementary
Pittman Center Elementary
Pleasant Hill Elementary
Powell Valley Elementary
Ramer Elementary
Riceville Elementary
Rickman Elementary
Ridgemont Elementary
Ridgeview Elementary School
Riverdale Elementary School
Robbins Elementary
Rogers Creek Elementary

Rogersville Elementary
Rose Hill School
Rural Vale Elementary
Rush Strong Elementary
Rutherford Elementary
Scotts Hill Elementary
Sharon School
Short Mountain Elementary
Smoky Mountain Elementary
Snowden Elementary/Middle
South Central Elementary
South Cumberland Elementary
South Fentress Elementary School
South Haven Elementary
South Lawrence Elementary
South Lincoln School
South Side Elementary
Southside Elementary
Spring Hill Elementary
Stone Elementary
Sullivan Gardens K-8
Sulphur Springs Elementary
Swiss Memorial Elementary
Thurman Francis Arts Academy/
Magnet School for the Arts
Toone Elementary
Tracy Elementary
Tuckers Crossroads Elementary
Unaka Elementary
Union Heights Elementary
Unity School
Wearwood Elementary
West Pines Elementary
West Side Elementary
West View School
Westover Elementary
White Pine Elementary
Whiteville Elementary
Wilson Elementary
Winfield Elementary
Woodbury Grammar
Woodland Elementary
Wynn Habersham Elementary

York Elementary
Yorkville Elementary

APPENDIX F

Middle Schools in ELA by Grade Sample

Alcoa Middle School	DeKalb Middle School
Appling Middle School	Dexter Middle
Arlington Middle	DuBois Middle of Leadership Public Policy
Athens City Middle School	Dyersburg Middle School
Bearden Middle School	E O Coffman Middle School
Bellevue Middle	Eagleton Middle School
Blackman Middle School	East Hickman Middle School
Bledsoe County Middle School	East Jr. High School
Bolivar Middle School	East Middle School
Bon Lin Middle School	East Ridge Middle School
Brentwood Middle School	East Ridge Middle School
Bridgeforth Middle School	Elmore Park Middle School
Brighton Middle School	Fairview Middle School
Brown Middle School	Farragut Middle School
Camden Jr High School	Fred J Page Middle School
Carpenters Middle School	Ft Loudoun Middle School
Carter Middle School	Germantown Middle
Cascade Middle School	Gibbs Middle School
Cedar Bluff Middle School	Grassland Middle School
Central Middle School	Greeneville Middle School
Charlotte Middle School	Gresham Middle School
Chattanooga Charter School of Excellence Middle	H Maynard Middle School
Cherokee Middle School	Halls Middle School
Chester County Junior High School	Hardin County Middle School
Chilhowee Middle School	Hardin Valley Middle School
Christiana Middle School	Harriman Middle School
Chuckey Doak Middle School	Harris Middle School
Cleveland Middle	Haywood Middle School
Clinton Middle School	Heritage Middle School
Coffee County Middle School	Heritage Middle School
Collierville Middle School	Hickman Co Middle School
Colonial Heights Middle	Highland Oaks Middle
Colonial Middle	Hixson Middle School
Community Middle School	Holston Middle School
Cordova Middle	Holston Middle School
Craigmont Middle	Holston Valley Middle School
Crestview Middle School	Houston Co Middle School
Crockett County Middle School	Houston Middle School
	Hunter Middle School

