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The Effects of the Learning-Focused Schools Model on Student Achievement in Math and Reading and Teachers' Perceptions of the Model

Wendy L. Royer

THE EFFECTS OF THE LEARNING-FOCUSED SCHOOLS MODEL ON STUDENT ACHIEVEMENT IN MATH AND READING AND TEACHERS' PERCEPTIONS OF THE MODEL

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By

Wendy L. Royer

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Presented by:

Wendy L. Royer
M.S., The Pennsylvania State University, 1979
B.S., West Chester University, 1978

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THE EFFECTS OF THE LEARNING-FOCUSED SCHOOLS MODEL ON STUDENT ACHIEVEMENT IN MATH AND READING AND TEACHERS' PERCEPTIONS OF THE MODEL

Approved by:

_____, Chair
Robert Bartos, Ed.D.
Dean, College of Education and Human Services, Retired
Shippensburg University

_____, Member
James E. Henderson, Ed.D
Professor of Educational Leadership
Director, Interdisciplinary Doctoral Program for Educational Leaders

_____, Member
Jean M. Dyszel, Ed.D.
Educational Consultant

Program Director
James E. Henderson, Ed.D.
Professor of Educational Leadership and
Director, Interdisciplinary Doctoral Program for Educational Leaders
Duquesne University School of Education

ABSTRACT

THE EFFECTS OF THE LEARNING-FOCUSED SCHOOLS MODEL
ON STUDENT ACHIEVEMENT IN MATH AND READING
AND TEACHERS' PERCEPTIONS OF THE MODEL

By

Wendy L. Royer

May 2009

Dissertation Supervised by Dr. Robert Bartos, Ed.D.

Learning-Focused Schools (LFS) is a research-based comprehensive school reform model designed to assist systems, schools, and teachers in using exemplary practices to increase learning and achievement. The purpose of the study was to analyze the first-year implementation of the model and determine its effect on the academic achievement in reading and math of fourth and fifth grade students. Student achievement data was obtained from the Pennsylvania System of School Assessment (PSSA). Using data from the 2008 PSSA, the study compared achievement of students taught by teachers with formal training in the model with achievement of students taught by teachers with no formal training. The study also compared the 2008 PSSA scores and 2007 PSSA scores for both fourth and fifth grade samples. The study also analyzed and discussed survey data collected by the school district. The survey solicited teacher feedback on instructional strategies, planning time, formal training, and administrative support. The

only significant finding from the study was increased reading achievement from the experimental group of fifth grade students taught by teachers with formal training in the model. Information from the survey provided evidence to support a successful first-year implementation of the model. A high percentage of teachers implemented expected strategies, met expectations for planning time, and reported adequate support from their building principals. In summary, the purpose for this dissertation topic was to provide the research school district and other districts with information that may guide future decisions for expanded implementation of the Learning-Focused Schools model. Information from the survey information may also assist in implementing effective further professional development necessary to sustain the model.

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I would like to express my appreciation to the West Shore School District. The school board’s commitment to funding higher education programs for staff is greatly appreciated. I also thank my colleagues for their support and encouragement. It is both an honor and privilege to work with them.

Finally, I thank the Duquesne University IDPEL cohort of 2008. Since our group began in 2004, every member has in someway contributed to my journey. Within this group, I would also acknowledge Dr. Todd Stoltz. Over the last six months of this program he became my “dissertation accountability coach.” His consistent commitment to my success truly defines collegial support.

DEDICATION

This dissertation is dedicated to my mother and my family. My mother did not live to see her dream fulfilled, as I became the fourth generation of educators. However, she has been with me in spirit throughout every professional endeavor of the past twenty-five years. I was never truly alone during any of the countless hours spent during the past five years of my doctoral program. There is nothing my mother could not describe, support, or explain through some saying or adage passed to her from her mother, her mother's mother, or some distant relative. I only now truly understand one of her favorites, "Any job worth starting is worth more finished." Thanks, Mom!

I also dedicate this dissertation to my family. Although my sons Tyler and Jared are grown, I appreciate their understanding during holidays and vacations over the past five years. My husband Dade's continued encouragement, support, and commitment continues to be instrumental to my success. For 26 years he has encouraged me to obtain my doctorate. When it mattered most, he was always there to make sure I kept going. For this I will always be grateful.

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INTRODUCTION

Overview

The pressure on public schools to improve student academic performance continues to grow. The requirements for adequate yearly progress (AYP) as outlined in the federal No Child Left Behind (NCLB) Act of 2001 challenge school districts to seek, develop, and implement best practices within every aspect of organizational performance. The No Child Left Behind requirement of highly qualified teachers in every classroom emphasizes the link between teacher competency and student achievement (Heneman & Milanowski, 2004). There is strong public and political appeal to link teacher and school evaluation to student achievement (Flowers & Hancock, 2003).

According to Marzano (2001), educational research over the last 40 years has identified characteristics of effective schools and teaching. “To have knowledge of these characteristics provides education with possibilities for reform unlike those available at any other time in history” (Marzano, 2001, p. 1). Historically, schools school districts have committed themselves to a wide variety of reform efforts dedicated to increasing teacher effectiveness and raising student achievement.

Achieving the goals of NCLB will “…require schools to undertake numerous changes, many of which will challenge prevailing norms and values and require educators to acquire new knowledge and skills” (Waters, Marzano, & McNulty, 2004, p. 51). The challenge is to identify the “right combination of resources and commitments for the underserved children of our nation who are currently being left behind” (Greene & Lee, 2006, p. 338).

Throughout the past decade, numerous school improvement initiatives and programs have been investigated, implemented, reviewed, and revised. According to Fullan (2006), "The most ambitious reforms have fallen miserably short of establishing the new mission of schools, where virtually all students are engaged in their own significant learning" (p. 25). Fullan also proposes that any major reform initiative must include significant investments in professional development.

One of these initiatives is Learning-Focused Schools (LFS). Thompson (2005) defines his model as a research-based comprehensive school reform model designed to assist systems, schools, and teachers in using exemplary practices to increase learning and achievement (Thompson & Thompson, 2005). The model is based on a learning framework connecting exemplary teaching strategies to teacher planning and instruction. The implementation of the model has demonstrated its ability to accelerate achievement of economically disadvantaged students, minority populations, special education students, and English Language Learners.

According the Thompson (personal communication, June 24, 2008), in 2007 the Learning-Focused Schools model was implemented in 92,000 classrooms in 3,200 schools across 290 school districts in 20 different states. By the end of the 2007-2008 school year, Thompson predicted his model would have some impact on the academic achievement of 2,800,000 students. Thompson also reported that the Learning-Focused Schools model has been implemented in more than 5,000 schools over the past 20 years.

The model is based on Thompson's research from approximately 300 schools across the United States that qualify as 90/90/90 exemplary schools. These are schools where 90 percent of students are identified as on or above grade level, 90 percent or more

participate in a free and/or reduced meal program, and 90 percent or more are minority students (Thompson, 2006).

Within his model, Thompson outlines three basic steps for success:

1. *Adapt, don't adopt.* The model encourages school districts to take what they are already doing and incorporate the LFS principles into their actions. The focus should be on quality and thoughtful implementation.
2. *Consistent and Pervasive.* Research-based instructional strategies must be consistent throughout all lessons at all times by all staff. Random implementation does not raise student achievement.
3. *Accountability.* The model is based on a prioritized curriculum and lesson plans incorporating research-based strategies. Through intensive training, the model focuses on five areas: curriculum, instruction, assessment, organization, and accountability.

Purpose of the Study

As the demand for accountability within public schools increases, so does the necessity to scrutinize the adoption and implementation of educational programs. In addition, limited financial resources dictate the majority of educational decisions in many public schools. As a result, the need to study and ascertain the effectiveness of any program requiring the allocation of both personnel and financial resources becomes an essential part of the process.

Unfortunately, many school improvement models are not implemented with a process in place to evaluate their effectiveness on classroom instruction and student achievement. Historically, school districts tend to embrace programs enthusiastically

within the first year. Often subsequent years lack the required allocation of resources and administrative commitment to ensure effective implementation. As a result, many school initiatives are abandoned and forgotten long before improvements can be measured. Within the LFS model, Thompson (personal communication, September 21, 2006) refers to this phenomenon as Last Year's New Thing, This Year's New Thing and Next Year's New Thing. The LFS model encourages a systematic analysis of school systems and encourages educators to adapt their existing educational commitments and resources into research-based educational practices.

The purpose of this study was to analyze and assess the first-year implementation of the Learning-Focused Schools comprehensive school reform model in one school district. The study compared student achievement in classrooms taught by teachers with formal training in the model with student achievement in classrooms taught by teachers with no formal training. Student achievement was determined from reading and math data obtained by the Pennsylvania System of School Assessment (PSSA).

First, the study compared the 2008 PSSA reading and math scores from a selected group of fifth grade students in classrooms taught by teachers with formal training in the LFS model with the 2008 PSSA reading and math scores from a similar group of fifth grade students in classrooms taught by teachers with no formal training in the model. Similarly, the study also compared the 2008 PSSA reading and math scores from a selected group of fourth grade students in classrooms taught by teachers with formal training in the LFS model with the 2008 PSSA reading and math scores from a similar group of fourth grade students in classrooms taught by teachers with no formal training in the model.

The study also compared the 2008 PSSA reading and math scores of fifth graders with their fourth grade 2007 PSSA reading and math scores. Comparisons were made between scores from students taught in classrooms by teachers with formal training in the model with students taught in classrooms by teachers with no formal training in the model. Similarly, the study also compared the 2008 PSSA reading and math scores of fourth graders with their third grade 2007 PSSA reading and math scores.

The study also analyzed and discussed survey data collected by the school district at the conclusion of year-one implementation of the model. All teachers with formal training in the LFS model during the 2007-2008 school year were asked to complete the survey in May 2008. The survey solicited feedback based on teachers' perceptions of the model; including the extent to which the model was implemented according to school district guidelines, the consistent and pervasive use of LFS instructional strategies in the classroom, elements of planning time, the effectiveness of formal training, the need for additional training, and the level of administrative support. A copy of the survey is in the Appendix.

The study was designed to determine the success of the Learning-Focused Schools model in the school district during the first year of implementation. The results will also provide this school district and other school districts implementing the model with information that may assist their decisions to expand implementation and develop effective practices to support the LFS model over time.

To this researcher's knowledge, there have been no independent studies in Pennsylvania to determine the effects of the model on student achievement as measured by the PSSA; therefore, the study provides school districts with information that is not

currently available. The study will also add to the body of literature on the effectiveness of school improvement models on student achievement in reading and math.

Statement of the Problem

The Federal No Child Left Behind requires all states to evaluate its public schools. In Pennsylvania all school districts determine adequate yearly progress (AYP) based on the results of the reading and math assessments from PSSA; other factors including test participation, attendance, and graduation are included in the AYP determination. To meet AYP, at least 95% of students overall and within each subgroup must take both the reading and math tests. Participation rate is calculated by taking the number of students who received a score for the test, divided by the enrollment of each tested grade and subgroup population. The participation rate is based on those students enrolled as of the last day of the assessment window, whether or not those students were enrolled for a full academic year. The attendance rate applies to schools that do not have a high school graduating class based on the entire school. The attendance threshold is 90% or any improvement from the previous year. The graduation rate applies to schools that have a high school graduating class, and includes only students enrolled in that class. The graduation threshold is 80% or any improvement from the previous year. The previous year's data is used to determine attendance and graduation rates (Pennsylvania Department of Education, Assessment, http://www.pde.state.pa.us/pde_internet/site/default.asp).

Pennsylvania establishes yearly proficiency levels in reading and math. Proficiency levels will continue to increase until 100% proficiency is expected in 2014. As a result, increased accountability for student achievement will continue to have a

major impact on the educational decisions of public schools. Whereas previously, students with disabilities were permitted to be excluded from state assessments, the dictates of NCLB now require the majority of special education students to participate and demonstrate established proficiency levels regardless of disability, language, and socioeconomic status. Pennsylvania's Secretary of Education Gerald Zahorchak states the following:

> The addition of more subgroups means schools must meet more targets to achieve AYP. Simply put, our schools now face a higher hurdle for making AYP than they have in years past. While this is a challenge for our schools, the addition of more subgroups is good for our students. (Pennsylvania Department of Education, Assessment, http://www.pde.state.pa.us/pde_internet/site/default.asp)

Since the mandates of NCLB require school districts to address the instructional needs of all students, especially those not meeting established proficiency levels, it becomes critical for school districts to seek and investigate new programs and practices that focus on improving instruction. Most educators agree current practices and programs are not sufficient for school districts to achieve the 100% proficiency requirements expected by 2014. Although there is no argument change is necessary, the long history of failure of education reforms, especially in urban schools, "complicates efforts to develop policies and strategies to guide the choices educators might make about reform strategies" (St. John, Manset-Williamson, Chung, & Michael, 2005, p. 481). If all students are to achieve proficiency, it will be necessary to make educational decisions based on solutions derived from the analysis of student achievement data. It will also be

necessary to look for programs that go beyond the classroom and into the infrastructure and systems of the public education.

Research Questions

1. Will there be a statistically significant increase in the math achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 Pennsylvania System of School Assessment (PSSA)?

2. Will there be a statistically significant increase in the reading achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

3. Will there be a statistically significant difference between the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

4. Will there be a statistically significant difference between the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

5. Will there be a statistically significant increase in the 2008 PSSA math scores

from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the LFS model?

6. Will there be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the LFS model?

7. Will there be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model?

8. Will there be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model?

9. Will there be a statistically significant increase in the math achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

10. Will there be a statistically significant increase in the reading achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

11. Will there be a statistically significant difference between the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade

2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

12. Will there be a statistically significant difference between the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

13. Will there be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the LFS model?

14. Will there be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the LFS model?

15. Will there be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model?

16. Will there be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model?

17. Will the teachers achieve the school district's expected level of implementation for the required LFS strategies in their classrooms based on information from the school district's Learning-Focused Schools End-of-year Survey?

18. Were the supports in place for year-one implementation of the model adequate based on information from the school district's Learning-Focused Schools End-of-year Survey?

Research Hypotheses

R1. There will be a statistically significant increase in the math achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 Pennsylvania System of School Assessment (PSSA).

R2. There will be a statistically significant increase in the reading achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R3. There will be a statistically significant difference between the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R4. There will be a statistically significant difference between the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth

grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R5. There will be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the LFS model.

R6. There will be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the LFS model.

R7. There will be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model.

R8. There will be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model.

R9. There will be a statistically significant increase in the math achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R10. There will be a statistically significant increase in the reading achievement

of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R11. There will be a statistically significant difference between the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R12. There will be a statistically significant difference between the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

R13. There will be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the LFS model.

R14. There will be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the LFS model.

R15. There will be a statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model.

R16. There will be a statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model.

R17. The teachers will achieve the school district's expected level of implementation for the required LFS strategies in their classrooms based on information from the school district's Learning-Focused Schools End-of-year Survey.

R18. The supports in place for year-one implementation of the model were adequate based on information from the school district's Learning-Focused Schools End-of-year Survey.

Null Hypotheses

Ho1. There will be no statistically significant increase in the math achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 Pennsylvania System of School Assessment (PSSA).

Ho2. There will be no statistically significant increase in the reading achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho3. There will be no statistically significant difference between the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth

grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho4. There will be no statistically significant difference between the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho5. There will be no statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the LFS model.

Ho6. There will be no statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the LFS model.

Ho7. There will be no statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model.

Ho8. There will be no statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model.

Ho9. There will be no statistically significant increase in the math achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho10. There will be no statistically significant increase in the reading achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho11. There will be no statistically significant difference between the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho12. There will be no statistically significant difference between the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA.

Ho13. There will be no statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the LFS model.

Ho14. There will be no statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the LFS model.

Ho15. There will be no statistically significant increase in the 2008 PSSA math scores from the 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model.

Ho16. There will be no statistically significant increase in the 2008 PSSA reading scores from the 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model.

Ho17. The teachers will not achieve the school district's expected level of implementation for the required LFS strategies in their classrooms based on information from the school district's Learning-Focused Schools End-of-year Survey.

Ho18. The supports in place for year-one implementation of the model were not adequate based on information from the school district's Learning-Focused Schools End-of-year Survey.

Significance of the Problem

In 2007, 92% of Pennsylvania's school districts (460 out of 501) and 77.5% of its schools (2,404 in all) made AYP or were classified as "making progress." Across all grades in 2006-2007, 69.2 % of Pennsylvania's students were on grade level (proficient or advanced) in math. In reading, students on grade level reached 67.7%.

