A Comparison of Sixth Grade Student Achievement in Reading and Mathematics at School Transition Year

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A COMPARISON OF SIXTH GRADE STUDENT ACHIEVEMENT IN READING AND MATHEMATICS AT SCHOOL TRANSITION YEAR

by

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ABSTRACT

This study contributed information for consideration as school districts determine grade span configuration as part of school design. The problem addressed was the extent to which student achievement may be impacted by the transition from one school to another from fifth to sixth grade in Florida public schools in order to provide data to school policy makers and school district administrators and add to the body of knowledge on the grade level configuration that contributed the most to student achievement in sixth grade. This was a causal-comparative study using quantitative data to analyze student scores at the school level for reading and mathematics on the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 assessment to explore the difference in achievement for sixth grade students with no school transition compared to those who had school transitions during middle school. A multivariate analysis of covariance (MANCOVA) was used to examine if a difference existed in the dependent variables of sixth-grade reading and mathematics achievement as measured by school mean developmental scale scores and the school percentage of students making learning gains on the FCAT 2.0 between schools with sixth grade as the transition year and without sixth grade as the transition year. The analyses were controlled for the covariates of the school percentages of socio-economic status as determined by free and reduced lunch rate, English Learner status, and exceptional student education status. Findings signified that schools with no school transition between fifth and sixth grade in Florida public schools had higher sixth-grade mean scores in reading and mathematics as measured by school mean developmental scale scores and in reading as measured by the percentage of school learning gains. This study offers insight into what grade configuration is more likely to positively impact student achievement during the middle grades and supports students remaining in an elementary setting with fewer transitions during the middle grades to most benefit reading and mathematics achievement. Findings are useful to school boards, superintendents, and school district administrators interested in educational policy development and research on transition especially when restructuring school grade configurations and building new school sites.

To my husband, Eddie, for continual support throughout this endeavor

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INTRODUCTION

Background of the Study

The transition of students from one school organization to another, such as transitioning from elementary to middle school or middle school to high school has been a concern of educators (Alspaugh, 1998; Greene & Ollendick, 1993; Pardini, 2002). Several authors noted that times of transition were generally stressful times for students (Greene & Ollendick, 1993; Malaspina & Rimm-Kaufman, 2008; Poncelet & Metis, 2004; Serdin, Stack, & Kingdom, 2013). As students moved from one school structure to another, there has often been a decline in student achievement after school transition (Alspaugh, 1998; Greene & Ollendick, 1993; Malaspina & Rimm-Kaufman, 2008; Poncelet & Metis, 2004; Yecke, 2006; Zanobini & Usai, 2002). In fact, Alspaugh (1998) found evidence of achievement loss at times of school-to-school transitions at both the start of middle school and the start of high school.

Many times the decisions by educational policy makers, such as the structural design element of schools, require students to transition from one school to another at a certain grade level (Clark, Slate, Combs, & Moore, 2013), very commonly sixth grade in the middle school setting. Researchers exploring the impact of school transition have noted negative effects on student academic achievement (Abella, 2005; Alspaugh, 1998; Clark et al, 2013; George, 2005; Green & Ollendick, 1993; Rockoff & Lockwood, 2010a; Schafer, 2010; Schwartz, Stiefel, Rubenstein, & Zabel, 2011). Based on the background research within the introduction, the researcher investigated the difference for students with no transition compared to those who had school transitions during the middle grades years. Analyses of the data were controlled for the variables of socio-economic status, English Learner, and exceptional student education, as many researchers have consistently found that students receiving program supports in those areas score lower than their peers not receiving such services (Shin, Davison, Long, Chan, & Heistad, 2013; Singh, 2013).

Statement of the Problem

School transitions have often been determined based on grade configurations within a school system. Alspaugh (1998) and Schafer (2010) recommended a minimum number of school-to-school transitions for students, preferably one between elementary and high school, in order to minimize the negative impact of the transition on student achievement. Alspaugh noted that schools with two transition periods for students reported higher dropout rates than schools with one transition and reported findings which supported that "the instability and adjustments required of students in school transitions were associated with education outcomes" (p. 25). Zanobini and Usai (2002) described a decline in grade-point average for students at the time of transitioning to a middle school setting. In researching school transition points, Malaspina and Rimm-Kaufman (2008) stated, "surprisingly little research exists about the extent to which school transitions pose a challenge and cause academic and social performance declines" (p. 2). Exploring student achievement of sixth graders after transitioning to a 6-8 or other middle school configuration and those remaining in elementary structures likely provided a source of information for educational leaders useful in development of policy and practice. Results of the Florida Comprehensive Achievement Test (FCAT) 2.0 Reading Assessment and FCAT 2.0 Mathematics Assessment were examined for sixth graders in school structures with a school transition occurring at sixth grade and those without a school transition occurring at sixth grade. Thus, the problem addressed in this study was the extent to which student achievement may be impacted by the transition from one school to another from fifth to sixth grade in Florida public schools.

Purpose of the Study

The purpose of this study was to explore the difference in student achievement for sixth graders after transitioning to a school with a grade span configuration beginning with sixth grade and for sixth graders remaining in an elementary structure (e.g., K-8, PK-6, etc.) using mean developmental scale scores and learning gains in reading and mathematics as measured by the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0. During analysis, the difference between the two groups was controlled for socio-economic status as measured by the percentage of students qualifying for free and reduced lunch rate, English Learner, and exceptional student education.

Significance of the Study

The significance of this study was to provide data to school policy makers and school district administrators and add to the body of knowledge on the grade level configuration that contributed the most to student achievement in sixth grade. This study was important as it contributed information for consideration as school districts determine grade span configuration as part of school design. Rockoff and Lockwood (2010a) noted a number of school districts considering alternative groupings to grade 6-8 settings. In reference to school districts restructuring from an elementary self-contained and middle school self-contained structures to

K-8 configurations, “little evidence exists to guide policymakers about whether such policies should be implemented” (Schwartz et al., 2011, p. 293). As school districts make policy decisions regarding school organization, it is important to gain insight into what makes grade span patterns more or less effective as related to student achievement (Schwartz et al., 2011). This study provided another step toward determining if transition between schools at the sixth-grade level creates an impact on student achievement, potentially contributing to solving the problem of having all students achieve despite grade configuration.

Using 2009 state achievement data, Schafer (2010) studied whether grade level configuration in Florida public schools had an impact on academic achievement for students in sixth-grade reading and mathematics. Florida, with its strong history of reform, has continued to make changes to its school grading system, implemented new standards, changed accountability measures, and participated in the national Race to the Top grant program which provided federal education funding to increase teacher and leadership effectiveness so as to impact student achievement (Florida Department of Education [FDOE], 2015e). The impact of statewide initiatives on student achievement cannot be overlooked. In the present study, the researcher explored results of 2014 state achievement data in reading and mathematics using Florida school level data for sixth-grade groups, one at the transition year to a new school setting and one without transition remaining in an elementary structure, potentially providing additional application to support informed decision making for policymakers.

Definition of Terms

The following definitions are provided to clarify variables of the research questions and particular terms. To avoid confusion, a distinction has been made between various Florida assessments and educational initiatives to reflect changes in terminology occurring between 2009 and 2014.

Achievement Level: The score on Florida Comprehensive Achievement Test (FCAT) and FCAT 2.0 ranging from the lowest score of Level 1 to the highest score of Level 5 on reading and mathematics, with Level 3 indicating a passing score (FDOE, 2014e).

Common Core State Standards (CCSS): The set of kindergarten through twelfth grade educational standards developed by state education chiefs and governors in 48 states, focused in English language arts and mathematics, and considered rigorous and aligned with college and career expectations (CCSS Initiative, 2015; FDOE, 2015c).

Developmental Scale Score (DSS): The score on FCAT 2.0 which allowed for comparison of students' scores vertically from year to year (FDOE, 2014f).

English Learner (EL): A student whose native language is other than English or who comes from a home in which a language other than English is primarily communicated (FDOE, 2013-2014).

Exceptional Student Education (ESE): The instructional program given to children with disabilities who need specifically designed programs and related services to progress in school and prepare for life after school (FDOE, 2011).

Florida Comprehensive Assessment Test (FCAT): A criterion-referenced test measuring student progress toward established benchmarks in mathematics, reading, science, and writing administered to students in third through eleventh grades (FDOE, 2010b). The FCAT measured the Sunshine State Standards and was administered in the state of Florida through 2010 (FDOE, 2015d).

Florida Comprehensive Assessment Test 2.0 (FCAT 2.0): A criterion-referenced test assessing student achievement of the Next Generation Sunshine State Standards (NGSSS) in mathematics, reading, science, and writing, administered to students beginning in Florida in 2011 (FDOE, 2015d). In 2015 the mathematics, reading, and writing were assessed via the new Florida Standards Assessment (FSA), and science continued to be tested using FCAT 2.0 Science aligned to the NGSSS (FDOE, 2014e).

Free and Reduced Lunch Rate: The percentage of school population qualifying for the lunch program established in the National School Lunch Act which provided free and reduced-price lunches to students from economically disadvantaged families (FDOE, 2010a).

Florida Standards Assessment (FSA): The new state assessment introduced in the 2014-2015 school year replacing FCAT 2.0 assessments in mathematics, reading, and writing (FDOE, 2014e).

Florida State Standards (FSS): The kindergarten through twelfth-grade academic standards created to equip students with skills and knowledge to be college and career ready, requiring stronger critical thinking, problem solving, and communication skills (FDOE, 2015f).

Learning Gain: The measurement on FCAT and FCAT 2.0 equivalent to more than one year's growth while remaining in Level 1 or Level 2, improving an achievement level, or maintaining a proficient achievement level of Level 3 or higher (FDOE, 2014d).

Next Generation Sunshine State Standards (NGSSS): State curriculum standards in Florida measured by FCAT 2.0 beginning in the 2010-2011 school year, with continuing alignment in 2015 on science and social studies standards (FDOE, 2015d, 2014e).

Race to the Top (RTTT): A grant program that offered participating school district federal funding to support reform efforts to boost teacher and leader effectiveness and student achievement, with Florida's inclusion from 2011 through 2014 (FDOE, 2015e).

School Transition: The articulation point across school settings when students move from one school to another for the next grade level as a feature of the organizational structure (Schwartz et al., 2011).

Socio-economic Status: Status determined by the school Free and Reduced Lunch Rates established in the National School Lunch Act and reported by FDOE in the 2013-2014 School (FDOE, 2015j).

Sunshine State Standards (SSS): Educational skills described in the Florida state curriculum framework until 2010 and measured by FCAT (FDOE, 2015d).

Theoretical Framework

The United States educational system is governed at the state and local levels as indicated in the federal constitution, and aspects of the educational system are defined by a variety of federal, state, and local laws as well as by court decisions and regulations (United States Department of Education [USDOE], 2008). State boards of education primarily make policy to maintain and improve the quality of public schools and oversee the majority of over 14,000 local school districts which are governed by local school boards (National Association of State Boards of Education [NASBE], 2015). As the policy making body for school districts, local school boards have ensured that resource allocations align with student learning and school improvement (NASBE), developing and adopting rules and policies impacting education, while overseeing school district operations, budget, personnel, and curriculum via professional superintendents and their administrative staff (USDOE). With school boards in such a critical position of enacting key decisions and policies for successful school reform, familiarity with education research impacting policy decisions is imperative (McAdams, 2012; Usdan, 2010). The relationship between education research and policy is important in ensuring informed public decision making and reform efforts (Hess, 2008).

Although educational reform efforts remain multifaceted, policy makers have sometimes focused on a single organizational feature of a school such as school grade span configuration to enact changes. This can be easily tracked as a reform measure to improve student achievement and lies within the control of school districts (Rubenstein, Schwartz, Stiefel, & Zabel, 2009; Schwartz et al., 2011). However, research on the issue of grade configuration is unclear in regard to which structure is most appropriate, and the decisions concerning groupings of students have often been adopted for academic reasons as well as for other reasons such as demographics, existing facilities, or cost factors (DeJong & Craig, 2002). The National Association of Secondary School Principals (NASSP, 2006) indicated decisions about grade configurations have often been based on school district budgets instead of what is best for students in the middle years. Thus, little research has been conducted to show how grade span (Rockoff & Lockwood, 2010b; Schwartz et al., 2011) or transitioning from one school structure to another (Malaspina & Rimm-Kaufman, 2008) impact student achievement.

Schwartz et al. (2011) explored the impact of transitions and the timing of transitions from one school setting to another in a longitudinal study in New York City. They found a clear pattern of lower academic gains in reading and mathematics for students experiencing more transitions than fewer prior to eighth grade. Other researchers have also indicated a trend of negative academic findings for students needing to transition from one school to another (Abella, 2005; Alspaugh, 1998; Clark, Slate, Combs, & Moore, 2013; George, 2005; Greene & Ollendick, 1993; Rockoff & Lockwood, 2010a, 2010b; Schafer, 2010). Behavioral or social emotional factors associated with school transitions could also further impact academic success (Abella, 2005; Arcia, 2007; Greene & Ollendick, 1993; Malaspina & Rimm-Kaufman, 2008; Poncelet & Metis, 2004; Yecke, 2006; Zanobini & Usai, 2002).

Regardless of school transitions or the timing of such transitions, certain variables or characteristics may have an effect on achievement measures. For instance, the population characteristics of socio-economic status (SES), English Learner (EL) status, and exceptional student education (ESE) status have been shown to impact student achievement (Shin et al., 2013; Singh, 2013). Shin et al. studied academic achievement results from 1997 to 2000 in mid-western United States school districts, revealing trends of consistently lower scores for students receiving program support for free and reduced lunch, ELL, and ESE as compared to students not receiving those services. Singh explored state reading scores from 2002 to 2009 in Hawaii and found a negative impact of SES, ELL, and ESE on student achievement. In the present study, therefore, the variables of SES, ELL, and ESE were controlled during statistical analysis to allow focus to remain on the effect of school transition on sixth-grade student achievement in Florida.

The research conducted in this study was based on the theoretical framework that educational policy makers construct decisions, such as grade configuration of schools within a school district, which ultimately impact student achievement. Review of the literature confirmed a limited number of studies on the effects of school transition on student achievement (Malaspina & Rimm-Kaufman, 2008; Rockoff & Lockwood, 2010a; Rubenstein et al., 2009; Schwartz et al., 2011), and recent findings indicated a positive impact for students not experiencing a transition during the middle school years (Clark et al., 2013; Rockoff & Lockwood, 2010a, 2010b; Schafer, 2010; Schwartz et al., 2011). Several scholars have agreed that school district decisions would benefit from results of research studies and data to inform policy and program implementation which impact students (Galey, 2015; Hess, 2008; Lubienski, Scott, & DeBray, 2014; Orland, 2015; Schwartz et al., 2011). Thus, it seems prudent to have research data available to policy makers to inform policy and ensure decisions are made in the best interest of student achievement, including the effect on achievement when transitioning from one school structure to another.

Research Questions

The following research questions guiding this study were addressed to examine if a difference existed in student reading and mathematics achievement for sixth graders based on transitioning to a new school structure. Alspaugh (1998) found achievement losses related to school transitions, and Schafer (2010) had similar observations. Schwartz et al. (2011) and Clark et al. (2013) reported achievement differences specific to groups of students who transitioned to new school sites during middle school years. As Schafer noted, limited research for policy makers focused on grade configuration and the impact on student achievement, and Alspaugh's focus on grade span led him to focus on the transition. In the researcher's experience in schools, there has often been a reported impact on student achievement whenever a transition from one school to another has occurred. The present study was conducted to isolate the transition by exploring two groups of Florida sixth-grade school level data, one at the transition year and one not at the transition year. This adds to the body of research for policy makers to review when exploring restructuring or determining grade span configuration of elementary and middle school structures. It examined sixth-grade achievement on state assessments controlling for the covariates of socio-economic status, English Learner, and exceptional student education.

1. Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?
2. Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

Methodology

Design of the Study

This was a causal-comparative study using quantitative data to analyze student scores at the school level for reading and mathematics on the 2014 FCAT 2.0 assessments to explore the difference in achievement for sixth-grade students with no school transition compared to those who had school transitions during middle school. The 2014 FCAT 2.0 reading and mathematics achievement data were available publicly on the FDOE website. The school percentages of each of the following were gathered: the mean developmental scale score, students making learning gains, and free and reduced lunch rate. The data were collected using school totals of student membership and English Learners (EL) and then converted to school percentages. The exceptional student education (ESE) school percentages were obtained via email communication with FDOE Education Information and Accountability Services (EIAS) staff. The district and school identification numbers and grade configurations were also available on the Florida Department of Education website. These data were exported into Microsoft Excel spreadsheets, and unique school numbers were created by combining the district number and school number for each school. The data were then merged in Microsoft Access and matched by the combined district and school number to schools with sixth-grade scores and student membership in 2014. The data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 22.0 program. Table 1 shows the research questions, corresponding names of reports containing data sources, related variables, and methods of analyses.

Table 1

Research Questions, Report Titles Containing Data Sources, Related Variables, and Methods of Analyses

Research Questions	Report Titles Containing Data Sources	Related Variables	Methods of Analyses
1. Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?	2014 FCAT 2.0 (by subject-Reading, by school, by grade level-6)	DV	MANCOVA
	2013-2014 School Grades	DV, CV	
	Florida Master School Identification (MSID) file	IV	
	English Learners by School by Race and Gender, Preliminary Survey 2, 2013-14	CV	
	Membership in Programs for Exceptional Students, Preliminary Survey 2, 2013-14	CV	
	School Membership by Grade, Preliminary Survey 2, 2013-14	CV	
2. Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?	2014 FCAT 2.0 (by subject-Mathematics, by school, by grade level-6)	DV	MANCOVA
	2013-2014 School Grades	DV, CV	
	Florida Master School Identification (MSID) file	IV	
	English Learners by School by Race and Gender, Preliminary Survey 2, 2013-14	CV	
	Membership in Programs for Exceptional Students, Preliminary Survey 2, 2013-14	CV	
	School Membership by Grade, Preliminary Survey 2, 2013-14	CV	

Note. DV = dependent variable; IV = independent variable; CV = covariate variable; MANCOVA= Multivariate analysis of covariance

Population

The accessible population of this study are the students enrolled in sixth grade throughout the public school districts within the state of Florida who took the 2014 FCAT 2.0 Reading Assessment and those who took the 2014 FCAT 2.0 Mathematics Assessment. The sample for this study was selected from Florida public schools which met the following criteria: (a) had sixth-grade 2014 FCAT 2.0 scores reported for 10 or more students; (b) had sixth-grade membership enrollment in 2014; and (c) had a grade combination containing sixth grade as identified by the assigned school grade code in the Florida Master School Identification (MSID) file. The data were sorted into two groups of schools: one group of sixth graders transitioning to a new school at sixth grade and another group of sixth graders not transitioning to a new school at sixth grade. This resulted in a sample of 927 schools including 562 with a school transition at sixth grade and 365 with no transition at sixth grade. Data for this study were gathered using the 2014 FCAT 2.0 Reading Assessment and 2014 FCAT 2.0 Mathematics Assessment, criterion-referenced tests, accessing student achievement of the Next Generation Sunshine State Standards (FDOE, 2015d).

Data Collection

Using a causal-comparative design, the researcher collected school scores for reading and mathematics on the 2014 FCAT 2.0 assessments from the FDOE (2015a) website to explore the difference in sixth-grade student achievement for students with a school transition at the sixth-grade year and those without a school transition at the sixth-grade year. The 2014 FCAT 2.0 reading and mathematics achievement data were available publicly on the FDOE website and were retrieved by the researcher, providing the following data for the dependent variables, independent variable, and covariates (FDOE, 2015a). Data collected included: (a) school mean developmental scale score, (b) school percentage of students making learning gains, (c) district and school identification numbers, (d) school grade codes indicating the grade combination served, (e) school percentage of students qualifying for free and reduced lunch program, (f) school student membership totals, (g) school English Learners (EL) totals, and (h) school percentages of exceptional student education (ESE).

Data for the dependent variables of mean developmental scale score (DSS) and percentage of learning gains in reading and mathematics were collected from the FDOE (2015a) website as reported on the sixth-grade 2014 FCAT 2.0 Reading Assessment and 2014 FCAT 2.0 Mathematics Assessment. The school percentages of students making learning gains were located in the 2013-2014 School Grades file.

Data for the independent variable of school transition were determined using the Florida Master School Identification (MSID) file which included district numbers, school numbers, and school grade codes (FDOE, 2014c). Examination of the grade combinations assigned to each school grade code allowed the data to be sorted into two groups: schools with the school transition year at sixth grade and schools with no school transition at sixth grade. An identifier was added to the spreadsheet distinguishing between the two groups.

Data for the covariates of socio-economic status (SES), English Learner (EL), and exceptional student education were also gathered from the FDOE (2015a) website. Student SES was defined by the school percentage of students qualifying for the free and reduced lunch program as reported in the 2013-2014 School Grades file. The student school membership totals and EL school totals were retrieved from archive files entitled School Membership by Grade, Preliminary Survey 2, 2013-14, and English Language Learners by School by Race and Gender, Preliminary Survey 2, 2013-14, respectively. A formula was later created in Microsoft Excel to convert the totals to percentage of students receiving EL services per school. The percentage of students receiving exceptional student education (ESE) services in each school were obtained via email communication with FDOE Education Information and Accountability Services (EIAS) staff from an archive file entitled Membership in Programs for Exceptional Students, Preliminary Survey 2, 2013-14.

The Florida Master School Identification (MSID) file included district and school numbers and school grade codes. Once all data were exported to Microsoft Excel, the district number and school number were combined into a unique identifier for each school. This same process was duplicated for each of the files obtained. These data were then merged in Microsoft Access, matched by the combined identifier for each school, and exported as one data file into Microsoft Excel.

Using Microsoft Excel, the produced data were sorted to eliminate any schools without sixth grade or a school grade code with a grade combination containing sixth grade. Also eliminated were any schools with less than 10 students in the group of reported sixth-grade FCAT 2.0 assessment scores or missing scores for school mean developmental scale score or school percentage of learning gains in reading and mathematics. This action produced a data set of 927 schools with sixth grade in 2014. The schools were sorted by transitioning at sixth grade and not transitioning at sixth grade, resulting in two groups of 562 and 365 respectively. These data were analyzed with the Statistical Package for Social Sciences (SPSS) Version 22.0 program.

Application to the Institutional Review Board (IRB) for Human Research Protection Program at the University of Central Florida was submitted for review and approval. The IRB determined the research activity in this study was not human research as defined by regulations. A copy of the IRB approval is provided in the Appendix.

Data Analysis

A multivariate analysis of covariance (MANCOVA) model was used to examine if a difference existed in the dependent variables of sixth-grade reading and mathematics achievement by school mean developmental scale score (DSS) and the school percentage of students making learning gains on the FCAT 2.0 among schools with sixth grade as the transition year and without sixth grade as the transition year. The analyses were controlled for the covariates of the school percentages of socio-economic status as determined by free and reduced lunch rate, English Learner, and exceptional student education. The dependent variables of mean DSS and learning gains were reported as interval data, and the independent variable of school transition year was reported as nominal data comprised of the two groups: transitioning at sixth-grade year and not transitioning at sixth-grade year. The covariates of socio-economic status, English Learner, and exceptional student education were reported as continuous data.

Limitations

This study included the following limitations:

1. The data sample was taken from Florida Comprehensive Achievement Test (FCAT) 2.0 in Florida and therefore may not be generalized to all states.
2. Many variables which could impact student achievement were not controlled in this study. These variables included race, gender, student attendance, behavioral factors, parental involvement, teacher preparedness, and instructional programs.
3. The quantity and variation of school grade combinations in the state of Florida as indicated by each school grade code produced dissimilarity in the number of schools with sixth grade occurring at the transition year and those schools with sixth grade not occurring at the transition year.
4. Information on achievement scores, school percentages of learning gains and free and reduced lunch, school student membership and EL totals, and ESE school percentages were dependent upon the accuracy of the data available via the Florida Department of Education.

Delimitations

The delimitations utilized in this study were determined by concentration on transition from fifth to sixth grade using Florida state assessment data in order to gain a better understanding of the potential impact of the school transition year on sixth-grade student achievement. In order to obtain the data for this study from the Florida Department of Education website, the analyses were limited to school level data. No student identifiers were utilized or explored.

Assumptions

This study included the following assumptions for operational purposes of the research:

1. The assessments used in this study were valid measures of reading and mathematics achievement.
2. The sample of sixth graders were representative of the sixth graders who participated in state testing in 2014.
3. The methodology proposed offered the most appropriate design for this particular research project.

Organization of the Study

This study is presented in five chapters. Chapter 1 has been used to present the background of the study with the statement of the problem, purpose of the study, and significance of the study. Definition of terms, theoretical framework, and research questions followed. Methodology, limitations, delimitations, assumptions, and organization of the study were included. Chapter 2 contains the review of the literature with historical context, theoretical perspective, and findings of related research.

Chapter 3 offers a description of the methodology utilized for this research, including an introduction, research questions, population, instrumentation, data collection, and data analysis. The findings of the investigation, including descriptive statistics, results of the data analysis for each research question, and additional analysis, are shared in Chapter 4. Chapter 5 contains a summary of the study, discussion of the findings, implications for practice, and recommendations for further research.

CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

This chapter presents the structure of educational policy making and the need for policymakers to be informed when making decisions which ultimately impact student achievement. The impact of school transition on student achievement in reading and mathematics are presented with findings of related research. Additionally, the characteristics of socio-economic status, English Learner, and exceptional student education are explored in relation to their impact on student performance. This study was conducted to add to the body of literature available to policy makers who make decisions which ultimately may impact student academic achievement, particularly in the area of the effect of the school transition year.

To conduct the literature review the researcher examined a variety of sources available through the University of Central Florida Library including articles and databases, books, OneSearch, and Inter Library Loan. Extensive use of abstracting and indexing services via Educational Resources Information Center (ERIC) encompassed EBSCOhost, Education Full Text (H. W. Wilson), Academic Search Premier, and PsycArticles. Keywords used in various searches included but were not limited to transition, K-8 education, student achievement, middle school transition, sixth grade, assessment, grade span, socio-economic status, English Learner, exceptional student education, and educational policy making. Pertinent references within other sources were searched by author and title, and resultant author searches included Alspaugh, Rockoff, Schafer, Schwartz, and Yecke. Journal searches included *Journal of Educational Policy, Educational Research and Evaluation, Middle School Journal,* and *Phi Delta Kappan*.

Handbooks and encyclopedias were explored for topics related to the research questions and educational policy making, generating summaries of major research of specialized topics (e.g., educational policy, school boards, free and reduced lunch, exceptional student education). Government documents and websites also provided information for the study, including United States Department of Education at www.ed.gov, Florida Department of Education at www.fldoe.org, National Association of School Boards of Education at www.nasbe.org, and National Assessment of Educational Progress at nces.ed.gov, among others. The researcher's personal collection of educational texts and articles collected through coursework and professional experiences as well as textbooks available through the University of Central Florida library were also referenced.

The following review of the literature centers on educational policy making, school grade span configuration, transitioning from one school structure to another, impacts of such school transitions on student achievement, and the effects of program supports for socio-economic status, English Learner, and exceptional student education. Specifically, Chapter 2 has been organized into five sections: (a) policy making in education; (b) transition effects; (c) socio-economic status; (d) English Learner; and (e) exceptional student education.

Policy Making in Education

In education, policy refers to the decisions and regulations enacted by the branches of government at national, state, and local levels (Guthrie, 2003). Osher and Quinn (2003) described it as follows:

> Policies are general principles or courses of action that are operative in a venue over which the policymaker has legitimate authority to make and operationalize policy.

> Policies delineate, specify, and authorize the methods by which any institution (e.g., a school, a district, a state department or branch) is administered. (p. 52)

The federal constitution provides that legal responsibility for school decision-making resides with the state governments, and states have delegated considerable policy discretion to local government (Guthrie, 2003).

In the United States, the educational system is governed at the state and local levels as indicated in the federal constitution (United States Department of Education [USDOE], 2008). The federal government provides important policy leadership, national educational statistics, and assistance to support education throughout the country. This is often accomplished with the assistance of non-governmental associations providing leadership on the educational issues important throughout the nation. The aspects of the education system are defined by a variety of federal, state, and local laws as well as by court decisions and regulations. The state and territorial governments oversee the aspects of education by: (a) providing funding, (b) determining broad policies, (c) licensing personnel, (d) ensuring provision of services to special needs populations, (e) directing local school boards, and (f) electing or appointing members of the state boards of education (USDOE, 2008).

The National Association of State Boards of Education (NASBE) is the national organization supporting state boards of education throughout the United States and its territories. It provides governance advocating public education in the United States and making policy to maintain and improve the quality of public schools (NASBE, 2015). Most state boards or the governors appoint chief state school officers (e.g., state superintendent, state commissioner) to serve as the head officials of state education agencies who manage the daily operations and report to the state boards, legislatures, or governors (USDOE, 2008). According to the USDOE

(2008), state boards of education in most states have been primarily responsible for education at the elementary, middle, and high school levels, providing oversight of statewide educational policies and regulations. As policy makers, each state board enacts appropriate regulations, supports local implementation efforts, oversees its state department of education, and ensures the public voice is represented in decisions about public education (NASBE, 2014). In 2014, state boards existed in the District of Columbia, Guam, and all but three states (i.e., Minnesota, New Mexico, Wisconsin) and varied in methods of selection, number of members, and style of governance (NASBE, 2014), overseeing the majority of the over 14,000 local school districts in the United States (USDOE, 2008).

At the local level, public education has been organized into school districts (USDOE, 2008). Local school boards constitute the governing and policy making bodies for school districts, ensuring resource allocations align with improving student learning and school improvement (NASBE, 2015). Within state guidelines, local school boards and individual schools develop and adopt rules and policies impacting education and commonly oversee school district operations, budgets, staff, and curriculum through professional superintendents and their administrations (USDOE, 2008). Local school boards influence educational policies at a local level in their selection and hiring of school district superintendents to supervise schools (Usdan, 2003). Avenues for parental involvement in and community support of the educational program exist at all levels (USDOE, 2008). Each of these stakeholders from the federal, state, and local levels impacts policy making in the educational arena.

Although school board action determines policy and program implemented to address the challenges being faced in education, school boards do not need to write the policy but instead simply guide its development (NASBE, 2006). The school board for a school district is in a unique position to enact policies for successful school reform, and as the policy making body, sets the political tone for the school district, exercises considerable influence, and enacts important decisions (Usdan, 2010). With such a critical role in policy making, school boards need to be well informed. Policy making enacting change requires familiarity with education research, including examination of best practices and recommendations by school district superintendents (McAdams, 2012). Usdan (2010) agreed with the importance of school district leaders to communicate reform activities to board members for greater understanding of reform policies being developed.