Jacksboro Middle School
 Jefferson Middle School
 Jim Satterfield Middle School
 Joe Shafer Middle School
 John Sevier Middle School
 Karns Middle School
 Kate Bond Middle School
 Kenwood Middle
 Kingsbury Middle
 Knox Doss Middle School at Drakes Creek
 Lafollette Middle School
 Lake City Middle School
 Lake Forest Middle School
 Lakewood Middle School
 LaVergne Middle School
 Lewis County Middle School
 Lexington Middle School
 Lincoln Heights Middle School
 Loftis Middle School
 Macon County Junior High School
 Madisonville Middle School
 Martin Middle School
 Maury Middle School
 Maxine Smith STEAM Academy
 McEwen Jr. High School
 Meadowview Middle School
 Meigs Middle School
 Midway Middle School
 Mill Creek Middle School
 Millington Middle School
 Montgomery Central Middle
 Mt. Juliet Middle School
 Mt. Pisgah Middle
 Munford Middle School
 New Providence Middle
 Norris Middle School
 North Middle School
 North Middle School
 North Parkway Middle School
 Northeast Middle
 Northeast Middle School
 Northview Middle School
 Northwest Middle School
 Norwood Middle School
 Oakhaven Middle
 Oakland Middle School
 Ocoee Middle School
 Oliver Springs Middle
 Oneida Middle School
 Ooltewah Middle School
 Portland East Middle School
 Portland West Middle School
 Powell Middle School
 Power Center Academy Middle
 Power Center Academy Middle –
 Southeast
 Red Bank Middle School
 Rhea Middle School
 Richview Middle
 Ridgeway Middle
 Ripley Middle School
 Robert E Ellis Middle
 Rock Springs Middle School
 Rockvale Middle School
 Rockwood Middle School
 Rocky Fork Middle School
 Rogersville Middle School
 Ross N. Robinson Middle School
 Rossvie Middle
 Rucker Stewart Middle
 Sevierville Middle School
 Siegel Middle School
 Smyrna Middle School
 Soddy Daisy Middle School
 South Doyle Middle School
 South Middle School
 Spring City Middle School
 Spring Station Middle School
 Springfield Middle School
 Station Camp Middle School
 Stewart County Middle School
 Stewarts Creek Middle School
 Sunset Middle School
 T A Dugger Junior High School
 T. W. Hunter Middle School
 Thompson's Station Middle School

Three Oaks Middle School
Treadwell Middle School
Unicoi Co Middle School
Union Grove Middle School
V G Hawkins Middle School
W James Middle School
W O Inman Middle School
Walter J. Baird Middle School
Warren County Middle School
Watertown Middle School
West Collierville Middle School
West Creek Middle
West Junior High School
West Middle School

West Valley Middle School
West View Middle School
West Wilson Middle School
West-Bemis Middle School
Westmoreland Middle School
Westwood Middle School
White Co Middle School
White Station Middle
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Winfree Bryant Middle School
Woodland Middle School

APPENDIX G

K-8 Schools in Math by Grade Sample

Allardt Elementary	Elk Valley Elementary
Allons Elementary	Elkton Elementary
Auburn Elementary	Emerald Academy
Baileyton Elementary	Englewood Elementary
Bargerton Elementary	Ethridge Elementary
Barret's Chapel Elementary/Middle	Etowah Elementary
Beaver Elementary	Fairview Elementary
Bethel Springs Elementary	Fall Branch Elementary
Black Oak Elementary	Flintville School
Blanche School	Forge Ridge School
Bridgeport Elementary	Forks River Elementary
Bulls Gap School	Frank P. Brown Elementary
Burchfield Elementary	Glenn Martin Elementary
Calhoun Elementary	Glenwood Elementary
Camp Creek Elementary	Grandview Elementary School
Carroll Oakland Elementary	Grassy Fork Elementary
Catons Chapel Elementary	Gray Elementary School
Celina K-8	Hampton Elementary
Centertown Elementary	Henry Elementary
Centerview Elementary	Hermitage Springs Elementary School
Central Elementary	Highland Rim School
Coalmont Elementary	Hilham Elementary
Community Montessori School	Hillcrest Elementary
Cosby Elementary	Hillsboro Elementary/ Middle School
Covington Integrated Arts Academy	Homestead Elementary School
Crab Orchard Elementary	Hornsby Elementary
Dayton City Elementary	Hunter Elementary
Debusk Elementary	Ida B. Wells Academy ES/MS
Defeated Elementary	J. P. Freeman Elementary/Middle
DeKalb West Elementary	Keensburg Elementary
Del Rio Elementary	Lake Road Elementary
Dodson Branch Elementary	Lakeview Elementary
Dodson Branch Elementary	Lamar Elementary
Dorothy And Noble Harrelson School	Lara Kendall Elementary
Douglass Elementary/Middle	Leoma Elementary
Dyer Elementary	Liberty Elementary
E K Baker Elementary	Lobelville Elementary
E.E. Jeter Elementary/Middle	Mary Hughes School
Edgemont Elementary	McDonald Elementary