According to Pennsylvania's Secretary of Education, Gerald Zahorchak, "The future success of our commonwealth is directly linked to the current success of our students. Governor Rendell recognizes that if Pennsylvania intends to compete in the new global economy, our students must rise to the challenge of being among the best educated in the world" (Pennsylvania Department of Education, Assessment, http://www.pde.state.pa.us/pde_internet/site/default.asp).

Since 2002, the Pennsylvania Department of Education reports rising achievement levels across all grades, subjects, and demographics. Although the past five years indicate higher levels of student achievement, more than 2,000 schools needed to increase student achievement to meet the higher proficiency levels of 2007-2008.

Due to the addition of testing in grades 4, 6, and 7, comparing the 2006-2007 AYP data to previous years is difficult. The addition of these three grades significantly increased the number of measurable subgroups. In 2006, 443 schools had three or more measurable subgroups for math. That number grew in 2007 to 1,224 schools. It will be a challenge for schools to meet the increased proficiency targets with the additional subgroups (Pennsylvania Department of Education, http://www.pde.state.pa.us/pde).

The focus of this study was a school district with testing results similar to those of the state. Table 1 provides a summary of the fourth and fifth grade proficiency percentages from the research school district over the past six years. For each year, the table also provides the required proficiency percentage targets established by the state of Pennsylvania to meet the requirements of the No Child Left Behind legislation.

Table 1

Six-Year Summary of PSSA Proficiency Percentages for Fourth and Fifth Grade Students

Year	PA Reading Target	District 4th Grade Reading	District 5th Grade Reading	PA Math Target	District 4th Grade Math	District 5th Grade Math
2002-2003	45%	Not tested	60%	35%	Not tested	64%
2003-2004	45%	Not tested	70%	35%	Not tested	72%
2004-2005	54%	Not tested	72%	45%	Not tested	73%
2005-2006	54%	74%	63%	45%	85%	69%
2006-2007	54%	72%	63%	45%	75%	68%
2007-2008	63%	78%	66%	56%	75%	68%

In response to the demands for increased achievement, the school district decided to implement the Learning-Focused Schools model. With Pennsylvania's 2014 requirement for 100% proficiency in reading and math only six years away, the school district was hopeful the model would provide a vehicle to meet these achievement expectations.

Prior to the first-year implementation in 2007-2008, teams from all schools attended training during the 2006-2007 school year. The school district's goal is full implementation of the LFS model in its 16 schools by September 2010. The required teacher training to implement LFS requires strong financial commitment from the school district. The model also requires all building principals and school district curriculum supervisors to be formally trained in the monitoring and accountability piece of the model. These financial and time commitments will far surpass any previous school improvement model implemented within the history of the school district.

The high levels of financial, personnel, and time commitments make it critical for the school district to closely monitor the implementation of this model and its impact on student achievement. The study was designed to determine the success of the Learning-Focused Schools model in the school district during the first year of implementation. The results will also provide this school district and other school districts implementing the model with information that may assist their decisions to expand implementation and develop effective practices to support the LFS model over time.

Identification of Variables

The study analyzed achievement data from the year-one implementation of the Learning-Focused Schools model during the 2007-2008 school year. The study compared reading and math achievement data from a selected group of students in fifth grade and a selected group of students in fourth grade.

First, the study compared the 2008 PSSA reading and math scores from a selected group of fifth grade students in classrooms taught by teachers with formal training in the LFS model with the 2008 PSSA reading and math scores from a similar group of fifth grade students in classrooms taught by teachers with no formal training in the model. Similarly, the study also compared the 2008 PSSA reading and math scores from a selected group of fourth grade students in classrooms taught by teachers with formal training in the LFS model with the 2008 PSSA reading and math scores from a similar group of fourth grade students in classrooms taught by teachers with no formal training in the model.

The study also compared the 2008 PSSA reading and math scores of the fifth grade students with their fourth grade 2007 PSSA reading and math scores. Comparisons

were made between scores from students taught in classrooms by teachers with formal training in the model with students taught in classrooms by teachers with no formal training in the model. Similarly, the study also compared the 2008 PSSA reading and math scores of the fourth grade students with their third grade 2007 PSSA reading and math scores. Comparisons were made between scores from students taught in classrooms by teachers with formal training in the model with students taught in classrooms by teachers with no formal training in the model.

Independent variable

The independent variable for the study was the four days of formal training in the LFS model completed by teachers of the experimental group; two days of training in Strategies I followed by two days of training in Strategies II. The control group received instruction from teachers with no formal training in the model. Both groups of students received instruction in identical curriculum content prescribed by the school district's curriculum. The curriculum is standards-aligned to the Pennsylvania Academic Standards.

Dependent variable

The dependent variables for the study were the reading and math scores from the Pennsylvania System of School Assessment (PSSA).

Control variable

Since the study was limited to the achievement scores of fourth and fifth grade students, this parameter limited the scope of this study and became a control variable.

Moderator variables

A possible moderator variable was the level of implementation. The level of implementation to the model may vary across schools, within classrooms, and between individual teachers.

Intervening variables

Important to consider as possible intervening variables in the study were the individual degrees of teacher comfort, expertise, and commitment. A second intervening variable that may have affected the findings of this study was the attitude of both administration and teachers. Finally, the degree of monitoring and supervision and the level of accountability established by the school district administration and building principal may also impact the results of the study. Both quantitative and qualitative data were collected through a teacher survey compiled by the school district. The survey was designed to ascertain the impact of these variables.

Operational Definitions

The following definitions were used for this study.

90/90/90 schools: Schools where 90% or more of the population is on or above grade level, 90% or more of the population participates in a free and/or reduced meal program, and where 90% or more of the students are minority (Thompson, 2005).

Acquisition lesson: A lesson designed for learners to acquire new knowledge, concepts, or skills (Thompson & Thompson, 2005).

Essential questions:	Concepts or skills in the form of a question designed to organize and set the focus for each lesson (Thompson & Thompson, 2005).
Exemplary school:	A school with 90% or more of its students on or above grade level (Thompson & Thompson, 2005).
Exemplary practices:	Research-based practices/activities that exist on a consistent and pervasive basis in exemplary schools (Thompson & Thompson 2005).
Formal training:	Two days of training in Strategies I followed by two days of training in Strategies II are considered formal training for this study.
Graphic organizers:	Visual representations designed to provide a structure for long and short term memory for students to learn key concepts, ideas, and relationships (Thompson, 2005).
Learning-Focused Schools:	A research-based comprehensive school reform model designed to assist systems, schools, and teachers in using exemplary practices to increase learning and achievement (Thompson & Thompson, 2005).
Pennsylvania System of School Assessment (PSSA):	A series of criterion referenced tests designed to test knowledge and skills on the grade level Pennsylvania Academic State Standards in reading, math, writing, and science. For the purpose of this study, scores from fourth and fifth grade were used.

PSSA advanced level:	Reflects superior academic performance. Advanced work indicates an in-depth understanding and exemplary display of the required skills.
PSSA proficient level:	Reflects satisfactory academic performance. Proficient work indicates a solid understanding and adequate display of the required skills.
PSSA basic level:	Reflects marginal academic performance. Basic work indicates a partial understanding and limited display of the required skills. This work is approaching but not reaching satisfactory performance. There is a need for additional instructional opportunities and/or increased student academic commitment to achieve the proficient level.
PSSA below basic level:	Reflects inadequate academic performance. Below basic work indicates little understanding and minimal display of the required skills. There is a major need for additional instructional opportunities and/or increased student academic commitment to achieve the proficient level.
Summarizing strategies:	A learning strategy designed to assist students in comprehending and remembering information and for teachers to assess learning, determine re-teaching needs, and adapt future teaching (Thompson & Thompson, 2005).

Assumptions

Students in the classrooms designated within this study were heterogeneously grouped according to guidelines established by the school district. There were no modifications to the grouping of students to accommodate the study. The study was also based upon the assumption that teachers in both experimental and control groups followed the prescribed school district curriculum in all subjects. There was also an assumption that teachers with formal training followed the guidelines prescribed by the model and the first-year implementation expectations outlined by the school district.

Limitations

Since successful implementation of the Learning-Focused Schools model depends upon the extent to which teachers support and implement the model, individual teacher commitment and teaching expertise may be limitations of the study. In addition, the degree of monitoring and supervision and the level of accountability established by the school district administration and building principal may also be a limitation of the study. Quantitative and qualitative data collected from the school district survey were used to determine the extent of these limitations. Survey information was analyzed and discussed within the findings of the study.

CHAPTER II

LITERATURE REVIEW

Introduction

The first section of the literature review provides a history of educational reform. The second section reviews the change process and factors influencing change. The third section provides an overview of the first four components of the Learning-Focused Schools model: curriculum, assessment, organization, and accountability. The fourth section focuses on instruction. Instruction is the fifth component of the LFS model and the focus for this study. The final section includes a review of the educational research provided by Thompson as the basis for the model and a summary of related research on the model.

Educational Reform

Introduction

According to Greene and Lee (2006), current educational reform "is perhaps most centrally how to marshal the right combination of resources and commitments for the underserved children of our nation who are currently being left behind" (p. 338). According to Slavin (2002) as cited by Greene and Lee (2006), "contemporary educational reform spotlights achievement outcomes and accountability in the form of increasingly high-stakes testing programs and underscores the important of systematic or school wide reform" (p. 338).

Historical Background

Over the past 40 years, the cumulative research on educational reform "provides some clear guidance about the characteristics of effective schools and effective teaching"

(Marzano, 2001, p.1). The major focus of school reform in the 1950s and early 1960s centered on the unequal educational opportunities of minority populations.

Within the mandates of The Civil Rights Act of 1964, James Coleman conducted a nationwide survey of educational opportunity. Reported to be the largest survey of public education, the study included over 640,000 students across six ethnic and cultural groups. Published in July 1966, the "Equality of Educational Opportunity" is commonly referred to as the Coleman Report. Within its findings, the Coleman Report implied that schools could not equalize the differences in student achievement due to environmental factors. One of the most publicized findings was that schools "accounted for only about 10% of the variances in student achievement, the other 90% was accounted for by student background characteristics" (Marzano, 2001, p. 2).

According to Marzano (2001), Jencks further substantiated Coleman's claims in a study based on the re-analysis of Coleman report data. Jencks reported that schools did little to decrease the gap between rich and poor and the various ability levels of students. Jencks reported student background as the major factor of student achievement. He found there was little evidence to support the influence of educational reform on student achievement.

Marzano characterized the 1970s and early 1980s as the school effectiveness movement. Marzano (2001) summarized his findings:

> As a whole, the school effectiveness movement produced fairly consistent findings regarding the characteristics of high performing schools. With some variation, five general features appear to characterize effective schools as identified by a variety of methodologies,

> most of which focus on identifying schools where students perform better than expected based on student SES. Those five factors or five correlates include: (1) strong leadership, (2) high expectations, (3) an orderly atmosphere, (4) an emphasis on basic skills, and (5) effective monitoring of student achievement. (p. 19)

These five factors are found within the five components of Thompson's model: curriculum, instruction, organization, assessment, and accountability.

Marzano (2001) developed an organizational pattern to synthesize educational research conducted in the 1980s and 1990s. "The following three categories appear to be implicit or explicit in a variety of studies: (1) school-level variables, (2) teacher-level variables, and (3) student-level variables" (p. 39). According to Marzano (2001), all of the 13 studies conducted by Bloom; Walberg; Fraser, Walberg, Welch, and Hattie; Hattie; Wang, Haertel, and Walberg; Lipsey and Wilson; Cotton; Scheerens and Bosker; and Creemers utilized teacher and student levels to organize the variables affecting student achievement. School level was used as a primary organizer by nine schools and implicitly by the remaining four.

Contemporary Educational Reform

Educational research provided guidance to contemporary educational reform efforts. A study by St. John et al., (2005) examined the underlying rationales for educational reform. Through an examination of existing reform models, the authors proposed there was an argument for the inclusion of three rationales: professional development, comprehensive reform approaches, and direct instruction. The authors proposed that to the extent these policy rationales influenced reform decisions, the

"underlying claims may move along unexamined by educators, evaluators, and policy makers" (p. 481). Although the focus was to determine the effectiveness of specific reading reform models, the study found support for the inclusion of both professional development and comprehensive reform. The study also found that emphasis on professional development had a positive effect on students if the intervention was sustained for at least two years. Pertinent to this study was support for schools to choose comprehensive programs to meet their needs. According to St. John et al.(2005), "The results of this study suggest that reform strategies that allow educators to select intervention designs that meet their educational needs may have a greater effect than mandating single reform models" (p. 515).

Greene and Lee (2006) reported an evaluation of a comprehensive school reform initiative designed to provide "meaningful and sustainable structure, substance, and support to the school's critical need to improve students' standardized test scores" (p. 337). The reform initiative was designed to implement external programs in student learning (Problem-Based Learning) and behavior (Positive Behavior Interventions and Supports). Although the reform model was based upon decentralized decision-making and active teacher participation, findings indicated a lack of both. Through observations and interviews, the report indicated inadequate training and support prevented successful implementation of external programs. In addition, the reforms actually conflicted with existing activities and even with each other. Greene and Lee (2006) also found support for the three factors described by Hatch (2000) as contributing to the success of school reform: difficulty in choosing a reform package to meet specific needs due to limited time and resources, a lack of current capacity to carry out reforms that required schools to

build further capacity, and the assumption that more reforms and the implementation of multiple programs at the same time would result in considerable change.

Greene and Lee (2006) suggested the following:

> One key to understanding the unfulfilled promise of this reform initiative is its external and packaged character. These were reforms that had been developed elsewhere, had been "proven" effective elsewhere, and were being imposed on the educators in this one school wholesale. (p. 338)

Interviews conducted by vanVeen and Sleegers (2006) provided insight into how secondary teachers perceived their work within the context of educational reform. The authors concluded that congruence between professional orientations and change resulted in more positive reactions toward change. Conversely, incongruence between professional orientations and change resulted in negative reactions. They concluded, "the manner in which teachers react to educational reform is largely determined by whether the teachers perceive their professional identities as being reinforced or threatened by reform" (vanVeen and Sleegers, 2006, p. 106). The authors defined two orientations to teaching. The authors defined teachers focused primarily on pedagogical content and their own teaching activities as having a "restricted orientation." Teachers more involved in the school as an organization were classified as having an "extended orientation." The authors proposed that effective reform efforts require teachers to adopt an educational perspective beyond the classroom, including their willingness to implement organizational changes. Teachers with an extended orientation would be more inclined to accept reform models such as Learning-Focused schools.

Kim and Crasco (2006) conducted a three-year empirical study that explored policies and practices of urban educational reform focusing in 22 major urban school school districts. Developed by the Directorate for Education and Human Resources at the National Science Foundation (NSF), the study's structure was based on six drivers, including four process drivers and two student outcome drivers. Driver 1 included the classroom, standards-based curriculum, instruction, and assessment. Driver 2 was defined as the policy driver; providing support for high-quality learning, teaching, professional development, and student support. Driver 3 required the convergence of educational resources. Driver 4 involved stakeholder/community support. Driver 5 identified measures of effectiveness focused on student outcomes. Driver 6 was defined as the equity driver; achievement of all students, including those historically underserved. The study reinforced the "necessity for continued professional development as new standards and curricula are introduced and as research demonstrates which teaching practices allow students to reach their full potential" (Kim & Crasco, 2006, p. 35). To some extent, all six drivers identified by NSF can be identified within the LFS reform model. However, Learning-Focused Schools is strongly linked to Driver 1: the classroom, standards-based curriculum, instruction, and assessment.

A qualitative study conducted by Schmidt and Datnow (2005) further examined the influence of teacher perceptions in the process of making sense of educational reform. Their study gathered data from a longitudinal, four-year case study of comprehensive school reform in five schools in California and Florida. The authors examined structured and less structured reform models within different contexts of school and classroom levels. At the school level, teachers attached little emotion to reform efforts. However,

making sense of reforms within their own classroom appeared to be a more emotional process. Findings suggested effective reform design teams need to "invest considerable energy and resources into making sure that teachers are knowledgeable about the reform, have the tools to implement reform in their classrooms, and understand how reform differs from their current practice" (Schmidt & Datnow 2005, p. 962). The LFS model strongly supports the importance of teachers' emotional investment in the process. While the LFS model stresses adapt don't adopt, the model also clearly articulates how to integrate the model into current practice and provide teachers with an understanding of how LFS differs from their current practice.

