

THE IMPACT OF TEACHER RETENTION ON STUDENT ACHIEVEMENT IN
HIGH SCHOOL MATHEMATICS

by

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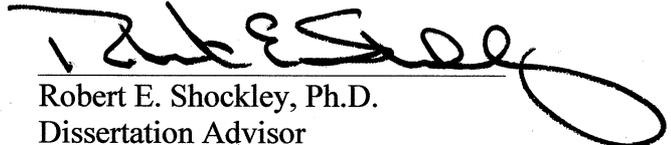
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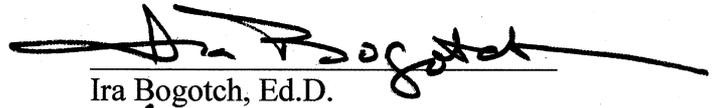
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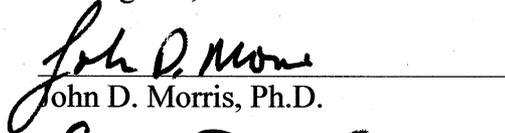
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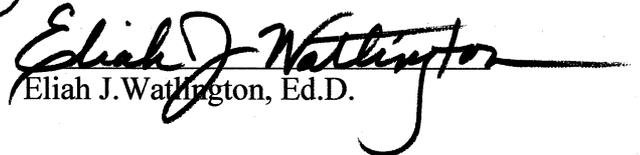
This dissertation was prepared under the direction of the candidate's dissertation advisor, Dr. Robert Shockley, Department of Educational Leadership, and has been approved by the members of his supervisory committee. It was submitted to the faculty of the College of Education and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

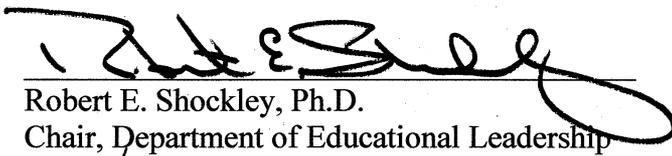
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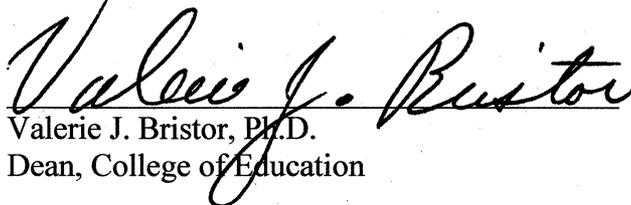

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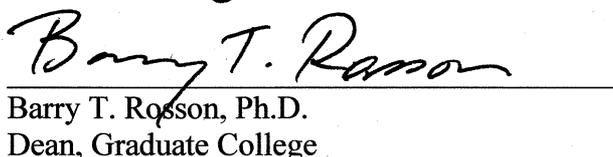

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VITA

Francisco J. Rodriguez, son of Dr. Leonardo Rodriguez and Maria de los Angeles (Martinez) Rodriguez, was born December 8, 1970, in Miami, Florida. He graduated from La Salle High School in 1988. He received his Bachelor of Science degree in Social Science Education from Florida State University in May of 1993. In August of 1993, he began his education career teaching in the Social Studies Department at Boca Raton Community High School. He entered Graduate School at Florida Atlantic University in August, 1997, and graduated with a Master in Education with a major in Curriculum and Instruction in May, 2000. In 1998 he served as a Project Coordinator for the Region V Area Center for Educational Enhancement at Florida Atlantic University and entered Graduate School once again in January, 2001 in pursuit of a Doctoral degree. He became a school administrator in 2002 at Forest Hill Community High School and remained there until obtaining a principalship in July of 2008 at West Gate Elementary School. In July of 2009 he became the Principal at Olympic Heights Community High School in Boca Raton, Florida. He married his wife Cheryl in 1995 and they have two sons Javier Alexander Rodriguez born in November, 2004 and Tyler Joseph Rodriguez born in September, 2008.

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This paper may not have been accomplished if not for the constant support and encouragement of my wife Cheryl. She believed in me and provided me with the time necessary to complete this dissertation. I cannot thank her or my two children Javier and Tyler enough for their sacrifices during this process.

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ABSTRACT

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The purpose of this study was to examine the relationship between teacher retention and student achievement as measured by the Florida Comprehensive Achievement Test (FCAT) Math Developmental Scale Scores (DSS). This study examined the impact of teacher transience on high school student math scores over a three-year period and considered the effect of teacher years of experience in relation to transience and achievement. For the purposes of this study teachers were identified into the following four classifications: Stayers, Within District Movers, Cross District Movers, or Beginning teachers. The findings indicated that students of beginning teachers scored significantly lower on the ninth grade math test than students of teachers in the other three classifications. At the 10th grade level there was no significant difference among the teacher transience groups.

Based upon the findings, the following conclusion resulted from the study. Since an analysis of the data indicated that teacher retention is likely to improve ninth grade

student score gains on the FCAT Math assessment, it is recommended that High School administrators carefully review the teaching assignments of ninth grade math teachers, especially in this era of high stakes testing and accountability.

DEDICATION

This manuscript is dedicated to my mother Maria de los Angeles (Martinez) Rodriguez who passed away in 1977. Although our time together was short, she has been a moral compass for me throughout my life. Her memory has guided me and helped me to pursue my dreams. She has been the impetus for higher achievements in my life including those that at times may have seemed impossible.

THE IMPACT OF TEACHER RETENTION ON STUDENT ACHIEVEMENT IN
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CHAPTER 1

INTRODUCTION

Education today is faced with a greater demand for high quality teachers and higher student achievement. Due to high rates of teacher attrition and teacher retirements from the baby-boomer era, the challenge of staffing our nation's classrooms with highly effective teachers is onerous. Recruitment and retention efforts by educational systems are attempting to soften the impact of teacher attrition and teacher retirements on academic achievement in the classrooms. This study examined the relationship between teacher retention and student achievement while considering teacher years of experience as a predictor of student achievement.

Purpose of the Study

The purpose of this study was to examine the relationship between teacher retention and student achievement as measured by the Florida Comprehensive Achievement Test (FCAT) Math Developmental Scale Scores (DSS). This study contributed to the existing body of literature on teacher retention and student achievement. As evidenced by school personnel records, the increased retention of teachers generally leads to a staff with a greater number of years of experience. This led to a secondary consideration, the relationship between years of overall teaching experience and student performance.

Statement of the Problem

Schools with low teacher retention have a highly transient staff. The problem this study investigated is the impact of teacher transience on student achievement and whether or not teacher longevity in the field impacts student achievement. There is a limited body of research available that considers the relationship between teacher retention and student achievement. A multitude of research is available on the topics of student achievement, and/or teacher retention, but very few research studies examine the relationship between the two. This limited availability of research provides an incomplete picture of the impact of teacher retention on student achievement.

In the School District considered in this study, student achievement, as measured by student performance on the FCAT Math assessment was evaluated. The literature suggests that at schools with a high teacher turnover rate and limited years of teacher teaching experience, student performance tends to be lower than at schools where this condition does not exist. For example, low teacher retention leads to low levels of student performance (Falch & Ronning, 2005). Zhang, Fashola, Le Floch, Aladjem, and Uekawa (2006) found that teacher turnover rate was a predictor for student academic achievement. The large urban school district considered in this study demonstrates the characteristics of low teacher retention and low student achievement at certain schools.

The current era of high stakes testing creates a scenario in which school districts and individual schools are continuously concerned with raising student achievement, which is increasingly being defined as student scores on standardized tests. The National Commission on Teaching and America's Future stated in its report "No Dream Denied: A Pledge to America's Children," that the most serious consequence of high teacher

turnover is that it erodes student achievement (Hunt Jr. & Carroll, 2003). For example, students in classrooms of teachers with less than two or three years of teaching experience demonstrate lower student achievement (Hunt Jr. & Carroll, 2003). Sanders' and Rivers's (1996) research on the impact of teachers on student achievement indicates a positive relationship between teacher effectiveness and student test score performance. According to Fetler (2001) teacher effectiveness as measured by student achievement can be correlated to individual longevity in the field, and therefore issues of teacher retention should be considered.

Rivkin, Hanushek, and Kain (2005) found that mathematics teachers in their first three years in the profession performed significantly less effectively than their more experienced colleagues. To investigate this further, the secondary consideration in this study focused on years of teaching experience and student achievement. Data was analyzed to determine if a correlation exists between these two factors. In the years ahead, the decline in the reserve pool of experienced teachers will lead to the hiring of more entry level teachers (Grissmer & Kirby, 1997), therefore, creating the potentiality for lower student achievement. A frequent loss of educators and a lack of continuity that interrupts academic progress is detrimental for student academic performance (Fine, 2002).