Michie Elementary	Scotts Hill Elementary
Midway Elementary	Sharon School
Minor Hill School	Short Mountain Elementary
Monteagle Elementary	Smoky Mountain Elementary
Morrison Elementary	Snowden Elementary/Middle
Mosheim Elementary	South Central Elementary
Mountain View Elementary	South Cumberland Elementary
New Center Elementary	South Fentress Elementary School
New Prospect Elementary	South Haven Elementary
Newport Grammar School	South Lawrence Elementary
Nolachuckey Elementary	South Lincoln School
Normal Park Museum Magnet School	South Side Elementary
North Cumberland Elementary	Southside Elementary
North Elementary	Spring Hill Elementary
Ottway Elementary	Stone Elementary
Palmer Elementary	Sullivan Gardens K-8
Parrottsville Elementary	Sulphur Springs Elementary
Pelham Elementary	Swiss Memorial Elementary
Philadelphia Elementary	Thurman Francis Arts Academy/ Magnet School for the Arts
Pi Beta Phi Elementary	Toone Elementary
Pickett County Elementary	Tracy Elementary
Pickwick Southside School	Tuckers Crossroads Elementary
Pin Oak Elementary	Unaka Elementary
Pine Haven Elementary	Union Heights Elementary
Pine View Elementary	Unity School
Pittman Center Elementary	Wearwood Elementary
Pleasant Hill Elementary	West Pines Elementary
Powell Valley Elementary	West Side Elementary
Ramer Elementary	West View School
Riceville Elementary	Westover Elementary
Rickman Elementary	White Pine Elementary
Ridgemont Elementary	Whiteville Elementary
Ridgeview Elementary School	Wilson Elementary
Riverdale Elementary School	Winfield Elementary
Riverview Elementary/Middle	Woodbury Grammar
Robbins Elementary	Woodland Elementary
Rogers Creek Elementary	York Elementary
Rogersville Elementary	Yorkville Elementary
Rural Vale Elementary	
Rush Strong Elementary	
Rutherford Elementary	

Appendix H

Middle Schools in Math by Grade Sample

A. Maceo Walker Middle	DeKalb Middle School
Alcoa Middle School	Dexter Middle
Appling Middle School	Dyersburg Middle School
Arlington Middle	E O Coffman Middle School
Athens City Middle School	Eagleton Middle School
Bearden Middle School	East Hickman Middle School
Bellevue Middle	East Jr. High School
Blackman Middle School	East Lake Academy Of Fine Arts
Bledsoe County Middle School	East Middle School
Bolivar Middle School	East Ridge Middle School
Bon Lin Middle School	East Ridge Middle School
Bridgeforth Middle School	Elmore Park Middle School
Brighton Middle School	Fairview Middle School
Brown Middle School	Farragut Middle School
Camden Jr High School	Fred J Page Middle School
Carpenters Middle School	Ft Loudoun Middle School
Carter Middle School	Germantown Middle
Cascade Middle School	Gibbs Middle School
Cedar Bluff Middle School	Grandview Heights Middle School
Charlotte Middle School	Grassland Middle School
Chattanooga Charter School of Excellence Middle	Greenbrier Middle School
Cherokee Middle School	Greeneville Middle School
Chester County Junior High School	Gresham Middle School
Chilhowee Middle School	H Maynard Middle School
Christiana Middle School	Halls Middle School
Chuckey Doak Middle School	Hardin County Middle School
Cleveland Middle	Hardin Valley Middle School
Clinton Middle School	Harriman Middle School
Coffee County Middle School	Harris Middle School
Collierville Middle School	Havenview Middle
Colonial Heights Middle	Haywood Middle School
Colonial Middle	Heritage Middle School
Community Middle School	Heritage Middle School
Cordova Middle	Hickman Co Middle School
Craigmont Middle	Hickory Ridge Middle
Crestview Middle School	Highland Oaks Middle
Crockett County Middle School	Hixson Middle School
Dalewood Middle School	Holston Middle School
	Holston Middle School

