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The Impact Of Teacher Incentive Pay Programs On The Learning Gains Of Low-performing Middle School Students

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THE IMPACT OF TEACHER INCENTIVE PAY PROGRAMS ON THE LEARNING GAINS OF LOW-PERFORMING MIDDLE SCHOOL STUDENTS

by

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ABSTRACT

President Barack Obama committed hundreds of millions of dollars to the Teacher Incentive Fund (TIF), yet a few fundamental questions remain unanswered—was the federal program effective? Did student test scores improve? Since the late 19th century, teachers have been paid for their classroom services regardless of how well—or poorly—their students performed. Nearly a century later, advocates of education reform continue to champion teacher compensation policies that link salary to student achievement. Researchers have identified two motivation theories that must be present in order to have a successful incentive pay program: goal theory and expectancy theory. The presence or absence of these theories, have produced mixed results at both the federal and state levels. Although the Florida Department of Education crafted its own statewide incentive pay plan, three public school districts have received multimillion dollar awards via competitive TIF grants.

The purpose of this dissertation was to determine if any differences in learning gains existed between the 2008 and 2009 Florida Comprehensive Assessment Test® (FCAT®) Math scores among the students of math teachers at one urban Central Florida Title I middle school who participated in TIF when compared to the students of math teachers who did not participate in TIF. The dissertation also analyzed FCAT® Math scores from 2005 through 2009 in one Central Florida school district to determine if any trends existed among the Title I middle schools participating in TIF; if any trends existed

among the Title I middle schools that did not participate in TIF; and if any trends existed between the two groups when compared to each other.

The literature review and results of this study found that learning gains existed among students whose teachers participated in TIF. In fact, at one urban Central Florida middle school, students of math teachers who did not participate in TIF also demonstrated learning gains. In addition, seven of the ten Title I middle schools from the same Central Florida district had increased FCAT® Math scores with the implementation of the TIF grant along with the three Title I middle school that were not eligible to participate.

This research suggested that the teacher incentive program implemented in a Central Florida district had a positive impact on learning gains of low-performing students. The results of the independent-samples tests revealed that there was no statistical difference in the math scores based on participation in TIF. Students of the math teachers who participated in TIF demonstrated at least one year's academic growth. Likewise, the findings were similar for students of teachers who opted not to participate as learning gains increased in this group as well. As a result of these findings, recommendations for further study include end-of-the-year interviews with TIF-eligible teachers whose students had learning gains, but chose not to participate. Suggestions for additional research include surveying teachers whose students had higher scores in the absence of an incentive program, analyzing the test scores of other subject areas, and researching other school districts in Florida that were awarded the TIF grant.

I dedicate this dissertation to my loving husband, Neville,
and our three wonderful children: Stephen, Michael, and Samantha.
Without their patience, understanding, and most of all love,
the culmination of my life-long dream would not have been possible.

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LIST OF ACRONYMS/ABBREVIATIONS

ARRA	American Recovery and Reinvestment Act of 2009
DSS	Developmental Scale Score
E-Comp	Effectiveness Compensation
FCAT®	Florida Comprehensive Assessment Test®
FLDOE	Florida Department of Education
LEA	Local Education Agency
MAP	Merit Award Program
NCLB	No Child Left Behind Act of 2001
OCPS	Orange County Public Schools
SES	Socioeconomic Status
SSS	Sunshine State Standards
STAR	Special Teachers Are Awarded
TAP	Teacher Advancement Program
TIF	Teacher Incentive Fund

LIST OF DEFINITIONS

Achievement Levels	Levels based on the scale score or developmental scale score achieved on the Florida Comprehensive Achievement Test® (Florida Department of Education, 2009a).
Annual State Report Card	A school grade assigned by the Florida Department of Education as determined by the accumulation of percentage points for eight measures of academic achievement and two additional conditions (Florida Department of Education, 2010a).
Developmental Scale Scores (DSS)	Scores established to follow a child's academic progress over time and across grade levels; used to establish annual learning gains among low-performing students (Florida Department of Education, 2009a).
Florida Comprehensive Achievement Test® (FCAT®)	Standardized tests administered every year to Florida public school students in grades three through eleven (Florida Department of Education, 2009a).
High-needs school	A hard-to-staff school, which is typically urban, high poverty, and high minority (Ryan, 2009).
Incentive pay	Rewards for superior teacher performance based on student outcomes (Clardy, 1988; Springer, 2009).
Learning gain	An increase in a student's developmental scale score from one school year to the next (Florida Department of Education (Florida Department of Education, 2009a).
Local education agency (LEA)	A school district (U.S. Department on Education, 2009b).
Low-performing students	Students who fail to demonstrate skills and/or knowledge required for their grade level; students who have scored a level 1 or level 2 on any FCAT® exam (Florida Department of Education, 2009a).

Merit pay	Rewards for superior teacher performance based on student outcomes (Clardy, 1988; Springer, 2009).
Performance pay	Rewards based on predetermined outcomes based on teacher and/or student behaviors (Springer, 2009).
Scale score (SS)	A score used to determine a student's achievement level for each grade and subject tested (Florida Department of Education, 2009a).
Sunshine State Standards (SSS)	Challenging core subject-area content that Florida students are expected to know and perform (Florida Department of Education, 2009a).
Teacher Advancement Program (TAP)	A multi-state performance pay program currently subsidized by TIF grants, developed in 1999 by the Milken Foundation (Springer, Ballou, & Peng, 2008).
Teacher Incentive Fund (TIF)	A federal competitive grant program that supports the development and implementation of performance-based teacher reward systems, based primarily on increases in student achievement in low-performing schools (U. S. Department of Education, 2009b).
TIF Fund Grantee	Local education agencies that are recipients of the Teacher Incentive Fund (U.S. Department of Education, 2009b).
TIF school	A school eligible to participate in the Teacher Incentive Fund grant (U.S. Department of Education, 2009b).
Title I School	The purpose of this title is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and achieve, at least, proficiency on challenging State academic a achievement standards and state academic assessments. (Florida Department of Education, 2010c).

CHAPTER ONE:
INTRODUCTION

For over a hundred years, public school teachers have been paid according to the educational services they provided for their students. Since the latter half of the 20th century, teacher salaries have been adjusted to compensate them for their years of service and level of education achieved (Clardy, 1988; Goldhaber, 2009; Springer, 2009). Education leaders and policymakers of the new millennia were advancing the teacher salary reform continuum by authorizing performance pay policies that rewarded teachers in low-performing schools for improving their students' standardized test scores (Neal, 2009; Springer). The Teacher Incentive Fund (TIF) was a federally funded performance pay program intended to close the achievement gap between low-performing students and their higher achieving counterparts (U.S. Department of Education, 2009b).

There have been relatively few comprehensive studies conducted on the various schools receiving TIF, yet hundreds of millions of taxpayer dollars have been committed to the newest wave of teacher compensation reform (Obama, 2009a, Springer, 2009). In this dissertation, Florida Comprehensive Assessment Test® (FCAT®) Math scores from urban Title I middle schools in a Central Florida district that participated in the federal program were analyzed. These results provided insight into the effectiveness of incentive programs that rewarded classroom teachers for increasing academic achievement.

Background

Recruiting and retaining highly qualified teachers has long been a challenge for many school administrators. Nowhere has the situation been felt more acutely than in the classrooms of urban schools as federal and state legislative mandates penalize districts for failing to raise the academic performance of low-performing students (Neal, 2009). In an attempt to fill this critical need for highly effective educators, policymakers have supported implementing incentive pay programs aimed at improving quality through offering cash bonuses to teachers who have increased student standardized test scores (Lavy, 2007; McNeil, 2007; Neal; Obama, 2009a; Springer, 2009).

On the evening of February, 24th, 2009, President Barack Obama delivered a speech to a joint session of the U.S. Congress that revealed the objectives of his unprecedented economic stimulus package, the American Recovery and Reinvestment Act of 2009 (ARRA). During his oratory, he made a promise to America's children that "the goal of this administration [was] to ensure that every child [had] access to a complete and competitive education—from the day they are born to the day they begin a career" (Obama, 2009a, p. 5). In an effort to achieve this goal, the ARRA allocated new incentives for teacher performance, pathways for advancement, and rewards for academic success. The President's economic plan included increased funding for "innovative programs that [were] already helping schools meet high standards and close achievement gaps" (Obama, 2009a, p. 5). The innovative program that Mr. Obama referred to in his speech was called the Teacher Incentive Fund (TIF). The purpose of TIF, a five-year

competitive grant initiative, was to support performance-based programs that improved academic achievement among low-performing students in high-needs schools (U.S. Department of Education, 2009b).

There were several terms that were commonly used among educators and policymakers when describing the rewarding of superior teacher performance with financial compensation. Merit pay, performance pay, pay-for-performance, and incentive pay programs were just a few of the terms that were synonymous to initiatives in which student standardized test results were used to assess teacher effectiveness in the classroom (Goldhaber, 2009; Heneman, 1992; Lavy, 2007; McNeil, 2007; Miller & Say, 1982; Ryan, 2009; Springer, 2009). Regardless of what the compensation system was called, linking a teacher's pay to his/her students' performance was a type of education reform designed to recruit and to retain quality teachers, while at the same time increasing academic outcomes among low-performing minority students, preferably in high-needs schools (Lavy; Miller & Say; Obama, 2009a; Ryan; U.S. Department of Education, 2009b).

For most incentive pay programs, a teacher's effectiveness in the classroom was measured through the standardized test results of his/her students. The TIF grant used the Florida Comprehensive Assessment Test® (FCAT®) to determine whether or not participating teachers received bonuses based on their students' learning gains (U.S. Department of Education, 2007). The FCAT® Sunshine State Standards (SSS) Reading and Mathematics were the standardized tests administered every year to Florida public

school children in grades three through ten. The quantitative results were reported by scale score and by Developmental Scale Score (DSS). Scale scores were used to determine a student's achievement level for each grade and subject tested. The DSS score was established to follow a child's academic progress over time and across grade levels (Florida Department of Education, 2009a). Table 1 and Table 2 illustrate the FCAT® DSS and scale scores, respectively, used in middle schools for grades six through eight.

Table 1
FCAT® Mathematics Developmental Scale Scores (DSS)

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
6	770 - 1553	1554 - 1691	1692 - 1859	1860 - 2018	2019 - 2492
7	958 - 1660	1661 - 1785	1786 - 1938	1939 - 2079	2080 - 2572
8	1025 - 1732	1733 - 1850	1851 - 1997	1998 - 2091	2092 - 2605

Note. From Florida Department of Education, 2008.

Table 2
FCAT® Mathematics Scale Scores

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
6	100 - 282	283 - 314	315 - 353	354 - 390	391 - 500
7	100 - 274	275 - 305	306 - 343	344 - 378	379 - 500
8	100 - 279	280 - 309	310 - 346	347 - 370	371 - 500

Note. From Florida Department of Education, 2008.

For example, a low-performing seventh grade student who scored at an FCAT® Level 2 for two years in a row, yet showed an increase in DSS scores (e.g. 85 points) during the same period of time would have demonstrated that an annual learning gain had

occurred. A learning gain had occurred when a low-performing FCAT® Level 1 or 2 student had met or exceeded a designated threshold of academic mastery based on his/her DSS score from one year to the next (Florida Department of Education, 2008). A higher performing student who had consistently scored at FCAT® Level 3, 4, or 5 on consecutive tests also was considered to have achieved a learning gain (see Appendix A). The annual learning gains of low-performing students and higher performing students were measured using different methods. A teacher was described as highly effective when learning gains were made among the majority of his/her students. This study compared any differences between the 2008 and 2009 FCAT® Math DSS scores of students in grades six through eight at an urban Title I middle school to determine if any learning gains occurred based on criteria set by the state of Florida (see Table 3).

Table 3
One Year's Growth Definition (Learning Gains) for FCAT® Math DSS

Grade	4	5	6	7	8	9	10
DSS	164	119	95	78	64	54	48

Note. Retained students cannot demonstrate learning gains using DSS. From Florida Department of Education, 2007b.

Statement of the Problem

Performance pay programs addressed two critical problems in the public education system: attracting and retaining highly-qualified teachers and improving academic outcomes among low-performing students. The passing of the No Child Left Behind Act

of 2001 (NCLB), had underscored America's need for highly effective teachers, especially in high-minority, low-income, high-needs urban schools (U.S. Department of Education, 2009a). The Obama Administration's Race to the Top education grant initiatives provided funding for areas of school reform that emphasized recruiting, retaining, and rewarding effective teachers and principals (U.S. Department of Education, 2010). Consequently, there was growing concern among education policymakers about the declining quality of teachers. The decades of improvement in overall job opportunities had led to a reduction in the pool of qualified applicants for teaching positions (Springer, 2009). During the same period, depreciating teacher pay scales had channeled the best educators into more lucrative occupations (Odden & Kelley, 1997, 2002; Springer, 2009). In an effort to counteract this alarming trend, stakeholders and policymakers hoped to design effective incentives that would attract, retain, and motivate highly-qualified and effective teachers (Neal, 2009; Odden & Kelley, 1997, 2002; Springer).

"The future belongs to the nation that best educates its citizens" (Obama, 2009b, p. 2). President Obama spoke these words to the U.S. Hispanic Chamber of Commerce, where he acknowledged that "a stubborn [education] gap persists between how well white students are doing compared to their African-American and Latino classmates" (Obama, 2009b, p. 2). Quality education was widely recognized as one of the most important vehicles to overcome the devastating effects of economic disparities and social inequalities. *A Nation at Risk: The Imperative for Education Reform*, a study by the

National Commission on Excellence in Education (1983) found that students who attended schools in underprivileged neighborhoods often lacked access to a quality education, which in turn, reduced their chances to acquire the academic skills needed to break the cycle of poverty and hopelessness. While the classroom talent and pedagogic knowledge of highly qualified instructors was desperately needed across the education spectrum, nowhere was that need more amplified than in the high-needs schools that served poor minority inner-city children (National Commission on Excellence in Education; Odden & Kelley, 1997, 2002; Ryan, 2009; Springer, 2009).

Purpose of Study

The purpose of this dissertation was to determine if any differences in learning gains existed between the 2008 and 2009 Florida Comprehensive Assessment Test® (FCAT®) Math scores among the students of math teachers at one urban Central Florida Title I middle school who participated in TIF when compared to the students of math teachers at the same Title I middle school who did not participate. The dissertation also analyzed FCAT® Math scores from 2005 through 2009 in one Central Florida school district to determine if any trends existed among the Title I middle schools participating in TIF; if any trends existed among the Title I middle schools that did not participate; and if any trends existed between the two groups when compared to each other.

The significance of this study was to provide insight into the efficacy of teacher performance pay programs, particularly those sustained with large infusions of federal

and state taxpayer funds. The conclusions of this study were based on actual student scores and school-level data, collected in a manner similar to the aggregate school-level data used in other research (Springer, Ballou, & Peng, 2008). These findings will contribute to the body of literature on education policies and teacher salary reform studies.

As we moved into the 21st century, our education system was in need of successful salary reform programs that encouraged talented individuals to enter the teaching profession and to make the long-term commitment of educating America's underprivileged children in urban schools (Neal, 2009; Ryan, 2009; Springer, 2009). President Obama was an advocate for teacher incentive programs by allocating hundreds of millions of taxpayer dollars (Obama, 2009a; U.S. Department of Education, 2010). Governor Crist voiced his political support for merit pay plans that would ultimately benefit Florida's school children (Florida Department of Education, 2007a). However, critics of these types of education and salary reform measures pointed to a lack of follow-up research to determine the effectiveness of the policies, especially as political leaders pledged continued financial support (Springer).

Research Questions

To solidify his commitment to education reform, President Obama's economic stimulus policy, the American Recovery and Reinvestment Act of 2009 (ARRA), earmarked over $687 million taxpayer dollars in funding for performance pay initiatives

(Chait & Miller, 2009a, 2009b). Moreover, the $4.35 billion Race to the Top fund provided competitive federal grants that championed school reform policies (U.S. Department of Education, 2010). Race to the Top awarded comprehensive state education programs that were implementing innovative initiatives that focused on recruiting and rewarding effective teachers and administrators in high-needs schools that increased academic achievement. The Teacher Incentive Fund (TIF) grant, initiated under the George W. Bush Administration with continued support of the Obama Administration, was designed to improve academic achievement among low-performing students (U.S. Department of Education, 2009b, 2010). Therefore, the four research questions of this study focused on the standardized test results of academically struggling students in a Central Florida school district that was in the second year of a TIF grant:

1. What differences in learning gains existed, if any, between the 2008 and 2009 Florida Comprehensive Assessment Test® Math scores among the students of math teachers at one urban Central Florida Title I middle school who participated in the Teacher Incentive Fund when compared to the students of math teachers who did not participate?
2. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, among the Title I middle schools in one Central Florida school district that participated in the Teacher Incentive Fund?

3. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, among the Title I middle schools in one Central Florida school district that did not participate in the Teacher Incentive Fund?
4. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, between the two groups when compared to each other?

Delimitations/Assumptions

The writing style of this dissertation was based on the *Publication Manual of the American Psychological Association,* Sixth Edition (American Psychological Association, 2010). Furthermore, the data gathered for this study came from two sources: the 2008 and 2009 FCAT® Math student scores were collected from one TIF Title I middle school in a Central Florida district and the 2005 through 2009 FCAT® Math middle school scores, also from a Central Florida district, were retrieved from the Florida Department of Education's publicly accessible website.

Four subject areas were tested on the FCAT® exams: reading, math, writing, and science. There were two reasons that FCAT® Math scores were chosen for this study. First, math was tested every year in middle school from sixth through eighth grade, unlike writing and science, in which each were tested only once in middle school during eighth grade. Learning gains must be measured using consecutive annual scores. Second,

a student's math score was influenced by only one teacher, unlike a student's reading score which could be attributed to as many as three different content-area teachers—Language Arts, Reading, and English Speakers of Other Languages (ESOL).

Although there were ten secondary schools participating in TIF in this Central Florida district, the data, findings, and conclusions in this study were limited to the seven participating Title I middle schools. The relationships, if any, of the scores at the participating Title I high schools were beyond the scope of this study. In addition, the data from these seven schools were compared to the three Title I middle schools that did not qualify for the TIF program. For the program in the Central Florida school district, eligibility to participate in TIF was based on the feeder patterns of its three Title I high schools (Orange County Public Schools, 2009e). Of the ten Title I middle schools in the district, only seven of them were zoned to send the majority of its students to the three Title I high schools. These seven Title I middle schools eligible to participate in the TIF were the primary focus of this study.

A preliminary investigation revealed that the majority of the math teachers at the Central Florida middle school in this study participated in the first year of the TIF grant during the 2007 – 2008 school year. Also, according to the information in the report from the first year of the TIF grant, over half of the nearly 1000 teachers and administrators at the TIF schools in Orange County (FL) participated (U.S. Department of Education, 2007). Moreover, results of the end-of-year teacher surveys in the same report indicated continued support and participation by the respondents. Consequently, the conclusions of

this study were based on the assumption that the majority of instructional and administrative staff continued to participate during the second year of the TIF grant.

Chapter Summary

Policymakers on education reform legislated hundreds of millions of taxpayer dollars for teacher incentive programs, even though there was limited research documenting their effectiveness. This dissertation will assess the impact of the Teacher Incentive Fund on low-performing students at an urban Title I middle school located in Central Florida during the second year of its implementation. In addition, FCAT® Math scores will be analyzed from ten Title I middle schools in the same school district over a period of five years. The results of these data will expose any trends in student outcomes that may have been influenced by the implementation of teacher performance pay initiatives.

This dissertation is made up of five chapters. Chapter One introduced the background and statement of the problem, the purpose of the study, and the four research questions. Other components of this chapter included the significance of the study as well as a section on delimitations and assumptions. Chapter Two provided a brief overview of the evolution of the teacher pay system in the United States from the end of the 20th century to the present followed by a review of the theories of motivation associated with performance pay programs. Teacher attitudes toward performance pay programs were surveyed and international perspectives from four countries were reviewed. Florida's

previous and current experiences with performance pay plans were explored, including a Teacher Incentive Fund that was awarded to three Florida school districts. The chapter ended with the results of Orange County Public School's first year in the Teacher Incentive Fund. Chapter Three described the research design and methodology of the study. Details of the research design, data gathering and sampling procedures, instrumentation, and research questions were given along with a discussion of the statistical analysis procedures and ethical considerations of the collected data. Chapter Four presented the detailed findings of the research. In Chapter Five, the conclusions reached in this dissertation supported the findings of previous studies on the efficacy of teacher performance pay programs. At the end of the chapter are recommendations for further research.

CHAPTER TWO:
LITERATURE REVIEW

Teacher pay structures have transformed into several systems of compensation since the era of the one room schoolhouses that dotted the landscape of rural America. From providing room and board supplements during the late 19th century to the single salary schedule used today, education leaders have sought to design a pay scale for teachers that recognized their efforts in the classroom and encouraged others to enter the profession. The 1983 federal report, *A Nation at Risk: The Imperative For Education Reform*, concluded that teachers who demonstrated superior pedagogic skills and knowledge should receive bonuses. By the early 21st century, a merit-based compensation policy had been drafted and adopted by federal legislators—the Teacher Incentive Fund (TIF). A primary goal of this performance pay program was to reward teachers who increased academic achievement among their low-performing students. Supporters of these initiatives hoped that offering financial bonuses would attract and retain high-quality effective educators and close the achievement gap.