Background of the Problem

A review of the literature indicated that schools with the lowest teacher retention rates have the lowest levels of student performance; as evidenced by Plecki, Elfers, Loeb, Zahir, & Knapp (2005). The growing body of research on teacher retention indicates that student achievement will suffer when students endure a continuous flow of beginning

teachers (Sanders & Rivers, 1996). This is due to the positive relationship that exists between years of teaching experience and student learning; as a result this is of great concern for schools having students of lower socio-economic levels, since many of them are often staffed with larger numbers of inexperienced teachers. A continuous turnover of teachers will lead to low student achievement and ongoing staffing problems (Dolton & Newson, 2003). There are a few studies that find a correlation between student achievement and teacher retention (Falch & Ronning, 2005; Hanushek, Kain, & Rivkin, 2003). Most of the research over the years on factors that affect student learning have supported the belief that teachers can and do make a difference (Wright, Horn, & Sanders, 1997). Fetler (2001) points to the experience of teachers as a predictor of student achievement. He suggests that more experienced and more highly educated teachers tend to produce higher achieving students.

Dolton and Newson (2003) looked at elementary schools in England and found that low levels of teacher retention have detrimental effects on student progress and achievement. Guin (2004), in another study of elementary schools, also found significant correlations between teacher retention rates and achievement of students. Plecki et al. (2005) found that teacher attrition is negatively associated with reading and math scores on standardized tests.

Contemporary educational theory holds that one of the pivotal causes of inadequate school performance is the inability of schools to adequately staff classrooms with experienced teachers (Ingersoll, 2001). In “Special Report: The Cost of underpaying Texas teachers” a study utilizing educational information on the state of Texas demonstrates that students taught by teachers with more than five years experience

consistently scored better on state exams (Strayhorn, 2006). The National Center for Educational Statistics (NCES) points out that as enrollment in public schools is projected to increase by 4% the demand for public school teachers will rapidly increase through 2014. Further, “Nearly 50% of teachers leave the profession within five years of entry and even higher attrition rates exist in more disadvantaged schools” (Heller as cited in Watkins, 2005, p. 83). Many of these teachers cite a lack of administrative support, difficult working conditions, challenging teaching assignments, poor student discipline, low salaries, negative school cultures and climates, a lack of a professional learning organizations and collaboration among school personnel as primary reasons for their attrition.

Today, with increasing accountability as measured by “student achievement”, district/school personnel must evaluate the issue of teacher retention and associated impacts upon student test scores on standardized tests. Fine’s (2002) qualitative study on the topic reveals that high levels of teacher turnover can produce a cumulative erosion of academic trust, engagement, and student learning. Strayhorn (2006) found a positive correlation between student test scores and the presence of a stable and qualified teaching staff. This study examined the relationship of teacher retention and corresponding impacts upon student performance on the 9th and 10th grade math sections of the FCAT.

Conceptual Framework

There are three primary underlying concepts that serve to form the conceptual framework of this study; 1) teacher retention, 2) student achievement, and the 3) impact of teacher retention on student achievement.

First, teacher retention is becoming increasingly important to schools and school districts as the pressures of accountability, high stakes testing, and federal and state mandates impact the profession. Approximately one-third of new teachers entering the profession will be gone by their third year and nearly half by the fifth year. Upcoming retirements and the staffing problems previously mentioned may lead to increased teacher shortages in the years to come. Although the statistics regarding professional transience are high, the important consideration for this paper is the impact on student learning. In an era of high stakes testing, student achievement is becoming a primary factor in teacher and school accountability.

Student Achievement in the area of Math, the second concept forming the conceptual framework of this study is typically measured by a longitudinal battery of standardized tests. The quantitative data resulting from an analysis of student scores on these standardized tests determines whether or not teachers are raising student's academic achievement. The third issue of investigation in this study is the impact of teacher retention on student achievement in the 9th and 10th grade FCAT Math. Consequently, this investigation explored the relationship between teacher retention and student achievement. These three concepts that form the conceptual framework of this study are further examined in the literature review in Chapter 2.

Research Questions

This study focused on 4 questions regarding the relationship between teacher retention and student achievement. Due to a secondary consideration in this study, one research question focused on the relationship between years of teaching experience and

student achievement. The specific questions addressed in this study completed in a large urban school district are as follows:

1. Is there a correlation between teacher transience group and the student score gain on the FCAT Math DSS from 8th to 10th grade?
2. Is there a difference in student score gain from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience?
3. Is there a difference in student score gain from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience?
4. Do years of teaching experience moderate the relationship between transience and student score gain on the FCAT Math DSS?

Null Hypotheses

1. There is no correlation between teacher transience group and the student score gain on the FCAT Math Developmental Scale Score from 8th to 10th grade.
2. There is no difference in gain score from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience.
3. There is no difference in gain score from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience.
4. Years of teaching experience does not moderate the relationship between transience and student score gain on the FCAT Math DSS.

Significance of the Study

The issue of teacher turnover and its consequences for students, schools, and districts are of significant concern. This study was undertaken to determine if teacher retention has an impact on student FCAT Math DSS. Depending upon the results of the

study, institutions may be able to plan staffing in the most appropriate manner to meet the needs of its student body. Institutions may also design staffing policies to maintain and/or attract teachers of appropriate longevity categories. Results from this study provide schools and school districts research-based evidence of the impact of teacher transience on student achievement. Schools and districts will be able to re-evaluate current practice and policies regarding the retention of teachers.

The results of this study can make a significant contribution to the existing scholarly research on teacher retention and its impact on student achievement. Recently, there has been research on the monetary costs to school districts when they have to replace teachers; this study can contribute to the field by measuring the cost to student learning. Currently there is a limited body of research on the relationship between teacher retention and student achievement. This study can add to this body of literature and may serve to inform future studies.

Definition of Terms

Specific terminology used throughout this study that must be clarified. For the purposes of this study, the following definitions are accepted:

Florida Comprehensive Assessment Test (FCAT): State examination of Florida used to determine student mastery of the Sunshine State Standards. The assessment is given to students from grade 3 through 11 in reading, writing, math, and science.

Developmental Scale Scores (DSS): Used to report scores and measure student achievement from year to year on the FCAT state assessment in Florida.

Teacher Transience Classifications: Classification given to teachers based on their mobility during a specific year. Classifications are as follows – Stayers, Within-District Movers, Cross-District Movers, and Beginning Teacher.

Stayers: Teachers employed in a math classroom teaching role at a school during year 1 who are employed in a math classroom teaching role in year 2 at the same school.

Within-District Movers: Teachers employed in a math classroom teaching role at a school during year 1 who are employed in a math classroom teaching role at a different school in the same district in year 2 (Barnes, Crowe, & Schaefer, 2007).

Cross-District Movers: Teachers employed in a math classroom teaching role at a school during year 1 who are employed in a math classroom teaching role at a different school and a different district during year 2 (Barnes et al., 2007).

Beginning Teacher: Teachers employed as math classroom teachers that are in their first year in the profession.

Teacher Transience Classification Permutations: Combinations of teacher transience classifications over a two-year period. The following are the 16 possible permutations based on the teacher transience classifications:

Table 1

Teacher Transience Classification Permutations

Year 1 (2006) Classification	Year 2 (2007) Classification	Permutation
Stayer	Stayer	Stayer/Stayer
Stayer	Within-District Mover	Stayer/Within-District Mover
Stayer	Cross-District Mover	Stayer/Cross District Mover
Stayer	Beginner	Stayer/Beginner
Within-District Mover	Stayer	Within-District Mover/Stayer
Within-District Mover	Within-District Mover	Within-District Mover/Within-District Mover
Within-District Mover	Cross-District Mover	Within-District Mover/Cross-District Mover
Within-District Mover	Beginner	Within-District Mover/Beginner
Cross-District Mover	Stayer	Cross-District Mover/ Stayer
Cross-District Mover	Within-District Mover	Cross-District Mover/ Within-District Mover
Cross-District Mover	Cross-District Mover	Cross-District Mover/ Cross-District Mover
Cross-District Mover	Beginner	Cross-District Mover/ Beginner
Beginner	Stayer	Beginner/ Stayer
Beginner	Within-District Mover	Beginner/ Within-District Mover
Beginner	Cross-District Mover	Beginner/ Cross-District Mover
Beginner	Beginner	Beginner/ Beginner

Teacher Transience Group Classifications: The 16 permutations mentioned above were categorized into the following three transience groups: No Transience, Partial Transience, and Full Transience.