Holston Valley Middle School
Houston Co Middle School
Houston Middle School
Hunter Middle School
Jacksboro Middle School
Jefferson Middle School
Jim Satterfield Middle School
Joe Shafer Middle School
John Sevier Middle School
Karns Middle School
Kate Bond Middle School
Kenwood Middle
Kingsbury Middle
Knox Doss Middle School at Drakes Creek
Lafollette Middle School
Lake City Middle School
Lake Forest Middle School
Lakewood Middle School
LaVergne Middle School
Lester Prep
Lewis County Middle School
Lexington Middle School
Lincoln Heights Middle School
Loftis Middle School
Macon County Junior High School
Madisonville Middle School
Martin Middle School
Maury Middle School
Maxine Smith STEAM Academy
McEwen Jr. High School
Meadowview Middle School
Meigs Middle School
Midway Middle School
Mill Creek Middle School
Millington Middle School
Montgomery Central Middle
Mt. Juliet Middle School
Mt. Pisgah Middle
Munford Middle School
New Providence Middle
Norris Middle School
North Middle School
North Parkway Middle School

Northeast Middle
Northeast Middle School
Northview Middle School
Norwood Middle School
Oakhaven Middle
Oakland Middle School
Ocoee Middle School
Oneida Middle School
Ooltewah Middle School
Portland East Middle School
Portland West Middle School
Powell Middle School
Power Center Academy Middle
Power Center Academy Middle –
Southeast
Red Bank Middle School
Rhea Middle School
Richview Middle
Ridgeway Middle
Ripley Middle School
Robert E Ellis Middle
Rock Springs Middle School
Rockvale Middle School
Rockwood Middle School
Rocky Fork Middle School
Rogersville Middle School
Ross N. Robinson Middle School
Rossvie Middle
Rucker Stewart Middle
Sevierville Middle School
Sherwood Middle
Siegel Middle School
Smyrna Middle School
Soddy Daisy Middle School
South Doyle Middle School
South Middle School
Spring City Middle School
Spring Station Middle School
Springfield Middle School
Station Camp Middle School
Stewart County Middle School
Stewarts Creek Middle School
Sunset Middle School

T A Dugger Junior High School
T. W. Hunter Middle School
Thompson's Station Middle School
Three Oaks Middle School
Treadwell Middle School
Tyner Middle Academy
Unicoi Co Middle School
Union Grove Middle School
V G Hawkins Middle School
W James Middle School
W O Inman Middle School
Walter J. Baird Middle School
Warren County Middle School
Watertown Middle School
West Collierville Middle School
West Creek Middle

West Junior High School
West Middle School
West Valley Middle School
West View Middle School
West Wilson Middle School
West-Bemis Middle School
Westmoreland Middle School
Westwood Middle School
White Co Middle School
White Station Middle
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Winfree Bryant Middle School
Wooddale Middle School
Woodland Middle School

Appendix I

Schools in Sixth Grade ELA Gender Sample

Alcoa Middle School	Central Middle School
Allardt Elementary	Charlotte Middle School
Allons Elementary	Chattanooga Charter School of Excellence Middle
American Way Middle	Chattanooga School For The Liberal Arts
Appling Middle School	Cherokee Middle School
Arlington Middle	Chester County Junior High School
Athens City Middle School	Chilhowee Middle School
Baileyton Elementary	Christiana Middle School
Bargerton Elementary	Chuckey Doak Middle School
Barret's Chapel Elementary/Middle	Cleveland Middle
Bearden Middle School	Clinton Middle School
Beaver Elementary	Coalmont Elementary
Bellevue Middle	Coffee County Middle School
Bethel Springs Elementary	Collierville Middle School
Black Oak Elementary	Colonial Heights Middle
Blackman Middle School	Colonial Middle
Blanche School	Community Middle School
Bledsoe County Middle School	Community Montessori School
Bolivar Middle School	Cordova Middle
Bon Lin Middle School	Cosby Elementary
Brentwood Middle School	Covington Integrated Arts Academy
Bridgeforth Middle School	Crab Orchard Elementary
Bridgeport Elementary	Craigmont Middle
Brighton Middle School	Crestview Middle School
Brown Middle School	Crockett County Middle School
Bulls Gap School	Dayton City Elementary
Burchfield Elementary	Debusk Elementary
Calhoun Elementary	DeKalb Middle School
Camden Jr High School	DeKalb West Elementary
Camp Creek Elementary	Dexter Middle
Carpenters Middle School	Dibrell Elementary
Carroll Oakland Elementary	Dodson Branch Elementary
Carter Middle School	Dorothy And Noble Harrelson School
Cascade Middle School	Douglass Elementary/Middle
Catons Chapel Elementary	DuBois Middle of Leadership Public Policy
Cedar Bluff Middle School	DuBois Middle School of Arts Technology
Celina K-8	
Centertown Elementary	
Centerview Elementary	