In this chapter, six topics will be discussed: evolution of the teacher pay system, an overview of teacher performance pay programs, the Teacher Incentive Fund, Florida's experience with performance pay programs, Florida TIF grantees, and Orange County (FL) Public School's survey results after its first year of implementing TIF.

Evolution of Teacher Pay System

The teacher pay system has evolved over the past hundred years from the modest wages of the pre-Industrial Age to the modern structure of educators receiving salaries based on education level and classroom experience (Goldhaber, 2009; Springer, 2009). Since the late 19th century, there have been three major types of teacher pay systems: supplying educators with room and board to supplement salary; differentiated salary, a grade-based payment scale; and the single salary schedule in use today (Goldhaber; Podgursky, 2009; Protsik, 1995; Springer).

Room and Board Supplement

In the late 1800s, the utilitarian one-room school house was a common educational fixture across rural America. These schools were specifically designed to serve the agricultural communities that dotted the American countryside (Clardy, 1988; Springer, 2009). However, teachers in rural schoolhouses generally lacked professional training or certification, in fact, the extent of their own pedagogic capacity rarely extended beyond elementary education (Spring, 1994). An individual could secure a teaching position if s/he possessed a basic understanding of reading, writing, and arithmetic skills; was determined to exhibit high moral character; and personified middle-class values (Tyack & Strober, 1981).

During this time, teaching was considered neither a career nor a profession. Protsik (1995) found that women, who overwhelmingly made up the pool of schoolteachers,

were prohibited from working in the classroom after marriage, while the small cadre of men who entered the field, generally did so as an income supplement to their primary responsibility—farming. When taken together, local education officials found little incentive to invest significant amounts of financial resources into the salaries of teachers. As a matter of practice, teachers were given room and board by their students' parents in an effort to supplement the meager salaries (Protsik).

Spring (1994) revealed that providing room and board for its schoolteachers had distinct advantages for the community. For instance, the lifestyle of the teacher was under constant supervision by the hosting family. Because most educators lacked professional training, the housing arrangements provided a type of accountability to the townspeople. Unfortunately, the public scrutiny into their private lives on top of the low wages discouraged women and men from committing to long-term teaching jobs (Spring).

Differentiated Salary

Protsik (1995) and Springer (2009) noted in their research that by the early 1900s, American society migrated from sprawling rural farms to incommodious urban centers. Additionally, the economic demands of the Industrial Revolution mandated changes to the nation's schools (Protsik; Springer). As the populace shifted to urban centers, specialized employment skills needed in city factories required school leaders to design a more sophisticated curriculum. Tyack's (1974) study explained how the one-room schoolhouse gave way to graded schools—placing students by age and ability into

separate classrooms with appropriate levels of rigor. Springer (2009) expanded on Tyack's findings as Springer noted that teachers were paid according to the grade level of their students. In response to these pedagogic and curricular changes, education reformers decided that teachers needed professional training; they were required to become certified by either graduating from teaching colleges or institutions or passing a county examination (Tyack, 1974).

With the establishment of graded schools and teacher certification requirements, came a redesign of salary structures. Although many states adhered to a minimum salary level, individual cities commonly created differentiated salary schedules based on a teacher's years of experience, gender, race, and the grade level taught (Podgursky, 2009; Tyack & Strober, 1981). Both systems—minimum salary level and differentiated salary schedule—were created with the goal of reducing high teacher turnover due to low salaries and to encourage others to enter the profession. According to Rothman (1978), the average urban teacher remained in the field of education for nearly a decade as a result of the differentiated pay schedule.

The overtly sexist (men were paid more than women) and racist (whites were paid more than blacks) salary allocation practices within the system led to the eventual demise of the differentiated pay scale. The notion of "equal pay for equal work" ushered in the salary system that was prevalent in most school districts across the country (Goldhaber, 2009; Podgursky, 2009; Protsik, 1995). All classroom instructors were paid at the same

scale regardless of race, gender, or grade level taught giving rise to the name—single salary schedule (Educational Research Service, 1978).

Single Salary Schedule

The single salary schedule was a table in which an instructor's educational status and years of teaching experience dictated the amount of his/her annual compensation (Clardy, 1988; Goldhaber, 2009; Podgursky, 2009). In Table 4, an example of the single salary schedule that was used in Duval County (FL) Public Schools illustrated how each column represented a teacher's level of education, such as bachelor's degree or master's degree, while the rows designated the number of years of teaching experience. To determine an individual's annual salary, the teacher would locate the cell created by the intersection of the appropriate educational level and years of experience (Clardy; Podgursky). Table 5 illustrates an example of a variation to the single salary table that was used in Miami-Dade County (FL) Public Schools that included a supplement for advanced degrees in addition to one's regular compensation.

Table 4
2009 – 2010 Single Salary Schedule: Duval County (FL) Public Schools

Year	Bachelor's	Master's	Specialist	Doctor's
1	37,300	38,300	39,300	40,300
2	37,439	38,449	39,748	41,161
3	37,629	38,643	40,105	41,539
4	37,902	39,074	40,518	41,972
5	38,284	39,541	40,946	42,419
6	38,693	40,085	41,319	42,793
7	39,078	40,455	41,730	43,177
8	39,505	40,771	42,214	43,663
9	40,196	41,358	42,804	44,288
10	40,721	41,972	43,446	44,876
11	41,260	42,598	44,042	45,974
12	41,958	43,300	44,865	46,919
13	42,961	44,115	45,618	47,919
14	43,540	44,744	47,058	48,858
15	44,117	45,349	48,132	49,584
16	44,983	46,316	48,991	50,436
17	45,831	46,941	49,659	51,111
18	46,486	47,459	50,156	51,511
19	48,290	50,454	52,415	53,746
20	50,648	53,617	55,101	56,926
21	53,437	56,584	58,160	60,093
22	55,515	58,537	59,991	62,047
23	57,052	59,996	61,342	63,354
95	65,301	68,449	69,888	71,891

Note. From Duval County Public Schools, 2010.

Table 5
2009 – 2010 Salary Schedule: Miami-Dade County (FL) Public Schools

Year	Bachelor's
1	38,000
2	38,190
3	38,381
4	38,573
5	38,766
6	38,960
7	39,154
8	39,350
9	39,547
10	39,745
11	39,943
12	40,143
13	41,400
	*******
15	47,000
	*******
17	50,300
	*******
19	53,100
20	54,350
21	58,350
22	68,225

Supplement for Advanced Degrees	
Master's	3,100
Specialist	5,150
Doctorate	7,200

Note. From Miami-Dade County Public Schools, 2010.

Modest pay increases occurred annually after the completion of another consecutive year of service, following an expected advance up the "steps" within each educational level (Clardy, 1988). Podgursky (2009) recognized that there were two types of performance behaviors that these salary structures identify as important: longevity and continued education. Financial incentives came from continued employment within the school district and from acquiring additional advanced college degrees (Clardy; Goldhaber, 2009; Podgursky). These pay structures provided no recognition of how effectively a teacher performed in the classroom. An increase in salary would occur every year regardless of instructional skills or student achievement (Goldhaber).

The single salary structure was a "nearly universal feature" of the majority of school districts across America. Podgursky (2009) noted in his research that 96 percent of public school districts reported using some type of salary schedule. The premise of this popular salary plan was that instructional and pedagogic knowledge "improve[d] with each year spent in the classroom and with each additional hour of college completed" (Clardy, 1988, p. 15). Ironically, there was a lack empirical evidence to support a correlation between continued education and better teaching (Ferris & Winkler, 1986; Greenwald, Hedges, & Laine, 1996; Hanushek, 1989; Podgursky; Springer, 2009).

The single salary schedule addressed the inequities of the differentiated pay scale. Protsik (1995) discovered that teachers were paid for how long they were in the classroom and what college degree they held—arguably equitable and objective characteristics. On the other hand, education reformers pointed out that the single salary

schedule “treats teachers with the same education level and experience as equals, despite unequal performance and skills” (Protsik, p. 12). Furthermore, an unintended consequence of the single salary system that impacted low-performing students was that teachers with less classroom experience within a school district received the lowest pay and were most often assigned to the high-needs schools (Podgursky, 2009; Ryan, 2009).

Teacher Salary Reform

A major reason teachers cited for entering the profession was the satisfaction of working with children (Goodlad, 1984). On the other hand, these same teachers noted the low salaries as a major reason for leaving. In their opinion, the meager compensation sent a message that their instructional services were undervalued. For many, the intention to become long-term educators evaporated upon experiencing tedious, non-student related, day-to-day activities with less than rewarding salaries. Ferris and Winkler (1986) discovered that attracting highly qualified individuals into teaching required raising beginning salaries. In addition, increasing the average annual pay would reduce mass exodus. Spuck (1974) also noted that offering extrinsic rewards attracted and retained teachers. Using a market-based approach, Podgursky (2009) concluded that teachers who demonstrated a high level of efficiency should receive a higher level of compensation.

When surveyed, teachers believed that increasing salaries would most likely attract and retain qualified educators (U.S. Department of Education, 2007). Their career decisions were based largely on future annual income; such as the decision to pursue a

teaching profession, the decision to stay in certain school districts (as opposed to relocating to another district with higher salaries), and the decision to abandon the field altogether (Bobbitt, 1989). Providing decent salaries would go a long way towards keeping teachers in the profession and reducing turnover rates (Bobbitt; Springer, 2009; Vigdor, 2009).

In 1983, the groundbreaking federal report, *A Nation at Risk: The Imperative For Educational Reform*, strongly recommended a teacher compensation scheme that was "professionally competitive, market-sensitive, and performance-based" (National Commission on Excellence in Education, p. 26). According to the report, salary reform should reward superior teachers, encourage average ones, and either improve or terminate ineffective educators. In response to this recommendation, education advocates and policy makers have supported performance pay programs that rewarded teachers who demonstrated a greater level of student achievement. By making salary contingent on a teacher's effectiveness, individual motivation to do an outstanding job should increase (Clardy, 1988; Podgursky, 2009; Springer, 2009).

Teacher Performance Pay Programs

Performance pay policy options to improve teaching quality could be grouped into three basic categories: (a) policies that improved teacher preparation and professional development, (b) policies that affected who became a teacher and how long the person remained in the field, and (c) policies that affected the work that teachers did in the

classroom (Vegas, 1994). Federal TIF grants underwrite state performance pay programs that created financial incentives that motivated talented teachers and encouraged qualified individuals to enter the teaching profession. In addition, there was a TIF requirement to provide supplementary professional development opportunities for its participants (U.S. Department of Education, 2009b).

Increased academic standards, as mandated by local, state, and federal agencies, were making significant demands on teachers for increasing curriculum knowledge, instructional skills, job performance, and student achievements. Previous salary reform programs did little to emphasize continuous professional development of specific pedagogic skills identified by school administrators as important to improving the academic success of low-performing minority students (Bacharach & Conley, 1986).

Performance pay was used to reward teachers with bonuses for increased student achievement and to provide a stronger incentive for continuous professional improvement. Lawler (1990) discovered that a more effective long-term performance strategy was to award the bonus independent of a teacher's base salary, thereby making it necessary to review the teacher's performance each school year.

Theories of Motivation

There were two motivation theories whose behavioral responses were more closely identified with the structure of business organizations that education administrators and policymakers hoped would transfer to public school settings. Goal-

setting theory and expectancy theory explained how teachers were motivated and the roles that incentive programs could play (Odden & Kelley, 1997, 2002).

Goal-Setting Theory

Locke (1968) proposed the goal-setting theory to explain a psychological phenomenon associated with employee motivation. The general premise of the theory was that "goals motivate[d] employee behavior when they [were] specific, challenging, and accepted as worthwhile and achievable" (Odden & Kelley, 1997, p. 60). Additional research has shown that identifying attainable and measureable goals would encourage an employee to reach beyond previous performance levels. (Mento, Steel, & Karren, 1987; Mohrman & Lawler, 1996; Podgursky, 2009; Rowan, 1996).

Offering incentive pay could enhance goal-setting behavior when monetary rewards were attached to surpassing specific measureable goals. Financial rewards increased an individual's commitment to reaching goals (Wright, 1989). Additional empirical evidence from Heneman (1992) underscored Wright's findings—challenging goals did not discourage participation in performance pay programs. In the aggregate, these results highlighted the importance of establishing goals. Employee motivation would be highest when attainable, measurable goals and monetary rewards were tied together—e.g. performance pay programs—rather than as unrelated activities (Heneman).

Expectancy Theory

Expectancy theory also could be used to predict employee behavior when designing an effective performance pay program (Odden & Kelley, 1997, 2002). According to the theory, individuals were more likely to participate in incentive programs when three conditions existed: expectancy, line of sight, and valence (Cumming, 1994; Heneman & Schwab, 1979; Heneman, Schwab, Fossum, & Dyer, 1989; Johnson, 1986; Lawler, 1986, 1990; Welbourne & Mejia, 1995). The expectancy condition includes in the underlying beliefs of the individual as s/he perceived the characteristics of the goal. For instance, a participant must have believed that the goal was both attainable and within his/her control. One also must have believed that accomplishing the goal was realistic and that s/he possessed the ability and skill needed to satisfy all of the requirements to receive the reward (Odden & Kelley, 1997, 2002).

Odden and Kelley (1997, 2002) identified that the next condition, line of sight, required participants to envision a positive correlation between their own performance and receiving the bonus and that the final condition of valence, participants must consider the incentive deserving of their time and effort. Vast amounts of empirical research have established that performance pay programs that included these three conditions have been most persuasive toward stimulating employee motivation (Blinder, 1990; Heneman, 1992; Heneman et al., 1989; Kennedy, Fossum, & White, 1983; Lawler, 1971, 1990; Wanous, Keon, & Latack, 1983; Welbourne & Mejia, 1995).

While goal-setting and expectancy theories helped explain an employee's psychological propensity to engage in performance pay programs, both intrinsic and extrinsic motivating factors contributed to behavior decisions as well. Odden & Kelley (1997, 2002) and Podgursky (2009) reported that strong intrinsic motivators describe attainable goals and allow adequate professional development opportunities whereas performance objectives accurately demonstrate a teacher's effectiveness in the classroom. In addition, their combined research also highlighted that extrinsic motivators should include appealing financial incentives, continuous administrative support, and effective collaboration among one's peers. Not surprisingly, extrinsic motivating factors could reinforce intrinsic ones and vice versa. The most efficacious performance pay programs brought together aspects of motivation theories and motivating factors (Odden & Kelley, 1997, 2002).

Teacher Attitudes Toward a Performance Pay Program

An online survey of teachers in 199 traditional public and magnet schools in Hillsborough County (FL) was administered at the end of the 2006 – 2007 school year; 1691 teachers responded (Jacob & Springer, 2008). The authors of this study found mild support for performance pay incentives among teachers and a weak relationship between teachers' characteristics and their views on performance pay initiatives. In addition, "teachers who [had] a more positive view of their principal's leadership ability and more confidence in their own teaching ability" were more likely to support incentive programs

(Jacob & Springer, 2008, p. 1). Jacob and Springer chose the teachers in Hillsborough County for their study because education reformers in this school district had "successfully designed and implemented several financial incentive programs, including teacher recruitment and retention bonuses for working in hard-to-staff schools or subject areas" (p. 3). While it should be noted that their survey instrument did not identify a specific incentive program, the teachers' responses could provide some insight into their attitudes towards performance-based initiatives similar to the federal program. A year after this survey was conducted, Hillsborough County Public Schools, along with two other Florida school districts, was awarded a Teacher Incentive Fund grant for the 2007 – 2008 school year (U.S. Department of Education, 2009c).

Some of the key findings of Jacob and Springer's (2008) study were that teachers favored bonuses based on individual performance rather than school or group performance. However, over half of the teachers were concerned that competitive rewards would destroy the "collaborative culture of teaching." Almost a third believed that implementing these programs would encourage teachers to work harder (Jacob & Springer).

Jacob and Springer (2008) discovered a weak relationship between teacher demographics and views on incentive pay programs. For example, gender and race were not correlated with supporting performance pay. Also, the number of students in the school (school size) nor the average achievement level of the school (school grade) were related to attitudes towards performance initiatives. Yet, years of teaching experience did

impact their opinions. Novice teachers with one to three years of experience were more supportive of incentive pay than veteran teachers with more than 20 years of experience. Secondary school teachers heavily favored incentive pay over elementary school teachers (Jacob & Springer).

The report also noted that a teacher who viewed his/her principal as an effective school leader supported incentive programs. The survey defined an effective principal as a school leader who set high standards for teaching, allocated time for professional development, and provided the resources needed for quality instruction (Jacob & Springer, 2008). And finally, teachers who were confident in their subject-area knowledge and pedagogic abilities were more likely to view incentive programs as a positive enticement. Jacob and Springer concluded that the respondents in their survey expressed favorable opinions on teacher incentive programs in general. However, it should be noted these positive findings may not necessarily translate into active participation or widespread support for specific teacher incentive pay plans (e.g. the Teacher Incentive Fund).

Teacher Performance Pay Programs: International Perspectives

Teacher salary reform was not solely an American education policy phenomenon. Several countries, such as India, Israel, Kenya, and Mexico, have implemented incentive programs that when taken collectively yielded mixed results. For example in India, Muralidharan and Sundararaman (2008) discovered that performance pay programs

improved academic achievement and encouraged positive classroom behavioral changes among teachers. On mathematics and language tests, students whose teachers participated in incentive programs outperformed their counterparts who did not participate. Moreover, teachers who participated in the programs were found to have assigned more homework, offered tutoring sessions outside of class time, and focused attention on the academic progress of low-performing students (Muralidharan & Sundararaman).

The findings of Muralidharan and Sundararaman (2008) supported Lavy's (2002) research on performance pay programs in Israel. Lavy's report also documented improved instructional strategies that were attributed to the implementation of the program. Lavy discovered "a positive and statistically significant" impact on student academic achievement from an incentive program designed to reduce student drop-out rates. A survey of teacher attitudes and behaviors revealed positive changes in teaching practices and effort, while adjusting their instructional strategies for low-performing students (Lavy).

Glewwe, Holla, and Kremer (2008) reported that Kenyan students of teachers who were eligible to receive bonuses scored better on standardized tests. Students whose teachers participated in performance pay programs had "noticeably higher" scores on standardized tests than students of teachers who did not participate. Participating teachers were also more likely to offer test preparation sessions beyond the regular school day (Glewwe et al.).

A comprehensive evaluation of an incentive program in Mexico conducted by Santibañez et al. (2007) revealed encouraging—albeit small—effects on secondary students. Bonuses were awarded based on the accumulation of points on a variety of criteria as defined by the incentive plan, including years of experience, highest degree held, professional development activities, the teacher's performance on a subject-matter knowledge test, and their students' test scores (Santibañez et al.). The authors of this study noted that the program's extensive award criteria may have not motivated teachers to exert the amount of effort necessary to yield dramatic increases in student scores.

Teacher Incentive Fund

The education policy recommendations in *A Nation at Risk*, underscored the need for a salary reform program that would reward superior teachers whose students achieved academic greatness (National Commission on Excellence in Education, 1983). Nearly twenty years later, the No Child Left Behind Act of 2001, required that all public school students, especially those who were in high-minority, high-poverty locations, were to be taught by highly-effective teachers (U.S. Department of Education, 2009a). With these goals in mind, President George W. Bush proposed in his 2006 budget a teacher performance pay initiative, the Teacher Incentive Fund (Chait & Miller, 2009a).

The Teacher Incentive Fund (TIF) was created to more closely align salary structures with quality teaching and increased student learning, while at the same time provided incentives to attract dedicated individuals to high-needs schools (U.S.

Department of Education, 2009b). When first implemented during the 2007 – 2008 school year, TIF provided $50 million dollars in competitive grants for states to design incentive programs that recognized and rewarded highly-effective teachers. Over the next two years, TIF awarded more than 30 competitive five-year grants stimulating growth in various state departments of education and local school boards for teacher salary reform policies (see Appendix B). During that time, the increase in funding had been dramatic—from $97 million in fiscal year 2009 to $487.3 million in fiscal year 2010 (Chait & Miller, 2009b). On top of that nearly five-fold endowment, the American Recovery and Reinvestment Act of 2009 infused another $200 million (Chait & Miller, 2009a; Obama, 2009a). Last, but not least, the Race to the Top fund awarded $4.35 billion in competitive grants for various education reform projects, including teacher incentive pay programs (U.S. Department of Education, 2010).

The Teacher Incentive Fund was a five-year federal competitive grant program that supported the development and implementation of performance-based teacher reward systems, based primarily on increased student achievement in high-needs public schools (U.S. Department of Education, 2009b). All local educational agencies (LEAs), e.g. public school districts, were eligible to apply provided the incentive program was to be implemented in schools with more than 30 percent of its student enrollment from low-income families. Approved grant applications contained well-defined and attainable student achievement goals, opportunities for professional development training and support, and on-going instructional feedback from administrators—elements researchers

had determined to be necessary in successful incentive programs (Blinder, 1990; Heneman, 1992; Kennedy et al., 1983; Lawler, 1971; Neal, 2009; Odden & Kelley, 1997, 2002; Podgursky, 2009; Springer, 2009).