Concerning educational policy making, Galey (2015) noted that the influence of federal agendas or regulations "tend to diminish the power of local school boards" (p. S12). Challenges facing educational policy makers also include increased involvement of public figures as well as foundations, and foundations often influence educational policy making by producing education research and data analyses in support of advocating for a particular program or reform. Foundations can further influence districts by providing funding to support their agendas for particular programs or reforms (Lubienski et al, 2014). Lubienski et al. described great diversity in types of available research and upheld the importance of improving the practice of providing research to policy makers, especially with numerous non-educators involved in education policy. Though it is unlikely a single evaluative study will directly impact the adoption of a particular educational policy, the relationship between education research and policy is important in ensuring informed public decision making and reform efforts (Hess, 2008).

Though educational reform efforts have remained complex, policy makers have sometimes focused on a single organizational feature of a school to enact changes (Rubenstein et al., 2009). Rubenstein et al. indicated reorganization of school grade spans offered at a school have been an easily tracked reform measure implemented to improve student achievement, yet such restructuring has occurred with little research available to consider the impact it may have on student achievement. Rearranging a school organizational feature such as grade span may be an attractive reform mechanism because it lies within the control of the school districts (Schwartz et al., 2011). Research on the issue of grade configuration is unclear as to which structure is most appropriate. The decision which directly impacts the number and size of classrooms needed in each facility for elementary, middle, and high schools has been determined by academic reasons, demographics, or existing facilities (DeJong & Craig, 2002). Furthermore, groupings of students have sometimes been determined by cost, such as a K-8 in a rural area to reduce transportation costs or a pre-kindergarten and kindergarten site to provide appropriate furniture, equipment, and facilities (DeJong & Craig, 2002).

The National Association of School Principals (2006) posited that decisions of school grade configuration have often been based on school district budgets instead of what is best for students in the middle grades, concluding:

> Regardless of grade configuration, policymakers, school boards, and superintendents must stop making decisions based primarily on budgets and the transportation schedule and instead create schools based on what is best for young adolescents--schools that address the intellectual and development needs of each student. (p. XVI)

Within their longitudinal study of grade span and its impact on student achievement, Schwartz et al. (2011) explored the impact of school transitions as well as the timing of transitions from one school setting to another. They found lower academic gains for students experiencing more transitions and suggested that fewer school transitions were preferable. School district decisions would benefit from results of research studies and data to inform policy and program implementation which impact students (Galey, 2015; Hess, 2008; Lubienski et al., 2014; Orland, 2015; Schwartz et al. 2011). Such decisions would include the effect on student achievement when transitioning from one school structure when determining school grade span policies (Lubienski et al., 2014; Schwartz et al. 2011).

Transition Effects

Although New York City and other school districts have restructured to K-8 configurations, little research has been conducted to show how grade span (Schwartz et al., 2011) or transition (Malaspina & Rimm-Kaufman, 2008) impact student academic achievement. Schwartz et al. (2011) described transitions as articulation points across school settings at which time students will move from one school to another. Many times grade configuration of schools was a specific structural design element requiring students to move from one school to another at a certain grade level (Clark et al., 2013; Schwartz et al., 2011). Clark et al. (2013) noted, “an optimal configuration for adolescent education has yet to be identified” (p. 1).

Research on transition indicates a trend of negative findings for students needing to transition from one school to another (Abella, 2005; Alspaugh, 1998; Arcia, 2007; George, 2005; Greene & Ollendick, 1993; Malaspina & Rimm-Kaufman, 2008; Rockoff & Lockwood, 2010b; Yecke, 2006; Zanobini & Usai, 2002). According to Zanobini and Usai (2002), a decline in students’ grade point averages following a school transition may be explained by the higher level of learning required by teachers. Factors making transition to middle school more difficult included self-esteem, self-concept, and motivation. Greene and Ollendick (1993) found nearly two-thirds of targeted students experienced a marked decrease in grade point average from fifth to sixth grade when transitioning to middle school, suggesting elementary behavior as a predictor. Malaspina and Rimm-Kaufman (2008) stated school transition points may have constituted an additional stressor and were especially more problematic for students at risk due to socio-economic factors. This often resulted in discipline problems, causing students to fall back further academically. In a study by Arcia (2007), it was confirmed "that sixth- and seventh-grade students in middle schools, regardless of associated factors, had substantially higher percentage suspensions than sixth and seventh graders in elementary/K-8 schools" (p. 467), and attributed this to the mere fact that they were in middle schools. When compared to students in the same grade levels in middle schools, students in K-8 settings had lower suspension rates (Abella, 2005) and fewer behavior problems (Yecke, 2006). Poncelet and Metis (2004) found when dealing with the psychological, biological, and social changes associated with adolescence that a decline in achievement and self-esteem occurred when coupled with the added stressor of changing school settings.

Educators recognize times of school transition can be difficult on students and consider strategies to affect a positive transition (NASSP, 2006). To minimize the negative impact of transition on student achievement, Alspaugh (1998) and Schafer (2010) recommended a minimum number of school-to-school transitions for students, preferably one between elementary and high school. Alspaugh (1998) noted that schools with two transition periods for students reported higher dropout rates than schools with one transition and reported findings which supported that "the instability and adjustments required of students in school transitions were associated with education outcomes" (p. 25). Abella (2005) found K-8 students performed better academically than middle school students in the Miami-Dade area in south Florida with higher attendance rates and lower suspension rates.

Using data from New York City public schools from 1996 to 2002, eighth graders attending K-8 settings showed greater gains on standardized achievement tests in reading and mathematics than eighth-grade students attending K-5 and 6-8 settings (Schwartz et al., 2011). In the same empirical study, low income students in K-8 settings performed better on eighth-grade achievement gains in reading and mathematics than eighth graders in other configurations requiring students' change or transition. In an analysis of third through eighth grade achievement data from 1999 through 2008, New York City sixth graders scored lower on reading and mathematics tests after transitioning to middle schools (6-8) than students continuing in K-8 schools (Rockoff & Lockwood, 2010). Furthermore, the effects persisted through eighth grade and indicated there were greater academic losses for those who transitioned at sixth grade than those who transitioned at seventh.

In a similar study, Texas public school sixth graders in K-8 settings performed better in reading for five consecutive years than those in 6-8 school settings (Clark et al., 2013). Clark et al. (2013) obtained the same results in mathematics in four of the five years examined. Schafer (2010) found grade span configuration in Florida schools had an impact on student achievement of early adolescents with results that revealed higher achievement in reading and mathematics in schools with elementary configurations (i.e., PK-6 and PK-8) than middle schools with sixth through eighth grade (i.e., 6-8). Schwartz et al. (2011) concluded more frequent school changes resulted in lower student performance for eighth graders. Like Alspaugh (1998), Schafer (2010) recommended creating grade level groupings that hold students for as long as possible in an elementary configuration, including K-8, thus minimizing the number of transitions.

Although the review of existing research showed there has been a trend in academic decline following transition, Barber and Olsen (2004) found that students increased academically during a transition year from fifth to sixth grade. These outcomes were based on student perception, however, without including any standardized test results. In another study using self-reported data (not standardized tests), no differences were found in achievement following transition to middle school (Whitley, Lupart, & Beran, 2007). Malaspina and Rimm-Kaufman (2008) suggested the additional stressor of school transitions for students at risk due to socio-economic factors may have contributed to discipline problems and students falling further behind academically.

Socio-economic Status

Socio-economic status (SES) in this study was determined by the school free and reduced lunch rates established in the National School Lunch Act. The school free and reduced lunch rate is the percentage of the school population qualifying for the program established by the National School Lunch Act which provided free and reduced-price lunches to students from economically disadvantages families as determined by family income levels (FDOE, 2010a, 2015j). Children from families with incomes at or below 130% of the poverty level (i.e., $30,615 for a family of four during the 2013-2014 fiscal year) qualify for the free lunch program, and children from families with incomes above 130% and below 185% of the poverty level (i.e., $45,568) qualify for the reduced lunch program and pay no more than 40 cents for a meal

(United States Department of Agriculture, 2013). Students in either of these categories were considered low SES in this study.

The National Assessment of Educational Progress [NAEP], (2015a) is the national assessment of students in the United States in academic achievement in mathematics, reading, and other subject areas, sampling fourth-, eighth-, and twelfth-grade students across the nation and reporting the results at the national and state levels. NAEP (2015a) has periodically conducted assessments using common sets of tests to provide a common measure of student academic progress over time. In 2013, national results indicated low SES students performed at a lower rate of proficiency in reading and mathematics than students not participating in the free and reduced lunch program. The same pattern was repeated for low SES students within the state of Florida when reporting results at the state level.

Concerning the degree to which socio-economic status forecasts student achievement, the National Association of School Boards of Education (2009) reported, “the gap between students from rich and poor families on measures of educational attainment is much more pronounced in the United States than in other high-performing nations around the world” (p. 1). A study of over 2,500 large urban school districts in the mid-western United States was conducted to explore academic achievement between 1997 and 2000, revealing trends of consistently lower scores for students in programs for free and reduced lunch status, English Learners, and exceptional student education as compared in four consecutive years to students not receiving those supports (Shin et al., 2013). Shin et al. further indicated the negative effects for students from low socio-economic households had increasing negative impacts over time with the learning gaps widening.

Research on student achievement indicated a trend of negative findings for low socio-economic students as compared to high socio-economic students, with socio-economic status being measured by participation in the free and reduced lunch program (Abedi, 2002; Crane, Huang, & Barrat, 2011; Schwartz et al., 2011; Shin et al., 2013; Singh, 2013). Schwartz et al. conducted an empirical longitudinal study in the New York City public school district. They found that low income students performed better in reading and mathematics on standardized state assessments in eighth grade, having attended an elementary K-8 school, than other grade span configurations involving an earlier transition in the middle school years prior to eighth grade. The results of a longitudinal study in Hawaii revealed a negative impact of socio-economic status on student reading achievement, persisting through fifth and eighth grades (Singh, 2013). A longitudinal study in North Carolina indicated lower mathematics achievement for students with lower socio-economic status as compared to their peers not qualifying for free and reduced lunch programs (Stevens, Schulte, Elliot, Nese, & Tindal, 2015).

Included in a series of technical briefs published by the Regional Educational Laboratories were the results of a longitudinal study of Arizona public schools utilizing state assessments. In this study, with participation in free and reduced lunch program determining designation as a Title I school, non-Title I subgroups consistently achieved higher scores than Title I subgroups (Crane et al., 2011). In 2002, Abedi researched achievement results in four sites across the United States and found that students not participating in the free and reduced lunch program had higher achievement scores in reading, writing, mathematics, and science than those students who participated in the free and reduced lunch program. This achievement trend was further supported by Krashen and Brown (2012) who found in three independent studies that, despite the trend for EL students to perform lower in achievement than non-EL peers, the higher socio-economic English Learner (EL) students performed consistently higher than their low socio-economic non-EL peers in mathematics and matched achievement in reading measures.

English Learner

The United States Department of Education (2015) has defined the English Learner (EL) as a student who is the minority in national origin and limited in English proficiency. According to the 2015 Florida Department of Education website, Florida's EL population ranked third in size in the nation with over 265,000 students who speak over 300 different languages, the majority of whom speak Spanish. EL students, whether born in the United States or not, have native language other than English, come from a home in which a language other than English is spoken as the primary language, or demonstrate sufficient difficulty relevant to learning in a classroom taught in English (FDOE, 2015b).

Using data from the National Assessment of Educational Progress (NAEP), Uro and Barrio (2013) compared a subgroup of numerous states' proficiency scores in reading and mathematics between 2005 and 2011 finding achievement gaps between EL and non-EL student performance scores similar to the national results on the same measures. Across fourth- and eighth-grade samples, EL students did not perform as well as their non-EL peers on the NAEP assessments in reading and mathematics. In 2013, the percentage of EL students proficient in reading and mathematics was lower in fourth and eighth grades than for non-EL peers (NAEP, 2015c). Similar trends have been found in various state level assessments on which EL students scored lower than their non-EL peers in reading and mathematics (Abedi, 2002; Crane et al., 2011; O'Conner, Abedi, & Tung, 2012a, 2012b, 2012c, 2012d).

In exploring the development of a nationally representative sample of EL students in kindergarten through eighth grade, the EL students who acquired English later in their elementary school years scored lower than their non-EL peers in reading and mathematics (Halle, Hair, Wandner, McNamara, & Chien, 2012). Additionally, the EL students who acquired English proficiency during the spring of first grade had lower scores than their non-EL peers in first-grade reading and mathematics measures but managed to grow at the same rate over time in reading and mathematics, maintaining that achievement gap over time. The EL students who acquired English proficiency in kindergarten scored at the same rate of growth over time as their non-EL peers in reading and had a faster rate of growth over time in mathematics, often surpassing their non-EL peers (Halle et al., 2011).

In a series of technical briefs published by Regional Educational Laboratories (REL), reviews of public school EL student performance data revealed a pattern of achievement gaps between the EL and non-EL peers in reading and mathematics in Arizona, Delaware, District of Columbia, Maryland, and Pennsylvania in each of the years of the study, 2007 through 2009 (Crane et al., 2011; O’Conner et al., 2012a, 2012b, 2012c, 2012d). In these studies, EL scores increased over time in reading and mathematics for all grades, and the achievement gaps were consistently smaller in elementary grade levels than in middle grade levels. Exceptions occurred with third-grade reading and mathematics achievement in the District of Columbia and Pennsylvania, with EL students performing higher than their non-EL peers in the years studied (O’Conner et al., 2012b, 2012d). The EL achievement gap was narrower for mathematics than reading for all grades studied in Pennsylvania, with higher mathematic scores for EL students in third, fourth, and eighth grades in the District of Columbia (O'Conner et al., 2012b, 2012d) as well as in fourth grade in Arizona (Crane et al., 2011).

Some researchers suggested results of EL achievement may be partially explained by language background (Abedi, 2002; Halle et al., 2005). Martiniello (2008) specifically focused on the idea of linguistic complexity creating challenges which impact student understanding of word problems in mathematics and, consequently, mathematics achievement scores for EL students. Based on scores for four sites across the United States, Abedi (2002) revealed achievement gaps between EL and non-EL peers, noting a consistent finding of greater gaps occurring with tests of reading and writing which required greater linguistic demands than tests of mathematics and science. Like the REL studies, Abedi (2002) reported greater gaps in reading and writing with smaller gaps in mathematics and science, which in some cases were non-existent. Results of the analysis indicated language factors as having the greatest impact on achievement results, more so than socio-economic status or parent education factors (Abedi, 2002). As part of the REL studies, Parker, O'Dwyer, and Irwin (2014) found no patterns between EL and non-EL peers in a New England school district in reading and mathematics proficiency but revealed consistent findings of EL students in exceptional student education scoring lower than other EL students on the same achievement measures.

Exceptional Student Education

Exceptional student education (ESE) is the instructional program provided to children with disabilities who need specifically designed programs and related services to progress in school and prepare for life after school (FDOE, 2011). The National Center for Education Statistics (NCES, 2015b) described ESE as serving students with disabilities and needing special services because of those impairments (e.g., hearing impairment, intellectual disability, specific learning disability). ESE students ages 3 to 21 eligible for services in United States public schools comprised approximately 13% (or 6.4 million) of all public school children in the nation in 2013 (NCES, 2015) and were students who may have needed specially designed instruction to meet their instructional goals (NAEP, 2015b).

The National Assessment of Educational Progress (NAEP, 2015a) periodically conducts assessments using common sets of tests to provide a common measure of student academic progress over time. Results have revealed a trend of many ESE students performing near the bottom of the achievement distribution, possibly disproportionately influencing state scores. In 2013, NAEP (2015c) reported consistently lower achievement scores for ESE students in mathematics and reading at each of the fourth and eighth grades as compared to their non-disabled peers. Researchers have found similar trends of poorer test performance for ESE students (Beaton, 2004; Schulte & Stevens, 2015; Shin et al, 2013; Singh, 2011; Stevens et al., 2015). Shin et al., utilizing data from a large mid-western, urban school district in the United States, found students who received ESE services had lower achievement scores in reading and mathematics than their non-ESE peers each year from fourth to seventh grade. Another longitudinal study in North Carolina demonstrated ESE students showing growth at each grade, third through seventh; yet year to year growth decreased over time, and ESE students consistently scored lower than general education students even when the higher performing gifted students were removed from the analysis (Stevens et al., 2015).