Accountability Movement

"The advent of accountability has significantly juiced up the rhetoric of school reform" (Fullan, 2006, p. xii). Accountability does not improve schools. However, according to Elmore (2002), "it does create the conditions in which it is advantageous for schools to work on specific problems, to focus their work in particular ways, and to develop new knowledge and skills in their students and staff" (p. 23). Today's educators are unprepared for the politically mandated requirements and community expectations inherent in the accountability movement. Prior school experience and professional education does not prepare teachers for a system that measures their success by the academic achievements of their students. Elmore (2002) proposed the organization and culture of American schools continues to treat teachers as solo practitioners "operating in isolation from one another under conditions of work that severely limit their exposure to adults doing the same work" (p. 4). Elmore (2002) proposed the following:

> It would be difficult to invent a more dysfunctional organization

> for a performance-based accountability system. In fact, the existing structure and culture seems better designed to resist learning and improvement than to enable it….There are few portals through which new knowledge about teaching and learning can enter schools…and few sources of assistance for those who are struggling to understand the connection between the academic performance of their students and the practices in which they engage. (p. 5)

The demands of increased accountability require schools to work differently and invest in developing the skills and knowledge of educators. The Learning-Focused Schools planning model requires extensive common planning. The model requires schools to reorganize and prioritize to provide teachers increased opportunities for professional growth.

Elmore (2002) described accountability as a reciprocal process:

> For every increment of performance I demand from you, I have an equal responsibility to provide you with the capacity to meet that expectation. Likewise, for every investment you make in my skill and knowledge, I have a reciprocal responsibility to demonstrate some new increment in performance. This is the principle of 'reciprocity of accountability for capacity.' (p. 5)

The Learning-Focused Schools model utilizes the principal of "reciprocity of accountability for capacity." LFS provides teachers with the knowledge and skills to support their instructional capacity for improved instruction. In turn, LFS sets high

expectations and requires teachers to be held accountable for using the consistent and pervasive instructional strategies of the model.

The Change Process

Effects of Leadership on Change

Studies of effective schools consistently link change and sustained improvement with educational leadership (Fullan, 2006). Academic success will require leaders to have increased knowledge of teaching and learning. According to Fullan (2006), "schools have a moral and intellectual responsibility to learn from other schools" (p. 95). The LFS model requires significant leadership changes at the school district level. Within all components of the model, school leaders are encouraged to engage in practices that will promote lateral capacity building (Thompson & Thompson, 2005).

Waters et al. (2004) proposed two primary variables are crucial in determining the effect of leadership on student achievement. Focus of change, the first variable, is defined by "whether or not leaders properly identify the correct focus for school and classroom improvement efforts" (p. 50). Important to this study is previous research that defined focus of change at the school level as "a guaranteed and viable curriculum, challenging goals, effective feedback, parent and community involvement, a safe and orderly environment, and collegiality and professionalism" (Waters et al., 2004, p. 50). At the teacher level, effective practices included effective instructional strategies, classroom management, and classroom curricular design. At the student level the importance of background knowledge and motivation was important. Prior to year-one implementation of the model, leadership of the research school district worked diligently to establish appropriate focus at all levels: district, school, classroom, and student.

Order of change, the second variable, involved a leader's understanding of the magnitude of what he or she is leading and the ability to adjust leadership practices accordingly. Waters et al. (2004) defined change into two categories: first-order change and second-order change. They defined first-order changes as those built on past and existing models. These changes are consistent with prevailing values and norms and are able to be implemented with the existing knowledge and skills of the stakeholders. Conversely, second-order change required leaders to drastically alter past practice, established values, and existing norms.

The LFS framework encouraging adapt, don't adopt is consistent with the definition of first order change. The school district's leadership chose Learning-Focused Schools because the model was consistent with established practices and procedures and encouraged the district to maintain existing knowledge and skills.

Resistance to Change

Achinstein and Owaga (2006) studied resistance to change beyond psychological reasons. Their study revealed teacher resistance based on professional principles rather than psychological deficits or basic reluctance to change. They defined this resistance as principled resistance. The study examined the resistance of two novice teachers who resisted mandated fidelity to a highly prescriptive reading program. The program, *Open Court*, was characterized by instructional scripts, pacing guidelines, and an emphasis on teacher-directed instruction. According to Achinstein and Ogawa (2006), the two cases demonstrated that "within prescriptive instructional programs and control-oriented educational policies, teachers have a limited ability to implement professional principles, including diversified instruction, high expectations and creativity" (p. 30).

Although the instructional strategies within the LFS model are strongly based on educational research, the strategies may be perceived as too prescriptive and controlled by both veteran and novice educators. Although creativity is encouraged, the model expects and requires consistent and pervasive use of specific educational strategies for every lesson. The principled resistance identified by Achinstein and Ogawa may be a factor in the adoption of the LFS model.

Four Components of Learning-Focused Schools

Learning-Focused Schools is comprised of five components designed to match the five exemplary practices Thompson identified in high achieving schools: curriculum, assessment, organization, accountability, and instruction. This section describes the first four components of the model.

Curriculum

According to Thompson, the current Pennsylvania Academic Standards would take 22 years to teach. Successful implementation of the model requires a prioritized curriculum divided into three areas: essential, important, and compacted (personal communication, March 28, 2006). Thompson (2005) defines essential content as the 50% necessary for mastery, important content as the 30% that can be introduced and extended, and compact content as the last 20% that is nice to know.

In terms of instructional time, the model suggests 70% of instructional time be spent on essential content, 20% on important, and the remaining 10% on compact. Prioritizing curriculum in this manner will assist teachers in planning learning units. In turn, the learning units determine the actual lesson content. According to Marzano (2001), "curriculum design might be operationally defined as the extent to which activities within

learning units are organized in a way that optimizes learning and the extent to which learning units are ordered in a way that optimizes learning" (p. 63).

Marzano analyzed over 200 standards and 3,000 benchmarks within national and state-level documents for 14 different subject areas at all grade levels (Kendall & Marzano, 2000). Based on his work with schools and school districts in all 50 states over the past two decades, Marzano (2002) concluded, "…without a standardized curriculum in place, a school has little chance of moving beyond its current level of effectiveness" (p. 7). According to Marzano (2002), a standardized curriculum must be viable, guaranteed, and the basis for academic grades. He defined *viable* as content that can be adequately covered within available instructional time. Classroom teachers estimated it would take 15,465 hours to cover the required content (Marzano, Kendall, & Gaddy, 1999).

Marzano defines three criteria of effective curriculum. First, curriculum content is defined as essential or supplemental. Similarly, LFS defines curriculum as essential, important, and compact. In the LFS model, essential content should be taught to all students and represent the content necessary for students to achieve proficiency on state standards. Marzano identifies essential content as 49%, Thompson as 70% of the total curriculum. Whereas Marzano identifies the remaining 51% as supplemental, Thompson designates 20% as important and the remaining 10% as compact or nice to know.

Marzano's second criterion of *guaranteed coverage* is also consistent with Thompson's model. Both agree that once essential content is identified, there is no option for teachers to make decisions that disregard or replace that content. Prior to implementation, the framework of LFS model requires school districts to prioritize and

map a curriculum that can guarantee coverage. Marzano (2002) also emphasizes the importance of monitoring coverage through a review of lesson plans and conferencing. Within the accountability component, LFS also encourages consistent lesson planning and requires a high level of administrative monitoring and supervision

Marzano's third criterion of linking curriculum to grades is not specifically addressed within LFS. Although Thompson's model supports and encourages a strong assessment component, Marzano (2002) proposes, "school policy should ensure that grades or scores on academic content reflect only student achievement in that content area" (p. 9). Although he supports effort and behavior as important, they should not be linked to student grades. Although Thompson's model proposes changes within grading procedures, his model does not propose that grades be based solely on curriculum content.

The standards movement increases the importance of a standards-aligned curriculum. State standards expect all students to receive instruction in the same content. Educators need to know what students are expected to know to be proficient on established standards and design a curriculum to consistently deliver this knowledge. Although it seems reasonable a written curriculum would accomplish this task, research supports this to be perception, not reality. According to Marzano (2002), studies completed by Doyle (1992); Stools (1989); and Yoon, Burstein, and Gold (n.d.) indicated that even when curriculum was highly structured, teachers commonly made independent decisions about what should be emphasized, added, and deleted. Even within an established curriculum, the resulting holes and gaps led to inconsistent delivery.

Although not the focus for this study, developing a standards-aligned curriculum was also a major priority of the research school district.

Assessment

The second component of LFS is assessment. In addition to traditional tests, quizzes, and portfolio assessments, the model encourages the use of student products and performances evaluated through rubrics based on well-defined criteria. The use of rubrics "assures that students are aware of the standards on which they will be assessed, the criteria defining the key dimensions of the task, and the levels of performance expected by the teacher" (Thompson, 2005, n.p.).

Organization

The LFS model defines organization as the third component essential to student achievement. The model encourages teams and large blocks of time, vertical tracking of curriculum and student performance, accountability across courses and grade levels, and prioritizing schedules for learning (Thompson, 2005).

Accountability

The fourth component of the LFS model is the accountability and monitoring by administration and school leadership. Thompson proposes a high correlation between successful implementation of Learning-Focused Schools and high levels of supervision and accountability. Thompson requires administrative participation for schools implementing his model. He also distinguishes between supervising and monitoring. Schools are encouraged to set goals and collect data based on critical data factors.

Research supports Thompson's emphasis on school leadership. The Mid-continent Research for Education and Learning (McREL) conducted a quantitative study

of school leadership spanning more than 25 years. Their meta-analytic study, *School Leadership that Works*, was designed to examine the classroom, school, and leadership practices highly correlated with school achievement (Waters et al., 2004). The analysis reviewed more than 5,000 studies examining the effects of leadership on student achievement. The study indicated only 70 of the studies published since 1978 utilized standardized, quantitative data as opposed to principals' self-assessment of leadership qualities. These 70 studies represented 2,894 schools, 14,000 teachers, and 1.1 million students. Data from the study reported an average correlation of .25 between leadership and student achievement. The studies as a whole suggested that improving principals' leadership abilities by one standard deviation, from the 50^{th} to the 84^{th} percentile, would lead to an increase in average student achievement from the 50^{th} to 60^{th} percentile" (Waters et al., 2004, p. 49).

An analysis of the 70 studies also identified 21 key areas that correlated with high levels of student achievement: culture, order, discipline, resources, curriculum and instruction and assessment, knowledge of curriculum instruction and assessment, focus, visibility, contingent rewards, communication, outreach, input, affirmation, relationships, change agent role, optimizer role, ideals and beliefs, monitoring and evaluation, flexibility, situational awareness, and intellectual stimulation (Waters et al., 2004).

The assessment component of the Learning-Focused Schools model includes several of these areas: knowledge and involvement in curriculum, instruction and assessment, the change agent role, and monitoring and evaluation. The model also requires principals to be directly involved in curriculum design, instruction, and assessment practices. Administrators must also be willing to embrace and lead change.

Finally, the LFS model requires principals to ensure the fidelity of implementation through frequent, systematic monitoring checks. The research district meets all of Thompson's criteria for this component.

The Fifth Component: Instruction

The instructional component of Learning-Focused Schools was the focus for this study. The relationship between instruction and achievement has been a consistent focus of educational research. This section reviews this research, including a review of Marzano's extensive research on effective instruction. Thompson credits Marzano's research as a major contributor to the Learning-Focused Schools model.

New Instructional Models

For more than 200 years, schools have been predominated by traditional models of teaching and learning. According to Johnston and Cooley (2001), the necessity for new instructional models was based upon three major factors: public demand for higher levels of achievement, cognitive research on how children learn, and the expectations and needs of today's students. The standards and accountability movement created increased expectations for student achievement. Additionally, students of the information age need knowledge beyond the traditional surface, technical, and scholastic knowledge. Higher order thinking skills including problem solving, collaboration, and communication are essential for today's students (Fulton, 1998). Cognitive research has provided information requiring education to provide opportunities for students to make connections between prior and new knowledge, follow individual interests, and work with others. Finally, increased access of technology has created students defined as digital natives,

characterized by high comfort levels with many types of technology that may exceed the expertise and experience of today's educators.

According to Johnston and Cooley (2001) and Creighton (2003), these new models of teaching and learning may be grouped under the term engaged learning. In recent years, researchers have formed a strong consensus on the importance of engaged learning in schools and classrooms. The North Central Regional Educational Laboratory developed teacher and staff indicators for engaged learning as a framework for applying standards and learning objectives to the implementation and integration of technology (Creighton, 2003). Engaged learning requires every student to be an explorer, cognitive apprentice, and producer of knowledge. Every teacher needs to be a facilitator, guide, co-learner, and co-investigator. Engaged learning requires change from teacher-centered to student-centered activities, large-group to small-group instruction, structured lessons to exploratory lessons, and from classroom to worldwide interactions (Jordan & Fullman, 1993). The instructional strategies required by the Learning-Focused Model meet the requirements for engaged learning.

Components of Instruction

In a document published by the United States Department of Education (2003), five instructional practices were established as critical to raising achievement and reducing the achievement gap. The first practice required systematic implementation of accelerating and previewing strategies including advance organizers, unit maps, vocabulary instruction, and scaffolding of grade-level expectations. The second practice required a uniform instructional planning model to include common unit plans and lesson plans, consistent and pervasive use of research-based instructional strategies, guided

practice, summarizing, and extended thinking activities. The third practice demanded a focus on reading comprehension across all subjects, requiring all teachers to incorporate common comprehension strategies and focus questions and organizers on these strategies. The fourth practice focused on district-wide writing across all subjects. Finally, the fifth practice involved differentiated assignments with choice. Critical to achievement was the opportunity for students to be motivated by instructional choices. All five of the practices outlined by the United States Department of Education are incorporated within Thompson's Learning-Focused Schools model.

Historical Background

In 1986, the United States Department of Education published a report titled, *What Works: Research About Teaching and Learning*. According to then Secretary of Education William J. Bennett, the report was "intended to provide accurate and reliable information about what works in the education of our children" (p. v). Within the preface, President Ronald Reagan challenged the federal government to continue its efforts to assemble and disseminate educational research to public educators. In August 2000, *What Works in Classroom Instruction* provided educators with a list of the instructional strategies proven by research to have the highest likelihood of positively affecting student learning. Thompson developed the instructional component of Learning-Focused Schools based on Marzano's research in effective classroom instruction.

Marzano's Research

Marzano's (1998) extensive research in the area of instruction provided substantial findings for today's educators. *What Works in Classroom Instruction* was partially based upon findings from a meta-analysis of instructional research. The meta-

analysis combined the results of over 100 studies involving more than 4,000 comparisons of experimental and control groups to determine the net effect of instructional interventions (Marzano, Gaddy, & Dean, 2000). The studies reported the effects of an instructional strategy on an experimental group of students compared to a control group of students not exposed to the strategy. According to Marzano et al. (2002), "An effect size expresses, in standard deviations, the difference between the increased or decreased achievement of the experimental group with that of the control group" (p. 2). If the effect size of a specific study is 1.0, the average score for students in the experimental group is 1.0 standard deviation higher than the average score of students in the control group.

Table 2 lists the top nine instructional strategies found to strongly effect student achievement. The percentile gains were the maximum percentile gains possible for students currently at the 50^{th} percentile (Marzano et al., 2000). As indicated in Table 2, the average effect size ranged from .59 to 1.61. Marzano stressed the importance of considering the effect average. The effectiveness of any strategy depended upon student achievement levels, instructional skills of the educator, and other contextual factors such as class size and grade level.

Table 2

Instructional Strategies with High Correlation to Student Achievement

Category	Average Effect Size	Percentile Gain	N	SD
Identifying similarities and differences	1.61	45	31	.31
Summarizing and note taking	1.00	34	169	.50
Reinforcing effort and providing recognition	.80	29	21	.35
Homework and practice	.77	28	134	.36
Nonlinguistic representations	.75	27	246	.40
Cooperative learning	.73	27	122	.40
Setting goals and providing feedback	.61	23	408	.28
Generating and testing hypotheses	.61	23	63	.79
Activating prior knowledge	.59	22	1251	.26

The following sections describe the nine instructional strategies identified through Marzano's research.

Identifying Similarities and Differences. The ability to compare, classify, create metaphors, and create analogies all involves identifying similarities and differences. Marzano (2000) suggested three types of strategies to assist students in using these reasoning processes to learn academic content: teacher-directed strategies, student-directed strategies, and graphic organizers. Teacher-directed strategies provide the necessary information to complete the task. Whereas teacher-directed strategies are useful to obtain general knowledge, student-directed tasks provide decreased structure and guidance. Finally, graphic organizers help students visualize whatever thinking process they are using. Thompson's LFS model incorporates identifying similarities and differences as one of the key instructional strategies.