Teacher Advancement Program (TAP)

While there had not been an evaluation of the TIF program specifically, the conclusions drawn in a study of the Teacher Advancement Program (TAP) by Springer et al. (2008) suggested promising results on the effect of teacher incentive programs in general. TAP, a multi-state performance pay program subsidized by TIF grants, was developed in 1999 by the Milken Foundation with various pedagogic goals that included attracting highly-qualified educators, improving teacher effectiveness, and increasing student achievement. By 2006, the school-wide incentive program was implemented in over 180 schools in 14 states and the District of Columbia. The authors of the study used mathematics test score data from nearly 1,200 TAP and non-TAP schools in two states spanning a four-year period from the 2002 – 2003 to the 2005 – 2006 school years.

The TAP design had four elements: (1) multiple career paths that created opportunities for professional advancement; (2) on-going targeted professional development that focused on specific instructional needs; (3) instructionally-focused accountability through summative and formative student assessments; and (4) performance-based compensation criteria with detailed student outcomes. According to the goal-setting and expectancy theories of motivation and the intrinsic and extrinsic

factors, TAP contained the conditions necessary for both successful teacher participation and improved student outcomes (Odden & Kelley, 1997, 2002; Springer, 2009).

To determine the impact of the performance pay program, Springer et al. (2008) compared school-level student math test score gains in schools that participated in TAP with school-level student math test score gains in non-TAP schools. Their results revealed a significant positive TAP-treatment effect on student scores in the grades two through six, while in the secondary schools the learning gains were only marginally higher. Furthermore, TAP schools had slightly higher test score gains when compared to the average test score gains in their respective states. It should be noted that the mathematics test score data used for their study were not the high-stakes exams on which the teacher bonuses were based (Springer et al.).

Florida's Experience with Performance Pay Programs

The Center for Educator Reform (2007) reported that while President George W. Bush's administration explored establishing a national federal merit pay plan, the Florida Department of Education (FLDOE) and state legislators required that school districts use student learning gains and classroom performance evaluations to determine and to reward highly-effective teachers. As a result, then-Governor Jeb Bush authorized legislative mandates that ordered all public school districts to propose and to implement their own teacher performance pay programs by 2003. The state statutes also allowed broad flexibility in how districts crafted their incentive plans. However, the same report noted

that the absence of state funding discouraged stakeholder buy-in and precipitated a hodgepodge of inconsistently designed reward programs with complicated application requirements and convoluted award criteria. Consequently, a relatively small percentage of teachers were able to qualify for the performance bonuses (Center for Educator Compensation Reform).

Many districts designed restrictive bonus pay systems that required teachers to maneuver through a tedious application process and nearly impossible award targets. For example, about two-thirds of Florida's 67 school districts insisted that teachers submit an application while a separate two-thirds mandated the submission of instructional portfolios (Center for Educator Compensation Reform, 2007). In one district, only tenured teachers were eligible for the incentive program, in yet another only National Board Certified Teachers could apply. State education officials and policymakers were disappointed when only ten or fewer teachers per district received bonuses in the 2005 – 2006 school year from just over half of Florida's public school districts (Office of Program Policy Analysis and Government Accountability, 2007).

Taking matters into their own hands, undaunted policymakers crafted various mandatory statewide "one-size-fits-all" performance pay programs for districts to put into action. By 2008, the Florida Department of Education (2007a, 2009b, 2009d, 2009f) reported the enactment of three different teacher incentive programs plans: Effectiveness Compensation (E-Comp), Special Teachers Are Rewarded (STAR), and the Merit Award Program (MAP). All of these salary reform policies were mandated by state statutes to

contain four criteria: (1) broad eligibility for all school-based instructional staff and administrators; (2) teacher-level compensation for individual teachers as opposed to school-level awards to be shared among the entire faculty; (3) the award was primarily based on student learning gains and to a lesser degree on teacher performance evaluations; and (4) the state education commissioner had the authority to ascertain whether district programs met the state mandates and could deny funding for those that failed to meet them (Center for Educator Compensation Reform, 2007; Florida Department of Education, 2009b, 2009c, 2009d, 2009f).

Effectiveness Compensation (E-Comp)

In 2006, Effectiveness Compensation (E-Comp) was provided to LEAs by the FLDOE to eliminate the multitude of incentive plan models that were being executed among school districts and to meet the state's performance pay requirements (Center for Educator Compensation Reform, 2007; Florida Department of Education, 2009d). The cornerstone of this policy was that the amount of freedom given for designing the performance pay plans was reduced significantly at the district level, thereby ensuring a uniform statewide approach. There were five key provisions for E-Comp: (1) all instructional staff were eligible and any application requirements or additional criteria were prohibited; (2) the measurement of a teacher's performance was primarily based on the learning gains of his/her students via assessment tools approved by the FLDOE; (3) bonuses worth five percent of a teacher's base salary were awarded to at least ten percent

of teachers in each district; (4) funding was to come from the state legislature—the education commissioner hoped to receive about $55 million; and (5) the commissioner would review the compensation plans for all 67 public school districts for proper compliance (Center for Educator Compensation Reform; Florida Department of Education, 2009d).

Strong opposition by teachers, district leaders, and teacher unions prevented statewide adoption of E-Comp. Several elements of the program troubled stakeholders: the absence of design involvement at the local level—teachers, district leaders, and unions; too much reliance on the FCAT®—a single measure of student performance; the proportion of teachers recognized—stakeholders felt the percentage was woefully inadequate; unrealistic timeline development—districts were given four months to craft a plan, negotiate it with their unions, and submit it for state approval (Center for Educator Compensation Reform, 2007).

Special Teachers Are Rewarded (STAR)

On the heels of the failed E-Comp, the Florida Legislature allocated $147.5 million dollars for the newly created Special Teachers Are Rewarded (STAR) incentive program (Florida Department of Education, 2009f). After having recognized the unpopular focus on FCAT® results in the previous performance pay plans, principal evaluations were to be added to measure teacher performance along with student learning gains, classroom management, and instructional practices. Also, the timeline for local school boards to

develop and meet with teachers unions was expanded. Like the E-Comp, all instructional personnel were eligible for a bonus and included an option for the inclusion of school administrators. STAR increased the proportion of teachers receiving bonuses from ten percent to the top 25 percent in each district—hoping to recognize a larger group of educators (Center for Educator Compensation Reform, 2007; Florida Department of Education). The amount of the performance bonus was calculated on five percent of a teacher's base salary for the 2006 – 2007 school year (Orange County Public Schools, 2009b, 2009c). Approval of district incentive plans was made by the state board of education, shifting the responsibility from the education commissioner (Florida Department of Education). Despite these policy modifications, only two-thirds of local school boards agreed to participate in the program, some over the objections of their teachers.

After only one year of implementation, STAR was dismantled after the 2006 – 2007 school year because—among other issues—it failed to garner widespread support across the state from teachers, unions, and superintendents. The major objection from stakeholders was the inconsistent payout amounts (Center for Educator Compensation Reform, 2007). For instance, a teacher at the lower end of the salary scale could achieve higher student learning gains while a more experienced counterpart at the upper end of the scale had students with significantly lower gains. The resulting bonus payout for the novice teacher would be less than that of the veteran because the award payment would be calculated on their respective salaries.

Merit Award Program (MAP)

The Merit Award Program (MAP) was another attempt by the Florida legislature to implement a statewide teacher performance pay plan. In March of 2007, Governor Charlie Crist signed into law a bill creating the new incentive pay program to replace STAR (Florida Department of Education, 2007b). Most of the provisions outlined in the STAR program were carried over into the MAP plan with a few significant adjustments. First, school districts were allowed to opt out of participating in the MAP plan provided local educational agencies (LEAs) were able to design and implement a performance plan of their own with similar goals and objectives. Second, academic proficiency, which was a measure of what a student learned, was included as a barometer of student achievement.

The previous plan mandated that student performance was to be based on learning gains, which required a pre-test and a corresponding posttest. For example, an end-of-course Algebra II test would measure the degree of academic proficiency of a secondary math student whereas the difference in DSS scores from two consecutive years of the FCAT® Mathematics tests would establish the amount of annual learning gains achieved (Florida Department of Education, 2009b, 2009c; Orange County Public Schools, 2009a). Finally, awards for the high performing teachers were to be based on five to ten percent of the district's average teacher's salary, unlike STAR where the payout was calculated on the individual's own base salary—which meant different bonus amounts depending on the teacher's length of service within the same district or even within the same school (Orange County Public Schools).

Although 53 districts adopted the new performance pay program (Center for Educator Compensation Reform, 2007), Orange County Public Schools (OCPS), the source of this dissertation's data, did not participate in the 2007 – 2008 school year. According to a statement posted on the district's website in 2009, "OCPS [was] currently studying the MAP legislation and its implications" (Orange County Public Schools, 2009c). As of the 2009 – 2010 school year, MAP had not been implemented in any Orange County public school.

Extensive research had shown that goal theory and expectancy theory were integral motivational components of successful performance pay programs (Blinder, 1990; Heneman, 1992; Heneman et al., 1989; Kennedy et al., 1983; Lawler, 1971, 1990; Podgursky, 2009; Springer, 2009; Wanous, et al., 1983; Welbourne & Mejia, 1995). Yet, in spite of the carefully crafted performance objectives and measurable student outcomes, the Florida plans failed to ignite widespread teacher buy-in—a critical motivating factor. Staff members did not believe that they were capable of accomplishing the goals nor did they consider the inequitable calculation of the bonuses as worthy of their time and effort (Jacob & Springer, 2008). Legislators and administrators who crafted these salary reform policies underestimated how the absence of expectancy theory can unravel even the most well-intentioned initiatives.

Florida TIF Grantees

In 2007, first year of the TIF grant program, three of Florida's largest school districts were collectively awarded over $12 million: Miami-Dade County Public Schools, Hillsborough County Public Schools, and Orange County Public Schools (U.S. Department of Education, 2009c). Similar in scope and design to previous Florida salary reform policies (E-Comp, STAR, and MAP), the TIF grants were awarded to high-needs schools as determined by each district's criteria for eligibility of participation in the TIF program.

Miami-Dade County Public Schools

Miami-Dade County Public Schools, located on Florida's southeast coast, was the largest school district in the state and the fourth largest school system in the nation. The district employed over 22,000 instructors and nearly 1,100 administrators. It served 348,000 students where 59% qualified for free or reduced-price lunch (Florida Department of Education, 2009e).

Project RISE—Rewards and Incentives for School Educators—was the district's five-year performance pay program funded its first year with a $2.7 million TIF award. The program was "designed to increase teacher and principal effectiveness in [36] high-needs schools through incentives and support, which would result in increased student achievement" (Miami-Dade County Public Schools, 2009, p. 1). The cornerstone of this comprehensive pilot plan was creating a "climate of change and high expectations

through learning communities, systems of mentoring, embedded professional development, and non-instructional planning time" (U.S. Department of Education, 2009c, p. 10). Project RISE awards ranged from $2500 to $3000 for teachers and administrators (Center for Educator Compensation Reform, 2008).

Hillsborough County Public Schools

Hillsborough County Public Schools, situated on the central west coast, was the third largest school district in Florida and the eighth largest school system in the nation (Florida Department of Education, 2009e). Almost 13,000 teachers and 650 administrators served over 193,000 students of whom 48% qualified for free or reduced-price lunch.

POWER—Performance Outcomes with Effective Rewards—was a five-year performance pay program for teachers and administrators that combined classroom performance with student achievement. POWER received an initial TIF funding award of $3 million that "provide[d] differentiated compensation for teachers and administrators in [21] high-needs schools" (Hillsborough County Public Schools, 2009, p. 1; U.S. Department of Education, 2009c). The hallmarks of POWER established a reward system based on increased student learning gains and increased teacher and principal effectiveness by offering staff development related to skills necessary to reach their objectives. After the 2007 – 2008 school year, teachers and administrators received awards of $1096.91 each (Center for Educator Compensation Reform, 2008).

Orange County Public Schools

Orange County Public Schools, located in central Florida, was the fourth largest school district in the state and the tenth largest school system in the nation with over 11,000 instructors and nearly 470 administrators. Forty-seven percent of its 174,000 students benefited from free or reduced-price lunch (American School & University, 2010; Florida Department of Education, 2009e).

Project REAP—Recognizing Excellence in Achievement and Professionalism—was a five-year performance pay program that rewarded teachers and administrators for improved student achievement. Orange County's (FL) first year TIF award of $6.6 million was used to implement the program in ten high-needs urban Title I secondary schools located across the district (U.S. Department of Education, 2009c). Project REAP contained three main components: targeted professional development activities, increased student achievement scores, and positive final evaluations (Orange County Public Schools, 2009e). Teachers received bonuses of up to $4000, while administrators received up to $5000 (Center for Educator Compensation Reform, 2008).

At first glance, Project REAP embraced the motivation elements necessary for a successful merit pay program: clearly defined student goals, staff development opportunities that helped teachers become more effective in the classroom, on-going administrative support and feedback, and an attractive financial bonus. The TAP program, which was based on components similar to Project REAP, revealed promising

results for incentive programs as student academic achievement improved in its participating schools (Springer et al., 2008).

Teacher Incentive Fund – Year 1:

Orange County Public Schools Summative Survey Results

During the 2007 – 2008 school year, the first year Orange County Public Schools participated in the TIF grant, 1,040 administrators and teachers located in the ten Orange County (FL) Title I secondary schools were eligible to participate in the performance pay program (U.S. Department of Education, 2007). Of that number, 507 participants satisfied the pay-out requirements at the end of the school year and received bonuses totaling $1,956,000; it should be noted that the number of recipients did not reflect the original number of applicants, some of whom did not meet the pay-out requirements to receive bonuses. A requirement of the incentive program was for participants—both instructional staff and administrators—to complete specific professional development courses. According to a report by the U.S. Department of Education (2007), a total of $257,754 was spent on various professional development courses designed to target the instructional needs of low-performing students and were paid for by the TIF grant. The Summative Survey Results Chart in Appendix C revealed that 429 of the 461 (93%) of the TIF teachers stated that the TIF professional development courses had a positive impact on their classroom instruction. In addition, 420 out of the 461 teachers (91%) found the content of the courses to be relevant and 438 (95%) reported using new

strategies learned for the course in their classrooms. The overall satisfaction rate on professional development indicators was 94% (U.S. Department of Education, 2007).

A goal of the TIF grant was to retain highly effective teachers and principals in high-needs schools. Information from the TIF Grant Performance Report (see Appendix D) noted that at the beginning of the 2007 – 2008 school year, 640 of the 905 (71%) teachers in Orange County Public Schools returned to their teaching positions at the ten participating TIF schools. However, instructional staff at the TIF schools was reduced by 14% (129 out of 905 teachers) as a result of severe budget cuts by the Florida Legislature (U.S. Department of Education, 2007). The effects of mandatory staff reductions caused teacher transfer rates to increase from 3% to 15% and overall teacher retention to drop to 55% (429 out of 776 teachers). The inability to retain highly qualified teachers may have been the result of budget cuts as opposed to a teacher's unwillingness to return to their schools. On a positive note, at the beginning of the 2007 – 2008 school year, seven of the ten (70%) principals returned to their positions at the TIF schools; whereas the following school year, the retention rate had improved to eight out of ten (80%) principals (U.S. Department of Education, 2007).

In the area of academic achievement, 91% (419 of the 461 teachers) surveyed in the Summative Survey Results Chart (see Appendix C) believed that their participation in TIF would have an impact on their students' standardized test scores most likely as a result of their targeted professional development courses (U.S. Department of Education, 2007). For example, on the 2007 FCAT®, TIF schools achieved a mean of 32.35 points in

mathematics and science. In the overall performance chart in Appendix F, baseline achievement in mathematics (M = 46.7) was significantly higher than achievement in science (M = 18). During the first year of the TIF grant, the number of students achieving at or above grade level increased 4.9 percentage points in mathematics (M = 51.6) and 5.9percentage points in science (M = 23.9) when compared to the scores of the previous year.

The Florida Department of Education (2010a) published an Annual State Report Card as a part of Florida's School Accountability System (see Appendix E). The School Accountability System tracked student learning gains based on the state's academic standards from year to year. The system allowed the improvement of individual students to be tracked from one school year to the next based on FCAT® Development Scale Scores in reading and mathematics from third through tenth grade (Florida Department of Education, 2010a). The Annual State Report Card assigned a school grade as determined by the accumulation of percentage points.

For 2007, the mean average of the total points on the FCAT® by the ten TIF schools was 435.9 (see Appendix F). The baseline of report card points earned by the middle schools (M = 453.4) was significantly higher than that of the high schools (M = 395) by nearly 60 points (U.S. Department of Education, 2007). During the first year of the TIF grant, eight of the ten participating schools increased their performance on the FCAT® by an average of 27.8 points. On the 2008 FCAT®, the TIF middle schools earned an average of 482 points, while the TIF high schools earned an average of 421

points (U.S. Department of Education, 2007). Under Florida's accountability system, at least 525 points were required for an "A" rating (see Appendix E). In 2008, one of the TIF middle schools received an "A" rating for the first time, having earned 534 points (U.S. Department of Education).

Previous experiences with Florida's teacher incentive programs—E-Comp, STAR, and MAP—indicated that their failures, in part, were due to a lack of "buy in" from classroom teachers (Jacob & Springer, 2008). On the other hand, the Year One TIF Summative Survey Results revealed that 417 of the 461 participants (90%) were confident that they had a complete understanding of the application process and the requirements related to the performance pay program (see Appendix C). Ninety-five percent (437 out of 461 teachers) were glad that their school was a part of the incentive program, while 91% (419 out of 461) were planning to participate the following year. One reason for the supportive responses could have been that 434 of the 461 teachers (94%) acknowledged that the TIF program was often referenced during formal and informal faculty meetings. Eighty-eight percent, 407 out of 461, of the respondents thought that the requirements for receiving the TIF incentive award were fair and equitable.

On a final note, 428 of the 461 teachers (93%) collaborated in learning teams on a regular basis (see Appendix C). These results contrasted the findings in the survey of Hillsborough County (FL) teachers conducted by Jacob and Springer (2008), where 56% (947 out of 1691 respondents) felt that incentive programs created a competitive

atmosphere which destroyed the "collaborative culture of teaching." Perhaps the favorable results of the Orange County program reflected the fact that 423 out of 461 respondents (92%) of the viewed the incentive program as a significant element of the school improvement plan (U.S. Department of Education, 2007).

Chapter Summary

Teacher pay structures have transformed from providing room and board supplements during the late 19th century to the single salary schedule used today. Education leaders have sought to design a pay scale for teachers that recognized their efforts in the classroom and encouraged others to enter the profession. The 1983 federal report, *A Nation at Risk: The Imperative For Education Reform*, concluded that teachers who demonstrated superior pedagogic skills and knowledge should receive bonuses. The Teacher Incentive Fund, a federal merit-based compensation policy, was designed by federal legislators to reward teachers who increased academic achievement among their low-performing students. Supporters of this salary reform program hoped that offering financial bonuses would attract and retain high-quality effective educators and close the achievement gap, especially in high-poverty, high-minority schools.

CHAPTER THREE:
RESEARCH DESIGN
AND METHODOLOGY

This dissertation focused on an investigation of the impact of a Teacher Incentive Fund (TIF) grant on low-performing middle school students in one Central Florida school district during its second year of implementation. This chapter details the research design and methodology used to analyze the FCAT® Math scores. The topics to be discussed in this chapter include: the research design, data gathering and sampling procedures, instrumentation, the research questions, statistical analysis procedures, and ethical considerations.

Research Design

The quantitative data collected for this study were analyzed using two different types of research designs. The first research design was a covariance design as the mean differences of the student scores were analyzed (Lomax, 2007; Marion, 2004). This design consisted of two groups: students whose teachers participated in the Teacher Incentive Fund (TIF) and students whose teachers did not participate. The students whose teachers participated in TIF were considered a treatment group, while the students whose teachers did not participate were considered a control group. In design notation (see Table 6), the observations "O1" located below event one were the 2008 FCAT® Math scores of students whose teachers participated in TIF (TIF Teachers) and the scores of

students whose teachers did not participate (Non-TIF Teachers). The observations "O2" located below event three were the 2009 FCAT® Math scores of students whose teachers participated in TIF (TIF Teachers) and the scores of teachers who did not participate in TIF (Non-TIF Teachers). The "X" located below event two represented the treatment (e.g. implementation of the TIF program), while the "blank space" located below event two represented the absence of treatment.

Table 6
Covariance Research Design

EVENT	1	2	3
TIF Teachers	O1	X	O2
Non-TIF Teachers	O1		O2

Note. From Marion, 2004.

The second research design was an ex post facto observational design, which described trends that existed in the FCAT® Math scores of the ten Title I middle schools in a Central Florida district from 2005 through 2009 (Rodger, 2004). The independent variable was used only to classify the Title I middle schools into two groups (Rodger). In design notation (see Table 7), one group (TIF Middle Schools) represented the seven Title I middle schools in a Central Florida district that participated in TIF, while the next group (Non-TIF Middle Schools) represented the three Title I middle schools that were not eligible to participate. The observations in the diagram labeled as "O1", "O2", "O3",

"O4", and "O5" located under events one, two, three, four, and five; respectively, represented the FCAT® Math scores over the five-year period.