In the same North Carolina study, Stevens et al. (2015) measured ESE students by group, all of which performed lower in mathematics than the general education students and demonstrated a pattern within those ESE subgroups. Students with speech-language impairment consistently performed the highest among the ESE subgroups followed with little variation by hearing impaired, autism, specific learning disabled, other health impairment, emotionally disturbed, and mild intellectual disabilities, respectively. The ESE subgroup of students with mild intellectual disabilities not only consistently performed lower than all other subgroups but also had the largest decrease in growth rate over the years. Using the same mathematics assessment data set, Schulte and Stevens (2015) focused on ESE students who entered, exited, or remained in ESE services during the study period from third to seventh grade and noted each ESE subgroup showed lower academic achievement in mathematics than their peers without disabilities, including students who had exited ESE. Additionally, all subgroups showed slower growth rates over the time of the study.

In 2013 Singh explored reading achievement in Hawaii in a longitudinal study controlling for third grade performance, ESE, English Learner (EL), and socioeconomic status (SES) in the analysis of results at fifth, eighth, and tenth grades. The results indicated a negative impact of ESE and SES persisting to high school and a negative impact of EL within elementary years. Interestingly, Singh concluded that both ESE and early reading competence had the greatest impacts and lasting effects on reading achievement, with EL and SES becoming less significant in later grades.

Summary

School transitions and their impact on student academic achievement remain a concern of educators with little educational research to support policy and decision making (Alspaugh, 1998; Clark et al., 2013; Greene & Ollendick, 1993; Malaspina & Rimm-Kaufman, 2008; Pardini, 2002; Rockoff & Lockwood, 2010; Rubenstein et al., 2009; Schwartz et al., 2011). Educational policy makers at the federal, state, and local levels have enacted decisions which ultimately impact educational activities at the district and school levels (Guthrie, 2003). Available research indicated a trend of negative impact of school transition year on student academic achievement, with lower achievement occurring for students making a school transition during the middle school years (Abella, 2005; Alspaugh, 1998; Clark et al., 2013; George, 2005; Greene & Olendick, 1993; Rockoff & Lockwood, 2010: Schafer, 2010; Schwartz et al., 2011). Additionally, exploration of the effects of socio-economic status, English Learners, and exceptional student education on national and state level achievement measures has consistently demonstrated lower test scores for these populations as compared to students who do not have these characteristics (Shin et al., 2013; Singh, 2013). An awareness of this information should inform educational policy making (Clark et al., 2013; Hess, 2008).

Policy makers have been known to make decisions regarding school design based on budgetary reasons or something other than the likely impact on student achievement (DeJong & Craig, 2002; NASSP, 2006; Rubenstein et al., 2009; Schwartz et al., 2011). Indeed, policy makers would benefit from educational research to inform decision making when developing programs and regulations (Clark et al., 2013; Galey, 2015; Hess, 2008; Orland, 2015; McAdams, 2012; NASSP, 2006; Usdan, 2010). Informed educational policy making should include research on the effect on academic achievement during school transition year to ensure decisions are made in the best interest of students.

CHAPTER 3
METHODOLOGY

Introduction

The purpose of this study was to explore the difference in student achievement for sixth graders who transition to a new school structure and for sixth graders not transitioning to a new school at sixth grade, ultimately providing data to educational policy makers and adding to the body of knowledge on the grade level configuration as part of school design that contributes the most to student achievement in sixth grade. Mean developmental scale scores and learning gains in reading and mathematics as measured by the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 were compared for students with a school transition during middle school and those without a transition. The methodology utilized to test the research questions are described in this chapter which contains the research questions, population, instrumentation, data collection, and data analysis followed by a summary.

Research Questions

The following research questions guiding this study were addressed to determine differences in student reading and mathematics achievement for sixth graders based on school transition year.

1. Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-

economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

2. Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

Population

The accessible population of this study were students enrolled in sixth grade throughout the public school districts within the state of Florida who took the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 reading and mathematics assessments. Most students enrolled in the grade levels which were tested participated in the administration of FCAT 2.0, including those in Exceptional Student Education (ESE) and English Learner (EL) programs (FDOE, 2014f). The sample for this study was selected from Florida public schools which met the following criteria: (a) had sixth grade 2014 FCAT 2.0 scores in reading and mathematics reported for 10 or more students, (b) had learning gains reported for reading and mathematics, (c) had sixth-grade membership enrollment in 2014, and (d) had a grade combination containing sixth grade as identified by the assigned school grade code in the Florida Master School Identification (MSID) file (FDOE, 2014c). The data were sorted into two groups of schools: one group of sixth graders transitioning to a new school grade combination at sixth grade and another group of sixth graders not transitioning to a new school at sixth grade. This resulted in a sample of 927 schools including 562 with a school transition at sixth grade and 365 with no transition at sixth grade. Data for this study were gathered utilizing the 2014 FCAT 2.0 Reading Assessment and 2014 FCAT 2.0 Mathematics Assessment, criterion-referenced tests assessing student achievement of the Next Generation Sunshine State Standards (FDOE, 2015d).

Instrumentation

Data for this study were gathered using the Florida Comprehensive Achievement Test (FCAT) 2.0 Reading Assessment and FCAT 2.0 Mathematics Assessment. The Bureau of K-12 Assessment oversaw the development, administration, scoring, and reporting of results for the FCAT 2.0 program with services provided by Florida Department of Education (FDOE) staff and contracted vendors (FDOE, 2015g). FCAT 2.0 are criterion-referenced tests accessing student achievement of the Next Generation Sunshine State Standards (NGSSS) in mathematics, reading, science, and writing administered to Florida students beginning in 2011 and each year through 2014 (FDOE, 2015d).

The 2014 FCAT 2.0 for sixth-grade reading was administered in two sessions totaling 140 minutes over two days. It was comprised of 50 to 55 multiple-choice items, 6 to 10 of which were experimental items intended for field testing and not scored. There were 200 to 1,100 words per passage on the sixth-grade assessment with an average of 700 words per passage. A total of 50% was literary text, which provides inspiration or entertainment (e.g., fiction, nonfiction, poetry, or drama), and 50% was informational text "used to solve problems, raise questions, provide information, or present new ideas” (FDOE, ca. 2013, p. 4). According to FDOE (ca. 2013):

> Proposed reading passages are reviewed by Florida educators for quality and grade-level appropriateness. Criteria for this review can be found in the *FCAT 2.0 Reading Test Item Specifications*. A review is also conducted by a committee of Florida citizens to ensure that the passages are free of bias and cultural insensitivity. (p. 3)

Concerning the cognitive demand inherent in each test item, the reading test items included: (a) 15 to 25% low complexity requiring recall and recognition; (b) 50 to 70% moderate complexity items involving flexible thinking and informational reasoning or problem solving; and (c) 15 to 25% high complexity, eliciting analysis and abstract reasoning. The FCAT 2.0 Reading Assessment was comprised of 15 to 25% vocabulary, 25 to 35% reading application, 25 to 35% literary analysis of fiction and nonfiction, and 15 to 25% information text and research process (FDOE, ca. 2013).

The 2014 FCAT 2.0 for sixth-grade mathematics was administered in two sessions totaling 140 minutes in the same day and comprised of 35 to 40 multiple-choice and 10 to 15 gridded-response items, totaling 50 to 55, 6 to 10 of which were experimental items intended for field testing and not scored. Concerning the cognitive demand inherent in each test item, the mathematics test items included: (a) 10 to 20% low complexity requiring recall and recognition; (b) 60 to 80% moderate complexity items involving flexible thinking and informational reasoning or problem solving; and (c) 10 to 20% high complexity eliciting analysis and abstract reasoning. The FCAT 2.0 Mathematics Assessment was comprised of 40% fractions, ratios, proportional relationships and statistics, 40% expressions and equations, and 20% geometry and measurement (FDOE, ca. 2013).

Reliability is the consistency of results from a test, or the expectation that a similar score would be achieved by a student who takes an equivalent version of the same measurement (FDOE, 2014a). The approach for estimating reliability of test scores for FCAT 2.0 was internal consistency reliability estimation which used a single administration to estimate test score reliability. FDOE reported the conditional standard error of measurement and coefficient alpha reliability measure indicated the 2014 FCAT 2.0 assessments to be reliable. Cronbach's alpha coefficients were .911 for reading and .932 for mathematics (FDOE, 2014b).

Validity is the determination if the test measures what it purports to measure or the verification of evidence to support inferences from assessment results (FDOE, 2014a). FCAT 2.0 assessments were constructed to have strong content validity though the efforts of FDOE, the content vendor, and educator committees specifically assigned to the task of ensuring assessments were content-valid. Evidence was documented that the test measured the content standards and benchmarks. FDOE reported the vast majority of items included on the test display good model fit, and scree plots were evidence that items on FCAT 2.0 measured a single dimension. Confirmatory Factor Analysis was conducted on FCAT 2.0, and the comparative fit index indicated a close fit, with values equal to or greater than 0.95 signifying the tests for each content area measured a single dimension. Specific to sixth-grade 2014 FCAT 2.0, the comparative fit index for mathematics was 0.965 and for reading was 0.987. An item-level analysis revealed that for all items on sixth-grade 2014 FCAT 2.0 assessments for each reading and mathematics presented point-biserial correlations of .030 or above, indicative that the items discriminated between high-achieving and low-achieving students appropriately.

Scoring results for reading and mathematics FCAT 2.0 were reported for all students as Developmental Scale Scores (DSS) and Achievement Levels as established by the State Board of Education in December 2011. A scale score provided one overall score for the entire test, and a DSS allowed for comparison from grade to grade. For Grade 6, reading DSS ranged from 167 to 283, and mathematics DSS ranged from 170 to 284. All students were included in reporting school performance in reading and mathematics. Achievement Levels reflected student understanding of the curriculum and were reported for reading and mathematics as Level 1 through Level 5, with Level 3 or higher representing a passing score (FDOE, 2014d).

Learning gains on FCAT 2.0 reading and mathematics were determined by comparing each individual student's prior year test score to the current year test score and demonstrating one of the following occurrences: (a) improving one or more achievement levels; (b) maintaining a proficient achievement level of 3 or higher; or (c) demonstrating more than one year's growth when remaining in achievement level 1 or 2 for both years as defined vertical scale score, scoring two points or one point respectively beyond a year's expected growth. In this instance for sixth grade, a learning gain was earned in reading when a student gained 9 points in Level 1 or 8 points in Level 2 and in mathematics when a student gained 10 points in Level 1 or 9 points in Level 2. Schools then earned one point for each percentage of students in the total school population who made learning gains. Learning gains for mathematics and reading were reported separately. When growth was 33% greater than the minimum increase for a year's expected growth, the learning gain was weighted at 1.1 point for each qualifying student (FDOE, 2014d). Thus percentages of students making learning gains in reading and mathematics were reported for each school.

Data Collection

This study employed a causal-comparative, quantitative methodology of data collection and analysis. The researcher analyzed school scores for reading and mathematics results on the 2014 FCAT 2.0 assessments to explore the difference in achievement for students with a school transition at the sixth-grade year compared to those who had no school transition at the sixth-grade year. The 2014 FCAT 2.0 reading and mathematics achievement data were available publicly on the Florida Department of Education (FDOE) website and provided data for the dependent variables, independent variable, and covariates (FDOE, 2015a). Data collected included: (a) school mean developmental scale score, (b) school percentage of students making learning gains, (c) district and school identification numbers, (d) school grade codes indicating the grade combination served, (e) school percentage of students qualifying for free and reduced lunch program, (f) school student membership totals, (g) school English Learners (EL) totals, and (h) school percentages of exceptional student education (ESE). School student membership totals and school EL totals were used to calculate the percentage of EL students per school. Table 2 indicates the data, name of report, and data source location (i.e., URL) for each variable and covariate for this study

Table 2

Variables and Covariates: Data, Report Title, and Location (URL)

Variables and Covariates	Data	Report Title	Data Source (URL)
Dependent Variables: School Mean DSS School % of LG	School Mean DSS	2014 FCAT 2.0 (by subject-Reading or Mathematics, by school, by grade level-6)	http://www.fldoe.org/accountability/assessments/k-12-student-assessment/results/2014.stml#FCAT2
	School % of LG	2013-2014 School Grades	http://schoolgrades.fldoe.org/
Independent Variable: Transition Points	District and School Identification Numbers	Florida Master School Identification (MSID) file	http://doeweb-prd.doe.state.fl.us/EDS/MasterSchoolID/
	School Grade Codes	Florida Master School Identification (MSID) file	http://doeweb-prd.doe.state.fl.us/EDS/MasterSchoolID/
Covariates: SES % FRL by school EL % by school[a] ESE % by school	SES % FRL by school	2013-2014 School Grades	http://schoolgrades.fldoe.org/
	School Student Membership Totals	School Membership by Grade, Preliminary Survey 2, 2013-14	http://fldoe.org/accountability/data-sys/edu-info-accountability-services/pk-12-public-school-data-pubs-reports/archive.stml
	School EL Totals	English Language Learners by School by Race and Gender, Preliminary Survey 2, 2013-14	http://fldoe.org/accountability/data-sys/edu-info-accountability-services/pk-12-public-school-data-pubs-reports/archive.stml
	School ESE %	Membership in Programs for Exceptional Students, Preliminary Survey 2, 2013-14	http://fldoe.org/accountability/data-sys/edu-info-accountability-services/pk-12-public-school-data-pubs-reports/archive.stml

Note. DSS = developmental scale score; % = percentage; LG= learning gain; FCAT = Florida Comprehensive Achievement Test; SES = socio-economic status; FRL = Free and Reduced Lunch Rate; EL = English Learner; ESE = exceptional student education.

[a]EL% by school was calculated from data presented in School Student Membership Totals and School EL Totals.

Data for the dependent variables of mean developmental scale score and percentage of learning gains in reading and mathematics were collected from the Florida Department of Education (FDOE, 2015a, 2015i) website as reported on the sixth-grade 2014 FCAT 2.0 Reading Assessment and 2014 FCAT 2.0 Mathematics Assessment. The 2014 FCAT 2.0 school mean developmental scale scores for reading were sorted by subject (i.e., reading), school, and grade level (i.e., 6). The 2014 FCAT 2.0 school mean developmental scale scores for mathematics were sorted by subject (i.e., mathematics), school, and grade level (i.e., 6). The school percentages of students making learning gains were located in the 2013-2014 School Grades file (FDOE, 2015j).

Data for the independent variable of school transition were determined using the Florida Master School Identification (MSID) file which included district identification numbers, school identification numbers, and school grade codes (FDOE, 2014c). Via the same location, a listing of the grade combinations assigned to each school grade code was available in the MSID Application Guidelines and analyzed to determine which grade combinations assigned to each school grade code included sixth grade, and of those codes which represented grade spans starting with sixth grade and which did not. An identifier was then assigned to distinguish between the two groups of schools, one with the school transition year at sixth grade and one with no school transition at sixth grade.