Dyer Elementary	Hampton Elementary
Dyersburg Middle School	Hardin County Middle School
E K Baker Elementary	Hardin Valley Middle School
E O Coffman Middle School	Harriman Middle School
E.E. Jeter Elementary/Middle	Harris Middle School
Eagleton Middle School	Havenview Middle
East End Preparatory School	Haywood Middle School
East Hickman Middle School	Henry Elementary
East Jr. High School	Heritage Middle School
East Lake Academy Of Fine Arts	Heritage Middle School
East Middle School	Hickman Co Middle School
East Ridge Middle School	Hickory Ridge Middle
East Ridge Middle School	Highland Oaks Middle
Eastside Elementary	Highland Rim School
Edgemont Elementary	Hilham Elementary
Elkton Elementary	Hillcrest Elementary
Elmore Park Middle School	Hillsboro Elementary/ Middle School
Emerald Academy	Hixson Middle School
Englewood Elementary	Holston Middle School
Ethridge Elementary	Holston Middle School
Etowah Elementary	Holston Valley Middle School
Fairview Elementary	Homestead Elementary School
Fairview Middle School	Houston Co Middle School
Fall Branch Elementary	Houston Middle School
Farragut Middle School	Hunter Elementary
Flintville School	Hunter Middle School
Frank P. Brown Elementary	Ida B. Wells Academy ES/MS
Fred J Page Middle School	Irving College Elementary
Ft Loudoun Middle School	J. P. Freeman Elementary/Middle
Germantown Middle	Jacksboro Middle School
Gibbs Middle School	Jefferson Middle School
Glenn Martin Elementary	Jellico Elementary
Grandview Elementary School	Jim Satterfield Middle School
Grandview Heights Middle School	Joe Shafer Middle School
Granville T. Woods Academy of	John Sevier Middle School
Innovation Charter School	Karns Middle School
Grassland Middle School	Kate Bond Middle School
Gray Elementary School	Keensburg Elementary
Greenbrier Middle School	Kenwood Middle
Greeneville Middle School	Kingsbury Middle
Gresham Middle School	Kirby Middle School
H Maynard Middle School	Knox Doss Middle School
Halls Middle School	at Drakes Creek

Lafollette Middle School
Lake City Middle School
Lake Forest Middle School
Lake Road Elementary
Lakeview Elementary
Lakewood Middle School
Lamar Elementary
Lara Kendall Elementary
LaVergne Middle School
Leoma Elementary
Lester Prep
Lewis County Middle School
Lexington Middle School
Liberty Elementary
Lincoln Heights Middle School
Loftis Middle School
Lowrance Elementary/Middle
Macon County Junior High School
Madisonville Middle School
Martin Middle School
Mary Hughes School
Maury Middle School
Maxine Smith STEAM Academy
McDonald Elementary
McEwen Jr. High School
Meadowview Middle School
Meigs Middle School
Memphis Academy Of Health Sciences
Michie Elementary
Midway Elementary
Midway Middle School
Mill Creek Middle School
Millington Middle School
Minor Hill School
Montgomery Central Middle
Morrison Elementary
Mosheim Elementary
Mountain View Elementary
Mt. Juliet Middle School
Mt. Pisgah Middle
Munford Middle School
New Center Elementary
New Prospect Elementary