Summarizing and Notetaking. These two strategies require students to analyze and synthesize information to decide what is important and what is not. Marzano suggested three basic strategies to utilize summarizing to increase understanding. First, the rule-based summarizing strategy developed by Brown, Campione, and Day (1981) requires students to follow specific steps to develop a summary. Second, summary frames provide a series of questions or a specific structure to assist students in identifying critical information. Finally, reciprocal teaching was a third strategy developed by Palinscsar and Brown (1984) that adds the components of questioning, clarifying, and predicting to summarizing.

According to Marzano et al. (2000), providing students with model notes was an effective way to introduce and teach notetaking. Teaching a variety of formats permits students to choose a format that best matches the content. A combination technique teaches students how to incorporate graphic representations into outline and web formats. As students take notes, "…they should be encouraged to continually add to them and revise them as their understanding of content deepens and sharpens" (Marzano et al., 2000, p. 46). The LFS model incorporates both summarizing and notetaking as key instructional strategies. The model actually requires teachers to incorporate summarizing strategies into every lesson within all subject areas.

Reinforcing Effort and Providing Recognition. Although this category deals with student attitudes and beliefs, Marzano (2000) proposed students could be taught the importance of effort and its effect on achievement. Using a rubric to assess effort and achievement helps students see the relationship between effort and achievement. According to Marzano et al. (2000), recognition is most effective when it is personalized

toward the student. Praise does not decrease intrinsic motivation. “Praise that is specific and contingent upon successful completion of an identified level of performance can have a powerful effect on student achievement” (Marzano et al., 2000, p. 55).

Homework and Practice. Marzano proposed that homework and practice provide students with opportunities to increase their level of understanding and proficiency. An effective homework policy is well defined and involves parents. LFS supports homework that requires students to review, apply, and practice what they have learned. LFS encourages the use of differentiated assignments to meet individual student needs.

Whereas homework provides an extension of the school day, effective instruction in school includes teacher modeling, guided practice, and independent assignments. Marzano et al. (2000) suggested that “it is not appropriate to engage students in rushed practice of multiple examples, but, rather, to give them an opportunity to practice a few examples in depth at a slower pace”(p. 68). There is a strong emphasis on guided practice activities within the instruction component of the LFS model.

Nonlinguistic Representations. Marzano et al. (2000) presented five major categories of nonlinguistic representations: graphic organizers, pictures and pictographs, mental pictures, concrete representations, and kinesthetic activities. Graphic organizers provide students a way to “combine the linguistic mode and the nonlinguistic mode of communication by using words and phrases to highlight key points and symbols and arrows to represent relationships” (p. 70). The LFS model includes a wide variety of graphic organizers, often specifically designed to meet the instructional needs of the concept being taught. When asked if every lesson had to incorporate a graphic organizer, Thompson responded, “Only for the lessons that you want students to learn” (personal

communication, March 28, 2006). Drawing pictures and creating mental pictures are also effective strategies for students to incorporate nonlinguistic representations. Concrete representations, often referred to as manipulatives, are also effective for students to establish an image of specific content. Finally, kinesthetic activities use movement as a way for students to make nonlinguistic representations of their learning.

Cooperative Learning. Marzano et al. (2000) cited five elements of formal cooperative learning as defined by Johnson and Johnson: positive interdependence, face-to-face promotive interaction, individual and group accountability, interpersonal and small group skills, and group processing. Using a variety of criteria to group students, cooperative learning is an established instructional strategy in many classrooms. Cooperative learning activities may also utilize informal grouping for pair-share and neighbor activities. Informal cooperative learning is a required strategy within every LFS lesson through the use of "numbered heads." This strategy requires each pair of students to assign themselves as a 1 or 2. Using the assigned numbers, students are provided opportunities to interact throughout the lesson.

Setting Goals and Providing Feedback. Goals are also useful to monitor student progress to determine if instruction is working. According to Marzano et al. (2000), effective goals are "stated specifically and concretely enough to give direction, yet general enough to provide flexibility" (p. 98). Research reported a higher effect on student achievement with goals as opposed to behavior objectives. Goals may be more effective than objectives that are "simply too specific to accommodate the individual and constructivist nature of the learning process" (p. 108). Setting goals provides students with direction and purpose.

The LFS model uses essential questions as the instructional strategy for setting goals. As the basis for all instruction, the model requires every lesson to begin with an essential question. The essential question establishes a broad objective with specific yet flexible goals for student learning.

Feedback can be defined as criterion-referenced or norm-referenced. Criterion-referenced provides feedback specific to a level of knowledge or skill. Norm-referenced provides feedback on performance as compared to other students. Marzano et al. (2000) proposed rubrics as an effective tool for providing feedback for both information and processes/skills. Thompson's LFS model encourages the use of teacher-constructed rubrics as an essential component of student assessment.

Generating and Testing Hypotheses. Generating and testing hypotheses involves applying knowledge. Marzano et al. (2000) described six tasks that require students to generate and test hypothesis within any content area: systems analysis, problem solving, historical investigation, invention tasks, experimental inquiry, and decision-making. Systems analysis tasks provide students with opportunities to analyze how systems work and the effects of change on the system. Problem solving requires students to generate and test hypotheses about possible solutions to a problem. Historical investigations involve collecting and analyzing the study of past events. Invention tasks begin with hypothesizing what might work, developing the idea, and testing the invention. Experimental inquiry uses the scientific across disciplines to help students use knowledge meaningfully. Finally, using a structured decision-making framework requires students to use their knowledge to establish criteria and test predictions against the criteria.

Deductive and inductive techniques may occur depending on the task. Deductive thinking uses a general rule to make predictions; whereas inductive tasks require learners to draw new conclusions based available information.

Activating Prior Knowledge. According to Marzano et al. (2000), the activation of prior knowledge was critical to all types of learning. Cueing, questioning, skimming, and utilizing advance organizers are effective strategies for students to connect what they already know with new information. These strategies are also essential within the instruction component of LFS. The model requires every lesson to begin with an activating activity designed specifically for the content of the lesson.

LFS Instructional Strategies

Based on research conducted by Marzano, the Mid-continent Research for Education and Learning, and the United States Department of Education, Thompson (2005) chose five instructional strategies for Learning-Focused Schools with a consistent correlation between use and learning. The strategies included extending thinking skills, summarizing, vocabulary in context, advance organizers, and non-verbal representations. The model proposes that effective instruction requires more than just choosing an effective strategy. “Teachers who connect and sequence strategies across lessons and units generate achievement gains well above teachers who randomly choose strategies or teachers who tend to use only 2-3 strategies” (Thompson & Thompson, 2005, n.p.). Table 3 provides the instructional strategies incorporated within the LFS planning model.

Table 3

Instructional Strategies of Learning-Focused Schools

Rank	Strategy	Effect Size	Percentile Gain
1	Extending Thinking Skills	1.61	45
2	Summarizing	1.00	34
3	Vocabulary in Context	.85	33
4	Advance Organizers	.73	28
5	Non-Verbal Representations	.65	25

The Learning-Focused Schools Model

Introduction

The final section of the literature review focuses on the Learning-Focused Schools (LFS) reform model and related research. The model incorporates both theory and practice from a wide range of educational study and research discussed within the first four sections of the literature review. Thompson claims those schools with 90% minority students and 90% of students qualifying for free or reduced lunch programs can achieve 90% levels of student achievement. The model is dedicated to promoting comprehensive, continual school improvement and to increasing achievement (Thompson & Thompson, 2000). According to Pate and Gibson (2007), “the acceptance of Thompson’s statement by school leaders has created a groundswell of support of the strategies that appear to have an extended life past what might be termed an educational fad” (p. 1).

Supportive Research

A research study conducted by Valdosta University surveyed 98 teachers enrolled in educational leadership graduate study. The teachers were full-time classroom teachers

with at least two days of training in LFS. The survey addressed nine of the essential strategies the LFS model proposes as essential to academic achievement: essential questions, activating and linking strategies, distributed guided practice/summarizing, extending and refining activities, summary strategies, concept maps, acceleration, formative rubrics, and cognitive teaching strategies (Pate & Gibson, 2007).

The survey solicited information on the impact of LFS on student learning, the teaching of the aligned curriculum and the match between curriculum and content being taught. The survey also asked teachers to report the frequency of how often they incorporated the primary LFS strategies within the classroom. Survey results indicated that 87% of the respondents reported teaching lessons related to the units and 59% believed that LFS had a positive impact on student learning. In addition, 87% of the teachers agreed they were teaching the prioritized curriculum. However, only 80% reported what they taught was in the curriculum.

Table 4 provides a summary of the strategy implementation levels converted to percentages. Of the nine strategies included in the survey, essential questions, summarizing strategies, activating and linking strategies, and distributed guided practice were used most frequently.

Table 4

Summary of Learning-Focused Schools' Strategy Implementation Levels by Percentages

Learning-Focused Strategy	Daily	At least once per week	At least once per month	Less than once per month
Essential Questions	71.3	23.4	3.2	2.1
Activating and Linking Strategies	45.7	47.9	5.3	1.1
Distributed Guided Practice	57.0	35.5	3.2	4.3
Extending/Refining Activities	15.4	63.7	14.3	6.6
Summarizing Strategies	48.9	35.9	8.7	6.5
Concept Maps for Units	12.2	53.3	21.1	13.3
Acceleration Strategies	13.0	52.2	23.9	10.9
Formative Rubrics	4.4	24.2	44.0	27.5
Cognitive Teaching Strategies	39.6	46.2	7.7	6.6

Pate and Gibson (2007) also examined the relationships between teaching experience, grade level, and the teaching degree with self-reported implementation of LFS strategies. Bivariate correlation coefficients using Spearman's correlation formulate at a .05 for statistical significance found no statistically significant relationship between years of teaching and implementation. Using grade level, there was a positive correlation between formative rubrics (r_s ($N = 84$) = .30, $p <$. 05)) and a negative correlation with cognitive strategies (r_s ($N = 84$) = -.23, $p <$.05)). A negative correlation was also reported between grade level and agreement with the positive impact of LFS on student learning (r_s (N=84) = -.36, $p <$.05)).

Pate and Gibson (2007) concluded that a higher use of rubrics at the middle and high school level might "suggest that teachers at the higher grade levels expect their students to take greater responsibility for their own learning and are more likely to provide them with the information on how their progress will be assessed" (p. 9). The lower use of cognitive strategies at the secondary level may indicate a stronger emphasis

on facts than thinking skills. The negative correlation between grade level and the perception of positive impact also "suggests that teachers at the higher grade levels are less likely to see the importance of emphasizing these skills" (Pate & Gibson, 2007, p. 10).

According to Pate and Gibson (2007), their study found the high levels of implementation and strong teacher belief supported by research as essential components of successful educational reform. As a result, they concluded that Learning-Focused Schools met the criteria to be considered a successful educational reform model.

In a second study, Nesbit Elementary School in Lilburn, Georgia, collected data from state assessments over a four-year period (personal communication, March 26, 2008). During this period, free and reduced eligibility increased from 62% to 92%. The populations of three subgroups decreased: African-American from 40% to 20%, Asian from 13% to 8%, and Caucasian from 6% to 3%. Within the same period, the Hispanic population increased from 36% to 65%. During the 2005-2006 school year, 75% of the students did not speak English as their native language and 54% were enrolled in the English as a Second Language (ESL) program. There were also 27 languages spoken across 71 countries with 150 new immigrants. For the 2005-2006 school year, Nesbitt reported 50% student mobility. Only 60% of the students were enrolled for the full academic year and only 600 of 1,449 students attended Nesbitt during the previous school year. For the same year, only 15% of the fifth graders had been enrolled at Nesbitt since first grade.

Nesbit Elementary School implemented the Learning-Focused Schools model during the 2002-2003 school year. As a result of increasing achievement, Nesbit

Elementary was removed from the failing schools list in 2004. They were also recognized by the Georgia Department of Education as a Distinguished Title I School. The school district's overall proficiency percentage for reading during the 2002-2003 school year was 71%, increasing to 85% for the 2004-2005 school year. In addition, the school district's overall proficiency percentage for math during the 2002-2003 school year was 69%, increasing to 87% for the 2004-2005 school year.

Conclusion

The pressure on public schools to improve student academic performance continues to grow. A review of the literature provides strong support for school districts to seek, develop, and implement best practices within every aspect of organizational performance. As the proficiency requirements continue to increase, so does the necessity to closely scrutinize the adoption and implementation of all educational programs. In addition, limited financial resources require school districts to seek programs that can be implemented and sustained over time. As a result, the need to study and ascertain the effectiveness of any program requiring the allocation of both personnel and financial resources becomes an essential part of the process.

The research school district chose LFS because the model did not require the school district to implement drastic changes or alter existing framework. Instead, Thompson's "adapt don't adopt" philosophy encouraged the school district to utilize its existing infrastructure to incorporate the components of the model into existing programs and practices.

CHAPTER III

METHODOLOGY

This chapter includes the target population, method of sampling, stimulus materials, measurement devices, data collection, and the analysis and design of the study. The study was designed to determine if the Learning-Focused Schools comprehensive reform model had an effect on student achievement in reading and math scores as measured by the Pennsylvania System of Student Assessment (PSSA). The experimental groups were comprised of fourth and fifth grade students in classrooms taught by teachers with formal training in the LFS model. The control groups were comprised of fourth and fifth grade students in the same schools taught by teachers with no formal training in the LFS model. The first part of the study compared 2008 PSSA data from the experimental group with the 2008 PSSA data from the control group for both fourth and fifth grade samples. The second part of the study was quasi-experimental, using a pre-test post-test group design. The 2007 PSSA scores were used as the pre-test scores. The effectiveness of the treatment was determined by using the 2008 PSSA scores as the posttest scores of the groups.

Target Population

The target populations for the study were fourth and fifth grade students enrolled during both the 2006-2007 and the 2007-2008 school years. The school district, a suburban-rural district located in central Pennsylvania, has 16 schools and covers an area of 78 square miles. During the 2007-2008 school year, the school district's total enrollment was 8,226 students. There were 3,400 elementary students; 564 students in fifth grade and

626 students in fourth grade. According to 2007-2008 district information, 17% of the enrollment was classified as economically disadvantaged.

The students in the experimental group were selected from classrooms taught by teachers with formal training in the model. Students in the control group were selected from classrooms taught by teachers with no formal training in the model. All classrooms in the school district were comparable based on established criteria to assure heterogeneous grouping. All students received instruction from identical content from a standardized school district curriculum aligned to the Pennsylvania Academic Standards.

The sample included fourth and fifth grade achievement data from students taught by teachers with formal training in the LFS model and similar achievement data from students taught by teachers with no formal training in the model. Since the 2007 PSSA scores were utilized as a pretest, only data from students who took both the 2007 and 2008 PSSA reading and math tests were included.

Method of Sampling

All fourth and fifth grade students in the seven elementary schools enrolled during both the 2006-2007 and 2007-2008 school years were selected as the target population. From this group, a random sample of 100 fifth grade students was selected from classrooms taught by teachers with formal training in the LFS model for the experimental group. A random sample of 100 fifth grade students was selected from similar classrooms taught by teachers with no formal training in the LFS model for the control group. Similar fourth grade samples were selected using the same criteria.

The 100 fifth grade students for the experimental group were chosen from a group of 141 students taught by teachers with formal training in the LFS model during the 2007-

2008 school year. The 100 fifth grade students for the control group were chosen from similar classrooms in the same schools from a group of 355 students taught by teachers with no formal training in the LFS model. The samples were randomly selected using SPSS (George & Mallery, 2005). Using the same selection criteria and procedures, the 100 fourth grade students for the experimental group were chosen from a group of 160 students and 100 fourth grade students for the control group were chosen from similar classrooms in the same schools from a group of 328 students. SPSS frequency tables were used to generate random samples that were proportionate to the total number of students eligible for the study in each of the seven elementary schools. In addition, all four groups were selected to be proportionate in terms of instructional setting (IEP or no IEP), ethnicity, economic status, and gender.

Stimulus Materials

The experimental group received instruction from teachers with formal training in the instructional practices and strategies in the LFS model. The control group received instruction from teachers with no formal training in the model.

The LFS model is based upon the premise that teachers formally trained in the model will utilize specific instructional strategies. Thompson's model is based upon the belief that consistent and pervasive use of research-based strategies will result in increased student achievement. Thompson defines *effective* teachers by the percentage of time they use the model's exemplary instructional strategies in their lessons. Least effective teachers use exemplary strategies less than 50%, average teachers 50% - 75%, and most effective, 75% or higher (Thompson, 2006).

Teachers in the experimental classrooms completed four days of formal training in the model's instructional strategies. Teachers were also required to meet at least once per month to collaborate and plan with their LFS team members. For year-one implementation, teachers with formal training were expected to incorporate essential questions, graphic organizers, and summarizing strategies into every lesson in at least one subject area.