Data for the covariates of socio-economic status (SES), English Learner (EL), and exceptional student education (ESE) were also gathered from the FDOE (2015a) website. Student SES was defined by the percentage of students at each school qualifying for the free and reduced lunch program as reported in the 2013-2014 School Grades file (FDOE, 2015j). The school student membership totals representing the number of students enrolled in each school were retrieved from an archive file entitled School Membership by Grade, Preliminary Survey 2, 2013-14 (FDOE, 2015h). The school EL totals representing the number of students receiving EL services in each school were obtained from an archive file entitled English Language Learners by School by Race and Gender, Preliminary Survey 2, 2013-14 (FDOE, 2015h). The school percentages of students receiving ESE services were obtained via email communication with FDOE Education Information and Accountability Services (EIAS) staff from an archive file entitled Membership in Programs for Exceptional Students, Preliminary Survey 2, 2013-14.

These data were exported into Microsoft Excel spreadsheets, and unique school numbers were created by combining the district identification number and school identification number for each school within each file. All data were merged in Microsoft Access, matched by the combined identifier for each school, reviewed for accuracy of including all data pieces necessary to support the variables and covariates in the research questions, and exported as one data file into Microsoft Excel. Within Microsoft Excel, the school EL percentages were calculated creating a formula dividing the school student membership total by the corresponding school number of students in EL, thus producing school EL percentages to use in analyses. Next, the data were sorted by 2014 sixth-grade membership to eliminate any schools without sixth-grade membership or without a school grade code with a grade combination containing sixth grade. Subsequently, any schools with less than 10 students in the group of reported sixth-grade FCAT 2.0 assessment scores or missing developmental scale scores or percentages of learning gains in reading and mathematics were eliminated. This action produced a data set of 927 schools with sixth grade in 2014. The schools were sorted into two groups, schools transitioning at sixth grade and schools not transitioning at sixth grade, resulting in two groups of 562 and 365 respectively. These data were imported into the Statistical Package for Social Sciences (SPSS) Version 22.0 program for analysis.

This ex-post facto study utilized historical student achievement data available through the FDOE website and analyzed at the school level. No student identifiers were used. Application to the Institutional Review Board (IRB) for Human Research Protection Program at the University of Central Florida was submitted for review and approval. The IRB determined the research activity in this study was not human research as defined by regulations. A copy of the verification letter is provided in the Appendix.

Data Analysis

A multivariate analysis of covariance (MANCOVA) was used to examine if a difference existed in sixth grade reading and mathematics achievement measured by school mean developmental scale scores (DSS) and the school percentage of students making learning gains on the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on school transition year. An analysis of variance (ANOVA) is a statistical technique in psychological research which deals with differences between or among sample means and two or more independent variables simultaneously (Howell, 2007), helping to reduce uncontrolled variation (Lomax, 2007). The analysis of covariance (ANCOVA) model follows the characteristics underlying ANOVA. It incorporates into the analysis a covariate, or secondary variable, which could impact the statistical analysis (Lomax, 2007). Similarly, a MANCOVA is an analysis of variance that deals with more than one dependent variable at a time and is an extension of the principles of ANCOVA (Hair, Anderson, Tatham, & Black, 1998), treating the scores in the same analysis rather than running separate analyses on each measure.

Using MANCOVA, the analyses were controlled for the covariates of school percentages of socio-economic status (SES) as determined by free and reduced lunch rate, English Learners (EL) status, and exceptional student education (ESE) status. The dependent variables of school mean developmental scale scores and school percentage of students earning learning gains were reported as continuous variables and the independent variable of school transition year as a grouping variable: transition at sixth-grade year and no transition at sixth-grade year. The covariates were reported as continuous variables using school percentages of SES, EL, and ESE.

For statistical purposes, the following assumptions must be met when using MANCOVA (Howell, 2007; Lomax, 2007). Homogeneity of variance must be met for analysis of variance to be used appropriately, meaning each population has the same variance (Howell, 2007). Normality of the distribution around the mean of each condition applies for analysis of variance to be used appropriately (Howell, 2007). Interdependence of observations must be met for analysis of variance to be used appropriately, meaning the observations are independent of each other (Howell, 2007). Linearity must be met for analysis of covariance to be used appropriately, meaning the relationship between the covariate means and the covariates is linear, or regression is linear (Howell, 2007; Lomax, 2007). Homogeneity of regression must be met for analysis of covariance to be used appropriately, meaning the regression coefficients are equal across groups or that the slopes of the regression lines are the same for each group (Howell, 2007; Lomax, 2007).

For this study, the data were combined in Microsoft Excel spreadsheets, merged in Microsoft Access, matched by combined district and school identification numbers, and sorted to include sixth-grade membership, a school grade code with a combination containing sixth grade, and sixth-grade scores on the 2014 FCAT 2.0 assessments in reading or mathematics. The data were imported into the Statistical Package for Social Sciences (SPSS) Version 22.0 program for analysis. For the MANCOVA, the level of significance used was .05 (p = .05), and the effect size was set at .50 (d = .50).

Summary

The methodology chapter presented the purpose of the study, research questions, and population. The instrumentation was described, including the name, purpose, and composition of the instruments used as well as how the assessments were scored. The data collection procedures were presented in tabular form accompanied by an explanation of methods used to locate those data in creating the master data set for the study. The statistical techniques used in the data analyses were also detailed. Chapter 4 contains a presentation and analysis of data.

CHAPTER 4
DATA ANALYSIS RESULTS

Introduction

This study was conducted to explore the extent to which student achievement may be impacted by the transition from one school to another from fifth grade to sixth grade in Florida public schools. The study provided empirical evidence to school policy makers and school district administrators and add to the body of knowledge on grade level configuration that contributed to student achievement in sixth grade. This was achieved by examining the difference in student achievement for sixth graders after transitioning to a new school and for sixth graders remaining in an elementary structure, utilizing mean developmental scale scores and learning gains in reading and mathematics as measured by the 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 assessments. School level data were gathered representing 927 schools in the state of Florida with sixth-grade enrollment and FCAT 2.0 data. This chapter presents the results of the data analyses for the two research questions.

In this chapter, the descriptive statistics for each variable are reported followed by evaluation of assumptions and results of statistical analysis. The presentation of the findings has been organized around the two research questions: "Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?" and "Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?" Results of additional analyses and a summary conclude the chapter.

Descriptive Statistics

The population of this study included students enrolled in sixth grade throughout the public school districts within the state of Florida who took the 2014 Florida Comprehensive Assessment Test (FCAT) 2.0 Reading Assessment and those who took the 2014 FCAT 2.0 Mathematics Assessment. The criteria included having scores reported for 10 or more students, school mean developmental scale score, school percentage of students making learning gains, sixth-grade enrollment, and a grade combination containing sixth grade as identified by the assigned school grade code in the Florida Master School Identification (MSID) file. The resulting data for this study were initially comprised of 927 schools sorted into two groups resulting in 567 schools, or 60.6%, with sixth graders transitioning to a new school at sixth grade and 365 schools, or 39.4%, with sixth graders not transitioning to a new school. The frequency statistics for the independent variable of school transition are shown in Table 3.

Table 3

Statistics for Grouping Variable

Independent Variable	*N*	%
Transition at Grade 6	562	60.6
Not Transition at Grade 6	365	39.4
Total	927	100.0

The descriptive statistics for each variable were explored. The dependent variables included mean developmental scale score for reading, mean developmental scale score for mathematics, school percentage of learning gains for reading, and school percentage of learning gains for mathematics. The independent or grouping variable was school transition point, at sixth grade or not at sixth grade. The covariate variables included socio-economic status (SES) as school percentage of free and reduced lunch, English Learner (EL) status, and exceptional student education (ESE) status, each at the school level.

As shown in Table 4, the number of valid cases for each variable except EL was 927 with no missing cases. The number of valid cases for English Learner was 763, or 82.3%, with 164 missing cases, or 17.7%. This missing EL value occurred due to the original data file from Florida Department of Education (FDOE) website reporting the number of EL students per school as an asterisk for schools with 1 to 9 students identified as meeting EL status (FDOE, 2015a). The missing data were defined within the Statistical Package for Social Sciences (SPSS) Version 22.0 program and treated as missing, and statistics were based on cases with no missing values for the covariate being analyzed. Consequently, the cases with missing EL data were excluded, and the number of valid cases for each variable were updated resulting in 763 cases of schools in the state of Florida with sixth grade enrollment, FCAT 2.0 data, and school percentages for each covariate (i.e., SES, EL, and ESE).

Table 4

Summary of Valid and Missing Cases per Variable

	Valid Cases		Missing Cases		Total	
Variable	*N*	%	*N*	%	*N*	%
Reading DSS	927	100.0%	0	0.0%	927	100.0%
Mathematics DSS	927	100.0%	0	0.0%	927	100.0%
Reading LG	927	100.0%	0	0.0%	927	100.0%
Mathematics LG	927	100.0%	0	0.0%	927	100.0%
SES	927	100.0%	0	0.0%	927	100.0%
EL	763	82.3%	164	17.7%	927	100.0%
ESE	927	100.0%	0	0.0%	927	100.0%

Note. DSS = developmental scale score; LG = learning gain; SES = socio-economic status; EL = English Learner; ESE = exceptional student education.

The FCAT 2.0 reading and mathematics assessment results for sixth grade were used to gather school mean developmental scale scores (DSS) and school percentage of learning gains. These data were studied to explore if a difference in achievement occurred for students with a school transition at the sixth-grade year compared to students who had no school transition at the sixth-grade year. Tables 5 and 6 report descriptive statistics of mean percentage and standard deviation for school mean DSS and school percentage of learning gains by subject in all school districts included in this study.

Table 5

Descriptive Statistics for School Mean Developmental Scale Score (DSS)

DSS	School Transition Point	*M*	*SD*	*N*
Reading	Transition at Grade 6	224.97	8.25	486
	No transition at Grade 6	227.68	7.60	277
	Total	225.95	8.12	763
Mathematics	Transition at Grade 6	224.67	9.45	486
	No transition at Grade 6	228.48	9.21	277
	Total	226.06	9.53	763

Table 6

Descriptive Statistics for Percentage of School Learning Gains (LG)

LG	School Transition Point	*M*	*SD*	*N*
Reading	Transition at Grade 6	.67	.08	486
	No transition at Grade 6	.70	.08	277
	Total	.68	.08	763
Mathematics	Transition at Grade 6	.68	.11	486
	No transition at Grade 6	.69	.12	277
	Total	.68	.11	763

Data Analysis Results

Descriptive and inferential statistics were used to answer the two research questions. To investigate both research questions, multivariate analysis of covariance (MANCOVA) was used to simultaneously analyze the relationship among multiple combinations of variables. Using the

Statistical Package for Social Sciences (SPSS) Version 22.0 program, MANCOVA analysis was performed on the dependent variables of school mean developmental scale score (DSS) for reading and mathematics with the independent variable of school transition points while controlling for the covariates of socio-economic status (SES), English Learner (EL) status, and exceptional student education (ESE) status. A separate MANCOVA analysis was performed on the dependent variables of school percentage of learning gains for reading and mathematics with the independent variable of school transition points while controlling for the covariates of SES, EL, and ESE. Total number of 927 was reduced to 763 with the deletion of 164 cases with a missing value of EL status (N = 763). The level of significance .05 was used for each statistical analysis in this study as this is a small value typically specified to minimize the possibility of making a Type I error of concluding that two means are significantly different when in fact they are the same (Hair et al., 1998).

For this study, data were screened after importing from Microsoft Excel to SPSS to ensure accuracy, and missing data were reviewed. Cases with missing EL values were removed. Evaluation of assumptions revealed outlier cases, which are those with an extreme value on one variable or combination of variables that may distort statistics and are usually deleted (Tabachnick & Fidell, 2007). Consequently, the 19 outlier cases with particularly extreme scores for DSS or for LG were identified. Statistics were conducted with and without outlier cases to see if identified outliers were truly influencing results. The resulting descriptive statistics are shown in Tables 7 and 8.

Table 7

Descriptive Statistics for School Mean Developmental Scale Score (DSS) Excluding Outliers

DSS	School Transition Point	*M*	*SD*	*N*
Reading	Transition at Grade 6	224.82	7.89	472
	No transition at Grade 6	227.65	7.47	272
	Total	225.85	7.85	744
Mathematics	Transition at Grade 6	224.48	8.98	472
	No transition at Grade 6	228.60	8.91	272
	Total	225.99	9.16	744

Table 8

Descriptive Statistics for Percentage of School Learning Gains (LG) Excluding Outliers

LG	School Transition Point	*M*	*SD*	*N*
Reading	Transition at Grade 6	.67	.07	472
	No transition at Grade 6	.70	.08	272
	Total	.68	.07	744
Mathematics	Transition at Grade 6	.67	.10	472
	No transition at Grade 6	.70	.10	272
	Total	.68	.11	744

Evaluation of assumptions in multivariate analysis includes normality, homogeneity of variance-covariance matrices, homogeneity of regression, linearity, and multicollinearity (Tabachnick & Fidell, 2007). Using SPSS, tests of multivariate normality revealed a combination of normal distribution and variation from normal distribution, as evident on the

Shapiro-Wilk Tests of Normality statistics shown in Table 9 for the full data set including outlier cases (*N* = 763) and in Table 10 for the data set excluding the 19 outlier cases (*N* = 744).

Table 9

Shapiro-Wilk Tests of Normality Including Outlier Cases (N = 763)

DV	School Transition Point	*W*	*df*	*p*
Reading DSS	Transition at Grade 6	.992*	486	.007
	No transition at Grade 6	.992	277	.162
Mathematics DSS	Transition at Grade 6	.993*	486	.018
	No transition at Grade 6	.995	277	.503
Reading LG	Transition at Grade 6	.993*	486	.017
	No transition at Grade 6	.995	277	.534
Mathematics LG	Transition at Grade 6	.996	486	.329
	No transition at Grade 6	.957*	277	<.001

Note. DV = Dependent Variable; W = Shapiro-Wilk statistic; *df* = degrees of freedom; *p* < .05; DSS = developmental scale score; LG = learning gain.

*p < .05

Table 10

Shapiro-Wilk Tests of Normality Excluding Outlier Cases (N = 744)

DV	School Transition Point	*W*	*df*	*p*
Reading DSS	Transition at Grade 6	.993*	472	.033
	No transition at Grade 6	.992	272	.124
Mathematics DSS	Transition at Grade 6	.995	472	.089
	No transition at Grade 6	.994	272	.355
Reading LG	Transition at Grade 6	.994	472	.079
	No transition at Grade 6	.995	272	.452
Mathematics LG	Transition at Grade 6	.993*	472	.026
	No transition at Grade 6	.986*	272	.009

Note. DV = dependent variable; *W* = Shapiro-Wilk statistic; *df*=degrees of freedom; $p < .05$; DSS = developmental scale score; LG=learning gain

*$p < .05$

Tests for normality for both samples (N =763 and (N = 744) revealed that the data was normally distributed for those without transitions on reading DSS and mathematics DSS as well as for those without transitions on reading LG with significance at $p > .05$. The data significantly deviated from a normal distribution for those with transition on reading DSS as well as for those without transitions on mathematics LG with significance at $p < .05$.

There were different results for both samples including and excluding outlier cases for those with transitions on mathematics DSS, reading LG, and mathematics LG. The Shapiro-Wilk statistic revealed statistical significance in normality for those with transition on mathematics DSS when including outliers with $W_{(486)} = .993$, p =.018 < .05 and no significance when excluding outliers with $W_{(472)} = .995$, $p = .089 > .05$. The result also found statistical significance in normality for those with transition on reading LG when including outliers with $W_{(486)} = .993$, $p = .017 < .05$ and no significance when excluding outliers with $W_{(472)} = .994$, $p = .079 > .05$. The result also discovered statistical significance in normality for those with transition on mathematics LG when excluding outliers with $W_{(472)} = .993$, $p = .026 < .05$ and no significance when including outliers with $W_{(486)} = .996$, $p = .329 > .05$.