Table 7
Ex Post Facto Research Design

EVENT	1	2	3	4	5
TIF Middle Schools	O1	O2	O3	O4	O5
Non-TIF Middle Schools	O1	O2	O3	O4	O5

Note. From Marion, 2004.

Data Gathering Procedures

The quantitative data collected for this study were examined to determine the impact of the Teacher Incentive Fund (TIF) on increasing academic achievement among low-performing students in grades six through eight. The measuring of academic achievement for a low-performing student was based on the amount of learning gains made by that student from one grade level to the next consecutive grade level (Florida Department of Education, 2008). Annual learning gains for low-performing students were based on the difference of the Developmental Scale Scores (DSS) for two consecutive FCAT® Math exams. A student who met or exceeded the criteria set by the Florida Department of Education (2008) achieved at least one year's academic growth. The guidelines that determined at least one year's academic growth varied according to grade level.

The 2008 and 2009 FCAT® Math DSS scores were collected from a Central Florida middle school—with the consent of the principal and the school district—and were compared to the criteria in Table 8 to determine the amount of learning gains achieved. The average learning gain for middle school students was calculated by adding together the growth definitions for sixth, seventh, and eighth graders, then dividing that sum by three. Therefore, the average learning gain for middle school students collectively is an increase of at least 79 points.

Table 8
One Year's Growth Definition (Learning Gains) for FCAT® Math DSS

Grade	4	5	6	7	8	9	10
DSS	164	119	95	78	64	54	48

Note. Retained students cannot demonstrate learning gains using DSS. From Florida Department of Education, 2007b.

In addition to the student scores from the one TIF middle school site, FCAT® Math test score data from Orange County Public School's ten Title I middle schools were collected for academic years 2005 through 2009. A list of the Title I middle schools was retrieved from Orange County Public School's public website along with information about the schools eligible to participate in the TIF program (Orange County Public Schools, 2009e). The ten Title I middle school FCAT® Math test score averages for the past five years were collected from the Florida Department of Education's interactive public website (Florida Department of Education, 2010b). These scores were analyzed to

determine the existence of trends in the data for the two years before TIF (2005 and 2006), the two years after TIF (2008 and 2009); the year of implementation (2007) served as the baseline.

Data Sampling Procedures

The FCAT® Math DSS scores of students enrolled at one of the Title I middle schools participating in TIF were an integral component of this study. These scores were a convenience sample based on the participation of the math teachers in the incentive program at this middle school. The scores of the students were grouped according to whether or not their teachers participated in TIF. There were ten math teachers employed at this particular middle school all of whom were eligible to participate in the incentive program. Of these ten math teachers, seven participated in TIF while three opted not to participate. The data were collected and sorted by grade level and math teacher. In order to protect the identity of the students, all identifying information was removed, such as student names and identification numbers, and replaced with an alphanumeric code.

The student database began with 1047 scores. After removing 97 scores of students who did not have 2008 FCAT® Math DSS results to pair with 2009 FCAT® Math DSS scores, there was a subtotal of 950. Next, students who scored at a FCAT® Level 3 or above were excluded. Since there were 460 students who reached this achievement, removing them from the database resulted in a final sample size of 490. In order to calculate annual learning gains per the Florida Department of Education guidelines, only

DSS scores from students who scored at FCAT® Level 1 or Level 2 were analyzed. The sample was limited to the scores of low-performing students that had both 2008 and 2009 FCAT® Math DSS results. For the seven math teachers who participated in TIF, 358 of their students met these criteria, whereas for the three math teachers who opted out of participating, 132 of their students met these requirements.

Instrumentation

The dependent variable for the covariance research design was the FCAT® Math DSS student scores. The student scores were an interval measurement as the distances between the points on the scale were equal across the scale (Lomax, 2007). The independent variable was the math teachers, who were divided into two groups: teachers who participated in the Teacher Incentive Fund (TIF) and teachers who did not participate in the incentive program. Their participation in TIF was the grouping variable. The control group, teachers who did not participate in TIF, were coded in the procedure using a TIF status = 0. The treatment group, the teachers participating in TIF, were coded in the procedure using a TIF status = 1.

The dependent variable for the ex post facto descriptive research design was the FCAT® Math DSS Title I middle school scores. In a manner similar to the student scores, the middle school scores were an interval measurement as well. For this research design, no independent variable was manipulated. The scores were grouped according to the middle school's eligibility to participate in the TIF program.

Research Questions

To solidify his commitment to education reform, President Obama's economic stimulus policy, the American Recovery and Reinvestment Act of 2009 (ARRA), earmarked over $687 million taxpayer dollars in funding for performance pay initiatives (Chait & Miller, 2009a, 2009b). Moreover, the $4.35 billion Race to the Top fund provided competitive federal grants that championed school reform policies (U.S. Department of Education, 2010). Race to the Top awarded comprehensive state education programs that were implementing innovative initiatives that focused on recruiting and rewarding effective teachers and administrators in high-needs schools that increased academic achievement. The Teacher Incentive Fund (TIF) grant, initiated under the George W. Bush Administration with continued support of the Obama Administration, was designed to improve academic achievement among low-performing students (U.S. Department of Education, 2009b, 2010). Therefore, the four research questions of this study focused on the standardized test results of academically struggling students in a Central Florida school district that was in the second year of a TIF grant:

1. What differences in learning gains existed, if any, between the 2008 and 2009 Florida Comprehensive Assessment Test® Math scores among the students of math teachers at one urban Central Florida Title I middle school who participated in the Teacher Incentive Fund when compared to the students of math teachers who did not participate?

2. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, among the Title I middle schools in one Central Florida school district that participated in the Teacher Incentive Fund?
3. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, among the Title I middle schools in one Central Florida school district that did not participate in the Teacher Incentive Fund?
4. What trends in the Florida Comprehensive Assessment Test® Math scores from 2005 through 2009 existed, if any, between the two groups when compared to each other?

Statistical Analysis Procedures

An independent-samples t test was conducted to evaluate the hypothesis that differences existed between the 2008 and 2009 Florida Comprehensive Assessment Test® Math scores among the students of math teachers at one urban Central Florida Title I middle school based on their teachers' participation in the Teacher Incentive Fund. The independent-samples t test was the statistical procedure chosen to analyze the 2008 and 2009 FCAT® Math DSS scores of the students because the two groups of math teachers were independent of each other—the scores of their students had no relationship to one another—and the scores were assumed to be normally distributed in each of the two

groups (Lomax, 2007). Referencing the covariance research design, the scores of the students were grouped by math teachers who participated in TIF—the treatment group ("TIF Teachers") and the teachers who did not participate—the control group ("Non-TIF Teachers"). The mean scores of the treatment group were compared to the control group to determine the existence of any differences in the average learning gain based on the growth definition.

The Development Scale Scores (DSS) from all of ten of the Title I middle schools in a Central Florida district were displayed in ten separate line graphs to show any changes over time in the scores from the FCAT® Math tests administered from 2005 through 2009 (Lomax, 2007). In reference to the ex post facto research design, there were five observations of the scores where each observation corresponded to the years 2005, 2006, 2007, 2008, and 2009. Trends that existed in the TIF middle schools that participated in the Teacher Incentive Fund were compared to trends that existed in the TIF middle schools not eligible to participate. The observations from these line graphs were the basis for the final conclusions.

Ethical Considerations

The ethical considerations regarding the student data gathered for this study were a moderate concern. The student data had all identifying characteristics removed prior to analysis. Also, any of the information published in tables within this study had all identifying characteristics removed. Written permission for the gathering of all student

data used in this study was granted by both the principal of the TIF Title I middle school and the research director for a Central Florida public school district.

Chapter Summary

An independent-samples t test was chosen to expose any differences in learning gains that existed between the 2008 and 2009 Florida Comprehensive Assessment Test® Math scores among math teachers who participated in the Teacher Incentive Fund when compared to math teachers who did not participate. Moreover, the data collected from ten Central Florida Title I middle schools were organized into separate line graphs that displayed any trends in learning gains over a five-year period. The topics discussed in this chapter included: the research design, data gathering and sampling procedures, instrumentation, the research questions, statistical analysis procedures, and ethical considerations. The results of these procedures will be analyzed to determine the academic impact of a Teacher Incentive Fund grant during its second year of implementation on low-performing middle school students in a Central Florida school district.

CHAPTER FOUR:
RESULTS

The purpose of this dissertation was to determine if any differences in learning gains existed between the 2008 and 2009 Florida Comprehensive Assessment Test® (FCAT®) Math scores among the students of math teachers at one urban Central Florida Title I middle school who participated in the Teacher Incentive Fund (TIF) when compared to the students of math teachers who did not participate. Furthermore, the study analyzed FCAT® Math scores from 2005 through 2009 in one Central Florida school district to determine if any trends existed: among the Title I middle schools participating in TIF; among the Title I middle schools that did not participate; and between the two groups when compared to each other.

Chapter Four begins with the results of the independent-samples t tests, which analyzed the scores of the students from the Title I middle school. The chapter ends with observations of the line graphs of the five-year data gathered from the ten Title I middle schools.

Independent-Samples t Test Results

An independent-samples t test was conducted to evaluate the hypothesis that differences existed between the 2008 and 2009 Florida Comprehensive Assessment Test® Math scores among the students of math teachers at one urban Central Florida Title I middle school based on their teachers' participation in the Teacher Incentive Fund. The

mean scores of the treatment group (TIF Teachers) and the control group (Non-TIF Teachers) were compared for any differences in the amount of learning gains achieved. According to the results in Table 9, Levene's test for equal variance, a measure of the dispersion of a set of data points around their mean value, shows that the homogeneity of variance assumption was satisfied ($F = 2.003$, $p = .158$).

Table 9
Independent-Samples t Test: Levene's Test for Equality of Variances

	Levene's Test for Equality of Variances		t-test for Equality of Means		
Equal Variances	F	Sig.	t	df	Sig. (2-tailed)
Assumed	2.003	0.158	1.49	488	0.14
Not Assumed			1.43	217.04	0.16

Figure 1 illustrates the dispersion of the student data grouped by their math teachers' participation in the Teacher Incentive Fund. The graphs of both the treatment group (TIF Teachers) and the control group (Non-TIF Teachers) reveal a normal distribution of the data sets.

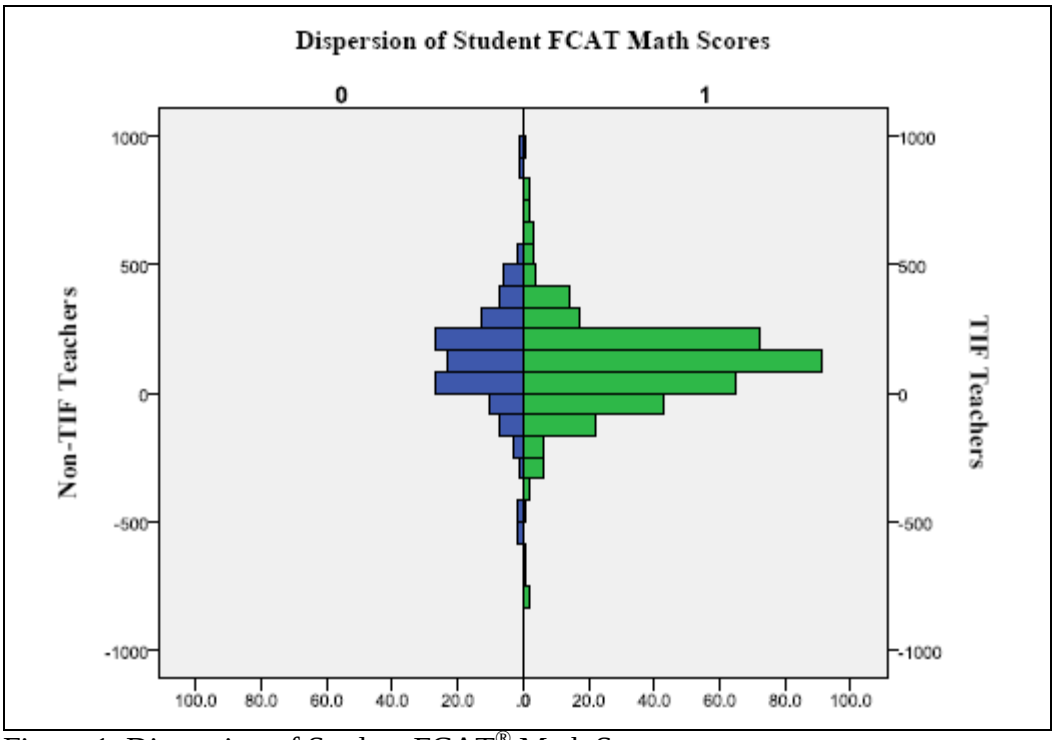

Figure 1. Dispersion of Student FCAT® Math Scores

Table 10 shows that students whose math teachers did not participate in TIF were defined as a "0" on the control grouping variable (Non-TIF Teachers), and students whose math teachers did participate were defined as a "1" on the treatment grouping variable (TIF Teachers). The mean scores of the TIF teachers (M = 100.97, SD = 198.83) and the non-TIF teachers (M = 131.80, SD = 216.98) were used to calculate the mean difference. The mean difference of the test scores, 30.83, was obtained by subtracting the mean scores of the TIF teachers from the mean scores of the non-TIF teachers (see Table 11). The 95% confidence interval for the difference in means was wide, ranging from -9.96 to 71.61.

Table 10
Independent-Samples t Test: Group Statistics

Grouping Variable	Group	N	Mean	SD	Std. Error Mean
0	Non-TIF Teachers	132	131.80	216.98	18.89
1	TIF Teachers	358	100.97	198.83	10.51

Table 11
Independent-Samples t Test: t-test for Equality of Means

	t-test for Equality of Means			
			95% Confidence Interval of the Difference	
Equal Variances	Mean Difference	Std. Error Difference	Lower	Upper
Assumed	30.83	20.76	-9.96	71.61
Not Assumed	30.83	21.61	-11.77	73.42

Although, students whose math teachers participated in TIF (M = 101.0, SD = 198.83) had lower mean scores than students whose math teachers who did not participate (M = 131.8, SD = 216.98), the results of the independent-samples t test revealed that there was no statistical difference between the two groups based on participation in TIF, $t(488) = 1.49$, $p > .05$ (see Table 9). The eta squared index indicated that less than 1% of the variance of the test score variable was accounted for by whether a teacher participated in TIF.

As shown in Table 12, when the mean difference of the students was separated by individual math teacher, the mean difference of three of the seven math teachers that participated in TIF exceeded the average learning gain for middle school students of 79

points. The mean scores of each of the math teachers who did not participate exceeded the average learning gain for middle school students (see Table 13).

Table 12
TIF Teacher FCAT® Math Mean DSS Scores

Variable	2009 TIF Scores			2008 TIF Scores			Mean
	N	M	SD	N	M	SD	Difference
TIF Teacher A	5	1012.8	252.3	5	961.2	405.0	52.6
TIF Teacher B	89	1628.9	180.4	89	1492.6	229.4	136.3
TIF Teacher C	78	1461.5	260.5	78	1427.1	200.0	34.4
TIF Teacher D	52	1448.9	217.9	52	1382.3	203.9	66.6
TIF Teacher E	45	1654.6	157.0	45	1457.9	210.1	196.7
TIF Teacher F	47	1786.6	102.2	47	1651.4	102.9	135.2
TIF Teacher G	42	1431.1	219.7	42	1373.8	236.6	57.3
Total	358	1558.4	243.3	358	1457.4	230.6	101.0

Table 13
Non-TIF Teacher FCAT® Math Mean DSS Scores

Variable	2009 non-TIF Scores			2008 non-TIF Scores			Mean
	N	M	SD	N	M	SD	Difference
Non-TIF Teacher H	70	1574.4	295.5	70	1466.3	289.2	108.1
Non-TIF Teacher I	12	1391.6	226.6	12	1227.4	242.5	164.2
Non-TIF Teacher J	50	1619.1	170.1	50	1462.0	178.4	157.2
Total	132	1574.7	254.8	132	1443.0	256.1	131.8

The grade-level student mean scores, as shown in Tables 14 and 15, show that both groups of sixth graders—students whose teachers participated in TIF (M = 49.0) and students whose teachers did not participate (M = -63.8) did not make at least one year's

learning gain (see Table 16). When compared to the 2008 FCAT® Math test, sixth grade students whose teachers did not participate in TIF scored lower on the 2009 FCAT® Math test. Students in seventh and eighth grades exceeded Florida's guidelines for learning gains for each grade level; 78 and 64 points, respectively (see Table 16). Seventh grade students whose teachers did not participate in TIF (M = 195.5) had a slightly higher score than seventh grade students whose teachers participated (M = 189.9). On the other hand, eighth graders whose teachers participated in TIF (M = 105.0) demonstrated higher learning gains than eighth graders whose teachers did not (M = 82.1).

Table 14
Grade Level FCAT® Math Mean DSS Scores: TIF Teachers

	2009 TIF Scores			2008 TIF Scores			Mean
Grade	N	M	SD	N	M	SD	Difference
6	176	1437.1	248.6	176	1388.1	229.2	49.0
7	99	1621.7	171.8	99	1431.8	229.5	189.9
8	83	1740.1	144.1	83	1635.1	115.5	105.0
Total	358	1558.4	243.3	358	1457.4	230.6	101.0

Table 15
Grade Level FCAT® Math Mean DSS Scores: Non-TIF Teachers

	2009 Non-TIF Scores			2008 Non-TIF Scores			Mean
Grade	N	M	SD	N	M	SD	Difference
6	11	1025.1	244.5	11	1088.9	268.2	-63.8
7	72	1579.4	190	72	1383.9	228.8	195.5
8	49	1691.2	168.2	49	1609.1	156.1	82.1
Total	132	1574.7	254.8	132	1442.9	256.1	131.8

Table 16
One Year's Growth Definition (Learning Gains) for FCAT® Math DSS

Grade	4	5	6	7	8	9	10
DSS	164	119	95	78	64	54	48

Note. Retained students cannot demonstrate learning gains using DSS. From Florida Department of Education, 2007b.

Data Tables and Line Graphs Observations

The next phase of the study involved analyzing the mean FCAT® Math scores from 2005 through 2009 of the ten Title I middle schools in this Central Florida school district to describe any trends that existed among schools that participated in TIF and those that did not. All Developmental Scale Scores (DSS) were retrieved from the Florida Department of Education's FCAT® interactive website, and information was displayed in tables and line graphs for interpretation and comparisons. (Florida Department of Education, 2010b). The seven Title I middle schools that participated in TIF were analyzed first; then the three Title I middle schools that did not participate were analyzed. Observations of the ten Title I middle schools described any trends that existed over the five-year period. Next observations of any trends during the two years TIF was implemented at the middle schools were documented. Both groups of middle schools were assigned an alphanumeric code that distinguished them from their eligibility to participate in the TIF grant.

In Table 17 and Figure 2, the scores of TIF MS – 01 revealed increased DSS scores across all grade levels over the five-year period where eighth grade had the largest point

gain of 51 points. Sixth grade scores increased 33 points and seventh grade scores were higher by 8 points. The most notable increase occurred among the sixth graders after the second year of the TIF grant, when scores increased 70 points after two years of declines. During that same time period, scores decreased in the seventh and eighth grades by 30 and 25 points, respectively. Two years after the implementation of TIF, sixth grade (by 46 points) and eighth grade (by 19 points) scores were higher whereas seventh grade scores were lower (by 11 points).

Table 17
TIF MS – 01: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1510	1527	1497	1473	1543	17	-30	-24	70
7	1674	1696	1693	1712	1682	22	-3	19	-30
8	1731	1791	1763	1807	1782	60	-28	44	-25

Note. Florida Department of Education, 2010b.