New Providence Middle
Newport Grammar School
Niota Elementary
Nolachuckey Elementary
Normal Park Museum Magnet School
Norris Middle School
North Cumberland Elementary
North Elementary
North Middle School
North Parkway Middle School
Northeast Middle
Northeast Middle School
Northview Middle School
Northwest Elementary
Northwest Middle School
Norwood Middle School
Oakland Middle School
Ocoee Middle School
Oliver Springs Middle
Oneida Middle School
Ooltewah Middle School
Orchard Knob Middle
Parrottsville Elementary
Philadelphia Elementary
Pi Beta Phi Elementary
Pickett County Elementary
Pickwick Southside School
Pin Oak Elementary
Pine Haven Elementary
Pleasant Hill Elementary
Portland East Middle School
Portland West Middle School
Powell Middle School
Powell Valley Elementary
Power Center Academy Middle
Power Center Academy Middle –
Southeast
Ramer Elementary
Red Bank Middle School
Rhea Middle School
Riceville Elementary
Richview Middle
Rickman Elementary

Ridgemont Elementary	Stewarts Creek Middle School
Ridgeview Elementary School	Stone Elementary
Ridgeway Middle	Sullivan Gardens K-8
Ripley Middle School	Sulphur Springs Elementary
Riverdale Elementary School	Sunset Middle School
Robbins Elementary	T A Dugger Junior High School
Robert E Ellis Middle	T. W. Hunter Middle School
Rock Springs Middle School	Thompson's Station Middle School
Rockvale Middle School	Three Oaks Middle School
Rockwood Middle School	Thurman Francis Arts Academy/ Magnet School for the Arts
Rocky Fork Middle School	Toone Elementary
Rogers Creek Elementary	Tracy Elementary
Rogersville Elementary	Treadwell Middle School
Rogersville Middle School	Tuckers Crossroads Elementary
Rose Hill School	Tyner Middle Academy
Ross N. Robinson Middle School	Unicoi Co Middle School
Rossvie Middle	Union Grove Middle School
Rucker Stewart Middle	Unity School
Rural Vale Elementary	V G Hawkins Middle School
Rush Strong Elementary	Veritas College Preparatory
Rutherford Elementary	Vine Middle/Magnet
Scotts Hill Elementary	W James Middle School
Sevierville Middle School	W O Inman Middle School
Sherwood Middle	Walter J. Baird Middle School
Siegel Middle School	Warren County Middle School
Smyrna Middle School	Watertown Middle School
Snowden Elementary/Middle	West Collierville Middle School
Soddy Daisy Middle School	West Creek Middle
South Central Elementary	West Junior High School
South Cumberland Elementary	West Middle School
South Doyle Middle School	West Side Elementary
South Fentress Elementary School	West Valley Middle School
South Haven Elementary	West View Middle School
South Lawrence Elementary	West View School
South Lincoln School	West Wilson Middle School
South Middle School	West-Bemis Middle School
South Side Elementary	Westmoreland Middle School
Southside Elementary	Westover Elementary
Spring City Middle School	Westwood Middle School
Spring Station Middle School	White Co Middle School
Springfield Middle School	White Pine Elementary
Station Camp Middle School	White Station Middle
Stewart County Middle School	

Whiteville Elementary
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Wilson Elementary
Winfree Bryant Middle School
Woodbury Grammar

Wooddale Middle School
Woodland Elementary
Woodland Middle School
York Elementary

Appendix J

Schools in Eighth Grade Math Gender Sample

A. Maceo Walker Middle	Chattanooga Charter School of Excellence Middle
Alcoa Middle School	Cherokee Middle School
Allardt Elementary	Chester County Junior High School
Allons Elementary	Chickasaw Middle
Appling Middle School	Chilhowee Middle School
Arlington Middle	Christiana Middle School
Aspire Hanley Middle School	Chuckey Doak Middle School
Athens City Middle School	Cleveland Middle
Baileyton Elementary	Clinton Middle School
Bargerton Elementary	Coffee County Middle School
Barret's Chapel Elementary/Middle	Collierville Middle School
Bearden Middle School	Colonial Heights Middle
Beaver Elementary	Colonial Middle
Bellevue Middle	Community Middle School
Bethel Springs Elementary	Cordova Middle
Blackman Middle School	Cosby Elementary
Blanche School	Crab Orchard Elementary
Bledsoe County Middle School	Craigmont Middle
Bolivar Middle School	Crestview Middle School
Bon Lin Middle School	Crockett County Middle School
Bridgeforth Middle School	Dalewood Middle School
Bridgeport Elementary	Dayton City Elementary
Brighton Middle School	Debusk Elementary
Brown Middle School	DeKalb Middle School
Bulls Gap School	DeKalb West Elementary
Burchfield Elementary	Dexter Middle
Calhoun Elementary	Dorothy And Noble Harrelson School
Camden Jr High School	Douglass Elementary/Middle
Camp Creek Elementary	DuBois Middle of Leadership
Carpenters Middle School	Public Policy
Carroll Oakland Elementary	Dyer Elementary
Carter Middle School	Dyersburg Middle School
Cascade Middle School	E K Baker Elementary
Catons Chapel Elementary	E O Coffman Middle School
Cedar Bluff Middle School	E.E. Jeter Elementary/Middle
Celina K-8	Eagleton Middle School
Centertown Elementary	East Hickman Middle School
Centerview Elementary	East Jr. High School
Charlotte Middle School	