Table 2

Teacher Transience Group Classifications

No Transience	Partial Transience	Full Transience
Stayer/Stayer	Stayer/Within-District Mover	Within-District Mover/Within-District Mover
	Stayer/Cross District Mover	Within-District Mover/Cross-District Mover
	Within-District Mover/Stayer	Cross-District Mover/Within-District Mover
	Stayer/Beginner	Cross-District Mover/Cross-District Mover
	Beginner/Stayer	Within-District Mover/Beginner
	Cross-District Mover/Stayer	Cross-District Mover/Beginner
		Beginner/Within-District Mover
	Beginner/Cross-District Mover	
	Beginner/Beginner	

Delimitations

This study considered changes in FCAT Math DSS for students in the targeted school district in grades 8, 9, and 10 for the school years 2005, 2006, and 2007. Only data of students actively and continually enrolled in the targeted school district for grades 8, 9, and 10 were considered. Data of any student retained during the years 2005, 2006, and 2007 was not considered. Teacher transience as defined in the above definitions for the same time period was linked to changes in student FCAT Math DSS. The study does not indicate reasons for teacher transience.

Limitations

Data availability is limited to actual historical district data. The reasons for teacher turnover in the targeted district were not available for review. The results of this study applied strictly to FCAT Math scores. No attempt was made to generalize the results of this study to student achievement on the Florida Comprehensive Assessment Tests in Reading, Writing, or Science.

Organization of the Dissertation

Chapter 1 states the purpose of the study, discusses the problem, describes the background of the topic to be studied, provides the conceptual framework for the study, lists the research questions and hypotheses, examines the significance of the study, and provides operational definitions, delimitations, limitations, and the organization of the study.

Chapter 2 provides a literature review specific to the research questions that are presented in this study, and also addresses the three primary areas grounding the conceptual framework that guided this study. First, the literature presented takes a closer look at issues regarding teacher retention. Clear and concise information about teacher retention concerns are presented and discussed. Second, the focus of the literature review shifts to a discussion of issues of student achievement pertinent to this study. Student achievement is discussed in light of the importance of classroom teacher impact. Third, a review of the literature focusing on the relationship between teacher retention and student achievement is presented. This section of the literature review discusses the potential impact of teacher retention on student achievement.

Chapter 3 discusses the research methodology, specific statistical techniques, procedures, and the design of the study. Particular attention is given to the alignment of the research question, null hypothesis, and statistical tests.

Chapter 4 presents an analysis of the results of the study.

Chapter 5 summarizes the study and provides a discussion of the results and conclusions based on the data collected.

CHAPTER: 2

REVIEW OF THE LITERATURE

The purpose of this study was to examine the relationship between teacher retention and student achievement as measured by the FCAT Math DSS. The targeted school district providing the source of FCAT student score data is located in Florida and is considered one of the largest urban school systems in the state. The study examined the relationship that exists between student achievement and the specified classifications of type of teacher transience. The relationship between years of teaching experience and student achievement on the FCAT was a secondary consideration.

This chapter is divided into three primary sections: literature on teacher retention including specific retention concerns, literature on student achievement, and literature focusing on the impact of teacher retention on student achievement.

Teacher Retention

The earliest evidence of literature on teacher retention can be found dating back to 1840 in Belgium. The literature from that period indicates that the approach to dealing with the issue was to increase salaries or provide monetary incentives (Rawson, 1840). The idea was to recruit more educators into the profession. Over the years, there has always been a concern about the shortage of teachers, and the attempts to solve the problem have typically been to recruit more teachers. In 1953 teacher recruitment efforts began to look at why teachers leave the profession or why people choose not to enter into

teaching. Low teacher salaries, poor living conditions, insecurity of tenure, little opportunity for promotion, inadequate retirement provisions, and restrictions placed upon the social lives of teachers have played a role in the crisis. Today we see the teacher shortage crisis due to a significant number of baby boomers retiring from the profession. This issue is compounded because of the large numbers of teachers choosing to leave the profession or transfer to other schools. There have been both quantitative and qualitative studies that have addressed the issue of teacher retention, and they report similar findings. Even though the research has identified specific causes for teacher attrition, solutions to the problem have revolved around a strategy of recruitment. Ingersoll (2001) points out that the crisis in the education field today is not really about recruitment of teachers but rather about the retention of teachers.

One analysis of teacher supply and demand uses the analogy of a leaky bucket. If water is leaking through holes in the bucket, the best solution is to fix the holes rather than keep pouring in more water (AmericanTeacher, 2005). In other words, solving teacher retention by recruiting more teachers is not the answer. The problem of teacher retention is not new to the profession. Gaining a better understanding of why schools have difficulty retaining and recruiting teachers is important in order to staff schools. Solving the question “Why do good teachers leave schools” is at the heart of the solution for teacher retention. Darling-Hammond (2003), Weiss (1999), and Ingersoll (2001) found that the following factors impact teacher retention: administrative support, working conditions, teaching assignments, student discipline, school climate and culture, collaboration through professional learning organizations, salaries, and incentives.

Addressing these identified areas is important to the retention and recruitment efforts of schools and consequently to raising student achievement.

Administrative Support

New teachers, in particular, often cite reasons for leaving the teaching profession that include: little or no administrative support, assignment to the most difficult to teach students, inundation with extracurricular duties, out-of-field placement, and isolation from peers (Hope, 1999). One common support mechanism that can have a dramatic impact on teacher retention is a strong, successful induction program for beginning teachers. Providing adequate training and support for beginning teachers increases the retention of a more competent, qualified and satisfied faculty (Menchaca, 2003). A teacher's first year is usually difficult and overwhelming, and induction programs are essential in helping the novice through the first year. Unfortunately, most induction programs provide mentoring and assistance that terminates at the end of the first year of teaching. Induction programs typically last for a period of one to three years and vary across school systems.

Induction programs are commonly used by school systems as a tactic for retaining new teachers. Most induction program goals are to address the process of socialization, adjustment to the procedures and mores of the school site and school system, and the development of effective instructional and classroom management skills (Lucksinger, 2000). Lucksinger further indicates that the first three years are most critical and it is important for teachers to have access to support from experienced teachers during this critical period. The literature indicates that it is during this period of professional development that beginning teachers may be more likely to leave the profession or the

school. Furthermore, 95% of the beginning teachers who are nurtured through an induction program experience success during their initial years and remain in teaching after three years; and 80% of them remain after five years (Wilkinson, 1994). The literature further indicates that in schools where principals ensure the necessary support for their novice teachers, there are lower attrition rates. Shann (1998) and Singh and Billingsley (1996) found the strongest influence on job satisfaction was principal support as it influences teacher commitment, which in turn promotes teacher retention.

Working Conditions

For both beginning and veteran teachers, issues in the work environment may provide the impetus for teachers to leave the profession (Certo & Englebright, 2002). There are many factors that impact teacher retention related to working conditions that play a major role in a teacher's decision to stay or leave the profession. Weiss (1999) found that, after controlling for teachers' personal and educational backgrounds, teaching fields, salary, and class sizes, teachers' perceptions of professional working conditions - such as administrative support, availability of necessary materials, participation in decision-making, and collegial opportunities - were the most significant predictor of beginning teachers' morale, career choice commitment, and plans to stay in teaching.

Many studies have shown that a school's demographic data is a strong predictor of teacher attrition. The teachers in more affluent schools may experience more desirable working conditions, such as smaller class sizes and student loads, and have a greater influence over school decisions (Darling-Hammond, 2003). High minority and high poverty schools are at a greater risk of having higher attrition rates. A school's racial composition and proportion of low-income students predict teacher turnover. According

to Plecki et al. (2005) salaries and working conditions such as large class sizes, facilities problems, multi-track schools, and lack of textbooks are strong and significant factors in predicting high rates of turnover. Once these conditions are taken into account, the influence of student characteristics on turnover is significantly reduced.

There are myriad of strategies available to schools and school systems which might take the form of benefits to compensate and/or reward teachers over and above their salary. Macdonald (1999) provides strategies that include: repairing and upgrading school buildings and teachers' accommodations, increasing teacher responsibility for educational decisions, prioritizing student learning and cooperative behaviors, reducing class sizes, increasing parental and community support for schools, making child care provisions, promoting collegial relationships between teachers and administrators, awarding teacher support and recognition, and providing counseling and medical care. Improving the working conditions of teachers, particularly those in low income and high minority schools can help improve teacher and student morale.

Teaching Assignments

It's people, not programs, that make the significant difference in raising student achievement (Whitaker, 2003). Teachers are the most important variable in the classroom, and careful consideration should be given to the assignments they receive. Novice teachers need the opportunity to develop and grow into experienced educators under conditions that optimize their chances for success. There is a common misconception that teachers new to the profession possess the latest skills necessary for success, however this school of thought hides the fact that new teachers lack the knowledge of classroom environments that comes with years of experience (Hope, 1999).

Class structures, sizes, and loads are all very important variables in first year teachers' assignments and are potential determinants of their decisions to leave or remain at a school.

Often new teachers get the toughest academic loads that require multiple daily lesson preparations and many teachers have listed this as a reason for leaving teaching. Additionally, new teachers may be assigned the most challenging students. These factors, plus schedules that require them to move from room to room to teach instead of having one classroom, have been identified as a recipe for disaster (Patterson, 2005).