Essential Questions

Within the LFS model, essential questions are concepts or skills in the forms of questions. Essential questions are created when a learning objective is stated in the form of a question that can be answered by what students are expected to know, do, or understand. A traditional lesson objective for reading might state, "Students will be able to use comprehension strategies." An essential question would read, "How do we use comprehension strategies to remember what we read?" Beyond communicating lesson objectives, essential questions organize and set the focus for lessons. At the close of instruction, essential questions gather evidence of the learning when they can be successfully answered.

Teachers formally trained in the LFS model are expected to begin every lesson with an essential question. In order for the teacher and students to be able to reference the question throughout instruction, the essential question must be posted in a visible location.

Graphic Organizers

Within the LFS model, some type of graphic organizer is incorporated into every lesson. Graphic organizers are used to visually show the key points or ideas of the lesson, turn abstract concepts into concrete visualizations, provide a structure for long and short-term memory, and guide student thinking throughout the lesson. The LFS model proposes

that when used effectively, graphic organizers have a strong impact on the long lasting learning effects that result in increased student achievement (Thompson & Thompson, 2005).

Thompson and Thompson (2005) cited a study conducted by the United States Department of Education in 1995. The study analyzed a control group of 8,250 ninth graders and an experimental group of 8,275 ninth graders. Within each group, 10% of the students had identified learning disabilities. Although pre-test results were similar, post-test results were 23% higher for students using graphic organizers. Post-test results for students with learning disabilities were 62% higher. The lasting effects of learning were also examined. Ten days after the test, students using graphic organizers retained 26% more of the information. Twenty days later the experimental group using graphic organizers retained 65% of the learning whereas the control group not using graphic organizers retained only 19% of the information.

According to Thompson (2006), understanding text structure is critical to reading comprehension. If students have a guide to text structure, comprehension is considerably higher than when they rely only on reading and memorization. Within the LFS model, students are taught the organizational patterns of text, sequence or time-order, listing or description, compare/contrast, cause/effect, and problem/solution. Familiarity with these organizational patterns permits students to locate information and connect text information with higher comprehension levels.

The LFS model incorporates a wide range of organizers designed to match the organization of text. Teachers are encouraged to match each lesson with a graphic organizer that facilitates the type of thinking required by students to learn the content.

Teachers formally trained in the LFS model are expected to incorporate some type of graphic organizer into all lessons.

Summarizing Strategies

Thompson considers summarizing a learning strategy rather than a thinking strategy. “Learners must summarize themselves for the learning to construct meaning. When summarizing, students create a schema for the information and remember it better and longer” (Thompson & Thompson, 2005, n.p.).

Often referred to as lesson closure or summary, this lesson component is frequently omitted or completed by the teacher with voluntary student participation. The LFS model requires participation from all students. A wide variety of summarizing strategies is utilized to answer the essential question of the lesson. For example, a traditional lesson closure may have the teacher ask, “What did we learn today?” A few student volunteers usually answer the question. Conversely, every closure or exit activity in the LFS model requires every student to participate in the activity. For example, a 3-2-1 activity asks each student to write “3” details about the lesson, “2” items he or she is curious about, and “1” overall idea in response to the essential question. Marzano (2002) ranked summarizing as one of the top five strategies having the greatest impact on student achievement.

The LFS model provides a wide variety of summarizing activities for teachers to incorporate within their lessons. In addition to the end of the lesson, teachers formally trained in the LFS model are expected to utilize summarizing activities throughout each lesson. Participation in summarizing activities identifies confusion, misconceptions, or misunderstandings that create barriers for student learning. Summarizing also provides a

way for teachers to assess learning and determine the need for additional instruction and/or guided practice.

Measurement Devices

Pennsylvania System of School Assessment

The measurement device for this study was the Pennsylvania System of School Assessment (PSSA). Currently, all students in grades 3 through 8 and grade 11 are assessed yearly in reading and mathematics. The assessment results from all grade levels are used to determine whether or not each school district has met the expected proficiency levels established for adequate yearly progress (AYP) (Pennsylvania Department of Education, Assessment, http://www.pde.state.pa.us/pde_internet/site/default.asp).

Historical Background. Beginning in 1992, PSSA tests in reading and math were administered in grades 5, 8, and 11 every three years based on the district's strategic planning cycle. In 1994, revisions to Chapter 5 required yearly participation by all school districts beginning in 1995. Finally, the adoption of the Pennsylvania Academic Standards for Reading, Writing, Speaking and Listening, and Mathematics in 1999 resulted in major structural and content changes to the PSSA. The standards identified the grade level content all students are expected to know (knowledge) and do (skills). Since 1999, the PSSA standards-based criterion-referenced reading and math tests have been used to measure students' attainment of academic content in the standards. PSSA data also determines the degree to which school programs attain proficiency at specific grade levels.

From 1999 through 2002, PSSA tests in reading and math were administered in grades 5, 8, and 11. In 2003, PSSA tests in reading and math were added for grade 3. In 2006, changes continued as grades 4, 6, and 7 were added. Also in 2006, grade 3 was added

to the calculation of adequate yearly progress (AYP). In 2007, the PSSA was administered to students in grades 3 through 8 and 11. For the first time all tested grade levels were included in the calculation of AYP (DRC Technical Report, 2008).

PSSA Administration, Content, and AYP. The 2007 reading and math tests consisted of six sessions. Although PSSA administration guidelines recommended each section be scheduled as one 50-60 minute assessment session, schools were permitted to combine multiple sections into a single session as long as the sequence was not altered. In grades 4 and 5, the three sessions of the PSSA reading assessment were reported in two categories. The first category, comprehension and reading skills, comprised 60-80% of the items pertaining to the understanding of fiction and nonfiction text. The second category, the interpretation and analysis of fictional and nonfictional text, comprised the additional 20-40% of the items. This category included components of text, literacy devices and concepts, and organization of nonfiction text. Within the test, 50-70% of the passages were fiction and 30-50% were nonfiction. For both grades the reading test included 56 multiple-choice items and 6 open-ended items (DRC Technical Report, 2008).

The math assessment of the PSSA was reported in five categories that closely correspond to those advocated by the National Council of Teachers of Mathematics (NCTM). The five categories included numbers and operations, measurement, geometry, algebraic concepts, and data analysis and probability. Within the math assessment, percentages of each category varied by grade level. In grade 4, numbers and operations accounted for 43-47% of the items. The remaining four categories each comprised 12-15% of the assessment. In grade 5, numbers and operations accounted for 41-45% of the

assessment and measurement for 13-16%. The remaining three categories each comprised 12-15% of the assessment (DRC Technical Report, 2008).

Reliability. Reliability refers to the expected consistency of test scores. The larger the coefficient the less test scores are influenced by random sources of error. According to a report published by the Data Recognition Corporation (2008), "Reliabilities go up with an increase in test length and population heterogeneity and go down with shorter tests and more homogeneous populations" (p. 129). Using the Cronbach's Alpha reliability indices, the report provided the following reliability coefficients for the PSSA fourth and fifth grade reading and math tests:

1) Grade 4 reading indicated an overall reliability of 0.90; 0.87 for reading comprehension and 0.73 for the interpretation and analysis of fiction and nonfiction.
2) Grade 5 reading indicated an overall reliability of 0.90; 0.87 for reading comprehension and 0.73 for the interpretation and analysis of fiction and nonfiction.
3) Grade 4 math indicated an overall reliability of 0.91 with numbers and operations, 0.84; measurement, 0.67; geometry, 0.47; algebraic concepts, 0.51; and data analysis and probability, 0.70.
4) Grade 5 math indicated an overall reliability of 0.92 with numbers and operations, 0.84; measurement, 0.56; geometry, 0.69; algebraic concepts, 0.58; and data analysis and probability, 0.73.

Sinclair and Thacker (2005) reported reliability coefficients for the 2002 PSSA. Test-retest reliability for the common items was 0.92 for math for all grades and from 0.88

to 0.91 in reading. Test-retest reliability for both common and matrix items was slightly higher. The reduction in reliability for the common items was attributed to the influence of test length. According to Sinclair and Thacker (2005), "…the relatively large number of items helps account for PSSA's high reliability estimates" (p. 1).

Validity. Convergent validity coefficients measure the relationship between students' performance on two separate tests for the same subject matter. Since the PSSA was designed to measure content specific to Pennsylvania, the extent to which another assessment measures the same content limits the strength of the correlation between assessments. To compute convergent validity, a 1994 report published by the Human Resources Research Organization (HumRRO) matched PSSA data with data from other commonly administered assessments. All comparison tests were highly correlated. "Same subject correlations were highest in mathematics, typically ranging from about 0.7 to 0.9. Reading correlations were slightly weaker, ranging from about 0.6 to 0.8. These coefficients provide strong evidence for the convergent validity of the PSSA" (Thacker, 2004, p. iii). Prior to the PSSA, the CTBS/Terra Nova was administered to the students enrolled in the research school district. The correlation between fifth grade PSSA mathematics and fifth grade CTBS/Terra Nova math scores ranged from 0.69 to 0.83. The correlation between fifth grade PSSA reading and fifth grade CTBS/Terra Nova reading ranged from 0.59 to 0.76 (Thacker, 2004).

PSSA and No Child Left Behind (NCLB) Requirements. The federal NCLB Act requires all public schools and school districts in all 50 states to assess AYP annually. In Pennsylvania, AYP is based upon PSSA test results and other factors: test participation, attendance, and graduation rate. In 2007, 92 % of Pennsylvania's school districts (460 out

of 501) and 77.5 % of its schools (2,404) made AYP or were classified as making progress (Pennsylvania Department of Education, Assessment, http://www.pde.state.pa.us/pde_internet/site/default.asp). In compliance with Pennsylvania School Code, the State Board of Education determined the criteria for the performance levels of the PSSA (PA School Code §4.51(b)(4)). The four performance levels defined in Chapter 1.

The administration window for the 2008 PSSA was March 31, 2008, through April 11, 2008. The established targets for 2007 were 45% proficient or advanced in math and 54% proficient or advanced in reading. In 2008, the proficiency levels increased to 56% in math and 63% in reading. Fifth graders tested in 2009 will be seniors in the year 2014 when 100% proficiency will be required.

Analysis of the PSSA achievement data identifies students not meeting expected proficiency levels that may be in need of additional educational opportunities. Administrators, teachers, and parents use PSSA data to identify specific areas of instructional focus. School and school districts also use PSSA data to evaluate school district needs in the areas of curriculum and instruction and direct plans for improvements. (www.pde.state.pa.us/a_and_t/site). In the research school district, PSSA scores are used to evaluate and direct the planning of curriculum and instruction. PSSA data are also used to develop district, school, classroom, and individual student goals. Through collaboration and shared goal setting, every school in the research district is required to establish specific goals and strategies designed to increase the achievement of its students.

School District LFS End-of-year Survey

The school district designed a survey to solicit feedback from the teachers at the conclusion of year-one implementation. The nine-question survey was designed to collect information in four areas. The survey asked teachers to indicate the frequency they implemented the three required instructional strategies: essential questions, graphic organizers, and summarizing strategies. Although not a required strategy for the first year, the survey also asked teachers to indicate how often they utilized extending/refining skills. The survey also asked teachers to provide information on the time of day and frequency of team planning. Teachers were asked to indicate if they believed the formal training was adequate and whether or not there was a need for subsequent training. The survey concluded by asking teachers if they were given adequate administrative support to implement the model in their classrooms.

Data Collection

Pennsylvania System of School Assessment

The PSSA was administered by classroom teachers. All classroom teachers in the school district received the same testing procedures and administration guidelines. The research school district provided 2007 and 2008 PSSA data. The data were provided in computerized files containing score information and non-identifiable demographic data used for the purpose of describing the sample. The anonymity of individual students was protected at all times and students were not identified in any manner throughout the study.

District LFS End-of year Survey

A hard copy of the survey was distributed in May 2008 to the 115 elementary teachers with formal training in the LFS model. Completed surveys were collected by each

building office and returned to the school district's Coordinator of Staff Development. There were 109 surveys returned to the staff development office. The survey data provided to the researcher were anonymous and did not include any personally identifiable information. Review and analysis of survey data from teachers provided information that may guide future decisions for expanded implementation of the model. Survey information may also assist the school district to develop and implement effective practices and the professional support necessary to sustain the model over time.

Analysis and Design

The purpose of this study was to determine if implementation of the Learning-Focused Schools reform model had an effect on reading and math achievement through a comparative analysis of the reading and math scores from students in the experimental groups with the scores from the control groups. The experimental groups included a random sample of 100 fifth grade and 100 fourth grade students taught by teachers with formal training in the LFS model. The control groups included a random sample of 100 fifth grade and 100 fourth grade students taught by teachers with no formal training in the LFS model. Descriptive and inferential statistics were used to analyze the data. Levene's test was used throughout the study to assure homogeneity of variances.

The first analysis compared the experimental group with the control group for both samples using scores from the 2008 PSSA math and reading tests. An analysis of variance (ANOVA) was used to assess the difference in group means between experimental and control group scores in math and reading for both the fifth and fourth grade samples. In this

design, R represents Randomized, X represents the treatment, and O represents the Testing/Measurement (LaFountain & Bartos, 2002). The design for this analysis was:

R1 X O
R2 O

The second analysis compared the experimental group with the control group for both samples by comparing scores from the 2008 PSSA math and reading tests with scores from the 2007 PSSA math and reading tests. This analysis utilized a quasi-experimental pretest-posttest group design. A paired samples t-test was used to assess the difference in group means between experimental and control group scores for both the fifth and fourth grade samples. In this design, R represents Randomized, X represents the treatment, and O represents the Testing/Measurement (LaFountain & Bartos, 2002). The design for this analysis was:

R O X O
R O O

A $p \leq .05$ was used for all analyses in the study.

According to Campbell and Stanley (1963), this type of design controls for the internal validity factors of history, maturation, testing, instrumentation, regression, selection, mortality, and interaction between selection and maturation. The design also controls for the external validity factor of interaction of testing and treatment. However, it is questionable whether the design controls for external validity in terms of interaction between selection and treatment and reactive arrangements of treatment situations.

In summary, the study was designed to collect and analyze quantitative data to determine the effects of the Learning-Focused Schools model on the math and reading achievement of fourth and fifth grade students. Math and reading scores from the

Pennsylvania System of School Assessment (PSSA) were utilized in the analyses of the study. The study was also designed to collect and analyze qualitative data from the school district's teachers following year-one implementation of the model. This information was provided through a survey created by the research school district.

CHAPTER IV

RESULTS

Overview

The purpose of the study was to determine the effects of the Learning-Focused Schools (LFS) model on student achievement in reading and math. The study was designed to compare student achievement in classrooms taught by teachers with formal training in the model with student achievement in classrooms taught by teachers with no formal training. Student achievement was determined from data obtained by the reading and math tests of the Pennsylvania System of School Assessment (PSSA).

The study was conducted with a random sample of 100 fifth grade students from classrooms taught by teachers with formal training in the LFS model and a random sample of 100 fifth grade students from classrooms taught by teachers with no formal training in the LFS model. The study also compared random samples of fourth grade students selected in the same manner as the fifth grade samples. All classrooms in the school district were comparable based on established criteria to assure heterogeneous grouping. All students received instruction from identical content from the school district's elementary curriculum aligned to the Pennsylvania Academic Standards.

The study also analyzed a survey distributed to all elementary teachers with formal training in LFS following year-one implementation during the 2007-2008 school year. The survey was designed to solicit feedback based on teachers' perceptions of the model; including the extent to which instructional strategies were implemented according to school district guidelines, the frequency and time spent on planning, the effectiveness of the formal training, and the level of administrative support. Although the analysis of

achievement data was limited to fourth and fifth grade, survey results from teachers in grades one through five with formal training in LFS were included in the study.

In the study, formal training in the Learning-Focused Schools model was the independent variable and PSSA reading and math scores were the dependent variables. Formal training in LFS included two days of training in Learning Strategies I followed by two days of training in Learning Strategies II. Teachers with formal training were also expected to meet at least once per month with other trained teachers in their respective buildings. For the dependent variable, PSSA tests are standards-based criterion-referenced assessments used to measure students' attainment of the academic standards and the degree a school program enables students to attain proficiency of the expected content within the standards. According to a report by Sinclair and Thacker (2005) "The relatively large number of items helps account for PSSA's high reliability estimates" (p. 1). Both analysis of variance (ANOVA) and paired samples t-tests were used to analyze math and reading scores from the PSSA.

The purpose of this chapter is to present the statistical results and procedures used to analyze the achievement data. Descriptive statistics will be followed by the results of the statistical analyses conducted on the data. This chapter also includes a summary of information compiled from the school district's Learning-Focused Schools End-of-year Survey. This chapter will be organized by the research questions outlined in Chapter 1.