East Middle School	Hickory Ridge Middle
East Ridge Middle School	Highland Oaks Middle
East Ridge Middle School	Highland Rim School
Edgemont Elementary	Hilham Elementary
Elkton Elementary	Hillcrest Elementary
Elmore Park Middle School	Hillsboro Elementary/ Middle School
Englewood Elementary	Hixson Middle School
Ethridge Elementary	Holston Middle School
Etowah Elementary	Holston Middle School
Fairview Middle School	Holston Valley Middle School
Fall Branch Elementary	Homestead Elementary School
Farragut Middle School	Hornsby Elementary
Flintville School	Houston Co Middle School
Forge Ridge School	Houston Middle School
Frank P. Brown Elementary	Hunter Elementary
Fred J Page Middle School	Hunter Middle School
Ft Loudoun Middle School	Ida B. Wells Academy ES/MS
Geeter School	J. P. Freeman Elementary/Middle
Germantown Middle	Jacksboro Middle School
Gibbs Middle School	Jefferson Middle School
Glenn Martin Elementary	Jellico Elementary
Grandview Elementary School	Jim Satterfield Middle School
Granville T. Woods Academy of	Joe Shafer Middle School
Innovation Charter School	John Sevier Middle School
Grassland Middle School	Karns Middle School
Gray Elementary School	Kate Bond Middle School
Greenbrier Middle School	Keensburg Elementary
Greeneville Middle School	Kenwood Middle
Gresham Middle School	Kirby Middle School
H Maynard Middle School	Knox Doss Middle School
Halls Middle School	at Drakes Creek
Hamilton Middle	Lafollette Middle School
Hampton Elementary	Lake City Middle School
Hardin County Middle School	Lake Forest Middle School
Hardin Valley Middle School	Lake Road Elementary
Harriman Middle School	Lakeview Elementary
Harris Middle School	Lakewood Middle School
Havenvue Middle	Lamar Elementary
Haywood Middle School	Lara Kendall Elementary
Henry Elementary	LaVergne Middle School
Heritage Middle School	Leoma Elementary
Heritage Middle School	Lester Prep
Hickman Co Middle School	Lewis County Middle School

Lexington Middle School
Liberty Elementary
Lincoln Heights Middle School
Loftis Middle School
Macon County Junior High School
Madisonville Middle School
Martin Middle School
Mary Hughes School
Maury Middle School
Maxine Smith STEAM Academy
McDonald Elementary
McEwen Jr. High School
Meadowview Middle School
Meigs Middle School
Memphis Scholars Raleigh-Egypt
Michie Elementary
Midway Elementary
Midway Middle School
Mill Creek Middle School
Millington Middle School
Minor Hill School
Montgomery Central Middle
Morrison Elementary
Mosheim Elementary
Mountain View Elementary
Mt. Juliet Middle School
Mt. Pisgah Middle
Munford Middle School
New Center Elementary
New Prospect Elementary
New Providence Middle
Newport Grammar School
Nolachuckey Elementary
Normal Park Museum Magnet School
Norris Middle School
North Cumberland Elementary
North Elementary
North Middle School
North Middle School
North Parkway Middle School
Northeast Middle
Northeast Middle School
Northview Middle School