Student Discipline

Student discipline is another significant component of the teacher retention problem facing schools today. Many teachers enter the profession immediately after college, bringing with them the altruistic belief that they will enlighten the young minds of the future. This zeal often burns out quickly when they are faced with students that are unmotivated to learn (Liu, Meyer, & Patrick, 2005). Quite often, unmotivated students become discipline problems. Student discipline problems are an identified impediment to teacher retention. At the secondary level, most teachers come into the profession with a passion for their subject area and a desire to share it with students. Unfortunately, many teachers report that student discipline issues make it difficult to perform their jobs to the best of their abilities. Data on student discipline and teacher retention shows that 52% of teachers in high minority schools feel that student discipline interferes with teaching, and 58% feel that student disrespect is a serious problem (Park, 2003).

Novice teachers usually are not equipped to handle unruly or disruptive students, and a great source of support can be found in induction programs. Some new teachers

struggle more than others, but the fact is that student discipline plays an important role in a teacher's decision to leave or stay. Rhodes, Nevil, and Allen (2004) identified student discipline as one of the leading causes of teacher attrition. New teachers worry more about maintaining student discipline in their classes than they do about classroom instruction. This makes quality instruction a challenge for new teachers. According to Johnson and Birkeland (2006), new teachers felt like they were coping with discipline on their own without the support of a school-wide approach to discipline that is adhered to by all teachers and administrators.

Salaries and Incentives

Plecki et al. (2005) found substantial evidence to suggest that wages play a role in retaining, as well as attracting teachers. This is especially true in areas with high costs of living. Baugh and Stone (1982) found that teachers are at least as responsive to wages in their decision to enter teaching as are workers in other occupations. Higher salaries make the profession more attractive for others to enter and remain in the profession. Placing an incentive program in hard-to-staff schools may attract the teachers that are desperately needed. However, it is important to note that there are several factors to consider in the retention of high quality teachers. Policymakers seeking to curb teacher retention in low-performing schools purely through salary incentives or compulsory assignments neglect the complex conditions that make it so difficult to hire and retain expert teachers in hard-to-staff schools (Berry, 2005).

School Culture and Climate

“School leaders can influence the emotional climate of their organisations and, in so doing, motivate staff and impact positively upon teachers’ working lives” (Rhodes et

al., 2004 p.79). Positive attitudes can translate into lower teacher attrition. New teachers in a school have quite a learning curve with which to deal. Not only do they have to learn the application of the skills and knowledge necessary for effective teaching, but they also have to learn the culture and climate of the school. Much of this is accomplished through induction programs that provide beginning teachers with a mentor. Experienced teachers indoctrinate new teachers with attitudes, behaviors, and values that have been defined as appropriate for teachers working in an education bureaucracy (Eddy, 1969). This can either be comforting to some new teachers or extremely frustrating. Whether a teacher's first few years in the profession are a time of constructive learning full of rewarding experiences or a time of coping, adjustment, and survival largely depends on the working conditions and culture of teaching to which they are exposed (Feiman-Nemser, 2003). A positive learning culture full of collaborative experiences and collegiality can be a strong source of support for new teachers to a school and consequently reduce the likelihood that they would move to another school or out of the profession entirely. Current educational culture and climate can be extremely stressful for hard-to-staff schools. The existing educational climate of high stakes testing and accountability has led to the intensification of the teaching profession, and there is some evidence to suggest that it is leading to the mass exodus of teachers (Hargreaves, 2000). High stakes testing and accountability are adding pressure to school personnel like never before, and this pressure is filtering its way through to districts, administrators, teachers, and students. Costigan (2005) tells us that the current trend of shifting teachers and administrators from school to school, or firing administrators for not raising student scores is taking its toll on teachers and causing many to leave the profession. First year teachers have enough on their plates

to handle, and the climate and culture of the school can play an important role in their survival within the profession.

Professional Learning Organization and Collaboration

Those who teach in low-achieving schools tend to be the most dissatisfied with their collegial relationships with peers (Harell, Leavell, Tassel, & McKee, 2004). Quite often the pressures and constraints placed on low-achieving schools limit the opportunities for collegial bonding. The fact is that in these schools it is most important for teachers to be supported by one another as they use and develop a common knowledge base (Little & McLaughlin, 1993). Since at-risk schools have a more difficult time retaining teachers, it is essential that a strong induction program be in place to support collaboration and a professional learning organization.

Pardini (2002) indicates that a successful formal induction process helps create a positive context in which belief, faith, and hope in what you are trying to accomplish is in very large supply, and therefore, effective instruction is more likely to take place. A strong induction program can assist new teachers to the profession in acculturating into a school and becoming part of a strong learning community. According to Watkins (2005), a strong induction program is one that assigns strong coaching mentors who can grow professionally as much as those they mentor, supports and extends innovative practice through active research, and supports collegial discussion and learning among experienced staff, new staff, and the principal through rigorous study groups.

A successful learning community involves mentoring, which breaks down the barriers of isolation and revitalizes commitments to teaching (Danielson, 2002). Schools with true professional learning organizations are often more successful at retaining

teachers because they are committed to the culture and the environment at the school. The collegiality that spawns from learning organizations helps eliminate isolation. Teachers who conduct their work in isolation often jeopardize their commitment and satisfaction with the profession. To keep good teachers in the profession, it is imperative that they be provided with the opportunity to collaborate in a learning community. According to Wong (2004), people crave connections, and new teachers want to belong to a group, make a difference, and experience success. Collegial relationships support formal and informal mentoring; they initiate reflection about practice, offer encouragement for ongoing growth, and increase the job satisfaction necessary for teachers to move to more advanced or mature stages of their careers. Schools can maintain good teachers by having structured, sustained, intensive professional development programs that allow new teachers to observe others, to be observed by others and to participate in networks or study groups where all teachers can share together, grow together, and learn to respect each other's work (Wong, 2004).

In summary, retaining teachers is an issue that has plagued the profession for many years. While previous efforts to resolve the problem have centered around recruitment policies, the current educational mandates require an understanding of the causes of teacher attrition in order to solve the problem. Teachers today experience stress from a lack of administrative support, poor working conditions, difficult teaching assignments, poor student discipline, low salaries and lack of incentives, less than desirable school cultures and climates, and a lack of collaboration and professional learning organizations within the school.

Student Achievement

In 1980, the report “A Nation at Risk” highlighted concerns over the American educational system. The report had as its principle thesis that downwardly spiraling student achievement had rendered the U.S. education system dysfunctional, thereby threatening the nation's technological, military, and economic preeminence. The report also asserted that only by elevating education achievement could the United States avoid subordinating itself to its educational superiors and economic competitors around the world (Guthrie & Springer, 2004). This combined with the Secretary’s Commission on Achieving Necessary Skills (SCANS) report which identified the three general areas of basic skills, thinking skills, and personal qualities--responsibility, self-esteem, sociability, self-management, and integrity/honesty--as important triggered an avalanche of educational reforms stressing accountability for student achievement (McNabb, 1997). The accountability systems put in place at the national and state levels have impacted public schools across the United States of America in a dramatic fashion. Since the Constitution of the United States of America leaves the primary responsibility for education to the individual states, each state has its own accountability and assessment system to monitor student achievement.

In the State of Florida, student achievement is measured by the FCAT test which currently is administered in every grade starting with grade 3 and ending in grade 11. At each of these grade levels, students receive a battery of tests some of which are criterion-referenced and some of which are norm-referenced assessments. The norm referenced assessments are strictly reading and math and compare students with one another, while the criterion-referenced assessments measure the student’s mastery of reading, math,

writing, and science skills identified by the state standards. The focus of this study was on the criterion-referenced Math FCAT assessment in grade 8, 9, and 10. Student results in these grade levels come in the form of a Developmental Scale Score (DSS), a scale score derived from the DSS, and an FCAT level derived from the scale score. The DSS is utilized to determine if a student has improved his or her achievement from one year to the next.

Table 3

FCAT Mathematics Developmental Scale Scores

GRADE	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
8	1025-1732	1733-1850	1851-1997	1998-2091	2092-2605
9	1238-1781	1782-1900	1901-2022	2023-2141	2142-2596
10	1068-1831	1832-1946	1947-2049	2050-2192	2193-2709

(Florida Department Of Education, 2007)

Students are typically assessed for the purpose of improving their learning and monitoring their performance or achievement gains (Tognolini & Stanley, 2007). Often schools, schools districts, and state educational systems make critical decisions regarding school effectiveness on information obtained from student achievement results on high stakes assessments utilized in test-based accountability systems (Meyer, 1997). The results obtained on individual student performance from year to year are used to determine the degree of student learning from year to year. The difference in scores from year to year represents an individual student’s achievement. A basic principle of learning implies that an individual student, not a cohort of students, has increased in knowledge and skills over a period of time, and therefore, analytical methods concerned with student learning should reflect this principle and consider individual students as the unit of

analysis (Willett, 1989). In other words, since school systems are in the business of educating children, the most appropriate way to measure student achievement is at the individual student level rather than utilizing the results of a cohort of students.