Multivariate homogeneity of variance-covariance matrices are used to test the equality of variance-covariance matrices between groups, and if sample sizes are unequal, Box's *M* test is utilized with significance at .001 (Tabachnick & Fidell, 2007). As shown in Table 11, the Box's *M* Test of Equality of Covariance Matrices was significant for the dependent variables of DSS with both data sets including and excluding outlier cases. Therefore, Pillai's Trace criterion was used to evaluate multivariate significance for reading DSS and mathematics DSS. Assumptions of multivariate homogeneity of variance-covariance of matrices were met for each dependent variable of learning gain with all cases including and excluding outliers. Therefore, Wilk's Lambda criterion was used to evaluate multivariate significance for reading LG and mathematics LG.

Table 11

Box's M *Tests of Equality of Covariance Matrices*

N	DV	Box's *M*	*F*	df_1	df_2	*p*
763	DSS	57.035	18.952	3	10657873.556	<.001
744	DSS	56.810	18.876	3	10619466.665	<.001
763	LG	12.640	4.200	3	10657873.556	.006
744	LG	11.970	3.977	3	10619466.665	.008

Note. DV = dependent variable; *F* = *F* ratio; *df* = degrees of freedom; $p < .05$; DSS = developmental scale score; LG = learning gain.

With MANCOVA statistics, linearity among all pairs of dependent variables, all pairs of covariates, and all pairings of dependent variables with covariates is assumed (Tabachnick & Fidell, 2007). With significance levels set at .05, the assumption of linearity was not met. When outliers were removed, the assumption of linearity was not met. The assumption of homogeneity of regression was not met. The statistics reported reflected the heterogeneity of the data. The assumption of multicollinearity was not met for DSS ($r^2 = .894$) and was met for learning gains ($r^2 = .630$). When outliers were removed, the assumption of multicollinearity was not met for DSS ($r^2 = .892$) and was met for learning gains ($r^2 = .630$). Statistics are shown in Table 12. There may be too much multicollinearity for DSS for each data set given the correlation was approaching .90. According to Tabachnick & Fidell (2007), variables are very highly correlated with multicollinearity of .90 and above, potentially causing problems with a correlation matrix.

Table 12

Correlations Between Variables Including and Excluding Outliers

	Including Outliers N (763)		Excluding Outliers N (744)	
Dependent Variables	r^2	p	r^2	p
Reading DSS & Math DSS	.894	<.001	.892	<.001
Reading LG & Math LG	.630	<.001	.630	<.001

Note. r^2 = Pearson correlation; $p < .05$; Math = mathematics; DSS = developmental scale score; LG = learning gain.

In each analysis, the covariates were socio-economic status (SES) as measured by school percentage of free and reduced lunch, English Learner (EL) status, and exceptional student education (ESE) status. MANCOVA analysis was conducted to examine the difference in reading and mathematics achievement as measured by mean developmental scale score (DSS) on sixth grade 2014 FCAT 2.0 assessments based on school transition points (i.e., transitioning at sixth grade to a new school and not transitioning at sixth grade to a new school). A separate MANCOVA analysis was conducted to examine the difference in reading and mathematics achievement as measured by school percentage of students making learning gains (LG) on sixth-grade 2014 FCAT 2.0 assessments based on school transition points.

Research Question 1

Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

Using the data set including outliers (*N* = 763) and the data set excluding outliers (*N* = 744), a MANCOVA was conducted to test the statistical significance between the two groups of students in the schools with transition and without transition on two dependent variables, reading DSS and mathematics DSS, controlling for three covariates of SES, EL, and ESE as the first step when answering research questions one and two. The tests were conducted using an alpha level at .05 as is the common practice for educational studies.

The multivariate tests on the sample excluding outliers (*N* = 763) revealed that there was a statistical significance in the combined dependent variables, student learning outcomes measured by reading DSS and mathematics DSS with $F_{(2, 757)} = 6.58$, $p = .001$, between the groups of students with transition and without transition after controlling for the covariates of SES, EL, and ESE, as shown in Table 13. The result discovered SES had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 757)} = 354.48$, $p < .001$. The result revealed that EL had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 757)} = 3.83$, $p = .022$. Also found from the results was that ESE had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 757)} = 25.77$, $p < .001$.

Table 13

*Multivariate Tests for Mathematics and Reading DSS (*N *= 763)*

Effect		Value	*F*	Hypothesis *df*	Error *df*	*p*	Partial η^2
Intercept	Pillai's Trace	.995	82398.29	2	757	<.001	.995
SES	Pillai's Trace	.484	354.48	2	757	<.001	.484
EL	Pillai's Trace	.010	3.83	2	757	.022	.010
ESE	Pillai's Trace	.064	25.77	2	757	<.001	.064
Transition	Pillai's Trace	.017	6.58	2	757	.001	.017

Note. F = *F* ratio; *df* = degrees of freedom; $p < .05$; Partial η^2 = partial eta squared; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

With regards to statistically significant results in multivariate tests for combined mathematics and reading DSS (*N*=763), the researcher further examined univariate test results for each main effect on the dependent variables. For reading DSS scores, the between-subjects effect was found statistically significant for difference between groups with transition and without transition with $F_{(1, 758)} = 9.87$, $p = .002$, as shown in Table 14. The mean for no transition was 2.71 points higher in reading DSS. The mean for reading DSS for students not transitioning at sixth grade was *M* = 227.68 (*SD* = 7.60, *n* = 277), and the mean for students transitioning at sixth grade was *M* = 224.97 (*SD* = 8.25, *n* = 486).

For the covariates, only EL was not significant on reading DSS, $F_{(1, 758)} = .06$, $p = .800 > .05$. The covariates SES and ESE were both statistically significant on reading DSS, with $F_{(1, 758)} = 708.67$, $p < .001$ and $F_{(1, 758)} = 47.10$, $p < .001$.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading DSS, as shown in Tables 13 and 14, the effect sizes were not significant specifically for the main effect and for SES and ESE. Therefore, interpretation of the statistical significance found in the reported tests are to be considered with caution. In other words, although the effect size values suggested a low to moderate practical significance, the statistical significance confirmed confidence that there was a difference between the groups with school transition and without school transition. The sixth graders who had no transition to a new school in sixth grade scored higher in reading as measured by developmental scale score than students who transitioned to a new school in sixth grade.

Table 14

*Between-subjects Effects for Reading and Mathematics DSS (*N *= 763)*

Source	DV	Type III *SS*	*df*	*MS*	*F*	*p*	Partial η^2
Correlated Model	Reading DSS	30079.44	4	7519.86	282.88	<.001	.599
	Math DSS	31704.11	4	7926.03	160.12	<.001	.458
Intercept	Reading DSS	4333846.75	1	4333846.75	163030.43	<.001	.995
	Math DSS	4346921.65	1	4346921.65	87815.24	<.001	.991
SES	Reading DSS	18838.72	1	18838.72	708.67	<.001	.483
	Math DSS	21078.45	1	21078.45	425.82	<.001	.360
EL	Reading DSS	1.70	1	1.70	.06	.800	<.001
	Math DSS	170.69	1	170.69	3.45	.064	.005
ESE	Reading DSS	1252.03	1	1252.03	47.10	<.001	.059
	Math DSS	879.97	1	879.97	17.78	<.001	.023
Transition	Reading DSS	262.36	1	262.36	9.87	.002	.013
	Math DSS	643.36	1	643.36	13.00	<.001	.017
Error	Reading DSS	20149.96	758	26.58			
	Math DSS	37521.58	758	49.50			
Total	Reading DSS	39005399.00	763				
	Math DSS	39059200.00	763				
Corrected Total	Reading DSS	50229.39	762				
	Math DSS	69225.69	762				

Note. DV = dependent variable; *SS* = sum of squares; *df* = degrees of freedom; *M*S = mean square; *F* = *F* ratio; *p* < .05); Partial η^2 = partial eta squared; DSS = developmental scale score; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

The multivariate tests on the sample excluding (*N* = 744) outliers also revealed that there was a statistical significance in the combined dependent variables, student learning outcomes measured by mathematics DSS and reading DSS with $F_{(2, 738)} = 10.44$, $p < .001$, between the groups of students with transition and without transition after controlling for the covariates of SES, EL, and ESE, as shown in Table 16. The result also discovered SES had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 738)} = 359.05$, $p < .001$. The result revealed that EL had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 738)} = 3.63$, $p = 027$ and that ESE had significant influence on learning outcomes as measured by reading DSS and mathematics DSS with $F_{(2, 738)} = 23.93$, $p < .001$.

Table 15

*Multivariate Tests for Reading and Mathematics DSS (*N *= 744)*

Effect		Value	*F*	Hypothesis *df*	Error *df*	*p*	Partial η^2
Intercept	Pillai's Trace	.996	85604.86	2	738	<.001	.996
SES	Pillai's Trace	.493	359.05	2	738	<.001	.493
EL	Pillai's Trace	.010	3.63	2	738	.027	.010
ESE	Pillai's Trace	.061	23.93	2	738	<.001	.061
Transition	Pillai's Trace	.028	10.44	2	738	<.001	.028

Note. *F* = *F* ratio; *df* = degrees of freedom; $p < .05$; Partial η^2 = partial eta squared; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

Regarding the significant results in multivariate tests for DSS (*N*=744), the researcher further examined univariate test results for each main effect on the dependent variables. For reading DSS scores there was a significant difference between groups with transition and without transition with $F_{(1, 739)} = 14.66$, $p < .001$, as shown in Table 16. The mean for no transition was 2.83 points higher in reading DSS. The mean for reading DSS for students not transitioning at sixth grade was *M* = 227.65 (*SD* = 7.47, *n* = 272), and the mean for students transitioning at sixth grade was *M* = 224.82 (*SD* = 7.89, *n* = 472).

For the covariates, only EL was not significant on reading DSS, $F_{(1, 739)} = .04$, $p = .835 > .05$. The covariates SES and ESE were both statistically significant on reading DSS, with $F_{(1, 739)} = 719.04$, $p < .001$ and $F_{(1, 739)} = 45.13$, $p < .001$.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading DSS, as shown in Tables 15 and 16, the effect sizes were not significant specifically for the main effect and ESE and SES. Therefore, interpretation of the statistical significance found in the reported tests must occur with caution. To clarify, although the effect size values suggested a low to moderate practical significance, the statistical significance indicated confidence in the difference between the groups of students with transitions and without transitions. Specifically, sixth graders not transitioning to a new school in sixth grade scored higher in reading learning outcomes as measured by developmental scale score than students transitioning to a new school in sixth grade.

Table 16

*Between-subjects Effects for Reading and Mathematics DSS (*N *= 744)*

Source	DV	Type III *SS*	*df*	*MS*	*F*	*p*	Partial η^2
Correlated Model	Reading DSS	28053.83	4	7013.46	291.46	<.001	.612
	Math DSS	30197.31	4	7549.33	173.26	<.001	.484
Intercept	Reading DSS	4107562.64	1	4107562.64	170700.93	<.001	.996
	Math DSS	4125648.08	1	4125648.08	94683.28	<.001	.992
SES	Reading DSS	17302.22	1	17302.22	719.04	<.001	.493
	Math DSS	19525.24	1	19525.24	448.10	<.001	.377
EL	Reading DSS	1.04	1	1.04	.04	.835	<.001
	Math DSS	98.11	1	98.11	2.25	.134	.003
ESE	Reading DSS	1085.97	1	1085.97	45.13	<.001	.058
	Math DSS	784.05	1	784.05	17.99	<.001	.024
Transition	Reading DSS	352.68	1	352.68	14.66	<.001	.019
	Math DSS	904.05	1	904.05	20.75	<.001	.027
Error	Reading DSS	17782.50	739	24.06			
	Math DSS	32200.55	739	43.57			
Total	Reading DSS	37997580.00	744				
	Math DSS	38058422.00	744				
Corrected Total	Reading DSS	45836.323	743				
	Math DSS	62397.87	743				

Note. DV = dependent variable; *SS* = sum of squares; *df* = degrees of freedom; *MS* = mean square; *F* = *F* ratio; $p < .05$); Partial η^2 = partial eta squared; DSS = developmental scale score; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

Using the data set including outliers (*N* = 763) and the data set excluding outliers (*N* = 744), a MANCOVA was conducted to test the statistical significance between the two groups of students in the schools with transition and without transition on two dependent variables, reading

LG and mathematics LG, controlling for three covariates of SES, EL, and ESE. The tests were conducted using an alpha level at .05 as is the common practice for educational studies.

The multivariate tests on the sample including outliers (*N* = 763) revealed that there was a statistical significance in the combined dependent variables, student learning outcomes measured by mathematics LG and reading LG with $F_{(2, 757)} = 8.69$, $p < .001$, between the groups of students with transition and without transition after controlling for the covariates of SES, EL, and ESE, as shown in Table 17. The result revealed SES had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 757)} = 120.93$, $p < .001$. The result also discovered that EL had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 757)} =22.88$ $p < .001$ and that ESE had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 757)} = 31.93$, $p < .001$.

Table 17

*Multivariate Tests for Reading and Mathematics LG (*N *= 763)*

	Effect	Value	*F*	Hypothesis *df*	Error *df*	*p*	Partial η^2
Intercept	Wilk’s Lambda	.062	5756.19	2	757	<.001	.938
SES	Wilk’s Lambda	.758	120.93	2	757	<.001	.242
EL	Wilk’s Lambda	.943	22.88	2	757	<.001	.057
ESE	Wilk’s Lambda	.922	31.93	2	757	<.001	.078
Transition	Wilk’s Lambda	.978	8.69	2	757	<.001	.022

Note. *F* = *F* ratio; *df* = degrees of freedom; $p < .05$; Partial η^2 = partial eta squared; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

When significant results in multivariate tests for LG (*N*=763) were found, the researcher further examined univariate test results for each main effect on the dependent variables. For reading LG scores there was a significant difference between groups with transition and without transition with $F_{(1, 758)}$ =10.49, p = .001, as shown in Table 19. The mean for no transition was .03 points higher in reading LG. The mean for reading LG for students not transitioning at sixth grade was M = .70 (SD = .08, n = 277), and the mean for students transitioning at sixth grade was M = .67 (SD = .08, n = 486). For the covariates, SES, EL, and ESE were statistically significant on reading LG with $F_{(1, 758)}$ = 232.26, $p < .001$, $F_{(1, 758)}$ = 43.85, $p < .001$, and $F_{(1, 758)}$ = 49.52, $p < .001$ respectively.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading LG, as shown Tables 17 and 18, the effect sizes were not significant specifically for the main effect and for SES, EL, and ESE. Therefore, interpretation of the statistical significance found in the reported tests must occur with caution regarding practical significance. Nonetheless, sixth-grade students not transitioning to a new school in sixth grade scored higher in reading as measured by school learning gains than sixth-grade students transitioning to a new school in sixth grade.