Norwood Middle School
Oakhaven Middle
Oakland Middle School
Ocoee Middle School
Oneida Middle School
Ooltewah Middle School
Ottway Elementary
Parrottsville Elementary
Philadelphia Elementary
Pi Beta Phi Elementary
Pickett County Elementary
Pin Oak Elementary
Pine Haven Elementary
Pittman Center Elementary
Pleasant Hill Elementary
Portland East Middle School
Portland West Middle School
Powell Middle School
Powell Valley Elementary
Power Center Academy Middle
Power Center Academy Middle –
Southeast
Ramer Elementary
Red Bank Middle School
Rhea Middle School
Riceville Elementary
Richview Middle
Rickman Elementary
Ridgemont Elementary
Ridgeview Elementary School
Ridgeway Middle
Ripley Middle School
Riverdale Elementary School
Riverview Elementary/Middle
Robbins Elementary
Robert E Ellis Middle
Rock Springs Middle School
Rockvale Middle School
Rockwood Middle School
Rocky Fork Middle School
Rogers Creek Elementary
Rogersville Elementary
Rogersville Middle School

Ross N. Robinson Middle School
Rossview Middle
Rucker Stewart Middle
Rural Vale Elementary
Rush Strong Elementary
Scotts Hill Elementary
Sevierville Middle School
Seymour Middle School
Sherwood Middle
Siegel Middle School
Smyrna Middle School
Snowden Elementary/Middle
Soddy Daisy Middle School
South Central Elementary
South Cumberland Elementary
South Doyle Middle School
South Fentress Elementary School
South Haven Elementary
South Lawrence Elementary
South Lincoln School
South Middle School
Southside Elementary
Spring City Middle School
Spring Station Middle School
Springfield Middle School
Station Camp Middle School
Stewart County Middle School
Stewarts Creek Middle School
Stone Elementary
Sullivan Gardens K-8
Sulphur Springs Elementary
Sunset Middle School
T A Dugger Junior High School
T. W. Hunter Middle School
Thompson's Station Middle School
Three Oaks Middle School
Thurman Francis Arts Academy/Magnet
School for the Arts
Toone Elementary

Tracy Elementary
Treadwell Middle School
Tuckers Crossroads Elementary
Tyner Middle Academy
Unaka Elementary
Unicoi Co Middle School
Union Grove Middle School
Union Heights Elementary
Unity School
V G Hawkins Middle School
Veritas College Preparatory
W James Middle School
W O Inman Middle School
Walter J. Baird Middle School
Warren County Middle School
Watertown Middle School
Wearwood Elementary
West Collierville Middle School
West Creek Middle
West Middle School
West Pines Elementary
West Valley Middle School
West View School
West Wilson Middle School
West-Bemis Middle School
Westmoreland Middle School
Westover Elementary
Westwood Middle School
White Co Middle School
White Pine Elementary
White Station Middle
Whittle Springs Middle School
Whitworth-Buchanan Middle School
Winfree Bryant Middle School
Woodbury Grammar
Woodland Middle School
York Elementary

VITA

CARMEN CRISTY PENDERGRASS

- Personal Data: Date of Birth: February 13, 1973
 Place of Birth: Hamblen County, Tennessee
 Marital Status: Married
- Education: Bledsoe County Schools, Pikeville, Tennessee
 B.S. Multidisciplinary Studies 1-8, Tennessee Technological
 University, Cookeville, Tennessee, 1995
 M.A. Instructional Leadership, Tennessee Technological
 University, Cookeville, Tennessee, 1999
 Ed.S. Classroom Teaching with an emphasis in American History,
 Lee University, 2011
- Personal Experience: Teacher, Bledsoe County Schools: Mary V. Wheeler Elementary,
 1995 - 2008
 Principal, Bledsoe County Schools: Mary V. Wheeler Elementary,
 2008 - 2010
 District-wide Instructional Coach, Bledsoe County Schools,
 2010 - 2014
 Academic Consultant, Tennessee Department of Education,
 2014 - present
- Professional Achievements: Presented at Tennessee LEAD Conference 2015 & 2016
 Lead organizer of the Upper Cumberland READ Conference,
 2015 - 2019
 Tennessee Early Literacy Network Member, 2016- present
 Team member for the Tennessee Department of Education Unit
 Starters, 2017 - 18
 Attended Carnegie Summit in San Francisco, 2017 & 2019
 Carnegie Improvement Science Leadership Course, 2018
 Presented at the Tennessee Early Literacy Network Summit, 2018