The research on teacher retention indicates that student achievement suffers when students endure a continuous flow of beginning teachers (Sanders & Rivers, 1996). This is due to the positive relationship that exists between years of teaching experience and its effects on student learning. Students having teachers with less than two or three years of teaching experience demonstrate lower student achievement (Hunt Jr. & Carroll, 2003). Considering the teacher shortage faced by the profession, many schools are forced to replace transient teachers with beginning teachers, especially in hard to staff schools.

Most of the research on factors that affect student learning have supported the belief that teachers can and do make a difference (Wright et al., 1997). Whitaker (2003) points out that it is teachers not programs that make the difference. Programs are a tool, but it is the teachers and the instructional decisions they make that can really impact student achievement. Fetler (2001) pointed to the experience of teachers as a predictor of student achievement. He suggested that more experienced and more highly educated teachers tended to produce higher achieving students. The more experienced the teacher, the better decisions they make.

In “Special Report: The cost of underpaying Texas teachers” a study utilizing educational information from the state of Texas demonstrated that students taught by teachers with more than five years experience consistently scored better on state exams (Strayhorn, 2006). Results such as this have been replicated in other studies and

demonstrate the need to retain teachers at the individual school sites so that an experienced staff can be available to work with the students.

In summary, the current educational concerns about raising student achievement that began in 1980 have changed how schools view their mission. “A Nation at Risk” and the SCANS report were the foundation of contemporary accountability systems. These reports established a sense of urgency in the United States that led to the states development of their own accountability systems. In Florida, like many other states across the country, standards were developed and implemented. This was followed by an assessment to measure mastery of the standards. The FCAT is used in Florida, and the FCAT DSS are used to determine student achievement of the standards. The literature indicates that the student as the unit of analysis is the best way to measure growth in student achievement. There may be several factors that impact student achievement, but several studies have indicated that a teacher’s number of years of experience may be correlated to improved student achievement. The Strayhorn (2006) study found that students in classes of teachers with more than five years of teaching experience consistently scored better on state exams. This highlights the significance of retaining teachers.

Impact of Teacher Retention on Student Achievement

Senator Barack Obama in a speech delivered at the Center for American Progress on October 25, 2005 stated:

From the moment our children step into a classroom, new evidence shows that the single most important factor in determining their achievement today is not the color of their skin or where they come from; it’s not who their parents are or how

much money they have. It's who their teacher is. It's the person who will brave some of the most difficult schools, the most challenging children, and accept the most meager compensation simply to give someone else the chance to succeed. (Obama, 2005, p.6)

The limited number of existing articles in the literature that connect teacher retention to student achievement limits the breadth of this section of the literature review. A review of the literature on the relationship between teacher retention and student achievement points out that nine specific studies have attempted to link these two variables. Seven of the studies employed a quantitative methodology, one utilized a qualitative method, and finally, one used a mixed-method approach. The studies while varying in design, all demonstrated the negative impact of teacher turnover on student achievement. These studies represented a wide variety of data sources utilized to support the contention that teacher turnover has an adverse affect on student achievement.

Rivikin et al. (2005) utilized over 3,000 Texas schools grades 3-8; Dolton and Newson (2003) used 316 London primary schools; Zhang et al. (2006) data came from 136 pairs of schools in 21 districts in 16 states; and Biniaminov and Glasman (1983) used data from 32 high schools in Israel. Guin (2004) used a mixed method approach and used various statistical models. She also incorporated principal and teacher interviews. Four of the nine studies relied on correlations and associations between variables and their data sources. Strayhorn (2006) included all schools in Texas; the Public Affairs Research Council of Alabama (2002) used data from all schools in Alabama; Plecki et al. (2005) utilized 20 diverse districts in Washington and a subset of 7 of the largest districts in the state; and Guin (2004) used one large urban district. Fine (2002) utilized the only purely

qualitative design using interviews, focus groups, and survey data collected from 112 elementary, middle, and high school students, as well as college students.

There are several studies that found a correlation between student achievement and teacher retention (Falch & Ronning, 2005; Fine, 2002; Hanushek et al., 2003). The literature indicated that schools with the lowest teacher retention rates have the lowest levels of student performance; as evidenced by Plecki et al.(2005). This study pointed to the notion that high poverty schools typically faced lower teacher retention rates and lower student achievement. Most of these hard-to-staff schools are forced to endure a continuous flow of teachers. This continuous turnover of teachers leads to low student attainment and ongoing staffing problems (Dolton & Newson, 2003). Further results from the Dolton and Newson (2003) study indicated the following possible reasons for teacher turnover affecting student achievement:

1. increased levels of teacher turnover seems likely to reduce teacher effectiveness
2. the efficiency of school organizations and management decrease
3. behavioral problems increase

The conclusions derived from the Dolton and Newson (2003) study suggested that a vicious cycle develops for disadvantaged schools. Low student achievement combined with high levels of social deprivation cause higher teacher turnover. Ingersoll (2001) highlighted the notion that high turnover can affect staff teamwork and collegiality, the continuity of the curriculum, and relationships with pupils, parents and the community. He went on to claim that all of these factors can and most likely will significantly and negatively impact student achievement.

Critical school level characteristics are impacted by teacher turnover rates. For instance instructional programs, professional development, teacher collaboration, and trust among staff members can and often do suffer in schools with higher teacher turnover rates. Guin (2004) reviewed several case studies of elementary schools with chronic teacher turnover and found the following in regards to the characteristics mentioned above:

1. schools with low teacher turnover have a consistent instructional program within and across grade-levels while the high teacher turnover schools are disrupted by a constant churning of teaching staff
2. low teacher turnover schools are able to target professional development in a manner that allows for continuous professional growth over time and focused towards advancing school-level goals while high teacher turnover schools are forced to repeat professional development due to new teacher arrivals causing a stagnation of school-level goals as evidenced by piecemeal staff development
3. teachers are able to collaborate on planning and curriculum implementation in low teacher turnover schools, while teachers faced with new co-workers each year in high teacher turnover schools find it difficult to collaborate
4. schools with low teacher turnover rates exhibit high levels of trust among staff while high teacher turnover schools demonstrate a lack of trust among teachers.

These findings are important because they speak to the issues of working conditions, school culture and climate, professional learning organizations, as well as collaboration that impacts teacher retention.

Fine (2002) found through focus group discussions that teachers leaving mid-year lead to disrupted courses, broken promises and students feeling betrayed, making it more difficult to improve student achievement. Studies revealed that these conditions caused a cumulative erosion of academic trust and loss of learning. Students felt abandoned and experienced a sense of emotional stress brought about by teacher attrition. This study found that instructional environments that suffer from a revolving door of teachers can create poor settings for academic learning.

Most of the research on factors that affect student learning have supported the belief that teachers can and do make a difference (Wright, et al., 1997). Contemporary educational theory holds that one of the pivotal causes of inadequate school performance is the inability of schools to adequately staff classrooms with experienced teachers (Ingersoll, 2001). Fine's (2002) qualitative study reveals that high levels of teacher turnover can produce a cumulative erosion of academic trust, engagement, and student learning. The students in hard to staff schools that need the most stability often get the least and consequently suffer the achievement costs usually associated with novice teachers. Rivkin, et al. (2005) concluded in their research that economically disadvantaged students systematically achieve less than more advantaged students. It is important to note that low income and minority students face higher teacher turnover and more often than not are taught by beginning teachers. Due to the fact that inexperienced teachers, regardless of their ultimate abilities, tend to perform more poorly, school

districts should develop and implement policies designed to keep more senior teachers in the classrooms of disadvantaged students in order to mitigate the impact of inexperience (Hanushek, Kain, & Rivkin, 2004).

Strayhorn (2006) found a direct correlation between student test scores and the presence of a stable and qualified teaching staff. Today, with increasing district school accountability as measured by student achievement on high stakes assessments districts/schools must evaluate the issue of teacher retention and associated impacts upon student test scores on standardized tests.

Consistent among all of the studies reviewed was the finding that teacher turnover was consistently associated with poorer student outcomes. The correlation between these variables was direct and negative.

In summary, there are only a limited number of studies that have specifically researched the impact of teacher retention on student achievement. These studies were quantitative, qualitative, and mixed method in nature. All nine studies found that teacher turnover was consistent with lower student achievement. The research over the years has supported the notion that teachers can and do make a difference. There is a direct correlation between student test scores and the presence of a stable, experienced, and qualified teaching staff.

Chapter Summary

The purpose of this study was to examine the relationship between teacher retention and student achievement as measured by the FCAT Math DSS. This study examined the relationship that exists between student achievement and the teacher's classification of transience. Since teacher retention leads to a staff with more years of

teaching experience, the relationship between years of teaching experience and student achievement on the FCAT was a secondary consideration.