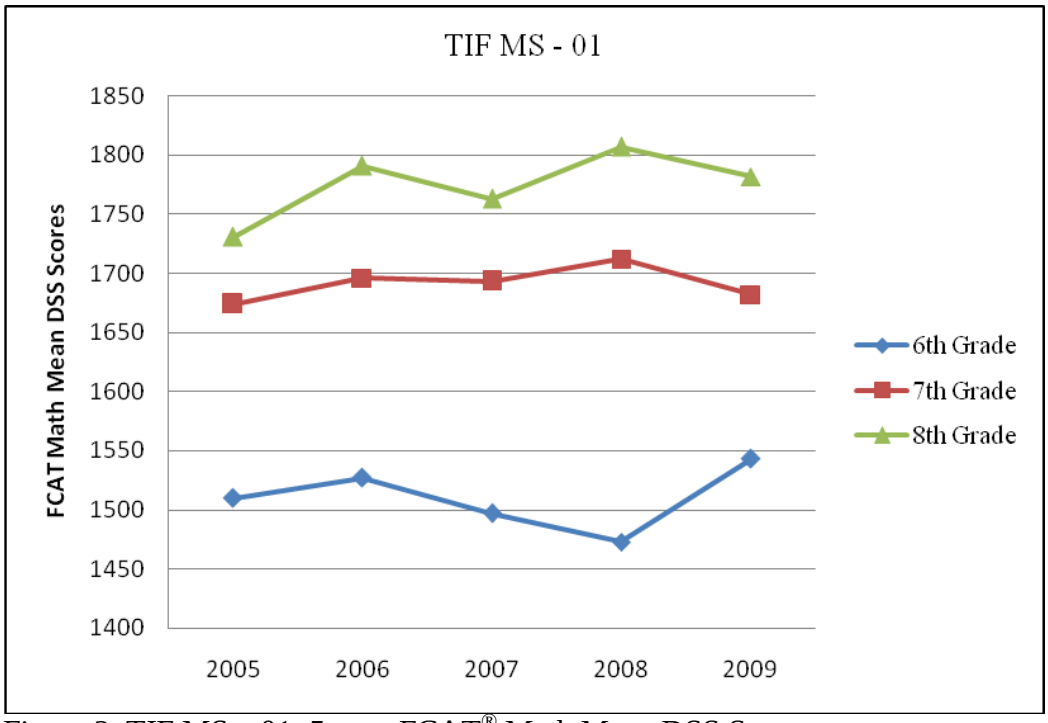

Figure 2. TIF MS – 01: 5-year FCAT® Math Mean DSS Scores

In Table 18 and Figure 3, the scores of TIF MS – 02 revealed increased DSS scores across all grade levels over the five-year period where eighth grade had the largest gains of 69 points. Seventh grade scores were 48 points higher followed by sixth graders whose scores increased 45 points. Eighth grade scores increased 44 points after the first year of the TIF grant; however, the scores made a slight decrease of just 2 points after the second year. Seventh grade scores were relatively flat after two years in TIF as the mean score remained the same in 2007 and 2009. Sixth grade scores showed no change after the first year of TIF, but increased 16 points after the second year.

Table 18
TIF MS – 02: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1566	1618	1595	1595	1611	52	-23	0	16
7	1713	1699	1761	1768	1761	-14	62	7	-7
8	1802	1810	1829	1873	1871	8	19	44	-2

Note. Florida Department of Education, 2010b.

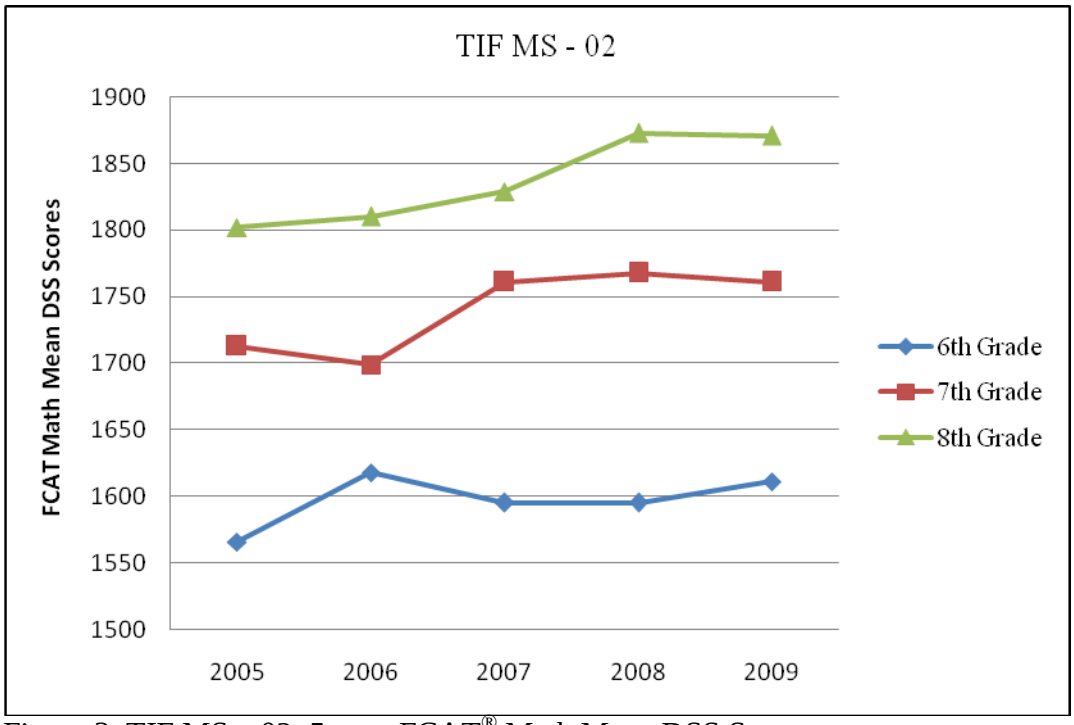

Figure 3. TIF MS – 02: 5-year FCAT® Math Mean DSS Scores

In Table 19 and Figure 4, the scores of TIF MS – 03 revealed increased DSS scores across all grade levels over the five-year period. Eighth grade scores had the largest gains at 131 points, followed by sixth grade (124 points) and seventh grade (120 points). Two

years after the implementation of TIF, sixth grade (85 points) scored the highest learning gains with eighth grade scores at 68 points higher. On the other hand, seventh grade scores were slightly lower (1 point) at the end of the second year of TIF. Sixth grade scores showed a steady year-over-year increase during the five-year period with an especially steep gain of 55 points after the second year of TIF.

Table 19
TIF MS – 03: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1502	1527	1541	1571	1626	25	14	30	55
7	1618	1676	1739	1776	1738	58	63	37	-38
8	1730	1779	1773	1844	1841	49	-6	71	-3

Note. Florida Department of Education, 2010b.

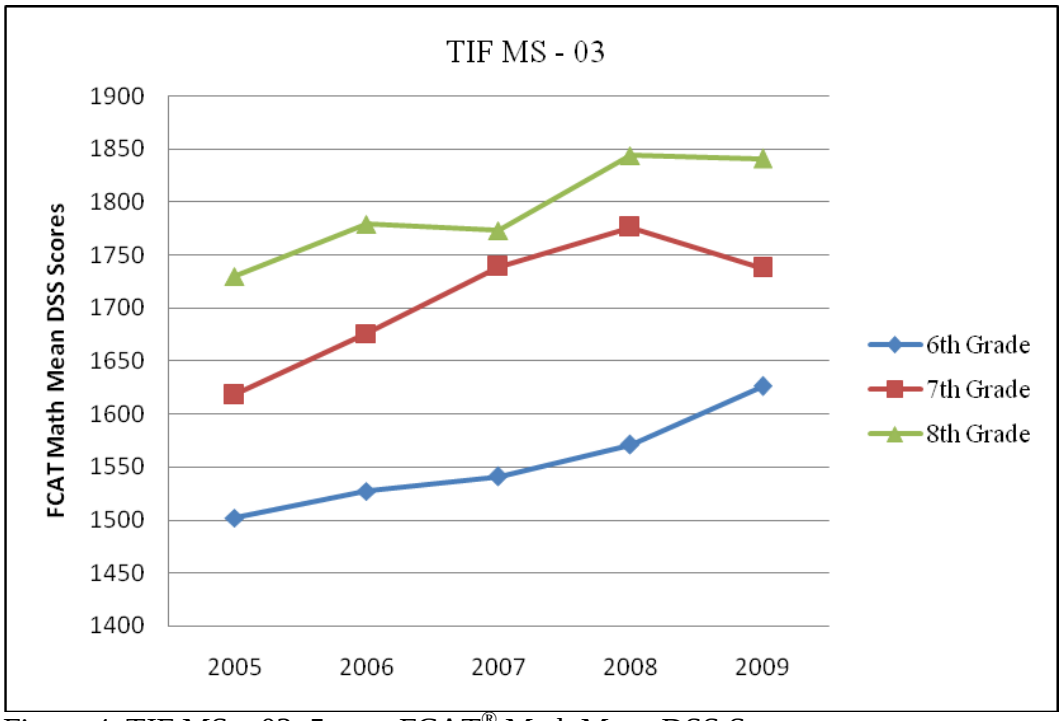

Figure 4. TIF MS – 03: 5-year FCAT® Math Mean DSS Scores

In Table 20 and Figure 5, the scores of TIF MS – 04 revealed increased DSS scores in sixth and seventh grade scores (10 points and 34 points, respectively) over the five-year period. However, eighth grade scores decreased 14 points during that same time. Two years after TIF, sixth grade scores had the highest gains at 38 points while seventh grade increased a modest three points. Eighth grade scores decreased 23 points, after two years in TIF; most notably dropping 45 points at the end of the second year in TIF.

Table 20
TIF MS – 04: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1443	1472	1415	1461	1453	29	-57	46	-8
7	1579	1634	1610	1598	1613	55	-24	-12	15
8	1704	1701	1713	1735	1690	-3	12	22	-45

Note. Florida Department of Education, 2010b.

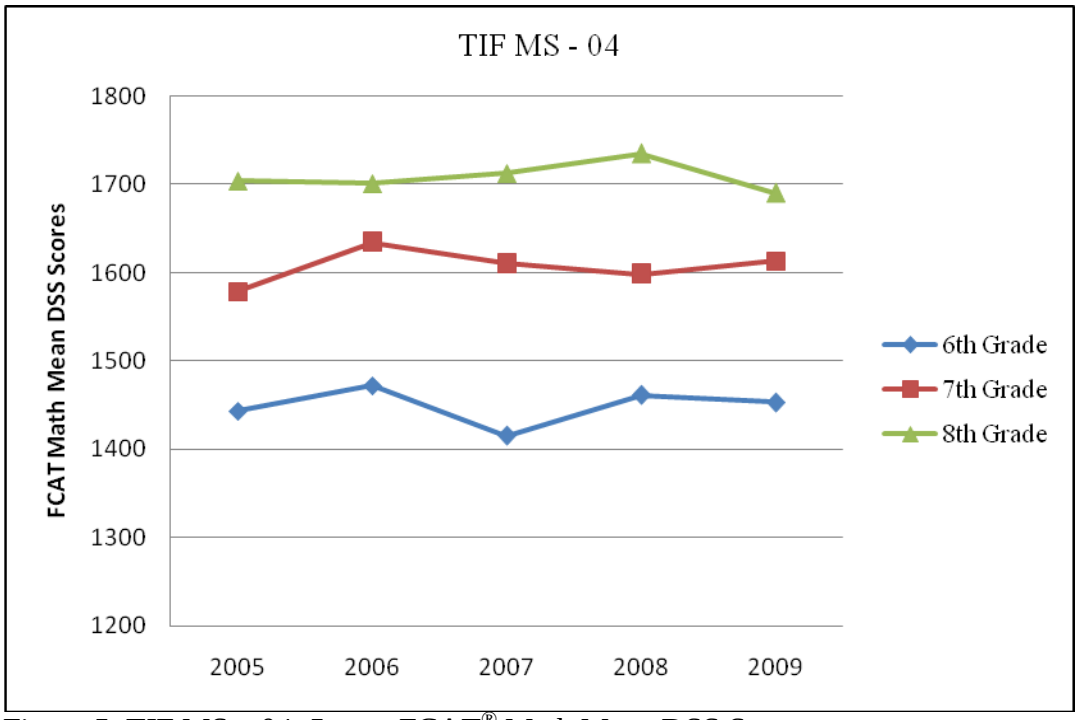

Figure 5. TIF MS – 04: 5-year FCAT® Math Mean DSS Scores

In Table 21 and Figure 6, the scores of TIF MS – 05 revealed increased DSS scores across all grade levels over the five-year period. Sixth grade scores had the highest learning gains with 35 points, while seventh grade (one point) and eighth grade (nine

points) scored modest increases. Two years after implementing TIF, sixth grade had the most dramatic increase at 126 points. On the other hand, the scores of the remaining grades decreased; seventh grade went down 39 points and eighth grade went down 22 points during the same period. The year before the TIF grant, sixth grade scores dropped significantly by 107 points, then increased at a steady rate during the two years after the incentive program was implemented, with 78 point gains the first year and 48 point gains the second year.

Table 21
TIF MS – 05: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1575	1591	1484	1562	1610	16	-107	78	48
7	1704	1718	1744	1743	1705	14	26	-1	-38
8	1790	1797	1821	1819	1799	7	24	-2	-20

Note. Florida Department of Education, 2010b.

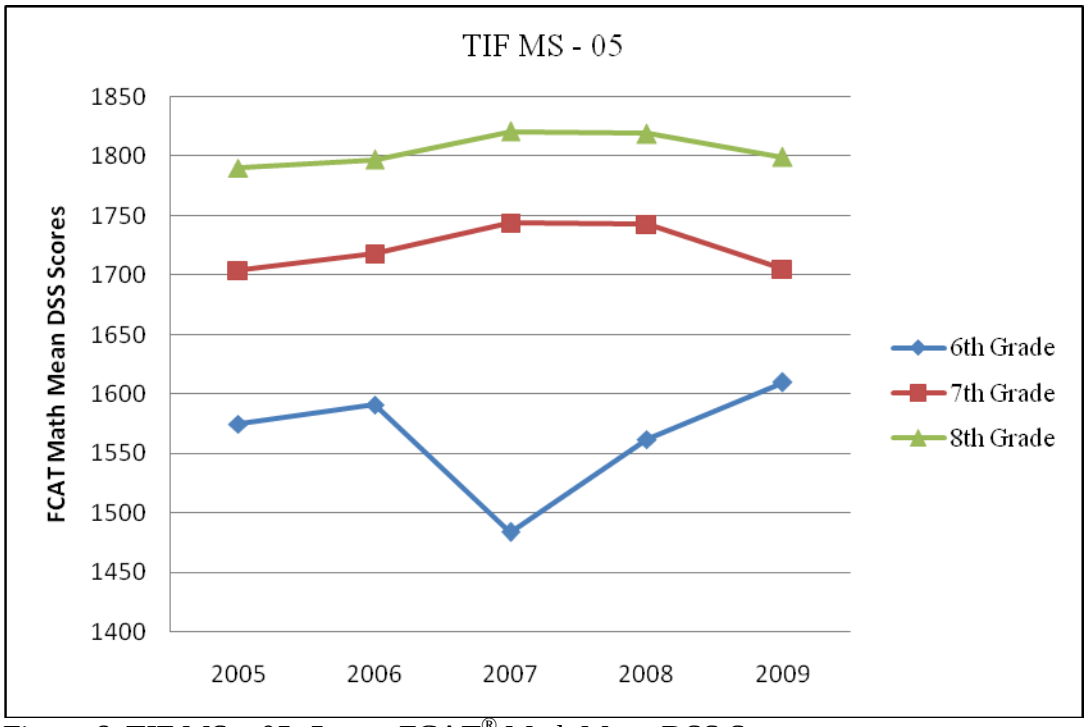

Figure 6. TIF MS – 05: 5-year FCAT® Math Mean DSS Scores

In Table 22 and Figure 7, the scores of TIF MS – 06 revealed increased DSS scores in seventh grade (46 points) and eighth grade (35 points) over the five-year period whereas sixth grade scores had decreased 40 points. Two years after implementing TIF, seventh grade and eighth grade scores were higher by 38 points and 25 points, respectively. Sixth grade scores had decreased by 30 points after two years in the TIF program. After the second year of TIF, all grade levels exhibited decreased scores, with sixth grade scores having shown the deepest decline at 37 points. Eighth grade scores dropped 26 points, while seventh grade had the smallest decrease at just one point.

Table 22
TIF MS – 06: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1578	1586	1568	1575	1538	8	-18	7	-37
7	1729	1709	1737	1776	1775	-20	28	39	-1
8	1808	1831	1818	1869	1843	23	-13	51	-26

Note. Florida Department of Education, 2010b.

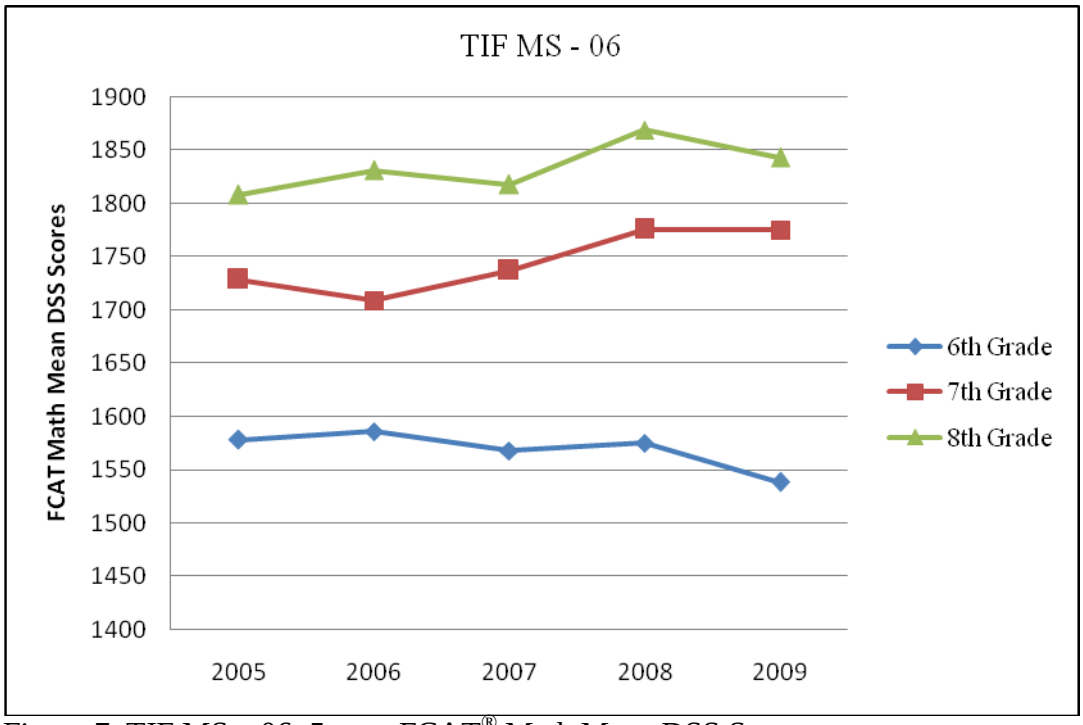

Figure 7. TIF MS – 06: 5-year FCAT® Math Mean DSS Scores

In Table 23 and Figure 8, the scores of TIF MS – 07 revealed increased DSS scores in eighth grade (57 points) and sixth grade (7 points) over the five-year period unlike seventh grade scores that had decreased 21 points. During the two years of the TIF grant, only eighth grade scores illustrated a gain of six points; sixth grade scores decreased

slightly by four points, while seventh grade scores dropped 22 points. After the second year of the TIF grant, seventh grade scores declined 65 points.

Table 23
TIF MS – 07: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1532	1506	1543	1536	1539	-26	37	-7	3
7	1695	1682	1696	1739	1674	-13	14	43	-65
8	1744	1768	1795	1808	1801	24	27	13	-7

Note. Florida Department of Education, 2010b.

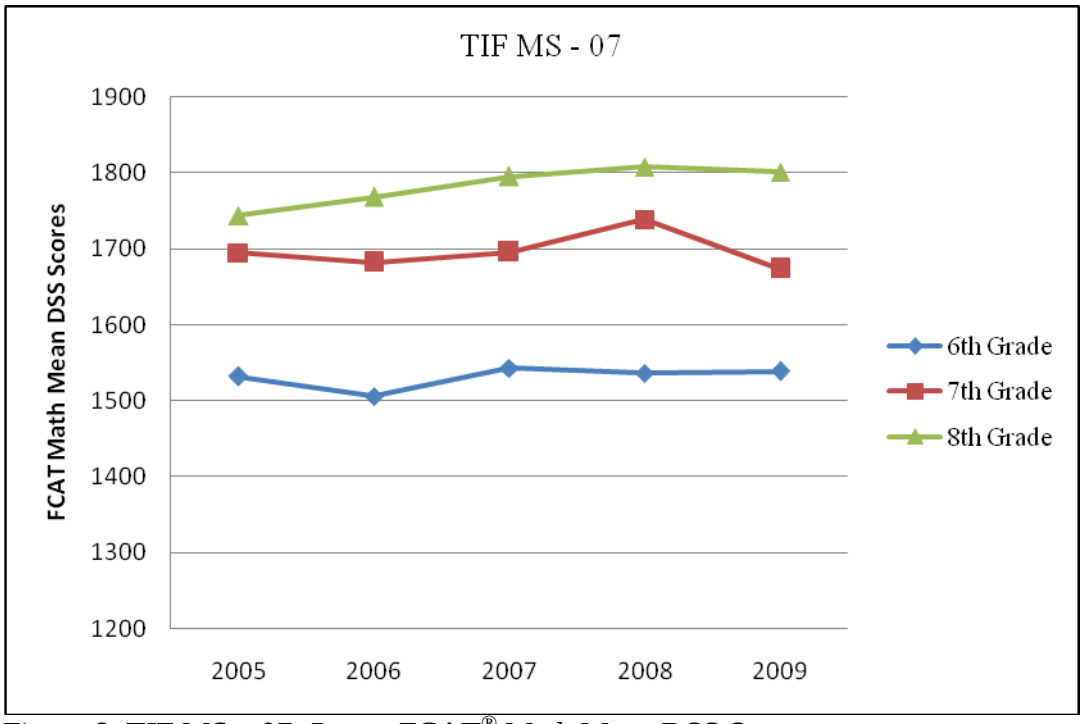

Figure 8. TIF MS – 07: 5-year FCAT® Math Mean DSS Scores

The last three sets of graphic displays were of the data retrieved from the Title I middle schools in the Central Florida district that were not eligible to participate in the TIF program. In Table 24 and Figure 9, the scores of Non-TIF MS – 08 revealed increased DSS scores across all grade levels over the five-year period; both sixth grade (37 points) and eighth grade (38 points) showed growth, whereas seventh grade (76 points) demonstrated the most dramatic increase of all the grade levels. Two years after the implementation of the TIF program in the district, all grade levels maintained increased scores, however, sixth grade (45 points) had the highest scores followed by seventh grade (29 points), then eighth grade at six points. Sixth grade showed the greatest increase of all grades after the first year of the TIF grant with learning gains of 47 points.