Table 18

*Between-subjects Effects for Reading and Mathematics LG (*N *= 763)*

Source	DV	Type III *SS*	*df*	*MS*	*F*	*p*	Partial η^2
Correlated Model	Reading LG	1.638	4	.409	97.92	<.001	.341
	Math LG	1.579	4	.395	36.97	<.001	.163
Intercept	Reading LG	47.881	1	47.881	11451.72	<.001	.938
	Math LG	48.061	1	48.061	4501.40	<.001	.856
SES	Reading LG	.971	1	.971	232.26	<.001	.235
	Math LG	1.325	1	1.325	124.06	<.001	.141
EL	Reading LG	.183	1	.183	43.85	<.001	.055
	Math LG	.069	1	.069	6.46	.011	.008
ESE	Reading LG	.207	1	.207	49.52	<.001	.061
	Math LG	.007	1	.007	.62	.431	.001
Transition	Reading LG	.044	1	.044	10.49	.001	.014
	Math LG	.001	1	.001	.13	.715	<.001
Error	Reading LG	3.169	758	.004			
	Math LG	8.093	758	.011			
Total	Reading LG	357.700	763				
	Math LG	364.553	763				
Corrected Total	Reading LG	4.807	762				
	Math LG	9.672	762				

Note. DV = dependent variable; *SS* = sum of squares; *df* = degrees of freedom; *M*S = mean square; *F* = *F* ratio; *p* < .05); Partial η^2 = partial eta squared; LG = developmental scale score; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

The multivariate tests on the sample excluding outliers (*N* = 744) revealed that there was a statistical significance in the combined dependent variables, student learning outcomes measured by mathematics LG and reading LG with $F_{(2, 738)} = 9.33$, $p < .001$, between the groups of students with transition and without transition after controlling for the covariates of SES, EL, and ESE, as shown in Table 19. The result also discovered SES had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 738)} = 127.27$, $p < .001$. The result revealed that EL had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 738)} = 26.40$, $p < .001$. Also found from the result was that ESE had significant influence on learning outcomes as measured by reading LG and mathematics LG with $F_{(2, 738)} = 34.02$, $p < .001$.

Table 19

*Multivariate Tests for Reading and Mathematics LG (*N *= 744)*

Effect		Value	*F*	Hypothesis *df*	Error *df*	*p*	Partial η^2
Intercept	Wilk's Lambda	.055	6381.39	2	738	<.001	.945
SES	Wilk's Lambda	.744	127.27	2	738	<.001	.256
EL	Wilk's Lambda	.933	26.40	2	738	<.001	.067
ESE	Wilk's Lambda	.916	34.02	2	738	<.001	.084
Transition	Wilk's Lambda	.975	9.33	2	738	<.001	.025

Note. *F* = *F* ratio; *df* = degrees of freedom; $p < .05$; Partial η^2 = partial eta squared; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

When significant results in multivariate tests for LG (*N*=744) were found, the researcher further examined univariate test results for each main effect on the dependent variables. There was a significant difference between groups with transition and without transition in reading LG scores with $F_{(1, 739)} = 16.23$, $p < .001$, as shown in Table 20. The mean for no transition was .03 points higher in reading LG. The mean for reading LG for students not transitioning at sixth grade was *M* = .70 (*SD* = .08, *n* = 272), and the mean for students transitioning at sixth grade was *M* = .67 (*SD* = .07, *n* = 472). For the covariates, SES, EL, and ESE were statistically significant on reading LG with $F_{(1, 739)} = 237.76$, $p < .001$, $F_{(1, 739)} = 50.26$, $p < .001$, and $F_{(1, 739)} = 55.87$, $p < .001$ respectively.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading LG, as shown in Tables 19 and 20, the effect sizes were not significant specifically for the main effect and for SES, EL, and SES, and interpretation of the statistical significance found are to be considered with caution. In other words, although the effect size values suggested a low practical significance, there was indeed a difference between the groups of sixth graders with transition and without transition. Sixth-grade students not transitioning to a new school in sixth grade consistently scored higher in reading as measured by school learning gains.

Table 20

*Between-subjects Effects for Reading and Mathematics LG (*N *= 744)*

Source	DV	Type III *SS*	*df*	*MS*	*F*	*p*	Partial η^2
Corrected Model	Reading LG	1.491	4	.373	104.51	<.001	.361
	Math LG	1.585	4	.396	44.23	<.001	.193
Intercept	Reading LG	44.978	1	44.978	12611.74	<.001	.945
	Math LG	46.087	1	46.087	5142.54	<.001	.874
SES	Reading LG	.848	1	.848	237.76	<.001	.243
	Math LG	1.254	1	1.254	139.90	<.001	.159
EL	Reading LG	.179	1	.179	50.26	<.001	.064
	Math LG	.055	1	.055	6.15	.013	.008
ESE	Reading LG	.199	1	.199	55.87	<.001	.070
	Math LG	.011	1	.011	1.22	.270	.002
Transition	Reading LG	.058	1	.058	16.23	<.001	.021
	Math LG	.007	1	.007	.75	.388	.001
Error	Reading LG	2.636	739	.004			
	Math LG	6.623	739	.009			
Total	Reading LG	348.179	744				
	Math LG	354.673	744				
Corrected Total	Reading LG	4.126	743				
	Math LG	8.208	743				

Note. DV = dependent variable; *SS* = sum of squares; *df* = degrees of freedom; *MS* = mean square; *F* = *F* ratio; $p < .05$); Partial η^2 = partial eta squared; LG = developmental scale score; SES = socioeconomic status; EL = English language; ESE = exceptional student education.

Research Question 2

Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

With the significant results in multivariate tests for DSS including outliers (*N*=763) as presented in the answer to the first research question, the researcher further examined univariate test results for the main effect on the dependent variable of mathematics DSS scores. There was a significant difference between groups with transition and without transition in mathematics DSS, $F_{(1, 758)} = 13.00$, $p < .001$, as shown in Table 14. The mean for no transition was 3.81 points higher in mathematics DSS. The mean for mathematics DSS for students not transitioning at sixth grade was $M = 228.48$ ($SD = 9.21$, $n = 277$), and the mean for students transitioning at sixth grade was $M = 224.67$ ($SD = 9.45$, $n = 486$). For the covariates, only EL was not significant on mathematics DSS, $F_{(1, 758)} = 3.45$, $p = .064 > .05$. The covariates SES and ESE were both statistically significant on mathematics DSS, with $F_{(1, 758)} = 425.82$, $p < .001$ and $F_{(1, 758)} = 17.78$, $p < .001$.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading DSS, as shown in Tables 13 and 14, the effect sizes were not significant specifically for the main effect and for SES and ESE. Therefore, interpretation of the statistical significance found in the reported tests are to be considered with caution. In other words, although the effect size values suggested a low practical significance, the statistical significance confidently confirmed that there was a difference between the groups with transition and without transition to a new school. Sixth graders with no transition to a new school in sixth grade scored higher in mathematics as measured by developmental scale score than students transitioning to a new school in sixth grade.

With the significant results in multivariate tests for DSS excluding outliers (*N*=744) as presented in the answer to the first research question, the researcher further examined univariate test results for the main effect on the dependent variable of mathematics DSS scores. There was a significant difference between groups with transition and without transition in mathematics DSS, $F_{(1, 739)} = 20.75$, $p < .001$, as shown in Table 16. The mean for no transition was 4.12 points higher in mathematics DSS. The mean for mathematics DSS for students not transitioning at sixth grade was $M = 228.60$ ($SD = 8.91$, $n = 272$), and the mean for students transitioning at sixth grade was $M = 224.48$ ($SD = 8.98$, $n = 472$). For the covariates, only EL was not significant on mathematics DSS, $F_{(1, 739)} = 2.25$, $p = .134 > .05$. The covariates SES and ESE were both statistically significant on mathematics DSS, with $F_{(1, 739)} = 448.10$, $p < .001$ and $F_{(1, 739)} = 17.99$, $p < .001$.

Please note that although there were statistically significant differences in the main effects and covariance influences on student learning outcomes as measured by mathematics and reading DSS, as shown in Tables 15 and 16, the effect sizes were not significant specifically for the main effect and ESE and SES, and interpretation of the statistical significance found must occur with caution. To clarify, although the effect size values suggested a low practical significance, the statistical significance confidently established that there was a difference between the groups with transition and without transition to a new school in sixth grade. Sixth-grade students who did not transition to a new school in sixth grade scored higher on mathematics as measured by developmental scale score than sixth-grade students who transitioned to a new school in sixth grade.

With the significant results in multivariate tests for LG including outliers (*N*=763) presented in the answers to the first research question, the researcher further examined univariate test results for the main effect on the dependent variable of mathematics LG scores. The difference between groups with transition and without transition in mathematics LG was not significant with $F_{(1, 758)} = .13$, $p = .715 > .05$, as shown in Table 18. The mean for no transition was .01 points higher in mathematics LG. The mean for mathematics LG for students not transitioning at sixth grade was $M = .69$ ($SD = .12$, $n = 277$), and the mean for students transitioning at sixth grade was $M = .68$ ($SD = .11$, $n = 486$). For the covariates, only ESE was not significant on mathematics LG with $F_{(1, 758)} = .62$, $p = .431 > .05$. The covariates SES and EL were statistically significant on mathematics LG, with $F_{(1, 758)} = 124.06$, $p < .001$ and $F_{(1, 758)} = 6.46$, $p = .011$.

Please note that although there were statistically significant differences in the covariance influences on student learning outcomes as measured by mathematics and reading LG, as shown Tables 17 and 18, the effect sizes were not significant specifically for SES and EL which suggested a low practical significance. Therefore, interpretation of the statistical significance found in the reported tests are to be considered with caution.

With the significant results in multivariate tests for LG excluding outliers (*N*=744) presented in the answer to the first research question, the researcher further examined univariate test results for the main effect on the dependent variable of mathematics LG scores. The difference between groups with transition and without transition in mathematics LG was not significant with $F_{(1, 739)} = .75$, $p = .388 > .05$, as shown in Table 20. The mean for no transition was .03 points higher in mathematics LG. The mean for mathematics LG for students not transitioning at sixth grade was $M = .70$ ($SD = .10$, $n = 272$), and the mean for students transitioning at sixth grade was $M = .67$ ($SD = .10$, $n = 472$). For the covariates, only ESE was not significant on mathematics LG with $F_{(1, 739)} = 1.22$, $p = .270 > .05$. The covariates SES and EL were statistically significant on mathematics LG, with $F_{(1, 739)} = 139.90$, $p < .001$ and $F_{(1, 739)} = 6.15$, $p = .013$.

Please note that although there were statistically significant differences in the covariance influences on student learning outcomes as measured by mathematics and reading LG, as shown in Tables 19 and 20, the effect sizes were not significant specifically for SES and EL. The effect size values suggested a low practical significance. Therefore, interpretation of the statistical significance found in the reported tests are to occur with caution.

Summary

In this chapter, the procedures used in the analyses and statistical tests were briefly reviewed. This was followed by a frequency analysis of the population, analysis of missing data, descriptive statistics for the included cases, and screening of data for accuracy and removal of outlier cases. Analysis of tests for normality, homogeneity of variance-covariance, homogeneity of regression, linearity, and multicollinearity were presented. The two research questions were presented with results of MANCOVA statistics for both types of achievement measures, developmental scale scores (DSS) and percentage of learning gains (LG), detailed for data sets including and excluding outlier cases.

Results from the multivariate analysis of covariance revealed a consistent finding in both reading and mathematics of statistical significance. There was a difference in student outcomes between groups of sixth-grade students with transition and without transition to a new school at sixth grade. Sixth graders who had no transition to a new school at sixth grade scored higher on learning outcomes than those who did transition to a new school at sixth grade. There was also a consistent trend of each of the covariates of socio-economic status, English Learner status, and exceptional student education status having significant influence on reading and mathematics learning outcomes as measured by developmental scale score and as measured by school percentage of learning gains.

Results from the data analysis to respond to the first quantitative research question revealed a statistically significant difference in reading achievement as measured by DSS and percentage of LG based on school transition points when controlling for covariates of socio-economic status, English Learner status, and exceptional student educations status. The mean DSS was higher for the group not transitioning at sixth grade than the group transitioning at sixth grade. The mean percentage of LG was higher for the group not transitioning at sixth grade than the group transitioning at sixth grade.

Results from the data analysis to respond to the second quantitative research question revealed a statistically significant difference in mathematics achievement as measured by DSS based on school transition points when controlling for covariates of socio-economic status, English Learner status, and exceptional student educations status. The mean DSS was higher for the group not transitioning at sixth grade than the group transitioning at sixth grade. There was no difference in mathematics achievement as measured by percentage of LG based on school transition points when controlling for the covariates, although the mean percentage of LG was higher for the group not transitioning at sixth grade than the group transitioning at sixth grade with all cases including or excluding outliers.

The next chapter contains a summary and discussion of the findings for each research question. Implications for practice and recommendations for further research are also offered.

CHAPTER 5
SUMMARY, DISCUSSION, AND IMPLICATIONS

Introduction

In the preceding chapter, the analyses of data have been presented. This chapter contains a summary of the study, discussion of the findings, and implications for practice as well as recommendations for further research and a summary. The purpose of the latter sections of the chapter is to expand on the concept of school transition points in an effort to explore their impact on student achievement and potentially inform policy makers on grade level configurations that have been found to contribute the most to student achievement in sixth grade.

Summary of the Study

School transitions have often been determined based on grade configurations within a school system, and the problem addressed in this study was the extent to which student achievement may be impacted by the transition from one school to another from fifth to sixth grade in Florida public schools. The purpose was to explore the difference in student learning outcomes for sixth graders after transitioning to a new school with a grade span configuration beginning with sixth grade and for sixth graders remaining in an elementary structure without transitioning to a new school at sixth grade. The significance of this study was to provide data to school policy makers and school district administrators and add to the body of knowledge on the grade level configuration that contributed the most to student achievement in sixth grade.

The research conducted in this study was based on the theoretical framework that educational policy makers construct decisions, such as grade configuration within a school district, which ultimately impact student achievement. Review of the literature confirmed a limited number of studies on the effects of school transition on student achievement (Malaspina & Rimm-Kaufman, 2008; Rockoff & Lockwood, 2010a, Rubenstein et al., 2009; Schwartz et al., 2011). Some findings have indicated a positive impact for students not experiencing a transition during the middle school years (Clark et al., 2005; Rockoff & Lockwood, 2010a; Schafer, 2010; Schwartz et al., 2011). Numerous authors agreed that school district decision making which impacts students would benefit from research study results and data to inform policy and program implementation (Galey, 2015; Hess, 2008; Lubienski et al., 2014; Orland, 2015; Schwartz et al., 2011).

The present study was designed to respond to the following two research questions:

1. Were there any differences in student reading achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?
2. Were there any differences in student mathematics achievement as measured by mean developmental scale score and the percentage of students making learning gains on sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 based on those with transitions versus without transitions when controlling for student socio-economic status, English Learner status, and exceptional student education status? If yes, what were the differences?

This causal-comparative designed study involved the analyses of school scores for reading and mathematics on sixth-grade 2014 FCAT 2.0 assessments to explore the difference in achievement for students with a school transition at sixth grade compared to the achievement of those students who had no school transition at sixth grade. Data were gathered via the Florida Department of Education (FDOE) website for all variables including: (a) mean developmental scale score (DSS) and the school percentage of learning gains (LG) for the dependent variables of DSS and LG for reading and mathematics; (b) district and school identification numbers and school grade codes indicating the grade combination served for the independent variable of school transition point; and (c) school percentage of students qualifying for free and reduced lunch, school student membership totals, school English Language (EL) totals, and school percentages of exceptional student education (ESE) for covariates of socio-economic status (SES), EL status, and ESE status. Using Microsoft Excel, the produced data were sorted to eliminate any schools without sixth grade or a school grade code with a grade combination containing sixth grade. Also eliminated were any schools with less than 10 students in the group of reported sixth-grade FCAT 2.0 assessment scores or missing scores for mean developmental scale scores or school percentage of learning gains in reading and mathematics. The files were merged, and data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 22.0 program.