This chapter reviewed the literature that created the foundation of the conceptual framework of this study. The chapter was divided into three primary sections: Teacher Retention, Student Achievement, and the Impact of Teacher Retention on Student Achievement. Particular attention was given to the issue of teacher retention and its causes, student achievement and how it is commonly measured by state assessment systems, and the relationship that may exist between teacher retention and student achievement. The methodology for this study is described in Chapter 3.

CHAPTER 3

METHODOLOGY

The purpose of this study was to examine the relationship between teacher retention and student achievement. Student achievement was measured by the Florida Comprehensive Achievement Test (FCAT) Math Developmental Scale Scores (DSS). This study examined the relationship that exists between student achievement and the type of classification of teacher transience. The impact of years of teaching experience on the relationship between teacher transience and student achievement on the FCAT Math assessment was a secondary consideration. The design of the study allowed for the investigation of the impact of teacher retention upon student achievement as demonstrated by FCAT Math DSS for each student from year to year.

Subjects

Student subjects in this study were students of the targeted school district enrolled in Grade 8 in the 2005 school year, and remaining consistently actively enrolled in the targeted school district in the 2006 and 2007 school years. This yielded a student subject population of approximately 9,000 subjects.

Teacher subjects in this study were teachers of the targeted school district that taught math to 9th and 10 grade students at the 23 district high schools in the 2006 and 2007 school years. This yielded a teacher subject population of approximately 270 teachers.

Available data of the total student and teacher population was considered. Sampling did not occur due to the fact that student subjects are linked to teacher subjects and therefore would reduce the number of teacher subjects to an insignificant quantity.

Procedures

All data collected were archival. Student FCAT Math Developmental Scale Score data were used for the school years 2005-2007. Individual student FCAT Math Developmental Scale Score data for the year 2005 (student Grade 8) were considered baseline data. The 2005 data were selected as the baseline data due to the fact that this study focused on high school (grade 9 and 10), and therefore the baseline data used were the students grade 8 FCAT Math Developmental Scale Score.

Archival teacher personnel information obtained included: transience during the 2006 and 2007 school years and years of teaching experience. The transience classifications were defined in the Definition section of Chapter 1. Sixteen (16) possible teacher transience classification permutations were developed based on the 2006 and 2007 school years: Stayer/Stayer; Stayer/Within-District Mover; Stayer/Cross District Mover; Stayer/Beginner; Within-District Mover/Stayer; Within-District Mover/Within-District Mover; Within-District Mover/Cross District Mover; Within-District Mover/Beginner; Cross District Mover/Stayer; Cross District Mover/Within-District Mover; Cross District Mover /Cross District Mover; Cross District Mover/Beginner; Beginner/Stayer; Beginner/Within District Mover; Beginner/Cross District Mover; Beginner/Beginner. These (16) teacher transience classification permutations were grouped into the three ordinal categories of transience listed below:

1. No transience—Stayer/Stayer

2. Partial transience—Stayer/Within District Mover, Stayer/Cross District Mover, Within District Mover/Stayer, Cross District Mover/Stayer, Stayer/Beginner, Beginner/Stayer
3. Full transience—Within District Mover/Within District Mover, Within District Mover/Cross District Mover, Cross District Mover/Within District Mover, Cross District Mover/Cross District Mover, Beginner/Within District Mover, Beginner/Cross District Mover, Within District Mover/Beginner, and Cross District Mover/Beginner, and Beginner/Beginner.

Only data of students actively and consistently enrolled in the targeted school district for grades 8, 9, and 10 for the school years 2005, 2006, and 2007 were considered. This ensured that data collected were on the same student for three consecutive years. Data of any student retained during the years 2005, 2006, and 2007 were not considered. This avoided the problem of multiple data for a given student in a given grade during the specified years.

The school district provided individual student FCAT Math Developmental Scale Score data for 2007 matched to the individual student 2005 FCAT Math Developmental Scale Score. All students must have been actively enrolled and taking a math course in both the 2006 and 2007 school year. Gain scores were calculated by subtracting the individual student's 2005 FCAT Math Developmental Scale Score (baseline score) from the same student's FCAT Math Developmental Score for 2007. The Pearson Product Correlation Test was used to determine if there was a relationship between student score gain and each identified teacher transience group classification. A significant Pearson Product Correlation Test result would cause the rejection of the null hypothesis, "There is

no correlation between teacher transience group and the student score gain on the FCAT Math Developmental Scale Score from 8th to 10th grade”.

The school district provided individual student grade 9 FCAT Math Developmental Scale Score data for 2006 matched to the individual student grade 8 FCAT Math Developmental Scale Score for 2005. Gain scores were calculated by subtracting the individual student’s 2005 FCAT Math Developmental Scale Score (baseline score) from the same student’s FCAT Math Developmental Scale Score for 2006. Individual student FCAT Math Developmental Scale Score data for 2006 were compared to teacher transience using an Analysis of Variance Test. If a significant result was obtained then a Post Hoc Sheffé test would be used to determine which of the transience group pairs were significantly different. A significant Analysis of Variance Test result would cause the rejection of the null hypothesis, “There is no difference in gain score from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience”.

The school district provided individual student 10th grade FCAT Math Developmental Scale Score data for 2007 matched to the individual student grade 9 FCAT Math Developmental Scale Score for 2006. Gain scores were calculated by subtracting the individual student’s 2006 FCAT Math Developmental Scale Score from the same student’s FCAT Math Developmental Scale Score for 2007. Individual student FCAT Math Developmental Scale Score data for 2007 was compared to teacher transience using an Analysis of Variance Test. If a significant result was obtained then a Post Hoc Sheffé test would be used to determine which of the transience groups are significant. A significant Analysis of Variance Test result would cause the rejection of

the null hypothesis, “There is no difference in gain score from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience”.

A secondary consideration, teacher years of teaching experience, was reviewed. Actual years of teaching experience were used for the 2006 (9th grade) and compared to student FCAT Math DSS scores to determine if years of experience moderated the relationship between teacher transience and student score gain on the FCAT Math DSS. The delimitations of this study were identified. Each of the delimitations addressed issues of limiting the effects of confounding variables and/or increasing aspects of validity and reliability of the study. A further consideration of this study was teacher transience as defined in the above definitions for the same time period. The study did not indicate reasons for teacher transience.

Instrumentation

This study utilized FCAT Math Developmental Scale Score for students in the targeted school district in grades 8, 9 and 10 for the school years 2005, 2006, and 2007. The FCAT Math DSS data were each student’s actual scores as reported to the targeted district by the Florida Department of Education. The FCAT is a state developed standardized test. Issues of validity and reliability have been addressed by the state. The 9th grade FCAT Math assessment did not contain multiple choice items while the 10th grade FCAT Math assessment contained multiple choice items as well as short and extended response items.

Analysis Techniques

The following outlines the research question (Q), corresponding null hypothesis (N) and statistical tests (T), used for analysis of data in this study. Pearson Product

Correlation, Analysis of Variance, and a Multiple Regression were the statistical tests used in this study.

- I. Research Question (Q 1): Is there a correlation between teacher transience group and the student score gain on the FCAT Math DSS from 8th to 10th grade?

Null Hypothesis (N 1): There is no correlation between teacher transience group and the student score gain on the FCAT Math Developmental Scale Score from 8th to 10th grade.

Statistical Test (T 1): A Pearson Product Correlation Test was used to determine if a correlation exists.

- II. Research (Q 2): Is there a difference in student score gain from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience?

Null Hypothesis (N 2): There is no difference in gain score from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience.

Statistical Test (T 2): An Analysis of Variance test and (T 2-1) Post Hoc Sheffé test was used to determine if there is a difference in the student score gain from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience.

- III. Research (Q 3): Is there a difference in student score gain from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience?

Null Hypothesis (N 3): There is no difference in gain score from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience.

Statistical Test (T 3): An Analysis of Variance test and Statistical Test (T 3-1) Post Hoc Sheffé test was used to determine if there is a difference in the student

score gain from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience.

IV. Research Question (Q 4): Do years of teaching experience moderate the relationship between teacher transience and student score gain on the FCAT Math DSS?

Null Hypothesis (N 4): Years of teaching experience do not moderate the relationship between teacher transience and student score gain on the FCAT Math DSS.

Statistical Test (T 4): A multiple regression model was used to determine if years of teaching experience moderated the relationship between teacher transience and student score gain on the FCAT Math DSS.

Chapter Summary

This study examined the relationship between teacher retention and student achievement as measured by the FCAT Math DSS. The study also examined the relationship that exists between student achievement and teacher group classification of transience. Since the literature suggests that teacher retention leads to more years of the accumulated teaching staff's experience, the relationship between years of teaching experience and student achievement on the FCAT was a secondary consideration. Statistical tests were used to determine if student FCAT DSS results indicated significance. Appropriate tests were used in an effort to answer the research questions and address the null hypotheses.