Table 24
Non-TIF MS – 08: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1559	1541	1548	1595	1593	-18	7	47	-2
7	1666	1721	1713	1704	1742	55	-8	-9	38
8	1761	1784	1793	1828	1799	23	9	35	-29

Note. Florida Department of Education, 2010b.

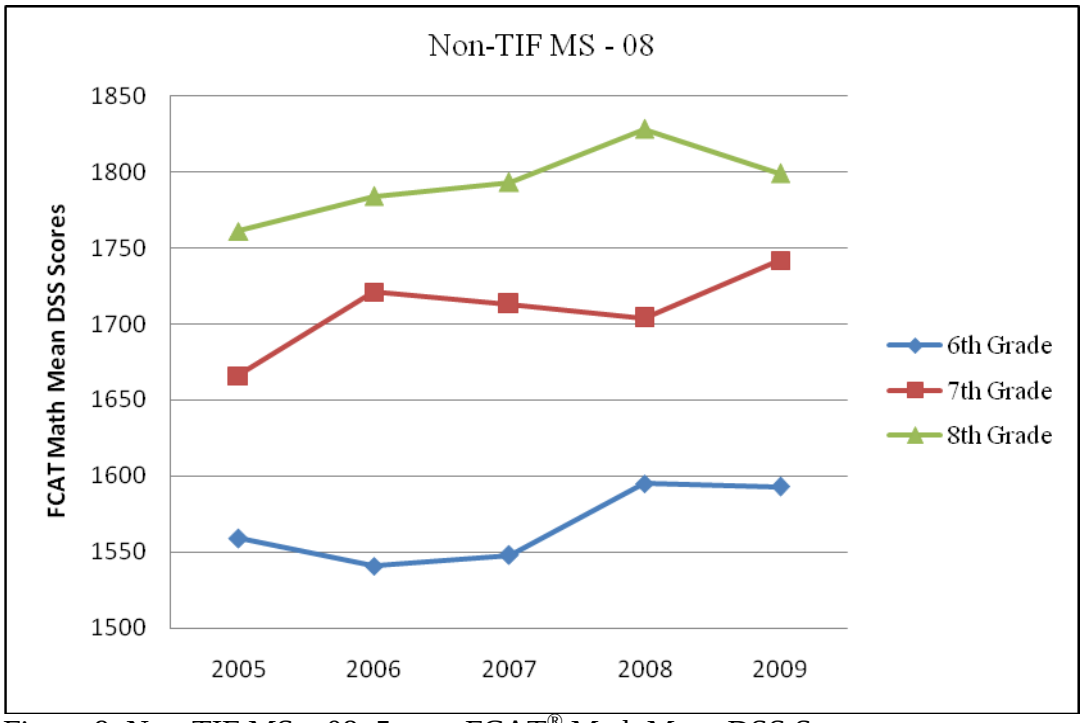

Figure 9. Non-TIF MS – 08: 5-year FCAT® Math Mean DSS Scores

In Table 25 and Figure 10, Non-TIF MS – 09 revealed a modest increase in DSS scores in eighth grade (8 points) scores over the five-year period. On the other hand, both seventh grade and sixth grade scores decreased by 41 points and 37 points, respectively. However, the two years the TIF grant was implemented elsewhere in the district, there were increased scores across all grade levels. Sixth grade had the highest gains at 37 points with eighth grade scores improving by 26 points. Seventh grade scores increased a slight two points. Seventh grade had the widest fluctuation during that two-year timeframe. The first year after the TIF program, seventh grade scores increased 52 points, whereas after the second year, their scores decreased by 50 points.

Table 25
Non-TIF MS – 09: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1627	1582	1553	1594	1590	-45	-29	41	-4
7	1773	1728	1730	1782	1732	-45	2	52	-50
8	1842	1845	1824	1867	1850	3	-21	43	-17

Note. Florida Department of Education, 2010b.

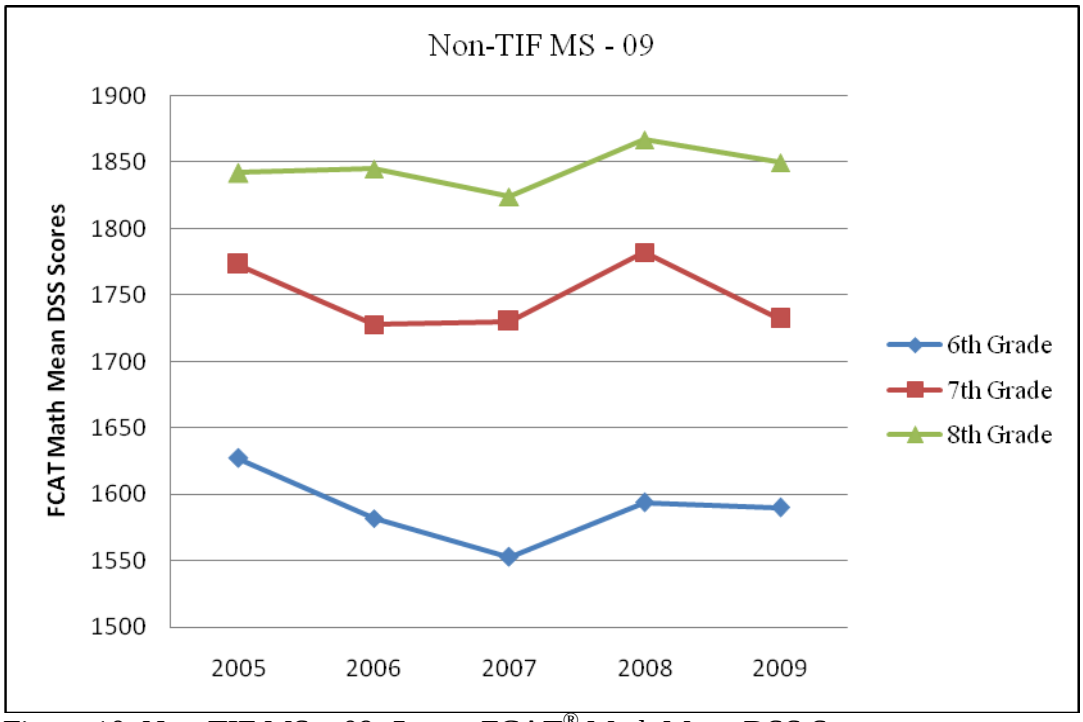

Figure 10. Non-TIF MS – 09: 5-year FCAT® Math Mean DSS Scores

In Table 26 and Figure 11, Non-TIF MS – 10 revealed a modest increase in DSS scores in seventh grade (seven points) scores over the five-year period as sixth grade and eighth grades showed decreased scores by eight points and 20 points, respectively.

During the two years TIF was implemented elsewhere in the district, the scores increased across all grade levels with seventh grade improving the greatest by 27 points, followed by sixth grade with 14 points and eighth grade with nine points. Seventh grade (44 points) scores showed the largest gains of all grade levels as the TIF grant was implemented in the district for the first time during the 2007 – 2008 school year.

Table 26
Non-TIF MS – 10: 5-year FCAT® Math Mean DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
6	1605	1558	1583	1605	1597	-47	25	22	-8
7	1745	1710	1725	1769	1752	-35	15	44	-17
8	1854	1816	1825	1821	1834	-38	9	-4	13

Note. Florida Department of Education, 2010b.

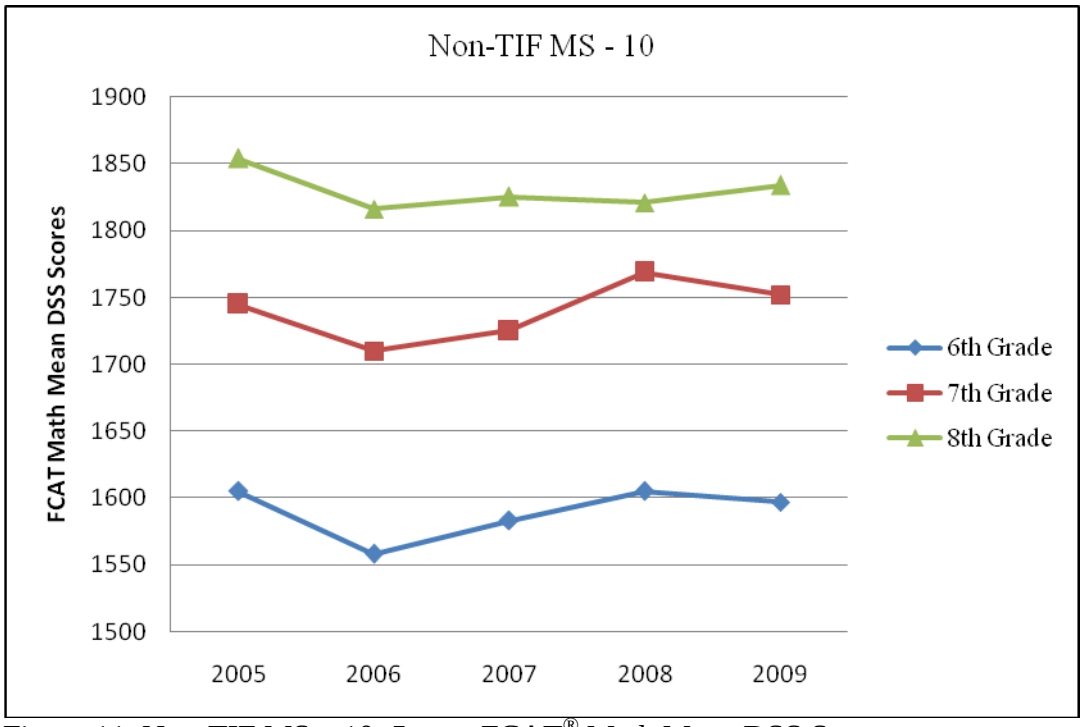

Figure 11. Non-TIF MS – 10: 5-year FCAT® Math Mean DSS Scores

Table 27 and Figure 12 illustrate the average DSS scores of the seven Title I middle schools participating in TIF and the three Title I middle schools not eligible to participate. Both groups showed their largest gains (TIF group at 27 points and non-TIF at 23 points) after the first year of the TIF grant, yet both registered a small drop in scores after the second year. At the end of the five-year period, the TIF group scores increased by a wider margin when compared to the non-TIF group; the TIF schools increased overall by 35 points whereas the non-TIF grew by 6 points.

Table 27
TIF v. Non-TIF Middle Schools: 2005 – 2009 FCAT® Math DSS Scores

	FCAT® Math Mean DSS Scores					Learning Gains			
	2005	2006	2007	2008	2009	2006	2007	2008	2009
Non-TIF	1744	1729	1730	1757	1750	-15	1	27	-7
TIF	1670	1687	1688	1711	1705	17	1	23	-6

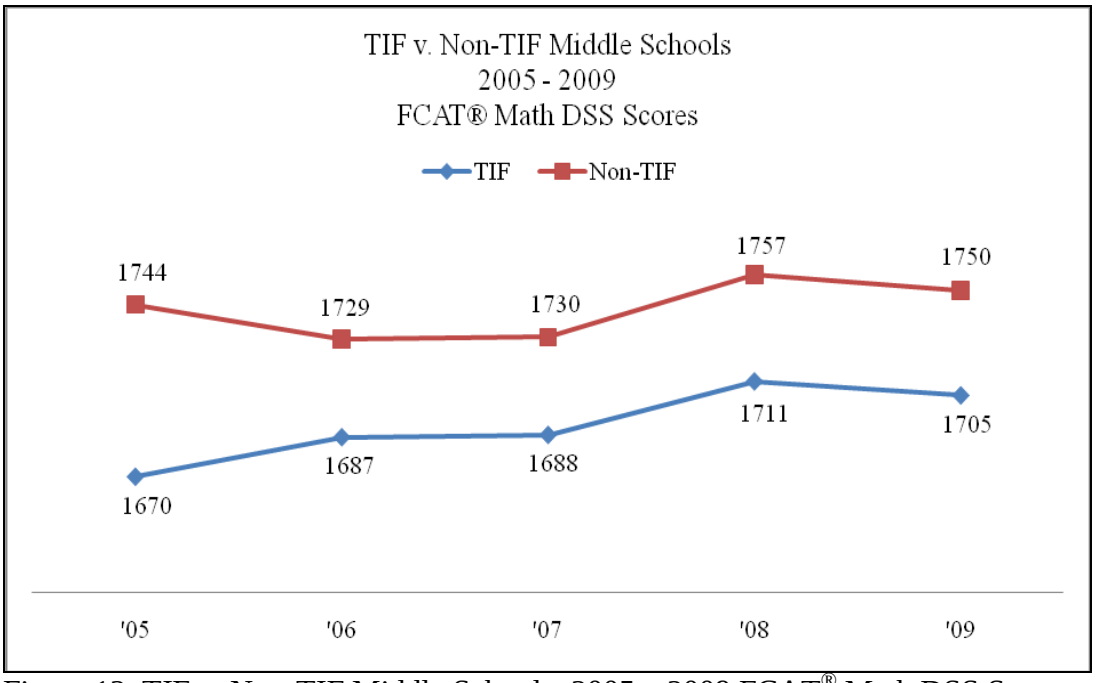

Figure 12. TIF v. Non-TIF Middle Schools: 2005 – 2009 FCAT® Math DSS Scores

Chapter Summary

Independent-samples t tests were conducted to determine if any differences in learning gains existed between the 2008 and 2009 FCAT® Math scores among students of math teachers a one Central Florida middle school during the second year of a Teacher

Incentive Fund (TIF) grant. The results of these tests determined that there was no statistical difference between the Math scores of the teachers who participated in TIF and teachers who did not participate. The mean scores of the treatment group and the control group revealed that learning gains were achieved among both groups. The 2005 through 2009 FCAT® Math scores of ten Title I middle schools were displayed in tables and figures after which observations of any trends were described. The observations of these middle schools yielded inconsistent data trends. The Title I middle schools that participated in the Teacher Incentive Fund (TIF) had shown increased math scores over the five-year period as did the middle schools that were not eligible to participate over the same period. At the end of the five-year period, TIF participating scores increased by a wider margin when compared to the non-TIF eligible schools. The results of these statistical procedures analyzed the academic impact of a TIF grant on middle school students who were performing below grade level in this Central Florida school district.

CHAPTER FIVE:
CONCLUSIONS, DISCUSSIONS, AND RECOMMENDATIONS

The Teacher Incentive Fund (TIF) was a five-year federal performance pay competitive grant program that supplemented the salary of highly effective teachers with financial recognition based on their students' standardized test scores. Seven Title I middle schools in a Central Florida district were eligible to implement TIF during the 2007 – 2008 school year. Participating teachers were qualified to receive bonuses based on how well their students scored on the Florida Comprehensive Assessment Test® (FCAT®).

This chapter begins with demographic profiles of the urban Title I middle school and the ten Title I middle schools and conclusions by this researcher. The chapter continues with a discussion of the learning gains of the students of math teachers who participated in TIF and the learning gains of the students of math teachers who did not participate. In addition, any trends observed in the five-year FCAT® Developmental Scale Scores (DSS) among the seven Title I middle schools of the Central Florida school district participating in TIF will be discussed; any trends observed among the three Title I middle schools that did not participate will be discussed; and any trends observed between the two groups when compared to each other will be discussed. The chapter ends with recommendations for additional research on teacher performance pay programs.

Demographic Profile: Title I Middle School

The urban Title I middle school, whose student scores were analyzed in this study received an annual state report card grade of "C" at the end of the 2008 – 2009 school year based on its 2009 FCAT® scores. This middle school served nearly 1000 students in its Central Florida community for over thirty years. The student population reflected the culturally diverse neighborhood of its residents. The ethnicity of the student body was comprised of 49% Black, 41% Hispanic, 4% White, 4% Asian/Pacific Islanders, 1% Multiracial, and 1% American Indian/Eskimo. Eighty-nine percent of the students were eligible for free or reduced price lunch. The average daily attendance rate was 93% for the 2008 – 2009 school year. Student mobility rate was 50% during the 2009 – 2010 school year. The student demographic information for the profile of this middle school was retrieved from its 2009 – 2010 School Improvement Plan (Orange County Public Schools, 2010a).

The instructional staff included 61 teachers and three administrators with an ethnic distribution of 46% Caucasian, 37% African-American, 16% Hispanic and 1% other. Twelve percent of the teachers had Master's degrees, while the average number of teaching experience was 7.8 years (Florida Department of Education, 2009e).

Demographic Profile: Ten Title I Middle Schools

There were a total of 34 middle schools in this Central Florida district; ten of which were designated as Title I schools. These schools served about 10,000 of the 36,690

students in grades six through eight. As of the 2009 – 2010 school year, between 76% to 91% of the students attending these schools received free or reduced price lunch; higher than the poverty average for this Central Florida district of 58% (Orange County Public Schools, 2009f).

The beginning teacher's salary in this district was $37,000. The district's average teacher's salary was $44,790. Teachers with advanced degrees received a supplement of $2605 for a master's, $3993 for a specialist, and $5267 for a doctorate (Orange County Public Schools, 2010b). Collectively, these Title I middle schools employed nearly 600 teachers and administrators of whom 21% held advanced degrees. The district average for advanced degrees was 40%. The average teaching experience in these middle schools was 8.3 years whereas the average for the district was 10.9 years (Florida Department of Education, 2009e).

Limitations

The school-wide DSS scores analyzed in this study included FCAT® Level 3, 4, and 5 students, whereas the analysis of the student DSS scores were limited to FCAT® Level 1s and 2s in order to calculate learning gains. Displaying the school-level data in tables and graphs illustrated the existence of any trends among all students over the five-year time period as opposed to the amount of learning gains achieved among low-performing students. The inclusion of upper level students (i.e., demonstrating skills and/or knowledge on or above grade level) may have overshadowed the extent of the

actual learning gains of the low-performing students, who were the intended targets of the Teacher Incentive Fund (TIF) program.

Conclusion

The conclusion of this researcher was that the teacher incentive program implemented in a Central Florida district had a positive impact on the learning gains of low-performing middle school students. As evidenced in this study, students of the math teachers who participated in the Teacher Incentive Fund (TIF) demonstrated at least one year's academic growth. These student-level results were similar to the higher learning gains found in the research conducted by Springer et al. (2008) on the Teacher Advancement Program (TAP), a multi-state performance pay program subsidized by TIF grants. School-based scores reviewed in the TAP study uncovered that the standardized test results of schools participating in the performance pay program increased when compared to previous years. Springer et al. did not use the high-stakes standardized exams on which the teacher bonuses in the TAP program were based. The student FCAT® Math scores used in this study were retrieved from the same middle school database used to calculate the learning gains for TIF bonuses. Based on the finding in this study, the TIF program implemented at an urban Central Florida middle school met its primary goal to reward highly effective math teachers who participated in the program and increased student standardized test scores.

Students of math teachers who did not participate in TIF had learning gains as well at the urban middle school. Unfortunately, they did not receive financial recognition for their efforts. These highly effective teachers should be encouraged to partake in future initiatives that recognize their students' academic success.

According to the statistical evidence presented in this study, there was no difference in student scores based on a teacher's participation in TIF. On average, test scores increased at this middle school for both groups (TIF teachers v. non-TIF teachers) during the TIF program, however, upon closer inspection the mean scores of sixth grade teachers noted the failure to exceed at least one year's growth for both groups. Clearly, a comprehensive review of the curriculum and instructional strategies for this grade level are warranted to better understand where adjustments should be implemented.

The impact of TIF at the ten Title I middle schools was inconsistent. During the two years before introducing the performance pay program in the seven TIF-eligible Title I middle schools, 100% of both seventh and eighth graders had higher Developmental Scale Scores (DSS); for the sixth graders only three of the seven (43%) middle schools had higher DSS scores. During the same two years, in the three Title I middle schools that were not eligible to participate, two schools had lower DSS scores across all grade levels. During the two years after TIF was implemented, the sixth graders in five of the seven (71%) TIF-eligible middle schools had higher DSS scores. The seventh graders in two of the seven (29%) schools had higher scores. Eighth graders fared better as five of the seven (71%) schools had higher scores. Observations of the seven middle schools that

were eligible to participate in TIF revealed no consistent impact, positive or negative, of the incentive program on student test scores.

Observations of the three Title I middle schools that were not eligible to participate in TIF exposed more definitive trends when compared to the TIF-eligible middle schools. Two years after TIF was implemented in the other Title I middle schools, two of the three TIF-ineligible Title I middle schools had higher DSS scores across all three grade levels. The other ineligible middle schools had higher DSS scores in sixth and seventh grade. FCAT® Math scores of the three TIF-ineligible Title I middle schools were higher after the incentive program was implemented at the seven TIF-eligible Title I middle schools.