Fifth Grade Sample Findings

Research Question 1

Will there be a significant increase in the math achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused

Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 Pennsylvania System of School Assessment (PSSA)?

Table 5 contains the descriptive data comparing the fifth grade 2008 PSSA math scores from the experimental group (formal training) to the control group (no formal training). There was a difference in the means of the math scores between the two groups. The mean for the experimental group (M = 1460.09) was higher than the mean for the control group (M =1411.56).

Table 5

Descriptive Statistics for Fifth Grade 2008 PSSA Math Scores

Math SS Grade 5	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1460.09	250.38	25.03	1410.41	1509.77	1001	2098
No formal training	100	1411.56	243.26	24.32	1363.29	1459.83	981	2098
Total	200	1435.82	247.43	17.49	1401.32	1470.33	981	2098

A one-way ANOVA was used to assess the difference in group means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 6 illustrates there was no significant difference, $F(1,198) = 1.93$, $p = .166$, between the means of the 2008 math scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 6

Analysis of Variance for Fifth Grade 2008 PSSA Math Scores X Formal Training X No Formal Training

Math SS Gr 5	Sum of Squares	df	Mean Square	F	Sig.
Between groups	117758.045	1	117758.045	1.932	.166
Within groups	1.207	198	60936.156		
Total	1.218	199			

Research Question 2

Will there be a significant increase in the reading achievement of fifth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fifth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

Table 7 contains the descriptive data comparing the fifth grade 2008 PSSA reading scores from the experimental group (formal training) to the control group (no formal training). There was a difference in the means of the 2008 reading scores between the two groups. The mean for the experimental group (M = 1394.78) was higher than the mean for the control group (M =1324.90).

Table 7

Descriptive Statistics for Fifth Grade 2008 PSSA Reading Scores

Reading Grade 5	N	Mean	Std Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1394.78	233.16	23.31	1348.52	1441.04	700	2015
No formal training	100	1324.90	222.64	22.26	1280.72	1369.08	809	1867
Total	200	1356.84	230.07	16.26	1327.76	1391.92	700	2015

A one-way ANOVA was used to assess the difference in group means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 8 illustrates there was a significant difference between the means of the 2008 reading scores of the experimental group (formal training) with the control group (no formal training), $F(1,198) = 4.70$, $p = .031$. The F value of 4.70 exceeds the critical value of 3.89. The null hypothesis can be rejected.

Table 8

Analysis of Variance for Fifth Grade 2008 PSSA Reading Scores X Formal Training X No Formal Training

Reading SS Gr 5	Sum of Squares	df	Mean Square	F	Sig.
Between groups	244160.720	1	244160.720	4.70	.031
Within groups	1.029	198	51967.102		
Total	1.053	199			

Research Question 3

Will there be a significant difference between the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training in the LFS model and the fourth grade 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the model?

Table 9 contains the descriptive data comparing the fourth grade 2007 PSSA math scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2007 math scores between the two groups. The mean for the experimental group (M = 1443.04) was higher than the mean for the control group (M =1402.30).

Table 9

Descriptive Statistics for Fifth Graders' Grade 4 2007 PSSA Math Scores

Math SS Grade 4	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1443.04	232.76	23.27	1396.86	1489.22	899	2105
No formal training	100	1402.30	216.90	21.69	1359.26	1445.34	899	1962
Total	200	1422.67	225.33	15.93	1391.25	1454.09	899	2105

A one-way ANOVA was used to assess the difference in group means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 10 illustrates there was no significant difference,

$F(1,198) = 1.640$, $p = .202$, between the means of the math scores of the experimental group (formal training) with the control group (no formal training).

The null hypothesis can be accepted.

Table 10

Analysis of Variance for Fifth Grader's Grade 4 2007 PSSA Math Scores

X Formal Training X No Formal Training

Math SS Gr 4	Sum of Squares	df	Mean Square	F	Sig.
Between groups	82987.380	1	82987.380	1.640	.202
Within groups	1.002	198	50613.085		
Total	1.010	199			

Research Question 4

Will there be a significant difference between the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training in the LFS model and the fourth grade 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model?

Table 11 contains the descriptive data comparing the fourth grade 2007 PSSA reading scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2007 reading scores between the two groups. The mean for the experimental group (M = 1386.62) was higher than the mean for the control group (M =1356.63).

Table 11

Descriptive Statistics for Fifth Graders' Grade 4 2007 PSSA Reading Scores

Reading Grade 4	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1386.62	204.73	20.47	1346.00	1427.24	819	1907
No formal training	100	1356.63	204.83	20.48	1315.99	1397.27	700	1685
Total	200	1371.62	204.82	14.48	1343.06	1400.19	700	1907

A one-way ANOVA was used to assess the difference in group means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 12 illustrates there was no significant difference, $F(1,198) = 1.072$, $p = .302$, between the means of the 2007 reading scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 12

Analysis of Variance for Fifth Graders' Grade 4 2007 PSSA Reading Scores

X Formal Training X No Formal Training

Reading SS Gr 4	Sum of Squares	df	Mean Square	F	Sig.
Between groups	44970.005	1	44970.005	1.072	.302
Within groups	8303656.870	198	41937.661		
Total	8348626.875	199			

To answer the final research questions in the analysis of the 2007-2008 fifth grade sample, a paired samples t-test was used to determine if there was a significant difference between the fifth grade 2008 PSSA math scores and fourth grade 2007 PSSA math scores from the experimental group (formal training) and the fifth grade 2008 PSSA reading scores and fourth grade 2007 PSSA reading scores from the experimental group (formal training).

Research Questions 5 and 6

Will there be a significant increase between the 2008 PSSA and 2007 PSSA math scores from fifth grade students receiving instruction from teachers with formal training? Will there be a significant increase between the 2008 PSSA and 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with formal training?

Table 13 provides the descriptive statistics for the paired samples. For the experimental group (formal training), the fifth grade math mean (M = 1460.09) was higher than the fourth grade math mean (M = 1443.04). The fifth grade reading mean (M = 1394.78) was higher than the fourth grade reading mean (M = 1386.62).

Table 13

Paired Samples Descriptive Statistics for Fifth Grade Formal Training Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Math SS Gr 5	1460.09	100	250.388	25.039
	Math SS Gr 4	1443.04	100	232.761	23.276
Pair 2	Read SS Gr 5	1394.78	100	233.163	23.316
	Read SS Gr 4	1386.62	100	204.737	20.474

Table 14 provides the correlation between the fifth grade 2008 PSSA math scores and fourth grade 2007 PSSA math scores and the fifth grade 2008 reading scores and fourth grade 2007 PSSA reading scores for the experimental group (formal training). There was a strong correlation between the 2008 and 2007 math scores $R = .878$. There was also a strong correlation between the 2008 and 2007 reading scores $R = .796$.

Table 14

Paired Samples Correlation for Fifth Grade Formal Training Group

		N	Correlation	Sig.
Pair 1	Math SS Gr 5 & Math SS Gr 4	100	.878	.000
Pair 2	Read SS Gr 5 & Read SS Gr 4	100	.796	.000

Table 15 provides the results of the paired samples t-test used to compare the fifth grade 2008 PSSA math scores and the fourth grade 2007 PSSA math scores and the fifth grade 2008 PSSA reading scores and the fourth grade 2007 PSSA reading scores from students in the experimental group (formal training). There was no significant difference, $t(99) = 1.41$, $p = 1.60$, between the 2008 and 2007 math scores from students in the experimental group. The null hypothesis can be accepted. There was no significant difference, $t(99) = .573$, $p = .568$, between the 2008 and 2007 reading scores from students in the experimental group. The null hypothesis can be accepted.

Table 15

Paired Samples for 2008 PSSA Grade 5 Math and 2007 PSSA Grade 4 Math and 2008 PSSA Grade 5 Reading and PSSA 2007 Grade 4 Reading for Formal Training Group

	Paired Differences							
				95% Confidence Interval of Diff.				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Math SSGr5-Math SSGr4	17.05	120.56	12.05	-6.87	40.97	1.41	99	.160
Pair 2 Read SSGr5-Read SSGr4	8.16	142.49	14.24	-20.11	36.43	.573	99	.568

A paired samples t-test was also used to determine if there was a significant difference between the fifth grade 2008 PSSA math scores and the fourth grade 2007 PSSA math scores from the control group (no formal training) and the fifth grade 2008 PSSA reading scores and the fourth grade 2007 PSSA reading scores from the control group (no formal training).

Research Questions 7 and 8

Will there be a significant increase between the 2008 PSSA math scores and the 2007 PSSA math scores from fifth grade students receiving instruction from teachers with no formal training in the LFS model? Will there be a significant increase between the 2008 PSSA reading scores and the 2007 PSSA reading scores from fifth grade students receiving instruction from teachers with no formal training in the model?

Table 16 provides the descriptive statistics for the paired samples. For the control group (no formal training), the fifth grade math mean (M = 1411.09) was higher than the

fourth grade math mean (M = 1402.04). The fifth grade reading mean (M = 1324.78) was lower than the fourth grade reading mean (M = 1356.63).

Table 16

Paired Samples Descriptive Statistics for Fifth Grade No Formal Training Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Math SS Gr 5	1411.56	100	243.266	24.327
	Math SS Gr 4	1402.30	100	216.906	21.691
Pair 2	Read SS Gr 5	1324.90	100	222.642	22.264
	Read SS Gr 4	1356.63	100	204.837	20.484

Table 17 provides the correlation between the fifth grade 2008 PSSA math scores and fourth grade 2007 PSSA math scores and the fifth grade 2008 PSSA reading scores and fourth grade 2007 PSSA reading scores for the control group (no formal training). There was a strong correlation between the 2008 and 2007 math scores, $R = .894$. There was also a strong correlation between the 2008 and 2007 reading scores, $R = .795$.

Table 17

Paired Samples Correlation for Fifth Grade No Formal Training Group

		N	Correlation	Sig.
Pair 1	Math SS Gr 5 & Math SS Gr 4	100	.894	.000
Pair 2	Read SS Gr 5 & Read SS Gr 4	100	.795	.000

Table 18 provides the results of the paired samples t-test used to compare the fifth grade 2008 PSSA math scores and the fourth grade 2007 PSSA math scores and the fifth

grade 2008 PSSA reading scores and the fourth grade 2007 PSSA reading scores for the control group (no formal training). There was no significant increase, $t(99) = 0.85$, $p = .397$, between the 2008 and 2007 PSSA math scores from students in the control group. The null hypothesis can be accepted. There was a significant decrease, $t(99) = -2.29$, $p = .024$, between the 2008 and 2007 reading scores from students in the control group. The null hypothesis can be accepted.

Table 18

Paired Samples for 2008 PSSA Grade 5 Math and 2007 PSSA Grade 4 Math and 2008 PSSA Grade 5 Reading and 2007 Grade 4 Reading for No Formal Training Group

	Paired Differences							
				95% Confidence Interval of Diff.				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Math SSGr5-Math SSGr4	9.260	108.76	10.87	-12.322	30.84	.85	99	.397
Pair 2 Read SSGr5-Read SSGr4	-31.73	138.05	13.80	-59.12	-4.33	-2.29	99	.024

Fourth Grade Sample Findings

Research Question 9

Will there be a significant increase in the math achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by the 2008 PSSA?

Table 19 contains the descriptive data comparing the fourth grade 2008 PSSA math scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2008 PSSA math scores between the two groups. The mean for the experimental group (M = 1452.49) was higher than the mean for the control group (M =1424.65).

Table 19

Descriptive Statistics for Fourth Grade 2008 PSSA Math Scores

Math SS Grade 4	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1452.49	221.72	22.17	1408.49	1496.49	971	1983
No formal training	100	1424.65	272.32	27.23	1370.61	1478.69	861	2370
Total	200	1435.82	247.43	17.49	1403.98	1473.16	861	2370

A one-way ANOVA was used to assess the difference in means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 20 illustrates there was no significant difference, $F(1,198) = .628$, $p = .429$, between the means of the 2008 math scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 20

Analysis of Variance for Fourth Grade PSSA Math Scores X Formal Training X No Formal Training

Math SS Gr 4	Sum of Squares	df	Mean Square	F	Sig.
Between groups	33753.28	1	33753.28	.628	.429
Within groups	1.22	198	61633.00		
Total	1.22	199			

Research Question 10

Will there be a significant increase in the reading achievement of fourth grade students receiving instruction from teachers with formal training in the Learning-Focused Schools model compared to fourth grade students receiving instruction from teachers with no formal training in the model as measured by PSSA?

Table 21 contains the descriptive data comparing the fourth grade 2008 PSSA reading scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2008 reading scores between the two groups. The mean for the experimental group (M =1438.13) was higher than the mean for the control group (M =1427.07).

Table 21

Descriptive Statistics for Fourth Grade 2008 PSSA Reading Scores

Reading Grade 4	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1438.13	209.20	20.92	1396.62	1479.64	902	1921
No formal training	100	1427.07	209.38	20.93	1385.52	1468.62	974	2070
Total	200	1432.06	208.85	14.77	1403.38	1461.72	902	2070

A one-way ANOVA was used to assess the difference in means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 22 illustrates there was no significant difference, $F(1,198) = .140$, $p = .709$, between the means of the 2008 reading scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 22

Analysis of Variance for Fourth Grade PSSA Reading Scores X Formal Training X No Formal Training

Reading SS Gr 4	Sum of Squares	df	Mean Square	F	Sig.
Between groups	6116.18	1	6116.18	.140	.709
Within groups	8673475.82	198	43805.433		
Total	8679592.00	199			

Research Question 11

Will there be a significant difference between the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the LFS model and the third grade 2007 PSSA math scores from fourth grade students receiving instruction from teachers with no formal training in the model?

Table 23 contains the descriptive data comparing the third grade 2007 PSSA math scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2007 math scores between the two groups. The mean for the experimental group (M =1343.34) was higher than the mean for the control group (M = 1333.34).

Table 23

Descriptive Statistics for Fourth Graders' Grade 3 2007 PSSA Math Scores

Math SS Grade 3	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal training	100	1343.34	160.55	16.06	1311.48	1375.20	903	1765
No formal training	100	1333.34	184.68	18.47	1296.70	1369.98	869	1765
Total	200	1338.34	172.67	12.21	1314.26	1362.42	869	1765

A one-way ANOVA was used to assess the difference in means between experimental and control group scores. The Levene statistic was used to ensure homogeneity of variances. Table 24 illustrates there was no significant difference,

F (1,198) =. 167, p = .683, between the means of the 2007 math scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 24

Analysis of Variance for Fourth Graders' Grade 3 2007 PSSA Math Scores

X Formal Training X No Formal Training

Math SS Gr 3	Sum of Squares	df	Mean Square	F	Sig.
Between groups	50000.00	1	50000.00	.167	.683
Within groups	5928652.88	198	299942.69		
Total	5933652.88	199			

Research Question 12

Will there be a significant difference between the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the LFS model and the third grade 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with no formal training in the model?

Table 25 contains the descriptive data comparing the third grade 2007 PSSA reading scores of the experimental group (formal training) to the control (no formal training). There was a difference in the means of the 2007 reading scores between the two groups. The mean for the experimental group (M =1372.08) was higher than the mean for the control group (M =1361.34).

Table 25

Descriptive Statistics for Fourth Graders' Grade 3 2007 PSSA Reading Scores

Reading Grade 3	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval Lower	Upper	Min.	Max.
Formal Training	100	1372.08	154.43	15.44	1341.44	1402.72	1039	1737
No formal training	100	1361.34	146.14	14.61	1332.34	1390.34	1056	1737
Total	200	1366.71	150.06	10.61	1345.79	1387.63	1039	1737

A one-way ANOVA was used to assess the difference in means between experimental and control group scores. The Levene statistic ensured there was homogeneity of variances. Table 26 illustrates there was no significant difference, $F(1,198) = .255$, $p = .614$, between the means of the 2007 reading scores of the experimental group (formal training) with the control group (no formal training). The null hypothesis can be accepted.

Table 26

Analysis of Variance for Fourth Graders' Grade 3 2007 PSSA Reading Scores

X Formal Training X No Formal Training

Reading SS Gr 3	Sum of Squares	df	Mean Square	F	Sig.
Between groups	5767.380	1	5767.380	.255	.614
Within groups	4475273.800	198	22602.393		
Total	4481041.180	199			

To answer the final research questions in the analysis of the 2007-2008 fourth grade sample, a paired samples t-test was used to determine if there was a difference between the fourth grade 2008 PSSA math scores and the third grade 2007 math scores from the experimental group (formal training) and the fourth grade 2008 PSSA scores and the third grade 2007 PSSA reading scores from the experimental group (formal training).