CHAPTER 4

RESULTS

The purpose of this study was to examine the relationship between teacher retention and student achievement. Student achievement was measured by the Florida FCAT Math DSS. This study examined the relationship that exists between student achievement and the teacher transience classification. The impact of years of teaching experience on the relationship between teacher transience and student achievement on the FCAT Math assessment was a secondary consideration.

The researcher utilized the archival data provided by the school district to explore the four research questions posed in this study. Teacher transience classifications of Stayer, Cross-District Mover, Within District Mover, and Beginner were used to describe a teacher's status from year to year during the school years 2006 and 2007. The data provided, matched students and their respective individual scores on the FCAT Math DSS from year to year with their respective teachers. As a result, individual student gain scores were able to be identified. Student FCAT Math DSS scores from the 2005 school year were used as baseline data for the study.

The first three research questions dealt specifically with the impact of teacher retention on student achievement. Research Question #1 (Q1) was designed to test the relationship between the type of teacher transience to which a student was exposed over the two-year period, and the student's overall gain in FCAT Math DSS score during that

same two-year period. Research Question #2 (Q2) was designed to test the relationship between the type of teacher transience to which a student was exposed during the student's 9th grade year (school year 2006), and the student's score gain on the FCAT Math DSS during the same year. Research Question #3 (Q3) was designed to test the relationship between the type of teacher transience to which a student was exposed during the student's 10th grade year (school year 2007), and the student's score gain on the FCAT Math DSS during the same year.

Research Question #4 (Q4) in the study was a secondary consideration and was designed to test if a teacher's years of teaching experience moderated the relationship between teacher transience and student score gain on the FCAT Math DSS.

All of the data provided by the school district was coded so that students and teachers could not be identified. The findings from this study are explained in the following sections within this chapter.

Finding One

Research Question #1 (Q 1) Is there a correlation between teacher transience group and student score gain of the FCAT Math DSS from 8th to 10th grade? The Null Hypothesis is stated to be: There is no correlation between teacher transience group and student score gain on the FCAT Math DSS from 8th to 10th grade. The Pearson Product Moment Correlation Test was used to determine if a correlation exists. The results of this statistical test indicated that there was no correlation at the .05 level of significance ($r = -.023, p > .05$). Therefore, the Null Hypothesis was not rejected.

Finding Two

Research Question #2 (Q2) Is there a difference in student score gain from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience? The Null Hypothesis is stated to be: There is no difference in student gain score from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience. An Analysis of Variance test was used to determine if there was a difference in the student score gain from 8th to 9th grade on FCAT Math DSS across the four types of teacher transience. Levenne’s test produced a value of $p=.430$ indicating that it was possible to proceed with the ANOVA because the assumption of equal variances in the groups was met. The Null Hypothesis was rejected (Table 4).

Table 4

SY 06 Gain Score DSS and Teacher Transience Classification

Source	Sum of Squares	df	Mean square	F	P	Partial Eta Squared
Corrected Model	175801.911	3	58600.637	5.888	.001	.002
Intercept	7330496.813	1	7330496.813	736.582	.000	.077
TchrTransc	175801.911	3	58600.637	5.888	.001	.022
Error	88370000.7	8880	9952.038			
Total	11460000.8	8884				
Corrected Total	88550000.7	8883				

R squared = .002; Adjusted R squared =.002

The F ratio ($F=5.888$) displayed above in Table 4 signifies that there is almost six times the variation between groups as among cases within groups. The p value of .001 indicates the probability is significant of this much variance between group means. The Partial Eta Squared in table 4 above of .002 is the effect size. This indicates that even though the null hypothesis was rejected there is a large sample with a small but significant effect size.

A Post Hoc Sheffé test was used to identify where there are significant differences. This test helped pinpoint the teacher transience classification(s) that were significantly different. The Post Hoc Sheffé test results shown below in Table 5 indicated that the relationship between teacher transience classification Beginner and each of the other transience groups was significant. These relationships are where the greatest variance in student score gain on the FCAT Math DSS is evident. There was no other significant relationship in the variance evident among the other classifications of teacher transience groups. In fact, the results of the Post Hoc Sheffé test indicate very little variance among the other transience groups with respect to student score gain on the FCAT Math DSS. Teachers classified as stayers, within district movers, or cross district movers demonstrated very little variance among their students gain scores on the ninth grade 2006 FCAT Math DSS.

Table 5

Post Hoc Sheffé Test for Significant Differences

(I) Teacher Transience	(J) Teacher Transience	Mean Difference (I-J)	Std. Error	P	95% Confidence Level	
					Lower Bound	Upper Bound
Stayer	Within district mover	-1.16139	2.80406	.982	-9.0016	6.6788
	Cross District Mover	-.01783	3.31790	1.00	-9.2948	9.2591
	Beginner	24.77167*	6.01972	.001	7.9404	41.6029
Within district mover	Stayer	1.16139	2.80406	.982	-6.6788	9.0016
	Cross district mover	1.14356	3.93808	.994	-9.8674	12.1545
Cross district mover	Beginner	25.93305*	6.38256	.001	8.0873	43.7788
	Stayer	.01783	3.31790	1.000	-9.2591	9.2948
	Within district mover	-1.14356	3.93808	.994	-12.1545	9.8674
Beginner	Beginner	24.78950*	6.62441	.003	6.2675	43.3115
	Stayer	-24.77167*	6.01972	.001	-41.6029	-7.9404
	Within district mover	-25.93305*	6.38256	.001	-43.7788	-8.0873
Beginner	Cross district mover	-24.78950*	6.62441	.003	-43.3115	-6.2675

* The mean difference is significant at the 0.05 level.

As transience indicated some degree of teaching experience, this situation seemed to indicate that teaching experience may have some degree of influence on student performance as opposed to no teaching experience. This situation provided the basis to

consider the fourth research question posed in the study. Research Question #4 (Q4): Do years of teaching experience moderate the relationship between transience and student score gain on the FCAT Math DSS from 8th to 9th grade?

Finding Three

Research Question #3 (Q3) Is there a difference in student score gain from 9th to 10 grade on the FCAT Math DSS across the four types of teacher transience? The Null Hypothesis is stated to be: There is no difference in student gain score from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience. An Analysis of Variance was used to determine if there was a difference in the student score gain from 9th to 10th grade on FCAT Math DSS across the four types of teacher transience. The results of these statistical tests indicated that there was no relationship at the .05 level of significance as shown below in Table 6. The Null Hypothesis was not rejected. Furthermore, since the Analysis of Variance was not significant the Sheffé test was not performed.

Table 6

SY 07 Gain Score DSS and Teacher Transience Classification

	Sum of Squares	df	Mean Square	F	P
Between Groups	56407.764	3	188802.588	1.659	.174
Within Groups	368470000	3251	11331.499		
Total	369070000	3254			

Finding Four

Research Question #4 (Q4) Do years of teaching experience moderate the relationship between transience and student score gain on the FCAT Math DSS from 8th to 9th grade? The Null Hypothesis is stated to be: Years of teaching experience do not moderate the relationship between transience and student score gain on the FCAT Math DSS from 8th to 9th grade. A multiple regression was used to determine if years of teaching experience moderated the relationship. The squared multiple correlation was not significant .004 ($p < .01$). In order to reduce the effect of multicollinearity the variables were centered and a product term was created. Table 7 below shows that the VIFs were less than 10 which indicates that the effects of multicollinearity were contained.

Table 7

Moderator Analysis of Experience, Transience, and Score Gain

Model	Unstandardized Coefficients		Standardized Coefficients		P	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
(Constant)	56.330	6.170		9.130	.000		
Yoec	.251	.716	.020	.351	.725	.103	9.728
Ttc	-	5.804	-.055	-2.054	.040	.460	2.172
		11.919					
YcTc	.167	.466	.020	.359	.720	.100	9.968

a. Dependent Variable: dssgain0506

The Beta for the product term (YcTc) was .020 and therefore not significant ($P < .005$). The regression results in Table 7 above indicate a p value of .72 and thus there was no evidence that experience moderated the relationship between teacher transience and student score gain on the FCAT Math DSS. The Null Hypothesis was not rejected.

CHAPTER 5

SUMMARY

Today education is faced with a greater demand for high quality teachers and higher student achievement. The current era of high stakes testing creates a scenario in which school districts and individual schools are continuously concerned with raising student achievement. Student achievement is increasingly being determined by an evaluation of student scores on standardized tests. The National Commission on Teaching and America's Future stated in its report "No Dream Denied: A Pledge to America's children," that the most serious consequence of high teacher turnover is that it erodes student achievement (Hunt Jr. & Carroll, 2003). Contemporary educational theory holds that one of the pivotal causes of inadequate school performance is the inability of schools to adequately staff classrooms with experienced teachers (Ingersoll, 2001). The purpose of this study was to examine the relationship between teacher retention and student achievement. Student achievement was measured by the FCAT Math DSS. This study examined the relationship that exists between student achievement and the type of classification of teacher transience. The impact of years of teaching experience on the relationship between teacher transience and student achievement on the FCAT Math assessment was a secondary consideration.