The seven Title I middle schools that participated in the Teacher Incentive Fund (TIF) had shown increased math scores over the five-year period as did the middle schools that were not eligible to participate over the same period. During four of the five years observed, the scores revealed consistent upward trending in data as both groups of middle schools had increased mean scores. At the end of the five-year period, TIF participating scores increased by a wider margin (35 points) when compared to the non-TIF eligible schools (6 points). The higher test scores of both groups may be a reflection of the current era of accountability in education as improving the academic needs of low-performing students drive curricular, instructional, and funding decisions. These observations highlight that teachers who dedicate themselves to demand academic excellence for their students in high-needs schools will achieve success regardless of the presence of a financial reward system.

Discussion

Santibañez et al. (2007) and Springer et al. (2008) reported higher scores from students whose teachers participated in an incentive program. Moreover, the research of Lavy (2002) and Muralidharan and Sundararaman (2008) also documented that student test scores increased when teachers were offered performance bonuses. The findings in this dissertation support the work of these authors as the test scores of the students whose teachers participated in the Teacher Incentive Fund (TIF) revealed that learning gains had occurred. In addition, this researcher discovered also that teachers at one urban Central Florida middle school who chose not to participate in TIF also had increased student test scores. The independent-samples tests noted that while there was no statistical difference between the two groups, mean scores had increased among the groups. Participation in TIF was not shown to be a statistical factor in whether or not students test scores would improved. Teachers who participated in TIF and had students whose scores increased received bonuses and thus were rewarded for their successful efforts.

The implementation of TIF at the urban middle school created a climate that focused attention on the academic achievement of low-performing students as TIF bonuses were based on improved FCAT® Test scores among this particular group. As a result, a teacher's day-to-day classroom decisions, e.g. what to teach and how to teach it, were based on knowing their students' skills and abilities. I believe that using student data to drive instruction, improves a teachers ability to help differentiate his/her lessons

to maximize diverse student understanding. When this instructional technique is utilized effectively, teachers will achieve higher levels of success for their students.

My research has shown that math test scores increased at seven Title I middle schools two years after teachers began participating in TIF. At the three TIF-ineligible middle schools, test scores had increased during the two years TIF was implemented at the other schools. These discoveries challenged the literature concerning the large number of inexperienced teachers employed in high-needs schools (Aaronson, Barrow, & Sander, 2007; Boyd, Grossman, Lankford, Loeb, and Wyckoff, 2006; Podgursky, 2009; Rivkin, Hanushek, & Kain, 2005). The consensus of the authors was that high-needs schools had a disproportionate number of inexperienced teachers, which translated into smaller learning gains among their students. Yet, the evidence presented in this study countered their conclusions. The data-driven instructional decisions may have attributed to the improved test scores among these schools along with the financial support of the federal government through educational funding programs that specifically target high-needs schools. Part of the requirements of participating in the TIF program was that teachers attend professional development which focused on the academic challenges of low-performing students. Quality collaboration with other teachers (as noted in the OCPS Year 1 TIF Summative Survey), when combined with data-driven instruction, targeted professional development, and additional resources will provide the framework of activities needed for improving student learning.

Goodlad (1984) cited that a major reason teachers entered the profession was the satisfaction of working with children. Perhaps, the highly effective—albeit "inexperienced" teachers—were motivated by their individual personal satisfaction and dedication to their craft rather than extrinsic financial rewards.

Policy Development: Race to the Top

The U.S. Department of Education's Race to the Top provided $4.35 billion dollars in competitive grants that supports education reform across four key areas: preparing students to succeed in college and the workplace, building data systems for student progress and instructional decisions, linking teacher pay to student success, and improving lowest performing schools (U.S. Department of Education, 2010). Florida was one of 40 states and the District of Columbia that applied for the grants and was one of the sixteen declared as first-round finalists by the U.S. Department of Education. In May, 2010, the phase one winners and their awards were announced: Delaware ($100 million) and Tennessee ($500 million). Their funding was scheduled for allocation for over a period of four years. Although Florida missed out on the first round of payouts, phase two awards are scheduled for announcement in June 2010. U.S. Education Secretary Arne Duncan hoped to award between ten to fifteen grants across the country.

Policy Implications: Florida's Proposed Merit Pay Plan

In April of 2010, House bill 7189 and Senate Bill 6 – Education Personnel reached the desk of Florida Governor Charlie Crist. The major items in this education reform bill, which would take effect July 1st, 2010 if signed into law, would eliminate automatic raises based on teaching experience or education degrees earned, require more than 50% of a teacher's evaluation to be based on student learning gains, create a performance fund for instructional personnel and school-based administrators, and would be phased in over three years (Florida House of Representatives, 2010).

There was significant opposition by teachers and teachers' union regarding this merit plan. Many protestors were extremely concerned with linking their salary to their student's success on an annual test. The findings in my research should put to rest some of their fears. Learning gains are attainable as evidenced by the increased mean scores of the both the student-level and school-based data. Furthermore, the scores of students whose teachers did not participate in TIF increased. The caveat is that the growth definition must remain the same. A well-designed merit pay program will encourage educators to create lessons that respond to their students' diverse educational needs. Without a doubt in my mind, these highly effective teachers will achieve academic greatness.

Recommendations

The Teacher Incentive Fund was designed to reward highly effective teachers for increasing the academic achievement of low-performing students. Nonetheless, there were three out of ten math teachers at one TIF-eligible Title I middle school in particular who did not participate in TIF, but their students scored higher than the students of teachers who participated. The results presented in this study uncovered that highly effective teachers produce academically successful students—their participation in a performance pay program notwithstanding. As a result of these findings, a recommendation for further study would be a follow-up questionnaire at the end of the school year surveying the highly effective teachers who were eligible to participate in TIF, but chose not to participate. What were their reasons for choosing not to participate? Was there a perceived barrier for success that discouraged them from participating? Since their students showed learning gains, would they participate in the program the following year? Have their attitudes for not participating been altered in any way? Their responses to these questions would provide insight for designing an incentive pay program that encouraged all teachers to seek rewards for their outstanding classroom efforts.

Another recommendation involves surveying the mindset of highly effective teachers in high-needs schools. As documented in this study, the teachers at the TIF-ineligible Title I middle schools had students who demonstrated learning gains, in spite of the absence of an incentive program. What motivated these teachers to be successful? What is their perception of incentive programs? Would they participate in one, if given

the opportunity? Their responses to these questions would complement the body of knowledge on performance pay programs.

Replicating this study with a larger sample of teacher participants from TIF award grantees in other Florida school districts or surveying TIF participating teachers about the instructional strategies they implemented would provide additional insight into performance pay plans. This data for this dissertation was limited to math scores; another study could focus on the results of another Florida Comprehensive Assessment Test®, such as reading or science.

Chapter Summary

This study analyzed the impact of a teacher incentive program in a Central Florida public school district. The Teacher Incentive Fund (TIF) awarded highly effective teachers with cash bonuses for increasing the test scores of its low-performing students. However, this study also noted that highly effective teachers who chose not to participate had students with increased test scores as well. Further, inconsistent trends among the Title I middle schools in their five-year scores were observed. During the two years after the incentive program was implemented, Title I middle schools that were eligible to participate in TIF experienced lower scores whereas middle schools that were not eligible to participate posted higher scores.

This chapter included the policy developments on the first phase of winners awarded Race to the Top education grants and Florida's Merit Pay plan. U.S.

Department of Education Secretary Arne Duncan hoped to provide funding for more states as Florida struggled with adopting its own performance pay plan amid a firestorm of opposition.

This researcher concluded that TIF had a positive impact on the learning gains of low-performing students. The test scores of students whose teachers participated in TIF achieved higher learning gains. Interestingly, students of teachers who chose not to participate in TIF had increased learning gains also. Furthermore, high-needs schools that were not eligible to participate had higher scores as the incentive program was implemented at other middle schools within its district. The outcomes of teachers who chose not to participate and schools that were ineligible for the program created an opportunity for additional research. Also, extending the scope of this research to other subject areas and to other Florida districts that were recipients of the TIF grant would expand the body of knowledge on the impact of teacher incentive programs on low-performing students.

APPENDIX A:
APPROVAL OF EXEMPT
HUMAN RESEARCH

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

Approval of Exempt Human Research

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

To: **Donna Miller**

Date: **March 23, 2010**

Dear Researcher:

On 3/23/2010, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	The Impact of Teacher Incentive Pay Programs on the Learning Gains of Low-Performing Middle School Students
Investigator:	Donna Miller
IRB Number:	SBE-10-06817
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 03/23/2010 11:01:34 AM EST

IRB Coordinator

APPENDIX B:
FCAT® ACHIEVEMENT LEVELS

FCAT® ACHIEVEMENT LEVELS

The Florida Comprehensive Assessment Test® (FCAT®) measured student performance on selected benchmarks in reading, mathematics, writing, and science that were defined by the Sunshine State Standards (SSS). The SSS articulated challenging content that Florida students were expected to know and to be able to do. The SSS were developed in seven content areas and were adopted by the State Board of Education in May 1996. Achievement Levels described the success a student had achieved on the Florida SSS tested on the FCAT® Reading, Mathematics, Science, and Writing assessments (see Table 24).

Table 28
Achievement Level Policy Definitions

Level 5	This student had success with the most challenging content of the SSS. A student who scored at Level 5 answered most of the test questions correctly, including the most challenging questions.
Level 4	This student had success with the challenging content of the SSS. A student who scored at Level 4 answered most of the test questions correctly, but may have had only some success with questions that reflected the most challenging content.
Level 3	This student had partial success with the challenging content of the SSS, but performance was inconsistent. A student who scored at Level 3 answered many of the test questions correctly but was generally less successful with questions that were the most challenging.
Level 2	This student had limited success with the challenging content of the SSS.
Level 1	This student had little success with the challenging content of the SSS.

Note. From Florida Department of Education, 2008.

Achievement Levels were based on both Developmental Scale Scores and scale scores. In Table 25, Achievement Levels ranged from one (lowest) to five (highest) with corresponding Developmental Scale Scores that ranged from zero to about 3000 across grades three through ten and were reported only for FCAT® SSS Reading and Mathematics. Developmental Scale Scores linked two years of student FCAT® data that tracked a student's progress over time. Students should have received higher scores as they moved from grade-to-grade according to their increased achievement. Developmental Scale Scores cannot be used to measure learning gains for FCAT® Science because students were not tested on this subject at each grade level. In Table 26, scale scores ranged from 100 (lowest) to 500 (highest) with corresponding Achievement Levels of one through five. Scale scores were reported for all FCAT® SSS subjects (Florida Department of Education, 2008).

Table 25 FCAT® Mathematics Developmental Scale Scores

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
6	770 - 1553	1554 - 1691	1692 - 1859	1860 - 2018	2019 - 2492
7	958 - 1660	1661 - 1785	1786 - 1938	1939 - 2079	2080 - 2572
8	1025 - 1732	1733 - 1850	1851 - 1997	1998 - 2091	2092 - 2605

Note. From Florida Department of Education, 2008.

Table 26 FCAT® Mathematics Scale Scores

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
6	100 - 282	283 - 314	315 - 353	354 - 390	391 - 500
7	100 - 274	275 - 305	306 - 343	344 - 378	379 - 500
8	100 - 279	280 - 309	310 - 346	347 - 370	371 - 500

Note. From Florida Department of Education, 2008.

APPENDIX C:
TEACHER INCENTIVE FUND
GRANTEE PROFILES

TEACHER INCENTIVE FUND GRANTEE PROFILES

Program Name	LEA	Award Amount	Incentive Award
Alaska Teacher and Principal Incentive Project	Chugach School District (Rural Alaska)	Yr 1: $1,278,773 Yr 2: $1,204,256 Yr 3: $1,046,050	$2500 - $5500
Amphitheater Unified School District Project EXCELL!	Amphitheater Unified School District (Tucson, AZ)	Yr 1: $4,700,840 Yr 2: $7,695,147	up to $10,000
Beggs Independent School District System to Motivate and Reward Teachers (SMART)	Beggs(OK) Independent School District	Yr 1: $507,514 Yr 2: $463,665	$1000 - $5000
Chicago Public Schools TAP	Chicago (IL) Public Schools	Yr 1: $131,273 Yr 2: $4,055,600 Yr 3: $6,680,488	$2000 - $5000
Community Training and Assistance Center and the Charlotte-Mecklenburg Schools Leadership for Educator's Advanced Performance	Community Training and Assistance Center (Charlotte, NC)	Yr 1: $1,987,589 Yr 2: $2,906,012	up to 10% of salary
Cumberland County Schools Teacher Incentive Fund Program	Cumberland County (NC) Schools	Yr 1: $1,174,176 Yr 2: $655,312	up to $10,000
Dallas Principal and Teacher Incentive Pay Program	Dallas (TX) Independent School District	Yr 1: $126,139 Yr 2: $777,989 Yr 3: $10,368,036	$7500 - $10,000

Note. Center for Educator Compensation Reform, 2008.

Program Name	LEA	Award Amount	Incentive Award
Eagle County School District Performance-Based Compensation Program	Eagle County (CO) School District	Yr 1: $1,562,129 Yr 2: $1,427,150 Yr 3: $1,403,227	up to $10,000
Edward W. Brooke Charter School Teacher Excellence Incentive Project	Edward W. Brooke Charter School (Roslindale, MA)	Yr 1: $295,090 Yr 2: $228,732	up to $5000
Fort Lupton Teacher Incentive Fund	Weld County (CO) Re-8 School District	Yr 1: $937,040 Yr 2: $755,482 Yr 3: $738,049	$560 - $2170
Guilford County Schools Mission Possible	Guilford County (NC) Schools	Yr 1: $1,790,060 Yr 2: $1,450,376 Yr 3: $1,789,997	$2500 - $5000
Harrison School District Two Recognizing Engagement in the Advancement of Learning	Harrison School District Two (El Paso, CO)	Yr 1: $1,170,393 Yr 2: $399,529	$1000 - $2000
Hillsborough County Public Schools Performance Outcomes with Effective Rewards	Hillsborough County Public Schools (Tampa, FL)	Yr 1: $3,088,827 Yr 2: $4,110,855	$1,091.96
Houston Independent School District Project SMART	Houston (TX) Independent School District	Yr 1: $3,991,330 Yr 2: $2,994,775 Yr 3: $2,197,532	up to $3000
Lynwood Unified School District Qwest for Success	Lynwood (CA) Unified School District	Yr 1: $2,288,832 Yr 2: $2,140,281	N/A

Note. N/A – monetary award information not available.

Program Name	LEA	Award Amount	Incentive Award
Mare Island Technical Academy (MIT Academy), The New 3's: Rigor, Results and Rewards	MIT Academy Mare Island Technical Academy (Vallejo, CA)	Yr 1: $417,428 Yr 2: $312,658 Yr 3: $216,107	N/A
Memphis City Schools Effective Practice Incentive Community (EPIC)	Memphis (TN) City Schools	Yr 1: $3,109,944 Yr 2: $2,196,767 Yr 3: $2,206,948	up to $7500
Miami-Dade County Public Schools Project RISE	Miami-Dade County (FL) Public Schools	Yr 1: $2,691,841 Yr 2: $3,761,377	$2500 - $3000
National Charter Schools Effective Practice Incentive Community (EPIC)	New Leaders for New Schools (NYC, NY)	Yr 1: $4,921,435 Yr 2: $1,866,502 Yr 3: $3,627,374	$3000 - $4000
National Institute for Excellence in Teaching, Teacher Advancement Program	National Institute for Excellence in Teaching (New Orleans, LA)	Yr 1: $1,219,957 Yr 2: $4,047,871	minimum $3000
Northern New Mexico Performance-Based Compensation Program	Northern New Mexico Network for Rural Education (NNMNRE) (Espanola and Taos, NM)	Yr 1: $571,074 Yr 2: $1,656,596 Yr 3: $1,753,600	$2434 - $3651
Ohio Teacher Incentive Fund (OTIF)	Ohio Department of Education	Yr 1: $5,510,860 Yr 2: $5,739,063 Yr 3: $2,944,338	$2,000

Program Name	LEA	Award Amount	Incentive Award
Orange County Public Schools - Recognizing Excellence in Achievement and Professionalism	Orange County (FL) Public Schools	Yr 1: $6,595,095 Yr 2: $5,390,282	up to $4000
Partnership for Innovation in Compensation for Charters Schools (PICCS)	Center for Educational Innovation - Public Education Association (NYC, NY)	Yr 1: $1,647,819 Yr 2: $2,638,847	up to $5000
Philadelphia Teacher and Principal Incentive Fund Project	School District of Philadelphia (PA)	Yr 1: $1,443,017 Yr 2: $2,048,208 Yr 3: $3,638,551	N/A
Prince Georges County Public Schools Financial Incentive Rewards for Supervisors and Teachers	Prince Georges County (MD) Public Schools	Yr 1: $572,425 Yr 2: $2,418,297	$10,000
Professional Compensation System for Teachers and Principals (ProComp)	Denver (CO) Public Schools	Yr 1: $5,747,869 Yr 2: $2,632,380 Yr 3: $5,588,227	salary will increase as much as 40% during 25-year career
School of Excellence in Education Teacher and Principals Awarded for Student Achievement	School of Excellence in Education (San Antonio, TX)	Yr 1: $684,373 Yr 2: $711,714	N/A
South Carolina Teacher Advancement Program (TAP)	Florence County School District Three (Lake City, SC)	Yr 1: $1,950,250 Yr 2: $956,259	$500 - $10,000

Program Name	LEA	Award Amount	Incentive Award
South Carolina Teacher Incentive Fund	South Carolina Department of Education	Yr 1: $7,503,051 Yr 2: $5,965,279 Yr 3: $7,445,991	$2000 - $5000
South Dakota Incentive Fund	South Dakota	Yr 1: $4,762,694 Yr 2: $4,661,292	$750 - $1500
University of Texas System Teacher Incentive Fund Program	University of Texas System	Yr 1: $1,438,787 Yr 2: $7,145,714	$200 - $5000
Washington, DC Effective Practice Incentive Community	District of Columbia Public Schools	Yr 1: $3,036,837 Yr 2: $1,159,619 Yr 3: 2,847,471	$8,000

APPENDIX D:
YEAR 1 TIF SUMMATIVE SURVEY RESULTS

YEAR 1 TIF SUMMATIVE SURVEY RESULTS
(N = 461)

Please mark the box that represents your current beliefs.	I Strongly Agree	I Agree	I Am Not Sure	I Disagree	I Strongly Disagree	Total % Agree	Total % Not Sure	Total % Disagree
I am confident that I have a complete understanding of the requirements and processes related to the TIF grant.	219	198	29	15	0	90%	6%	3%
The professional development that I took for TIF was relevant to the content that I teach.	195	225	19	22	0	91%	4%	5%
I have the support necessary to implement what I have learned through the TIF professional development.	250	198	13	0	0	97%	3%	0%
I have used many of the concepts/strategies that I learned through the TIF professional development in my classroom instruction.	199	237	12	13	0	95%	3%	3%
The professional development that I took for TIF has had a positive impact on my teaching.	269	162	19	11	0	93%	4%	2%
In my school, the TIF initiative is often referenced during formal and informal meetings of the faculty.	200	234	16	11	0	94%	3%	2%

Note. From U.S. Department of Education, 2007.

YEAR 1 TIF SUMMATIVE SURVEY RESULTS
(N = 461)

Please mark the box that represents your current beliefs.	I Strongly Agree	I Agree	I Am Not Sure	I Disagree	I Strongly Disagree	Total % Agree	Total % Not Sure	Total % Disagree
I believe that my participation in TIF will have impact on the achievement of my students.	220	199	33	9	0	91%	7%	2%
TIF is a significant element of our school improvement efforts.	283	140	29	9	0	92%	6%	2%
I think that the requirements for the receiving of the TIF incentive award is fair and equitable.	191	216	43	10	1	88%	9%	2%
I am happy that our school was chosen to participate in TIF.	303	134	18	6	0	95%	4%	1%
I am planning to participate in TIF next year.	274	145	42	0	0	91%	9%	0%

Note. From U.S. Department of Education, 2007.

APPENDIX E:
OCPS TEACHER RETENTION
BY TIF SCHOOL

ORANGE COUNTY PUBLIC SCHOOLS
TEACHER RETENTION BY TIF SCHOOL
SCHOOL YEARS: 2006-07 & 2007-08

TIF - Participating Schools	Instructional Staff		Retired		Dismissed		Resigned		Transferred		Total Turnover		Teachers Retained		% Retained	
	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008	2006-2007	2007-2008
School A	68	55	0	1	2	2	23	21	3	10	28	34	40	21	59%	38%
School B	176	139	2	3	8	7	40	30	11	37	61	77	115	62	65%	45%
School C	66	55	1	2	0	0	16	11	2	8	19	21	47	34	71%	62%
School D	97	86	2	4	0	2	18	7	2	7	22	20	75	66	77%	77%
School E	73	69	1	2	0	2	16	18	1	8	18	30	55	39	75%	57%
School F	67	55	0	2	1	6	16	14	5	9	22	31	45	24	67%	44%
School G	122	117	3	2	8	5	24	37	3	10	38	54	84	63	69%	54%
School H	75	61	0	0	5	4	17	11	2	14	24	29	51	32	68%	52%
School I	83	72	2	1	2	0	10	15	1	8	15	24	68	48	82%	67%
School J	78	67	1	1	0	2	16	16	1	8	18	27	60	40	77%	60%
Total	905	776	12	18	26	30	196	180	31	119	265	347	640	429		
As % of Total Teachers			1%	2%	3%	4%	22%	23%	3%	15%	29%	45%	71%	55%		

Note. From U.S. Department of Education, 2007.