Research Questions 13 and 14

Will there be a significant increase between the 2008 PSSA and 2007 PSSA math scores from fourth grade students receiving instruction from teachers with formal training in the LFS model? Will there be a significant increase between the 2008 PSSA and 2007 PSSA reading scores from fourth grade students receiving instruction from teachers with formal training in the model?

Table 27 provides the descriptive statistics for the paired samples. For the experimental group (formal training), the fourth grade math mean (M = 1452.49) was higher than the third grade math mean (M = 1334.34). The fourth grade reading mean (M = 1438.13) was higher than the third grade reading mean (M = 1372.08).

Table 27

Paired Samples Descriptive Statistics for Fourth Grade Formal Training Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Math SS Gr 4	1452.49	100	221.729	22.173
	Math SS Gr 3	1343.34	100	160.555	16.056
Pair 2	Read SS Gr 4	1438.13	100	209.207	20.921
	Read SS Gr 3	1372.08	100	154.426	15.443

Table 28 provides the correlation between the fourth grade 2008 PSSA math scores and the third grade 2007 PSSA math scores and the fourth grade 2008 PSSA reading scores and the third grade 2007 PSSA reading scores of the experimental group (formal training). There was a strong correlation between the 2008 and 2007 math scores, $R = .814$. There was also a strong correlation between the 2008 and 2007 reading scores, $R = .800$.

Table 28

Paired Samples Correlation for Fourth Grade Formal Training Group

		N	Correlation	Sig.
Pair 1	Math SS Gr 4 & Math SS Gr 3	100	.814	.000
Pair 2	Read SS Gr 4 & Read SS Gr 3	100	.800	.000

Table 29 provides the results of the paired samples t-test used to compare the fourth grade 2008 PSSA math scores and the third grade 2007 PSSA math scores and the fourth grade 2008 PSSA reading scores and third grade 2007 PSSA reading scores from students in the experimental group (formal training). There was a significant difference, $t(99)= 8.37$, p = 000 between the 2008 and 2007 math scores from students in the experimental group. The null hypothesis can be rejected. There was also a significant difference, $t(99) = 5.22$, p = 000, between the 2008 and 2007 reading scores from students in the experimental group. The null hypothesis can be rejected.

Table 29

Paired Samples for 2008 PSSA Grade 4 Math and 2007 Grade 3 Math and 2008 PSSA Grade 4 Reading and 2007 PSSA Grade 3 Reading for Formal Training Group

	Paired Differences							
				95% Confidence Interval of Diff.				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Math SSGr4-Math SSGr3	109.15	130.40	13.04	83.27	135.02	8.37	99	.000
Pair 2 Read SSGr4-Read SSGr3	66.05	126.54	12.65	40.94	91.16	5.22	99	.000

A paired samples t-test was also used to determine whether or not there was a difference between the fourth grade 2008 PSSA math scores and third grade 2007 PSSA math scores of the control group (no formal training) and the fourth grade 2008 PSSA reading scores and third grade 2007 PSSA reading scores of the control group (no formal training).

Research Questions 15 and 16

Was there a significant increase between the 2008 PSSA and 2007 PSSA math scores of fourth grade students receiving instruction from teachers with no formal training in the LFS model? Was there a significant increase between the 2008 PSSA and 2007 PSSA reading scores of fourth grade students receiving instruction from teachers with no formal training in the model?

Table 30 provides the descriptive statistics for the paired samples. For the control group (no formal training), the fourth grade math mean (M = 1424.65) was higher than

the third grade math mean (M = 1333.34). The fourth grade reading mean (M = 1427.07) was higher than the third grade reading mean (M = 1361.34)

Table 30

Paired Samples Descriptive Statistics for Fourth Grade No Formal Training Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Math SS Gr 4	1424.65	100	272.328	27.232
	Math SS Gr 3	1333.34	100	184.682	18.468
Pair 2	Read SS Gr 4	1427.07	100	209.388	20.939
	Read SS Gr 3	1361.34	100	146.142	14.614

Table 31 provides the correlation between the fourth grade 2008 PSSA math scores and third grade 2007 PSSA math scores and the fourth grade 2008 PSSA reading scores and third grade 2007 PSSA reading scores of the control group (no formal training). There was a strong correlation between the 2008 and 2007 math scores, *R* = .830. There was also a strong correlation between the 2008 and 2007 reading scores, *R* = .777.

Table 31

Paired Samples Correlation for Fourth No Formal Training Group

		N	Correlation	Sig.
Pair 1	Math SS Gr 4 & Math SS Gr 3	100	.830	.000
Pair 2	Read SS Gr 4 & Read SS Gr 3	100	.777	.000

Table 32 provides the results of the paired samples t-test used to compare the fourth grade 2008 PSSA math scores and third grade 2007 PSSA math scores and the

fourth grade 2008 PSSA reading scores and third grade 2007 PSSA reading scores from students in the control group (no formal training). There was a significant difference, $t(99) = 5.79$, $p = .000$ between the 2008 and 2007 math scores of students in the control group. The null hypothesis can be rejected. There was also a significant difference, $t(99) = 4.95$, $p = 000$, between the 2008 and 2007 reading scores of students in the control group. The null hypothesis can be rejected.

Table 32

Paired Samples for 2008 PSSA Grade 4 Math and 2007 PSSA Grade 3 Math and 2008 Grade 4 Reading and 2007 Grade 3 Reading for No Formal Training Group

	Mean	Std. Deviation	St. Error Mean	95% Confidence Interval of Diff. Lower	Upper	Paired Differences t	df	Sig. (2-tailed)
Pair 1 Math SSGr4-Math SSGr3	91.31	157.68	15.77	60.024	122.596	5.79	99	.000
Pair 2 Read SSGr4-Read SSGr3	65.73	132.91	13.29	39.357	92.103	4.95	99	.000

School District Learning-Focused Schools Survey Findings

Research Question 17

Will the teachers achieve the school district's expected level of implementation for the required LFS strategies in their classrooms as reported by information from the school district's Learning-Focused Schools End-of-year Survey?

The school district's survey was designed to solicit feedback from the teachers at the conclusion of year-one implementation. There were 109 surveys returned from

elementary teachers in grades one through five. Although the comparison of student achievement data in this study was limited to grades four and five, survey results were compiled from all elementary teachers in the school district that received formal training in LFS prior to the 2007-2008 year-one implementation of the model.

The nine-question survey solicited information in four areas. The first area focused on instructional strategies. The first four questions asked teachers to indicate the frequency they utilized the four instructional strategies: essential questions, graphic organizers, summarizing strategies, and extending/refining skills.

The first response asked teachers if they used the strategy for "every lesson, every day, all subjects." Although the school district's requirement for year-one implementation was only one subject area, the majority of the teachers implemented all four strategies in the majority of their lessons. This response was followed by "most lessons," asking teachers in what subjects they were used. The survey also asked teachers to indicate other subjects where strategies were implemented. Table 33 reports the utilization percentages for each of the four strategies.

Table 33

Utilization Percentages for LFS Instructional Strategies for Year-One Implementation

Strategy	Every lesson, every day all subjects	Most lessons
Essential questions	21%	79%
Graphic organizers	8%	82%
Summarizing strategies	25%	75%
Extending/refining skills	1%	50%

For the first-year implementation of Learning-Focused Schools, teachers were only required to implement the three strategies into every lesson in one subject area. The school

district had established that year-one implementation of strategies would be considered successful if 80% of the teachers with formal training achieved this goal. Based on survey results, the teachers achieved the school district's expected level of implementation for the three required LFS strategies in their classrooms. The null hypothesis can be rejected.

Research Question 19

Were adequate supports in place for first-year implementation of the model based on information from the school district's Learning-Focused Schools End-of-year Survey?

The survey also asked teachers to provide information on the time and frequency of team planning. Teachers were also asked to assess the adequacy of the formal training and the need for further training. Finally, the survey asked teachers if they had adequate administrative support to implement the model in their classrooms.

Frequency of Planning. The survey asked teachers to indicate the frequency of LFS team planning during year-one implementation. The survey provided several responses: more than once per cycle, once per cycle, twice a month, once a month, and other. From the 109 teachers that returned the survey, 7% met more than once per cycle (every 6 days), 26% met once per cycle, 9% met twice a month, and 40% met once a month. The remaining 18% met less than once per month.

Time of Planning. The survey asked teachers to indicate when they met with their team. The survey provided the following options: common planning time, before school, after school, and early dismissal days. From the 109 teachers that responded, 64% reported using common planning time. Within that 64%, 53% also reported using before and after school time. The remaining 36% reported planning during early dismissals, before and after school, and lunch periods.

Adequacy of Training. The survey asked teachers to indicate if the four days of formal training was adequate for successful implementation of the model. Teachers were asked to indicate between "LFS training was adequate" or "I believe I need more training." Based on the survey, 68% reported the training was adequate and 32% of the 109 teachers believed they needed more training. The survey also asked teachers to indicate the areas of additional training. From the 32% indicating a need for more training, 21% requested ongoing refresher training in the strategies. Other areas of requested training included: extending/thinking skills (4%), vocabulary strategies (3%), thinking skills (1%), acceleration (1%), and specific grade level training (2%).

As a result of feedback from this question, the school district offered an LFS refresher as an option for summer training. The school district also scheduled an LFS refresher for all teachers with formal training during the 2008-2009 school year. The school district plans to continue to offer refreshers every year. The content of each refresher training will be based on feedback from the staff.

Principal Support. The survey asked teachers to indicate whether or not "my principal provides me with the support I need to implement LFS." According to the survey, 93% of the teachers chose this response. Of the remaining 7%, 4% indicated that increased feedback and opportunities to share ideas could improve their success. The remaining 3% indicated a need for additional training from their building principal.

Additional Supports. The final questions asked, "Is there any additional type of support the school district could provide to assist your implementation of the LFS model in your classroom?" Results from the survey indicated that 57% either responded no or left the question blank. Of the remaining 43%, 22% indicated a need for increased

planning time. Other support requests included developed concept and learning maps for all subjects (6%), additional materials including manuals, posters and flip charts (5%), opportunities to visit and observe other teachers (3%), LFS formal training for all staff (4%), and consistent expectations across the school district (3%).

For first-year implementation, the school district required all teachers with formal training to meet at least once a month. The school district did not establish any expectations or requirements for where and when planning occurred. In terms of training, the school district was interested in whether or not teachers believed the four days of formal training were adequate. The school district was also interested in how the teachers' perceived the level of support provided by their building principals. Finally, the survey was designed to provide the school district with information to guide future decisions for staff development and other supports to sustain the model.

Information from the survey supported the school district achieved its expectation for planning. The survey indicated that 82% of the teachers with formal training met at least once per month. Combined with the percentage of teachers that believed they had adequate training in the model (68%) and the percentage that reported sufficient administrative support (93%), the school district determined there were adequate supports in place for year-one implementation of the model. The null hypothesis can be rejected.

Summary of Findings

Results from the study indicated a statistically significant increase in the reading achievement of 100 randomly selected fifth grade students taught by teachers with formal training in the Learning-Focused Schools compared to a similar group of students taught by teachers with no formal training in the model. Data from the fourth grade sample also indicated significant increases in both math and reading achievement between the 2007 PSSA third grade scores and the 2008 PSSA fourth grade scores. However, since the significant increases in student achievement occurred in both the experimental and control groups, the treatment of formal training in the LFS model was not responsible for increases in achievement.

Although the statistical results of this study were limited, the descriptive data indicated differences in reading and math scores between the two groups. It is possible that the LFS instructional strategies implemented by teachers with formal training contributed to the higher means of the experimental groups.

Information from the survey provided the school district with evidence that teachers with formal training achieved the school district's expected level of implementation for the three required instructional strategies; essential questions, graphic organizers, and summarizing activities. Teachers also met the school district's expectations for team planning. The survey indicated a need for additional training in several areas. Finally, information from the survey indicated a strong belief that principals provided teachers with adequate support to implement the model in their classrooms

CHAPTER V

DISCUSSION

Introduction

Increased accountability for student achievement has forced school districts to seek initiatives and programs designed to increase student achievement. The research school district for this study follows a seven-year instructional design cycle. During the cycle, each area of the curriculum is reviewed, researched, and rewritten by a select group of administrators and teachers. The school district has worked diligently to align irs curriculum to Pennsylvania's Academic Standards.

Although the school district has adopted a standards-aligned curriculum and provided their staff with abundant instructional resources, only slight gains in student achievement have been realized. To date, the school district has been fortunate many grade levels have achieved and often exceeded the proficiency targets established by the Pennsylvania System of School Assessment (PSSA). However, as the year 2014 approaches the school district's concern for increased achievement has become more urgent. Over the past several years the school district has spent considerable time considering and discussing available options.

The school district made the decision in early 2006 to explore the possibility of implementing the Learning-Focused Schools (LFS) comprehensive school reform model. The strong curriculum emphasis of LFS provided a good match for the school district's curricular efforts. In addition, the model's monitoring and accountability component aligned with the high expectations the school district had established for its building principals. In March 2006, approximately 100 teachers and administrators attended an

overview of the Learning-Focused Schools model. School district administration and teachers believed the comprehensive nature of the model would meet many of the school district's needs. Implementing the LFS model would not require the school district to implement drastic changes. Instead, the adapt don't adopt philosophy encouraged the school district to utilize its existing infrastructure to incorporate the components of the model into the existing programs and practices.

Following the overview, the school district began the process of mapping out an implementation schedule. Prior to the start of the 2007-2008 school year, 115 elementary teachers had received four days of formal training in the model. All building principals and school district administrators were also trained in the model.

The purpose of this study was to determine the effects of the Learning-Focused Schools model on student achievement in math and reading as measured by the reading and math tests of the PSSA. The study also analyzed information from an end-of-year survey distributed to the teachers with formal training in LFS. The survey was designed to solicit feedback from the teachers at the conclusion of the year-one implementation. The nine-question survey was designed to solicit information in four areas. The survey asked teachers to indicate the frequency they implemented the four required instructional strategies: essential questions, graphic organizers, summarizing strategies, and extending/refining skills. The survey also asked teachers to provide information on the time and frequency of team planning. Teachers were also asked to assess if they felt the formal training was adequate and whether or not there was a need for additional training. Finally, the survey asked teachers if they were given adequate support by their building principals to implement the model in their classrooms.

Procedures

The study was conducted following the 2007-2008 school year. Since both 2007 and 2008 PSSA scores were used, the target population for the study was fourth and fifth grade students who attended school in the research district in both 2006-2007 and 2007-2008. From this group, random samples were generated. The experimental groups were100 fifth grade students and 100 fourth grade students taught by teachers with formal training in the LFS model. The control groups were 100 fifth grade students and 100 fourth grade students taught by teachers with no formal training in the model.

Conclusions

Fifth Grade PSSA Math and Reading Data

There was no significant increase in the math achievement of the experimental group (formal training) compared to the control group (no formal training). There was a difference in the means. The mean of the experimental group (M = 1460.09) was higher than the mean of the control group (M = 1411. 56). Although not significant, the difference is worth noting. The implementation of the LFS model's instructional strategies by teachers with formal training in LFS may be responsible for the higher math achievement of the experimental group.

There was a significant increase in the fifth grade reading achievement of the experimental group (formal training) compared to the control group (no formal training). Based on the results from the ANOVA, $F(1,198) = 4.70$, $p = .031$, the null hypothesis can be rejected. The treatment, implementation of LFS instructional strategies by teachers with formal training in the model, may have contributed toward the significant increase in reading scores of the experimental group.

The analyses conducted on the fifth grade samples' fourth grade reading and math scores assured there were no significant differences between the two groups. However, the means of the reading and math scores from the experimental group were slightly higher than the control group. Since both samples were randomly selected, there was no apparent reason for these differences. However, this information does indicate that the achievement of the experimental group was higher even prior to the treatment of the study.

The results of the paired samples t-test indicated no statistically significant increases in achievement between the fifth grade 2008 PSSA math scores and the fourth grade 2007 PSSA math scores and the fifth grade 2008 PSSA reading scores and the fourth grade 2007 PSSA reading scores from students in the experimental group (formal training). Combined with the high correlation of the scores, .878 for math and .796 for reading, the results do not support that formal training in the LFS model had any impact on the reading or math achievement of the experimental group.

A paired samples t-test was also used to determine any statistically significant increases in achievement between the fifth grade 2008 PSSA math scores and the fourth grade 2007 PSSA math scores and the fifth grade 2008 PSSA reading scores and the fourth grade 2007 PSSA reading scores from students in the control group (no formal training). Although there was no statistically significant increase between the 2007 and 2008 math scores, there was a statistically significant difference, t (99) = -2.29, p = .024 between the 2007 and 2008 reading scores. However, the significance found was decreased achievement between the fourth and fifth grade scores of the control group. The decrease in control group reading scores is worth noting. Although no significant

increase in reading achievement was found in the experimental group, the results indicated there was an increase from the fourth grade 2007 PSSA reading mean (M = 1386.62) and the fifth grade 2008 PSSA reading mean (M = 1394.78). The decrease in the reading mean of the control group may indicate some influence of the treatment on the scores from the experimental group.