Multivariate analysis of covariance (MANCOVA) was used to determine if a difference existed in achievement in reading or mathematics as measured by school mean developmental scale scores and school percentage of learning gains on sixth-grade FCAT 2.0 assessments. The covariates included school level socio-economic status, English Learner status, and exceptional student education status. MANCOVA analyses were performed separately on developmental scale scores and learning gains for two sets of school level data, one including and another excluding 19 identified outlier cases. There were 763 cases in one set of data with 486 in the group transitioning at sixth grade and 277 in the group not transitioning at sixth grade. When the 19 outlier cases were excluded, there were 744 cases with 477 in the group transitioning at sixth grade and 272 in the group not transitioning at sixth grade.

Discussion of the Findings

The research questions guiding this study were addressed to determine if a difference existed in student reading and mathematics achievement for sixth graders in Florida based on transitioning to a new school structure. Examination of descriptive statistics revealed 164 of the 927 identified cases with sixth-grade scores were missing English Learner (EL) data due to the state's reporting system of withholding the number of students qualifying for EL services if the number fell within 1 through 9 inclusively. Specifically, when schools had fewer than 10 students identified for EL status, the data were replaced with an asterisk. This ultimately resulted in missing data for EL status. The researcher removed cases with missing EL data resulting in 763 cases, a large enough data set necessary to perform MANCOVA analysis with far more than the 20 degrees of freedom (*df*) for error suggested to assure multivariate normality of the distribution of the means (Tabachnick & Fidell, 2007). Further examination of normality revealed 19 particularly extreme cases. Because this missing data only accounted for 2% of the total sample size, the researcher determined the outlier cases would be removed and MANCOVA analysis would be examined for both sets of data (*N* = 763, *N* = 744) to see if identified outliers were influencing results. Findings were similar for analyses with and without outlier cases.

Evaluation of assumptions in multivariate statistics requires analysis of dependent variables, covariates, and a variety of pairings of variables with one another and for each to be assumed (Tabachnick & Fidell, 2007). Although the assumption of normality was met for many variable combinations in this study, normality was not assumed for all. Assumptions of homoscedasticity and linearity were not met. Without linearity, the results may present an underestimation of actual strength of the relationship (Hair et al., 1998). Assumption of multicollinearity was not met for developmental scale scores and was met for learning gains. Removal of outlier cases produced similar results for evaluation of assumptions. The researcher proceeded with awareness of possible impact on estimation process and interpretation of results.

The use of the student learning outcomes as measured by the school percentage of learning gains may have been a potential concern in this study. Although appropriately reported as interval data as required for analysis, school learning gains were derived from a comparison of two sets of developmental scale scores for each student within the schools. Specifically, in the state of Florida a learning gain was defined as a measurement on Florida Comprehensive Achievement Test (FCAT) or FCAT 2.0 equivalent to more than one year's growth while remaining in Level 1 or 2, improving an achievement level, or maintaining a proficient level of Level 3 or higher (FDOE, 2014c). Achievement levels and the various methods of potentially earning a point for a learning gain to be applied toward the school percentage of learning gains were identified by FDOE and approved by the state board of education. Established state policy regarding particular dates of student attendance impacted which students who participated in state testing may or may not have been eligible to earn a learning gain. Essentially, not all students were included in learning gains due to attrition and the various ways learning gains were calculated in this state-created measure. The developmental scale scores used in this study, on the other hand, were raw scores derived directly from the standardized achievement test with no further calculations on those measures. Hence, the researcher conducted statistics on learning gains and developmental scale scores separately.

Using sixth-grade 2014 Florida Comprehensive Achievement Test (FCAT) 2.0 assessments, MANCOVA statistics revealed a consistent trend in both reading and mathematics achievement as measured by school mean developmental scale scores and by school percentage of learning gains based on school transition points when adjusting for covariates of socio-economic status, English Learner status, and exceptional student education status. There was a statistically significant difference in student outcomes among groups of sixth-grade students with transition and without transition to a new school at sixth grade. Sixth graders who had no transition to a new school at sixth grade consistently scored higher on learning outcomes as compared to those who did transition to a new school at sixth grade. Additionally, each covariate had significant influences on the combined student outcomes of reading and mathematics, as indicated in much of the literature, with the impact of socio-economic status having the most practical significance, even more than either English Learner status or exceptional student education status. Results were similar for both data sets, including and excluding outlier cases. Although the effect size values were minimal for the main effects and covariance influences on student learning outcomes, there was a consistent finding in both reading and mathematics of a difference in student outcomes between the two groups with transition and without transition to a new school at sixth grade revealing higher sixth grade student achievement for schools without transition.

With regard to statistically significant results in multivariate tests for combined reading and mathematics, the researcher further examined univariate test results for each main effect on reading and mathematics. For reading, results revealed a statistically significant difference in achievement as measured by reading developmental scale scores and reading learning gains among schools with and without transition when controlling for covariates of socio-economic status, English Learner status, and exceptional student education status. The mean for each sixth grade learning measure of reading developmental scale scores and reading learning gains was higher for schools without transition to a new school at the sixth grade year, indicating sixth-grade students without transition performed better on reading achievement. The covariates of socio-economic status and exceptional student education status had a significant influence on reading developmental scale scores. The covariates of socio-economic status, English Learner status, and exceptional student education status each had a significant influence on reading learning gains. On both measures, the influence of socio-economic status had the greatest impact, as indicated in much of the literature.

For mathematics, results revealed a statistically significant difference in achievement as measured by mathematics developmental scale scores among schools with and without transition when controlling for covariates of socio-economic status, English Learner status, and exceptional student education status. The mean for each sixth grade learning measure of mathematics developmental scale scores and mathematics learning gains was higher for schools without transition to a new school at the sixth grade year. Although the mean score for mathematics learning gains was higher for schools without transition at sixth grade, the difference was not significant. Like reading, the covariates of socio-economic status and exceptional student education status had a significant influence on mathematics developmental scale scores. The covariates of socio-economic status and English Learner status had a significant influence on mathematics learning gains. On both measures of mathematics developmental scale score and mathematics learning gains, the influence of socio-economic status had the greatest impact. The findings in this study indicated sixth-grade students without transition performed better on mathematics achievement as measured by developmental scale score as compared to sixth-grade students who transitioned at sixth grade.

Of the three covariates, the influence of socio-economic status had the greatest impact on reading and mathematics, combined and individually. The impact of exceptional student education status had an influence on each reading and mathematics developmental scale scores and on reading learning gains. The effect of English Learner status on each reading and mathematics had no significant influence individually on either reading or mathematics developmental scale scores and minimal influence on each reading and mathematics learning gains. With consistent findings of the impact on sixth-grade achievement following transition to a new school at sixth grade, students who qualify for programs for socio-economic status, English Learner status or exceptional student education status may be further impacted in academic achievement. Although this is moderately evident for students who qualify for programs for socio-economic status and apparent for students meeting exceptional student education status, the influence of English Learner may have less of an impact on student achievement in reading and mathematics when transitioning to a new school setting between fifth and sixth grades.

The significant findings in this study in reading and mathematics were consistent with those of previous researchers (Clark et al., 2013; Schafer, 2010; Schwartz et al., 2011) who indicated that students showed higher achievement in school settings with no or with fewer transitions during the middle grade years. In these studies, researchers examined the impact of transitions on student achievement and found greater gains in reading and mathematics for students staying in elementary settings longer, including K-8 and K-6 grade level configurations. Clark et al. described better performance in reading for five consecutive years and better performance in mathematics for four of five consecutive years for sixth graders in K-8 settings in Texas public schools. Schafer reported higher achievement in reading and mathematics as measured by 2009 FCAT assessments for Florida sixth-grade students remaining in elementary settings. Schwartz et al. reported greater academic losses for students transitioning at sixth grade in New York City public schools and proposed that greater academic losses occurred due to more frequent school changes. These findings imply that it is important to consider minimizing school transitions when designing policy regarding grade configuration and resulting school transitions. An awareness of this information should inform educational policy making (Clark et al., 2013; Hess, 2008). This study contributed to the knowledge base concerning the potential impact of grade configurations and school transitions on student achievement.

Implications for Practice

School transitions have often been determined based on grade configurations within a school system, an easily tracked reform effort to improve student achievement which lies within the control of school districts (Rubenstein et al., 2009; Schwartz et al., 2011). However, research results on grade configuration have been unclear as to which structure is most appropriate, and decisions concerning groupings of students have often been adopted for many reasons besides academic achievement of students (DeJong & Craig, 2002), sometimes strictly for budgetary reasons (NASSP, 2006).

The findings of this study have implications for individuals interested in the educational system. Student achievement strengths related to the lack of school transition were identified. There was a significant difference in reading and mathematics achievement as measured on the sixth-grade 2014 FCAT 2.0 assessments based on school transition points when adjusting for socio-economic status, English learner status, and exceptional student education status. The schools with no transition at the sixth-grade year had a higher mean developmental scale score in reading and mathematics as well as a higher percentage of student learning gains in reading than schools with transition for students at the sixth-grade year. Educational policy makers interested in restructuring schools should find evidence linking school grade configurations to student achievement very informative. Parents searching for a school system for their children would be interested in the consistency of higher reading and mathematics achievement outcomes for students not transitioning to a new school at sixth grade.

For educational administrators, this study offers insight into the significance of the impact transitioning from one school to another has on the performance of sixth graders in reading and mathematics following transition to another school. It will provide administrators and superintendents an idea of which configurations may negatively influence student achievement. In particular, the findings of this study support students remaining in an elementary setting with fewer transitions during the middle grades to most benefit reading achievement and perhaps mathematics. In analyzing data for both research questions, school transition points were identified as significant in regard to student achievement, especially in reading.

This study will also be useful to persons interested in educational policy development and research on school transitions. Researchers have indicated that the impact of transition on student achievement can have negative results at the transition year (Alspaugh, 1998; Rockoff & Lockwood, 2010b; Schafer, 2010; Schwartz et al., 2011). These researchers focused on student achievement in reading and mathematics, noting the decreased performance or academic losses at times of school transitions. There have been indications that the findings of lower achievement in reading and mathematics for students who transitioned during the middle grades persisted through eighth grade (Schwartz et al., 2011; Rockoff & Lockwood, 2010b). This study was conducted to examine school performance on standardized state measures in Florida. Findings signified that schools with no transition had higher sixth-grade mean scores in reading and mathematics. The information contained in this study indicated that the grade configuration and point of school transition could impact student outcomes. What really matters is how policy makers address the decision making regarding grade configuration and school transition points that could potentially impact student achievement. For example, the data suggest that not transitioning at sixth grade may result in higher student achievement. School boards, superintendents, and school district administrators who remain focused on student achievement could consider such findings when restructuring school grade configurations and building new sites. This information should have a direct effect on the way school boards and districts reorganize schools.

Recommendations for Further Research

The goal of this study was to see if a difference existed in reading and mathematics achievement based on school transition points. School level data were gathered from sixth-grade 2014 FCAT 2.0 assessments. The data were examined, and many significant findings resulted. However, although significant, the findings had some limitations. One limitation was that the findings explained only Florida sixth-grade achievement and, therefore, may not generalize to other states. Another limitation was the design of the study focused on school transition points, resulting in uneven groups of schools transitioning at sixth grade and not transitioning at sixth grade, and included the whole population without sampling. As this was causal-comparative research, the researcher sought to find relationships among the variables after the event had occurred to determine if the independent variable affected the dependent variable, thus limiting the ability to take a random sample of the population. Additionally, by using only school level sixth-grade data, the findings could not explain lasting effects of transition, such as whether or not students recouped their educational losses before entering high school. Finally, with each statistically significant finding in this study, the effect size remained in the modest range between .010 and .493. A small effect is real but difficult to detect, and a general rule when planning analysis is to either look for a large effect size or use a large sample (Howell, 2007).

Based on the assumptions of this study, suggestions are made for further research. According to Hair et al. (1998), normality tests are quite sensitive in large samples. To accommodate for non-normal distribution, the researcher suggests working with a sample of the total number of cases to assure normality of the sampling distribution or considering data transformations prior to conducting multivariate tests. Data transformation may also be considered as a remedy for heteroscedastic. A solution for the detection of a nonlinear relationship is to create new variables to represent nonlinear portions of the relationship or to transform one or more variables to achieve linearity (Hair et al., 1998). The researcher suggests consideration of using a stepdown analysis of the dependent variables within the MANCOVA procedure of SPSS to overcome highly correlated dependent variables and hence strengthen the power of the analysis. Another avenue of future research could include examination of nested data in which the analysis takes into account the likely higher correlations of schools nested within the same districts.

Future research exploring the impact of transition could include student level achievement data, data from a sampling of states across the nation, or data from matched K-8 to K-5 and 6-8 schools with similar demographics. For example, if in this study had student level data been utilized, the results would have provided additional descriptive statistics or the prospective for matched cases during the analysis. There would also have been the potential for longitudinal data analysis to reveal how students perform in consecutive years before, during, and after the school transition year or years. Sampling data from a national population would allow for generalization of the results beyond the state of Florida. Matching similar K-8 schools to K-5 and 6-8 schools would allow the opportunity for further study of K-8 characteristics including but not limited to when and where established, types of neighborhoods, mobility rates, and parents' desires to keep children at schools close to home.

Perhaps future researchers can further isolate the independent variable of school transition point, including how transition at other times in the school career besides sixth grade impacts student achievement or conducting further research on the transition between middle school and high school. Additional variables to explore in relation to the impact of school transition could include: class size, ethnicity, gender, gifted status, mobility, stability, school finances, or Title I status. Further research could compare sixth-grade student achievement among groups of schools with self-contained classrooms and with departmentalizing in intermediate Grades 3, 4, and 5 prior to transitioning to a new school in sixth grade. It may also be interesting to examine the impact of school transition related to areas other than grades, such as student confidence, social development, or relationships with peers.

In this study, it has been shown that school grade configuration and control of the resulting school transition year does have an impact on student achievement. Although there may be many other factors that affect student achievement, the data indicate that the school transition point is worth considering when developing policy impacting grade configuration. Policy makers would benefit from reviewing the results of this and other studies on transition effects on student achievement, especially as they influence the year the school transition actually occurs.

Summary

The findings of this study expanded the body of knowledge and work of previous researchers in the area of school transition points in relation to student achievement. This investigation revealed a consistent trend in both reading and mathematics that sixth-grade scores were consistently higher for groups of schools not transitioning at the sixth-grade year as compared to groups of school transitioning at the sixth-grade year with statistical significance on reading developmental scale scores, reading learning gains, and mathematics developmental scale scores. In this study, analysis was adjusted for the covariates of socio-economic status, English Learner status, and exceptional student education status. Specifically, the result did show that transitioning from one school to another does have a significant impact on sixth graders in reading and mathematics achievement.

The literature indicated that although there are few studies examining the impact of school transitions and grade configuration on student achievement, those with available empirical findings revealed higher performance in reading and mathematics in school settings with no or fewer transitions during the middle grade years, including sixth grade. In the policy-making literature, a need for informed decision making based on findings of empirical studies was noted. There continues to be a need to expand the knowledge base on school transitions and their impact on student achievement. In addition to providing more empirical evidence to explore this issue, the present investigation revealed that educational policy makers need to review the available findings in preparation to make informed decisions. Superintendents, with the support of school district administrators, need to research appropriate data and information to present to school board members for their review so as to arrive at informed decisions when enacting educational policy potentially impacting student achievement

APPENDIX
INSTITUTIONAL REVIEW BOARD (IRB) LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

From : **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To : **Julie C. Roseboom**

Date : **July 16, 2015**

Dear Researcher:

On 07/16/2015 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review:	Not Human Research Determination
Project Title:	A Comparison of Sixth Grade Student Achievement in Reading and Mathematics at School Transition Year
Investigator:	Julie C Roseboom
IRB ID:	SBE-15-11425
Funding Agency:	
Grant Title:	
Research ID:	N/A

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 07/16/2015 02:06:32 PM EDT

IRB manager

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