APPENDIX F:
ANNUAL STATE REPORT CARD

ANNUAL STATE REPORT CARD

The Florida Department of Education (2010a) published an Annual State Report Card as a part of Florida's School Accountability System. The School Accountability System tracked student learning gains based on the state's academic standards from year to year. The system allowed the improvement of individual students to be tracked from one school year to the next based on FCAT® Development Scale Scores in reading and mathematics from third through tenth grade (Florida Department of Education, 2010a). The Annual State Report Card assigned a school grade as determined by the accumulation of percentage points for eight measures of achievement and two additional conditions:

1. One point for each percent of students who scored at or above FCAT® Achievement Level 3 in reading.
2. One point for each percent of students who scored at or above FCAT® Achievement Level 3 in mathematics.
3. One point for each percent of students who scored at or above FCAT® Achievement Level 3 in science.
4. One point for each percent of students who scored at or above 3.5 on the FCAT® writing assessment.
5. One point for each percent of students who made learning gains in reading.

6. One point for each percent of students who made learning gains in mathematics.
7. One point for each percent of the lowest performing students who made learning gains in reading.
8. One point for each percent of the lowest performing students who made learning gains in mathematics.

The points from each of these eight measures of achievement were added together and converted into a school grading scale shown in Table 24.

Table 29
2009 School Grading Scale

Grade	Total Points
A	525 and above
B	495 – 524
C	435 – 494
D	395 – 434
F	Less than 395

Note. From Florida Department of Education, 2010a.

The two additional conditions added to the point system were: (1) schools that earned enough total points to earn a grade of "A" must also have tested at least 95% of the eligible students; all other letter grade designations were based on a minimum of 90% tested and (2) a school with enough points to have earned an "A" must have shown learning gains among the low-performing students in both reading and math for the current year; a school with enough points to have earned a "B" or "C" must have shown

learning gains of the low-performing students in both reading and mathematics for either the current or previous year (Florida Department of Education, 2010a).

APPENDIX G:
2007 & 2008 FCAT® MATHEMATICS, SCIENCE, AND OVERALL PERFORMANCE REPORT FOR OCPS TIF SCHOOLS

2007 & 2008 FCAT® MATHEMATICS,
SCIENCE, AND OVERALL PEROFRMANCE
REPORT FOR OCPS TIF SCHOOLS

Eligible TIF Schools	Points for Students Achieving at or Above Grade Level in Mathematics (Level 3 or Higher)		Points for Students Achieving at or Above Grade Level in Science (Level 3 or Higher)		Total Report Card Points	
	2007	2008	2007	2008	2007	2008
TIF MS – 01	39	39	13	19	422	454
TIF MS – 02	56	64	28	40	507	534
TIF MS – 03	48	57	21	30	467	521
TIF MS – 04	29	35	12	12	403	430
TIF MS – 05	42	46	21	25	446	484
TIF MS – 06	58	59	30	40	473	500
TIF MS – 07	45	44	17	17	456	450
TIF HS – 01	48	57	11	18	371	421
TIF HS – 02	54	60	9	21	430	409
TIF HS – 03	48	55	18	17	384	434
Middle School Mean Points Earned on FCAT®	45.3	49.1	20.3	26.4	453.4	481.9
High School Mean Points Earned on FCAT®	50.0	57.3	12.7	18.7	395	421.3
Total Mean Points Earned on FCAT®	46.7	51.6	18	23.9	435.9	463.7

Note. From U.S. Department of Education, 2007.

REFERENCES

Aaronson, D., Barrow, L., & Sander, W. (2007). Teachers and student achievement in Chicago high schools. *Journal of Labor Economics, 25*(1), 95-136.

American Psychological Association. (2010). *Publication manual of the American Psychological Association.* (6th ed.). Washington, DC: American Psychological Association.

American School & University. (2010). *The 2009 AS&U 100.* Retrieved from http://asumag.com/asu100/2009/enrollment/index.html

Bacharach, S. B., & Conley, S. C. (1986). Educational reform: A managerial agenda. *Phi Delta Kappan, 67*(9), 641-648.

Blinder, A. S. (Ed.). (1990). *Paying for productivity: A look at the evidence.* Washington, DC: Brookings Institution.

Bobbitt, S. A. (1989). *Teachers incentive programs in the public schools.* National Center for Education Statistics. Washington, DC.

Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2006). How changes in entry requirements alter the teacher workforce and affect student achievement. *American Education Finance Association, 1*(2), 176-216.

Center for Educator Compensation Reform. (2007, November). *The evolution of performance pay in Florida.* Retrieved from http://cecr.ed.gov/guides/summaries/FloridaCaseSummary.pdf

Center for Educator Compensation Reform. (2008). *Teacher incentive fund grantee profiles.* Retrieved from: http://cecr.ed.gov/initiatives/grantees/profiles.cfm

Center for Teaching Quality. (2007). *Performance-pay for teachers: Designing a system that students deserve.* Retrieved from http://www.teachingquality.org/publications/policy.

Chait, R., & Miller, M. (2009a May). *Paying teachers for results: A summary of research to inform the design of pay-for-performance programs for high-poverty schools.* Center for American Progress. Retrieved from http://www.americanprogress.org/issues/2009/05/pdf/performance_pay.pdf

Chait, R., & Miller, M. (2009b July). *Getting the facts straight on the Teacher Incentive Fund.* Center for American Progress. Retrieved from http://www.americanprogress.org/issues/2009/07/tif_myth_fact.pdf

Clardy, A. (1988). *Compensation systems and school effectiveness: Merit pay as an incentive for school improvement.* Washington: Education Resources Information Center.

Cumming, C. M. (1994). Incentives that really do motivate. *Compensation and Benefits Review, 26*(3), 38-40.

Duval County Public Schools. (2010). *2009 – 2010 Teacher salary schedule.* Retrieved from http://www.duvalschools.org/statis/weardcps/employeeinfo/teacher_salary_schedule.asp

Educational Research Service Report. (1978). *Methods of scheduling salaries for teachers.* Arlington, VA: Educational Research Service, 1978.

Ferris, J., & Winkler, D. (1986). Teacher compensation and the supply of teachers. *Elementary School Journal, 86,* 389-403.

Florida Department of Education. (2007a, March 29). Media room press release. Statement by Education Commissioner Jeanine Blomberg regarding the Governor signing the Merit Award Program in law. Retrieved from: http://www.fldoe.org/news/2007/2007_03_29.asp

Florida Department of Education. (2007b, April 23). *Accountability: Adequate yearly progress and school grades.* Presented at 2007-2008 Technical assistance meeting for selected NCLB programs. Retrieved from: https://www.fldoe.org/bsa/title1/pdf/ayptapresentation.pdf

Florida Department of Education. (2008). *FCAT Achievement Levels.* Retrieved from http://fcat.fldoe.org/pdf/fcAchievementLevels.pdf

Florida Department of Education. (2009a). *Assessment and school performance: FCAT – Florida Comprehensive Assessment Test®*. Retrieved from http://www.fldoe.org/faq/default.asp?Dept=179&ID=984

Florida Department of Education. (2009b). *District guidelines for performance pay participation for 2007 and beyond.* Retrieved from: http://fldoe.org/PerformancePay/pdfs/MeritAwardProgram.pdf

Florida Department of Education. (2009c). *District guidelines for performance pay participation in 2006-2007.* Retrieved from: http://fldoe.org/PerformancePay/pdfs/Guidance.pdf

Florida Department of Education. (2009d). *Educator Recruitment and Professional Development: E-Comp - Effectiveness Compensation.* Retrieved from: https://www.fldoe.org/FAQ/default.asp

Florida Department of Education. (2009e). *Florida School Indicators Report.* Retrieved from: http://www.fldoe.org/eias/eiaspubs/fsir.asp

Florida Department of Education. (2009f). *Special Teachers are Rewarded (STAR) FAQs.* Retrieved from http://www.fldoe.org/JustForTeachers/STAR/FAQ/

Florida Department of Education. (2010a). *2009 Guide to calculating school grades: Technical assistance paper.* Tallahassee, FL: Florida Department of Education. Retrieved from: http://schoolgrades.fldoe.org/pdf/809/2009SchoolGradesTAP.pdf

Florida Department of Education. (2010b). *Florida Comprehensive Assessment Test®*. Retrieved from: http://fcat.fldoe.org

Florida Department of Education. (2010c). *Race to the top grant.* Retrieved from http://www.fldoe.org/arra-glossary.asp

Florida House of Representatives. (2010). *CS/CS/SB 6 – Education Personnel (SPSC).* Retrieved from: http:// http://www.myfloridahouse.gov/Sections/Bills/billsdetail.aspx?BillId=44352&SessionIndex=-1&SessionId=64&BillText=&BillNumber=06&BillSponsorIndex=0&BillListIndex=0&BillStatuteText=&BillTypeIndex=0&BillReferredIndex=0&HouseChamber=S&BillSearchIndex=0

Glewwe, P., Holla, A., & Kremer, M. (2008). *Teacher incentives in the developing world.* Cambridge, MA: Harvard University. Retrieved from: http://www.economics.harvard.edu/faculty/kremer/files/KntchinV9_080915.pdf

Goldhaber, D. (2009). The politics of teacher pay reform. In M. Springer (Ed.), *Performance incentives: Their growing impact on American K-12 education* (pp. 25-42). Washington, DC: The Brookings Institute.

Goodlad, J. I. (1984). *A place called school.* New York: McGraw-Hill.

Greenwald, R., Hedges, L., & Laine, R. (1996). The effect of school resources on student achievement. *Review of Educational Research, 66*(3), 361-396.

Hanushek, E. (1989). The impact of differential expenditures on school performance. *Educational Researcher, 18*(4), 45-62.

Heneman, R. L. (1992). *Merit pay: Linking pay increases to performance ratings.* Reading, MA: Addison-Wesley.

Heneman, H. G., III, & Schwab, D. P. (1979). *Work and rewards theory.* In D. Yoder & H. G. Heneman, Jr. (Eds.), ASPA handbook of personnel and industrial relations. Washington, DC: Bureau of National Affairs.

Heneman, H. G., III, Schwab, D. P., Fossum, J. A., & Dyer, L. (1989). *Personnel/human resource management.* (4th ed.). Burr Ridge, IL: Irwin.

Hillsborough County Public Schools. (2009). *Teacher incentive fund: Performance outcomes with effective rewards.* Retrieved from http://teacherincentives.mysdhc.org/POWER/home%20page

Jacob, B., & Springer, M. (2008). *Teacher attitudes toward pay for performance: Evidence from Hillsborough County, Florida.* Nashville: TN. National Center on Performance Incentives. Retrieved from: www.performanceincentives.org/news__events/detail.asp?pageaction=ViewSinglePublic&LinkID=218&ModuleID=38&NEWSPID=1

Johnson, S. M. (1986). Incentives for teachers: What motivates, what matters? *Educational Administration Quarterly, 22*(3), 54-79.

Kennedy, C. W., Fossum, J. A., & White, B. J. (1983). An empirical comparison of within-subjects and between-subjects expectancy theory models. *Organizational Behavior and Human Performance, 32,* 124-143.

Lavy, V. (2002). "Evaluating the Effect of Teachers' Group Performance Incentives on Pupil Achievement." *Journal of Political Economy*, 110 (6), 1286–1317.

Lavy, V. (2007). Using performance-based pay to improve the quality of teachers. *The Future of Children, 17*(1), 87-109.

Lawler, E. E., III. (1971). *Pay and organizational effectiveness: A psychological view.* New York: McGraw-Hill.

Lawler, E. E., III. (1986). *High-involvement management.* San Francisco: Jossey-Bass.

Lawler, E. E., III. (1990). *Strategic pay: Aligning organizational strategies and pay systems.* San Francisco: Jossey-Bass.

Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance, 3,* 157-189.

Lomax, R. G. (2007). *An introduction to statistical concepts.* (2nd ed.) . Mahwah, NJ: Lawrence Erlbaum Associates.

Marion, R. (2004). *The whole art of deduction: Research skills for new scientists.* Texas: The University of Texas Medical Branch. Retrieved from http://sahs.utmb.edu/pellinore/intro_to_research/wad/wad_home.htm

McNeil, M. (2007, March 14). Florida Governor seeking to boost performance pay. *Education Week, 26*(27), 18-20.

Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study of the effect of goal setting on task performance: 1966-1984. *Organizational Behavior and Human Decision Processes, 39,* 52-83.

Miami-Dade County Public Schools. (2009). *Project RISE: Rewards and incentives for school educators.* Retrieved from: http://projectrise.dadeschools.net/

Miami-Dade County Public Schools. (2010). *2009 – 2010 Salary schedule.* Retrieved from http://salary.dadeschools.net/

Miller, L. M., & Say, E. (1982, March). *Incentive pay for teachers: Impacts in an urban district.* Paper presented at the annual meeting of the American Educational Research Association in New York, NY. Retrieved from ERIC.

Mohrman, A., Mohrman, S. A., & Odden, A. (1996). Aligning teacher compensation with systemic school reform: Skill-based pay and group-based performance awards. *Educational Evaluation and Policy Analysis, 18,* 51-71.

Muralidharan, K., & Sundararaman, V. (2008). "Teacher Incentives in Developing Countries: Experimental Evidence from India." NBER Working Paper NO. 15323. Nashville, TN: National Center on Performance Incentives. Retrieved from: http://www.performanceincentives.org/news__events/detail.asp?pageaction=ViewSinglePublic&LinkID=236&ModuleID=38

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Washington: U.S. Department of Education.

Neal, D. (2009). Designing incentive systems for schools. In M. Springer (Ed.), *Performance incentives: Their growing impact on American K-12 education* (pp. 149-170). Washington, DC: The Brookings Institute.

Obama, B. (2009a, February 24). *Obama's speech to Congress.* Address presented to a joint session of Congress, Washington, DC. Retrieved from http://www. cbsnews.com/stories/ 2009/02/24/politics/main4826494.shtml

Obama, B. (2009b, March 10). *President Obama's Remarks to the Hispanic Chamber of Commerce.* Speech presented at the Hispanic Chamber of Commerce, Washington, DC. Transcript: President Obama's remarks to the Hispanic Chamber of Commerce. Retrieved from http://www.nytimes.com/2009/03/10/us/politics/10text-obama.html

Odden, A., & Kelley, C. (1997). *Paying teachers for what they know and do: New and smarter compensation strategies to improve schools.* Thousand Oaks, CA: Corwin Press.

Odden, A., & Kelley, C. (2002). *Paying teachers for what they know and do: New and smarter compensation strategies to improve schools.* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Office of the Federal Register. (2009). *Federal Register, (74)*58, 13412. Retrieved from: http://www.gpoaccess.gov/fr/index.html

Office of Program Policy Analysis and Government Accountability. (2007, January). *Restrictive requirements limited participation in performance pay systems (Report Number 07-01).* Tallahassee, FL: Author. Retrieved from http://www.oppaga.state.fl.us/reports/pdf/0701rpt.pdf

Orange County Public Schools. (2009a). *2007 Merit award program implementation.* Retrieved from https://www.ocps.net/es/hr/pds/instructional/performancepay/Pages/default.aspx

Orange County Public Schools. (2009b). *Comparison of STAR proviso and merit award program F.S. 1012.225.* Retrieved from https://www.ocps.net/es/hr/pds/instructional/performancepay/Pages/default.aspx

Orange County Public Schools. (2009c). *Instructional performance pay.* Retrieved from https://www.ocps.net/es/hr/pds/instructional/performancepay/Pages/default.aspx

Orange County Public Schools. (2009d). *Special Teachers Are Awarded STAR plan 2006-2007.* Retrieved from https://www.ocps.net/es/hr/pds/instructional/performancepay/Pages/default.aspx

Orange County Public Schools. (2009e). *Teacher incentive fund.* Retrieved from: https://www.ocps.net/es/hr/PDS/tif/Pages/default.aspx

Orange County Public Schools. (2009f). *Title I Schools and Poverty Percentages (2009-10).* Retrieved from: https://www.ocps.net/cs/services/support/titlei/Pages/TitleISchools.aspx

Orange County Public Schools. (2010a). *Florida differentiated accountability program.* 2009 – 2010 School improvement plan. Retrieved from https://www.ocps.net/cs/services/accountability/improvement/SIP/Westridge%20MS%2009-10%20DOE.pdf

Orange County Public Schools. (2010b). *2009 – 2010 Pocket Facts Orange County Public Schools.* Retrieved from http:// https://www.ocps.net/Documents/pocketfacts2009.pdf

Podgursky, M. (2009). A market-based perspective on teacher compensation reform. In M. Springer (Ed.), *Performance incentives: Their growing impact on American K-12 education* (pp. 67-86). Washington, DC: The Brookings Institute.

Protsik, J. (1995). *History of teacher pay and incentive reforms.* Paper presented at the Conference on Teachers Compensation of the Consortium for Policy Research in Education (Washington, DC, November 2 – 4, 1994). Retrieved from ERIC.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica 73,* (2), 417-458.

Rothman, S. M. (1978). *Woman's proper place: A history of changing ideals and practices, 1870 to the present.* New York: Basic Books.

Rowan, B. (1996). Standards as incentives for instructional reform. In S. H. Fuhrman & J. A. O'Day (Eds.), *Rewards and reform: Creating educational incentives that work* (pp. 195-225). San Francisco: Jossey-Bass.

Ryan, J. E. (2009). A legal perspective on teacher compensation reform. In M. Springer (Ed.), *Performance incentives: Their growing impact on American K-12 education* (pp. 43-66). Washington, DC: The Brookings Institute.

Santibañez, L., Martinez, J. F., Datar, A., McEwan, P. J., Setodji, C. M., & Basurto-Davila, R. (2007). "Breaking Ground: Analysis of the Assessment System and Impact of Mexico's Teacher Incentive Program 'Carrera Magisterial.'" Technical Report. RAND Corporation. Retrieved from: http://www.eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=tru&_&ERICExtSearch_SearchValue_0=ED496982&ERICExtSearch_SearchType_0=no&accno=ED496982

Spring, J. (1994). *The American School 1642 – 1993.* (3rd ed.). New York: Longman.

Springer, M. G. (Ed.). (2009). Rethinking teacher compensation policies: Why now, why again? *Performance incentives: Their growing impact on American K-12 education* (pp. 1-21). Washington, DC: The Brookings Institute.

Springer, M., Ballou, D., & (Xiao) Peng, A. (2008 February). *Impact of the Teacher Advancement Program on student test score gains: Findings from an independent appraisal.* Nashville: TN. National Center on Performance Incentives. Retrieved from: http://www.performanceincentives.org/data/files/news/PapersNews/Springer_et_al_2008.pdf

Spuck, D. W. (1974). Reward structures in the public high school. *Educational Administration Quarterly, 10,* 22-42.

Tyack, D. B. (1974). *The one best system: A history of American urban education.* Cambridge: Harvard University Press, 1974.

Tyack, D. B., & Strober, M. H. (1981). *Women and men in schools: A history of sexual structuring of educational employment.* Washington: National Institute of Education.

U.S. Department of Agriculture. (2009). *National School Lunch Program.* Retrieved from: http://www.fns.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.pdf

U.S. Department of Education. (2007). Teacher Incentive Fund Grant Performance Report (ED 524B). OMB No. 1890-0004. October 31, 2007. Washington, DC.: U.S. Department of Education.

U.S. Department of Education. (2009a). *No Child Left Behind Act of 2001 (NCLB).* Retrieved from http://www.ed.gov/nclb/landing.jhtml

U.S. Department of Education. (2009b). *Teacher incentive fund (TIF).* Retrieved from http://www.ed.gov/programs/teacherincentive/index.html

U.S. Department of Education. (2009c). *Teacher incentive fund (TIF) awards.* Retrieved from http://www.ed.gov/print/programs/teacherincentive/awards.html

U.S. Department of Education. (2010). *Race to the Top.* Retrieved from http://www2.ed.gov/programs/racetothetop/factsheet.pdf

Vegas, E. (Ed.). (1994). *Incentives to improve teaching: Lessons from Latin America.* Washington, D.C.: The World Bank.

Vigdor, J. L. (2009). Teacher salary bonuses in North Carolina. In M. Springer (Ed.), *Performance incentives: Their growing impact on American K-12 education* (pp. 227-249). Washington, DC: The Brookings Institute.

Wanous, J. P., Keon, T. L., & Latack, J. C. (1983). Expectancy theory and occupational/organizational choices: A review and test. *Organizational Behavior and Human Performance, 32,* 66-86.

Welbourne, T. M., & Mejia, L. R. (1995). Gainsharing: A critical review and a future research agenda. *Journal of Management, 21,* 559-609.

Wright, P. M. (1989). Testing the mediating role of goals in the incentive-performance relationship. *Journal of Applied Psychology, 74,* 699-705.