Fourth Grade PSSA Math and Reading Data

There was no statistically significant increase between the fourth grade 2008 PSSA math scores of the experimental group (formal training) and the control group (no formal training). There was a difference in the means. The mean of the experimental group (M = 1452.49) was higher than the mean of the control group (M = 1424.65). Although not significant, the difference is worth noting. The implementation of the LFS model's instructional strategies by teachers with formal training in LFS may be responsible for the higher math achievement of the experimental group.

There was no significant increase between the fourth grade 2008 PSSA reading scores of the experimental group (formal training) and the control group (no formal training). The mean of the experimental group was only slightly higher than the mean of the control group.

In analyzing the third grade 2007 PSSA math and reading scores from both groups, there were no statistically significant differences between the reading or math scores. Although not significant, the means of the reading and math scores from the experimental group were somewhat higher than the means from the control group. Since both samples were randomly selected, there was no apparent reason for these differences.

However, this information does indicate that the achievement of the experimental group was higher even prior to the treatment of the study.

The results of the paired samples t-test indicated statistically significant increases between the fourth grade 2008 PSSA and third grade 2007 PSSA math, $t(99)= 8.37$, p = 000, and reading scores, $t(99) = 5.22$, p = 000 from students in the experimental group (formal training). Combined with the high correlation, .814 for math and .800 for reading, the results support that the treatment of formal training in the model may have had an effect on student achievement in math and reading.

A paired samples t-test was also used to determine if there was a statistically significant increase in achievement between the fourth grade 2008 PSSA and third grade 2007 PSSA math scores and the fourth grade 2008 PSSA reading scores and third grade 2007 PSSA reading scores from students in the control group (no formal training). Results indicated a statistically significant increase, $t(99) = 5.79$, p = .000 between the 2008 and 2007 math scores of students in the control group. There was also a statistically significant increase, $t(99) = 4.95$, p = 000, between the 2008 and 2007 reading scores of students in the control group.

Since there were statistically significant increases between the 2007 PSSA and 2008 PSSA reading scores and math scores from both the experiment and control groups, the increased achievement in the experimental group cannot be attributed to the treatment. Possible reasons for the increased achievement of both groups will be discussed within the Conclusion section of this Chapter.

District LFS End-of-year Survey

The school district's survey was designed to solicit feedback at the conclusion of year-one implementation from teachers with formal training in the model. Although the comparison of student achievement data in this study was limited to fourth and fifth grade, the study included survey results from all elementary teachers with formal training for the first-year implementation of the model. There were 115 teachers with formal training. Of the 115 surveys distributed, 109 surveys were returned.

The nine-question survey solicited information in four areas. The first area focused on instructional strategies. The first four questions asked teachers to indicate the frequency they utilized the four instructional strategies: essential questions, graphic organizers, summarizing strategies, and extending/refining skills.

Essential Questions. Teachers with formal training were only required to develop essential questions for one subject area. The survey indicated that 100% of the teachers reported using essential questions during every lesson or most lessons. This exceeded the school district's expectation that 80% of teachers with formal training would develop essential questions for every lesson in one subject.

According to comments from the survey, teachers found that once they were comfortable developing essential questions in one subject it made sense to incorporate the strategy into other subjects. As essential questions became considered instructional best practice, the majority of teachers made the decision to develop and use them in all their lessons.

It was not surprising a higher percentage of teachers reported using essential questions in math (57%) than language arts (48%). Comments from teachers indicated that

the concrete nature of math content made it easier to develop essential questions. The overlap of skills in language arts made developing essential questions a greater challenge.

Graphic Organizers. Information from the survey indicated that 100% of the teachers reported using graphic organizers for every lesson or most lessons. Since teachers with formal training were only required to incorporate graphic organizers in every lesson for one subject area, the survey would support that teachers exceeded the school district's expectation that 80% of the teachers with formal training would implementation this strategy for every lesson in one subject area.

Similar to essential questions, teachers expanded their use of graphic organizers into multiple subjects. Comments from the survey indicated a high success level from graphic organizers. This success encouraged teachers to incorporate the strategy beyond the required single subject.

Due to the diverse nature of subjects within language arts, the survey confirmed the school district's prediction that a higher percentage of teachers would use graphic organizers for language arts (62%) than in math (44%). In math, the majority of graphic organizers were used during problem-solving activities.

Summarizing Strategies. Information from the survey indicated that 100% of the teachers reported using summarizing strategies in every lesson or most lessons. Information for the survey indicated that 25% of the teachers utilized summarizing strategies in every lesson every day in all subjects. The remaining 75% reporting using some summarizing strategies for most lessons, math (49%) and language arts (56%).

Similar to essential questions and graphic organizers, teachers exceeded the school district's expectation that 80% of teachers with formal training would incorporate summarizing strategies into every lesson for one subject.

Extending/Refining Skills. These skills were not required during year-one implementation. However, since they were highly encouraged, the school district included this strategy in the survey. From the 109 surveys, 1% reported using extending /refining skills in every lesson every day in all subjects. Of the remaining teachers, 50% reported using extending/refining skills in most lessons.

Based on the model's criteria of 75%, Thompson (2006) would define the teachers of the research school district as "most effective" in all four strategies.

The next four questions of the survey asked teachers to provide information on the time and frequency of team planning, assess the adequacy of the formal training and the need for further training, and indicate if they believed they had adequate administrative support to implement the model in their classrooms. The final question asked teachers to indicate if there were any additional supports the school district could provide to assist implementation of the LFS model.

Frequency and Time of Planning. Teachers with formal training were required to meet at least once per month. Since 82% met at least once per month, teachers achieved the school district's expectation in this area. Comments from the survey indicated that teachers included planning for LFS within other grade level meetings, during informal times such as lunch, and weekends. Teachers also expressed a strong need for additional planning time. Approximately 42 of the 109 teachers responding to the survey included a comment about planning time.

Throughout the school district, building principals reorganized schedules to further increase planning time for year-one implementation of the model. The survey provided the school district with strong evidence that teachers used the provided planning time. However, comments from the survey clearly indicate the school district needs to continue its efforts to increase planning opportunities. Information from the survey would support a strong relationship between planning time and teachers' perception of successful implementation of the model.

Adequacy of Training. The survey asked teachers to indicate if the four days of formal training was adequate for successful implementation of the model. The survey indicated only 68% of the teachers believed the training was adequate. According to school district administration, this percentage was not unexpected (personal communication, June 18, 2008). Immediately following the four days of formal and throughout the year, many teachers expressed a concern that the training was not enough The survey provided the school district with a wide variety of training suggestions. The school district utilized this information for planning staff development activities for the 2008-2009 school year.

Principal Support. The survey asked teachers to indicate whether or not they believed their principal provided the support needed to successfully implement the LFS model. School district administration was extremely pleased that 93% indicated sufficient support. It is the opinion of the researcher that the school district did not expect such a high percentage of teachers would report they had adequate support from their building principal (personal communication, July 14, 2008).

Thompson requires every principal to receive formal training in the model. The school district also followed Thompson's recommendation and set specific expectations for

supervision and monitoring of the model. The survey provided strong evidence to support the success of the school district's efforts to provide the level of administrative support necessary to support the model The survey also provided support to encourage the school district to maintain the high expectations established for their building principals.

Additional Supports. The survey asked teachers to share if there was anything the school district could do to assist implementation of the LFS model in their classrooms. Only 43% of the 109 teachers indicated any additional supports. Information from this question was used to plan staff development activities for the 2008-2009 school year. The school district also designated a large portion of the curriculum budget to purchase materials to assist teachers in their implementation of the model. Finally, feedback from this question contributed to the central administration's directive for each building principal to establish specific goals and consistent expectations for teachers with formal training in the model for the 2008-2009 school year.

Limitations

Although the sample represented a large portion of the students that attended the school district for the two-year period of the study, the study was limited to students in fourth and fifth grade. As a result, the study did not provide any information regarding increased achievement in math or reading for students in first, second, and third grade.

The study was also limited to the extent that other factors may have influenced student achievement. The adoption of a new reading series during the same time period as the study may have influenced the study. The study may also have been limited to the extent that the level of implementation varied across schools, within classrooms, and

between individual teachers. Although survey information indicated strong support and commitment, other factors may have interfered with implementation of the strategies.

Although the degree of monitoring, supervision, and accountability provided by building principals was originally considered a possible limitation, information from the district survey indicated this was actually an area of strength during year-one implementation.

Implications

As the district continues toward its goal of 100% implementation by 2010, it will be critical for the school district to develop and maintain consistent procedures to evaluate the effectiveness of the model. There are several implications for this process.

Ongoing changes in student enrollment present an implication for the district in terms of its accountability for student achievement. The issue of student transience poses a challenge not only to the implementation of LFS, but to all district efforts designed to provide the best possible educational opportunities for all students.

For this study, the total fifth grade enrollment during the 2007-2008 school year was 564 students. From this enrollment, only 477 attended the school district the previous year as fourth graders. Consequently, 86 (15%) of the 563 students were new to the district as fifth graders. Even more significant, the school district's fourth grade enrollment during the 2007-2008 school year was 626. From this enrollment, only 488 students attended the district as third graders. Therefore, 138 students (22%) were new to the district as fourth graders.

As a result of student transience, for the 2008 PSSA tests the district was responsible for the academic proficiency of 224 incoming fourth and fifth grade students.

Additionally, students withdrawing from the district may have increased their achievement as a result of district efforts, including Learning-Focused Schools.

Initially, enrollment figures reviewed by the researcher were limited to the target populations of the study; however, as a result of the findings from this group, a review of the entire elementary enrollment seemed appropriate to determine the impact of this issue. During the 2007-2008 school year, 500 elementary students left the school district. During the same time period, 524 students enrolled in the school district. Although at first glance this appeared to be an increase of 24 students, it actually represented a 15% change in the school district's total elementary enrollment of 3,400 students. In fact, the overall enrollment of one elementary school located in a highly transient community changed by 33% during the 2007-2008 school year. If these fluctuations occur on a consistent basis, there is certainly a level of concern regarding the implications for accountability of student achievement.

To determine if this pattern continued, the enrollment records for the first three months of the 2008-2009 school year were also reviewed. Between September 1, 2008, and December 1, 2008, 282 elementary students withdrew from the district. During the same time period, 307 new students enrolled. This represents an increased enrollment of 24 students. Disturbing is the fact that in 68 school days, the overall elementary enrollment of 3,460 changed by 300 students. If this rate continues, the end result could be an overall enrollment change of over 25% for the 2008-2009 school year.

In addition to student enrollment, the structure of the curriculum and differences in instructional time could have implications for this study. Although essential questions are easily implemented across all subject areas, survey information indicated that teachers

were most comfortable incorporating the other strategies into the language arts curriculum. Language arts includes reading, writing, language, grammar, and spelling activities. Teachers reported that language arts activities were extremely conducive to a wide variety of graphic organizers. Due to the large amount of curriculum and concepts within language arts, there were also more opportunities to provide summarizing activities and incorporate extending/thinking skills.

With regard to instructional time, fourth and fifth grade students receive approximately 150 instructional minutes per day in language arts. This equates to almost 50% of the daily instructional minutes. Conversely, fourth and fifth grade students receive approximately 75 minutes per day in math instruction. Due to the multiple strands within language arts and the large amount of instructional time, it was not surprising that teachers reported implementing new strategies into this area of the curriculum first. These factors may be implications for the study since the only statistically significant increase identified in the study was in fifth grade reading,

Based on the curriculum, the amount of instructional time spent on language arts, and the nature of the strategies, the expected increase in reading achievement was more likely to occur than in math during first-year implementation. A major focus of year-two implementation will be working with teachers to expand the use of instructional strategies equally across all subject areas. The school district has developed specific training to assist teachers in the process.

Recommendations for Future Study

Although there may be small increases in student achievement after year-one implementation, the majority of research from Thompson's model indicates the largest

gains of 7-10% will occur after the third year of implementation (Thompson, 2006). As a result, it will be necessary for the district to employ ongoing evaluation as it continues to expand implementation. In addition, the district will not be able to determine the effects of the model on student achievement without the analysis of testing data from all grade levels.

It may be also benefit the district to study possible explanations for the differences in training percentages between levels of professional staff. To date, participation in formal training has been voluntary. The discrepancy between trained high school staff and elementary/middle school staff could impact the consistency and effectiveness of instruction as students progress through the grades. It would be beneficial for the district to determine the presence of any barriers that might affect its goal to have 100% of the professional staff trained by the year 2010. Table 34 provides a summary of the school district's training status as of December 1, 2008.

Table 34

District Summary of Professional Staff with Formal Training in LFS

Level	Number of Professional Staff	Percentage with Formal Training
High school	209	34%
Middle school	183	67%
Elementary	269	74%
District Total	678	59%

Based upon the information the survey provided following year-one implementation, it may be useful for the district to continue this practice. A survey specific to year-two implementation and subsequent years could provide valuable

information on the expanded use of instructional strategies to additional subjects, opportunities for increased planning time, and feedback on ongoing staff development. As the district continues to make improvements and provides more formal training, distribution of the same survey would provide opportunities for it to compare information, assure similar responses, assess improvements, and encourage continued feedback.

Summary

Results from the fifth grade sample in this study indicated a statistically significant increase in the reading achievement of 100 randomly selected fifth grade students taught by teachers with formal training in the Learning-Focused Schools model compared to a similar group of students taught by teachers with no formal training in the model. Data from the fourth grade sample also indicated significant increases in both math and reading achievement between third grade scores and fourth grade scores. However, since the significant increases in student achievement occurred in both the experimental and control groups, the treatment of formal training in the LFS model was not responsible for the increases in achievement. The implementation of a new reading series may have been responsible for the reading gains. Even though the only significant statistical evidence of the study was limited to fifth grade reading, the descriptive data indicated differences in reading and math scores between the two groups. It is possible that the LFS instructional strategies implemented by teachers with formal training contributed to the higher means of the experimental groups.

Overall, information collected from the school district's end-of-year survey indicated year-one implementation was successful. Teachers exceeded the school

district's expectation for 80% implementation of the exemplary strategies in their classrooms. Based on the model's criteria of 75%, Thompson (2006) would define the teachers of the research school district as "most effective" in all four strategies. Also important to determining the success of year-one implementation was survey information indicating that 93% of the teachers believed they had adequate support from their building principal to implement the model in their classrooms.

According to Pate and Gibson (2007), high levels of implementation and strong teacher belief are strong indicators of successful educational reform. Their implementation study of Learning-Focused Schools reported both high levels of strategy implementation and strong teacher belief in the model. As a result, they concluded that Learning-Focused Schools met the criteria to be considered a successful educational reform model. Therefore, since the results of this study identified similar high levels of implementation and strong teacher support, the year-one implementation of Learning-Focused Schools in the research school district would meet the criteria of successful educational reform.

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APPENDIX

School District End-of-year LFS Survey

LFS End-of year Survey

To create a school district summary of current LFS implementation and assist our planning and goal-setting for next year, please take a few minutes to answer the following questions.

1. I use essential questions:
___ Every lesson, every day, all subjects
___ Most lessons in Math Language Arts Social Studies Science (circle one or more)
___ Other subject areas _____

2. I use graphic organizers:
___ Every lesson, every day, all subjects
___ Most lessons in Math Language Arts Social Studies Science (circle one or more)
___ Other subject areas _____

3. I use summarizing strategies:
___ Every lesson, every day, all subjects
___ Most lessons in Math Language Arts Social Studies Science (circle one or more)
___ Other subject areas _____

4. I incorporate extending/refining skills:
___ Every lesson, every day, all subjects
___ Most lessons in Math Language Arts Social Studies Science (circle one or more)
___ Other subject areas _____

5. The trained LFS team in my building met to discuss and/or plan:
___ More than once per cycle
___ Once per cycle
___ Twice a month
___ Once a month
___ Other _____

6. Our team met: (check all that apply)
___ During grade level common planning time
___ Before school
___ After school
___ Early dismissal days
___ Other_____

7. To successfully implement LF strategies in my classroom:
___ LFS training was adequate
___ I believe I need more training
If so, please indicate areas you would like to receive more training
_____

8. My principal:
___ Provides me with the support I need to successfully implement LFS
___ Could improve my success next year by:
_____

9. Is there anything the school district could provide to assist your implementation of the LFS model in your classroom? (Use the back for more space)