Student achievement was measured by student performance on the FCAT Math assessment. Data for 2005 were used as baseline year data and compared to data for 2006

and 2007. The difference between individual student scores from one year to the next was noted as student gain score.

This study focused on four questions regarding the relationship between teacher retention and student achievement. Due to a secondary consideration in this study, one research question focused on the relationship between years of teaching experience and student achievement. Categories of teacher transience were defined as Stayer, Within District Mover, Cross District Mover, and Beginner.

Four research questions were posed, and the Null Hypothesis for each question was tested and either rejected or not.

(Q1) Is there a correlation between teacher transience group and the student score gains on the FCAT Math DSS from 8th to 10th grade? Null Hypothesis (N1) There is no correlation between teacher transience group and the student score gain on the FCAT Math DSS from 8th to 10th grade.

(Q2) Is there a difference in student score gain from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience? Null Hypothesis (N2) There is no difference in gain score from 8th to 9th grade on the FCAT Math DSS across the four types of teacher transience.

(Q3) Is there a difference in student score gain from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience? Null Hypothesis (N3) There is no difference in gain score from 9th to 10th grade on the FCAT Math DSS across the four types of teacher transience.

(Q4) Do years of teaching experience moderate the relationship between transience and student score gain on the FCAT Math DSS? Null Hypothesis (N4) Years

of teaching experience do not moderate the relationship between transience and student score gain on the FCAT Math DSS.

Discussion of the Findings

The statistical test utilized to examine the data in Research Question #1 (Q1) was the Pearson Product Moment Correlation. Over the two year period students were assigned to two math teachers. The transience classification of each teacher was noted. The combination of teachers made up the transience experience that a student received during the two year period. The results of the Pearson Product Moment Correlation indicated that the transience combination was not significant in accounting for student gain score on the FCAT Math DSS over the two year period. The Null Hypothesis was not rejected.

The statistical test utilized to examine the data in Research Question #2 (Q2) was the Analysis of Variance. Student scores were compared between the base year (2005) and the 9th grade year (2006). Student gain in achievement score was determined. The results of the ANOVA indicated significance at the .05 level. The Null Hypothesis was rejected. The Post Hoc Sheffé test was used to support a finding of significance and to specify in which transience classification the significance occurred. This test demonstrated that in the 9th grade it does matter to which type of teacher transience a student is exposed. The student score gain for Stayers, Cross District Movers, and Within District Movers were similar, and no significant difference was indicated. However, a significant difference was evident for teachers classified as Beginners. In other words, students in the 9th grade receiving a Stayer, Cross District Mover, or Within District Mover scored similarly, but a student who received a Beginner scored significantly lower

on the FCAT Math assessment. The sample in the study was large; however the effect size was small but significant. This finding supports the original secondary concern of the study – the notion that the years of teacher experience impact student achievement.

The statistical test utilized to examine the data in Research Question #3 (Q3) was the Analysis of Variance. The results of this Analysis of Variance indicated that there was no significance at the .05 level. As a result a Post Hoc Sheffé Test was not necessary because the limited amount of variance among the four types of teacher transience classifications was insignificant. The Null Hypothesis was accepted. The type of transient teachers assigned to 10th grade students did not really impact the student score gain on the FCAT Math assessment.

The statistical test utilized to examine the data in Research Question #4 (Q4) was Multiple Regression. This is the primary test typically used for a moderation analysis. The results of this test indicated that there was no significance, and therefore, years of teaching experience did not moderate the relationship between teacher transience and student score gain in the 9th grade FCAT Math assessment. This result is contrary to the assumption stated above in the discussion of the findings for research question 2.

Data analysis utilizing the corresponding statistical test only produced a significant effect regarding Research Question #2. The Null Hypothesis was rejected. The data indicated that there was a significant difference in gain score from 8th to 9th grade across the four types of teacher transience. The Post Hoc Sheffé test indicated that there was a difference between teachers having some teaching experience (Stayer, Within District Mover, Cross District Mover) and Beginning teachers.

Conclusions

The results of the study indicate that teacher transience has an impact at the 9th grade level for students taking the FCAT Math assessment. Analysis of the data indicated that students of beginning teachers have a significantly lower student score gain on the FCAT Math assessment at the 9th grade level, compared to other teacher transience groups. It should be noted that while there was a significant difference in the student score gains identified for the beginning teachers when compared to the other three transience groups, the effect size was small. Therefore, it is recommended that High School administrators consider teaching assignments of 9th grade Math teachers, especially in this era of high stakes testing and accountability. The analysis of the data from this study indicate that attention to the transience of 9th grade Math teachers may be a factor for principals to consider in the assignment of teachers as related to increased student achievement.

High School administrators considering teacher placements for 10th grade Math can note that there was no significant difference in 10th grade Math student score gains regarding teachers classified in any of the four categories (Stayers, Cross District Movers, Within District Movers, and Beginners) used in this study.

Furthermore, the multiple combinations/permutations of 9th and 10th grade teacher did not prove to be significant in student score gain on the FCAT Math assessment.

Years of teaching experience did not moderate the relationship between transience and student score gain on the FCAT Math assessment. The tests performed did however demonstrate that teacher transience is a factor in accounting for 9th grade student score

gain on the FCAT Math assessment. These results showed a significant variance in student score gain for beginning teachers.

Recommendations

Based upon the findings of this study, the following recommendations are posed to High School administrators:

1. Consider teacher transience when assigning courses and grade levels to Math teachers.
2. Consider utilizing beginning Math teachers at grade levels other than 9th grade.
3. Consider implementing teacher retention strategies for 9th grade Math teachers.

Recommendations for Further Study

Based upon the finding of this study, the following recommendations are posed for further study in order to increase the base of knowledge regarding the relationship between teacher retention and student achievement:

1. Since years of teaching experience data were not available for the 10th grade teachers, further research is needed to determine if years of experience moderates the relationship between teacher transience and student score gain on the FCAT Math assessment.
2. Further studies are needed to determine if teacher transience moderates the relationship between item specifications on the FCAT Math assessments at 9th and 10th grade and student performance.

3. Further studies are needed to determine the impact of years of teaching experience on student performance on the FCAT Math assessment test.
4. Further studies are needed to determine the relationship between academic achievement and teacher transience that utilize the classifications developed for this study (Stayer, Within district mover, Cross district mover, and Beginner).
5. Further research is needed to determine if the significant variance in student score gain for beginning teachers seen at the 9th grade level is due to teacher transience or to a transition year phenomenon identified by Sanders and Horn (1998).

In conclusion, this exploratory study is unique because there is a very limited body of research that specifically links teacher retention and student achievement. The nine studies focusing on the impact of teacher retention on student achievement discussed in chapter two vary in methodology. Seven of the studies employed a quantitative methodology, one utilized a qualitative method, and one used a mixed-method approach. The studies while varying in design, all demonstrated a negative impact of teacher turnover on student achievement. Seven of the studies cited occurred at the elementary or middle school levels. None of the studies cited analyzed only mathematics achievement. Consequently, the high school and mathematics focus is a unique characteristic of this study.

The transience classifications used within this study provides a unique lens with which to measure the impact of teacher retention on student achievement. This study does contribute to the existing body of literature because it uses four distinct categories

(Stayer, Within District Mover, Cross District Mover, and Beginner) to classify teacher transience and compares these classifications to student achievement results. The findings of this study are inconsistent with existing literature.

It is important to consider that this study did not take into account the effects of a transition year phenomenon that occur when students enter the lowest grade offered at any particular school. Sanders and Horn (1998) found that the negative effects of student transfers to any grade other than the lowest grade offered in the new school is negligible, however when the population of students transition from elementary to middle or middle to high school the loss in expected gains is dramatic. The transition year in this study occurs in the 9th grade.

This study indicated that teacher retention is particularly important at the 9th grade level, but that years of teaching experience did not moderate the relationship between transience and student score gain on the FCAT Math assessment. Further research is needed to determine if years of teacher experience at the 10th grade level moderates the relationship between teacher transience and student score gain on the FCAT Math assessment. As the existing teacher retention research shows, beginning teachers are often given the lower level classes which are typically difficult to manage. Schools should consider other alternatives when assigning teachers to classes and school administrators should review teacher transience at the 9th grade level in order to ensure that students at this grade are not receiving a beginning teacher. In this era of high stakes testing and accountability, students should receive the optimum opportunity for success.

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