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An Investigation of the Relationship Between Professional Development and Student Achievement in 53 Middle Schools Within a Large Urban School District in South Florida

Sharon R. Lewis

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PROFESSIONAL

DEVELOPMENT AND STUDENT ACHIEVEMENT IN 53 MIDDLE SCHOOLS

WITHIN A LARGE URBAN SCHOOL DISTRICT IN SOUTH FLORIDA

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of

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By

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ABSTRACT

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Purpose

Student achievement has received much attention in the past decade and is still the subject of discourse in terms of standards and accountability. There have been and still remain active discussions among researchers and practitioners that suggest teachers should have both the subject-matter knowledge and the teaching skills necessary to enable students to reach high standards.

The purpose of this study was to investigate the impact of the intensity of professional development on student achievement as measured by the Florida Comprehensive Assessment Test (FCAT) school grade within a three-year time frame. The study examined the intensity of the professional development received by teachers within the middle schools over a three-year time frame and the affects on student achievement over the same time frame as it related to schools' grades based on the FCAT. Intensity was defined as the average number of in-service points earned by the teacher and the school in professional development activities.

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Method

The research design was nonexperimental because there was no manipulation of the independent variable by the researcher and there was no random assignment of participants. The data on which the conclusions were based was archival. The groups in the study are (1) schools wherein the school's FCAT grade improved over a three-year time frame, (2) schools wherein the school's FCAT grade remained stable and (3) schools wherein the school's FCAT grade declined over a three-year time frame. A one way analysis of variance (ANOVA), t-tests and repeated measures was used to investigate the differences in professional development points among schools at different FCAT school grade levels. School grade is defined as the letter grade (A, B, C, D, or F) that is given to the school by the Florida Department of Education based upon the accumulation of percentage points for six measures of student achievement. The measures are: (1) the percent of students meeting high standards in reading; (2) mathematics; (3) writing; (4) the percent of students making learning gains in reading; (5) mathematics; and 6) the percent of the lowest performing students making learning gains in reading (*Florida Department of Education Guide to Calculating School Grades,* 2004, pp. 2-3).

Major Findings

The results revealed that schools with satisfactory student achievement have more professional development activity than schools with poor student achievement regardless of whether professional development activity is measured as points per teacher or points per school. The evidence was not strong enough to demonstrate a statistically significant association between declining levels of professional development activity and declines in student achievement as measured by declining school grades.

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CHAPTER 1

THE PROBLEM

<u>Introduction</u>

The twenty-first century is marked by a society that demands accountability in education in areas such as student achievement, teacher expertise, and classroom practices. It is further marked by a decline in student achievement and in student test scores across the nation (Florida Department of Education, 2004; U. S. Department of Education Office of Educational Research & Improvement 2004).

Westhaver (2003) reports that: according to the 2000 National Assessment of Educational Progress (NAEP), 82% of our nation's 12th graders performed below the proficient level on the science test. It also showed that only a third of our fourth-graders are able to read at a proficient level, with minority students lagging even further behind (p. 46). This is a clear indication of the need for educational reform and suggests that America's educational system has once again come under question about what students are learning and how they are being taught (Florida Department of Education, 2004; U. S. Department of Education, 2004; Westhaver, 2003).

The "A Nation at Risk" (1983) report served as a catalyst for school improvement initiatives throughout the United States. From that time on, America has engaged in the restructuring of its educational process to develop new reforms for the twenty-first century and improve student achievement. The United States Department of Education (2002) reported a chilling decline in student achievement and test scores that again called attention to an educational crisis in the United States.

President George W. Bush signed the No Child Left Behind Act (NCLB) into law on January 8, 2002, in an attempt to improve the standards of the education system and to provide a template for educators to improve student achievement. The NCLB Act places substantial responsibility and accountability for student achievement, professional development, schools' curriculum, and instruction on the national and state levels. States are held accountable at the national level where they must show adequate yearly progress in student achievement or be faced with restructuring of the school district and/or individual schools (No Child Left Behind Act, 2002).

It is therefore incumbent upon states, school districts, and schools to seek ways to improve teacher performance within the classroom as a means of improving student achievement and obtaining learning gains in students' test scores.

The decline in student achievement, the need for comprehensive assessment, and the demand for accountability are all reasons to attract educators' attention and require them to review how best to address teacher training as teachers work to empower students within the classroom.

Teachers are challenged to develop strategies that are effective that will make a difference and help students develop critical thinking and learning skills to improve their academic achievement. To implement these strategies, teachers should be provided with professional development opportunities that focus on subject content to provide the continuous refreshment needed to deliver more effective instruction.

It is equally important that educators at all levels understand that education is much bigger than their own classrooms and that students' academic gains require the teacher to be open to change and to reflect on their individual teaching and practices at all times. The teacher

must be a learner, willing to extend beyond the classroom to adopt new ideas and a fresh approach to the learning process. Effective teachers must be willing to contribute to the professional growth of others. They should share their experiences with others, recognizing the process of collaboration as a part of their professional growth. The teacher should examine with precision the new reforms that are proposed in education, and develop new methods of working with students (Bunting, 2002; Darling-Hammond, 1999).

The literature led the researcher to the identification of the issues facing educators today and focused on using professional development activities to increase student achievement. The issues of accountability, better standards, improved classroom teaching strategies, and assessment served as a driving force for the researcher to further examine the critical issues related to professional development and its relationship to student achievement (Darling-Hammond, 1997; Fishman, Marx, Best, & Tal, 2003; Fullan, 2001; Sparks, 2003).

Background of the Problem

The challenge to improve the quality of teaching in ways that will impact student achievement requires educational organizations to reconsider how educators are initially trained and what opportunities are provided to them for professional renewal and retooling throughout their careers; they must focus on reforms that would provide research-based programs for professional growth. Schools must demonstrate accountability for what is being taught in the classroom and how teachers are teaching.

Darling-Hammond (1997) in a report, Doing What Matters Most: Investing in Quality Teaching, Prepared for the National commission on Teaching and America's Future, suggests that teachers need to have continuous access to the latest knowledge about teaching and learning and this comes through professional development. Teacher knowledge of subject matter is what

matters most. It is equally important that every child be guaranteed a caring, competent, qualified teacher and every teacher and principal, adequate preparation and professional development. Teachers need professional development activities that provide opportunities for them to learn how to question, analyze, and expand their instructional practices to a higher level that activates the critical thinking process of students. The way teachers learned in the past is much different from the classrooms of today. Methods of delivery are more focused; the teacher must be more engaged in the assessment and observation of the students and understand the impact on learning. Thus, the teachers must be connected to the paradigm of ongoing professional development (Darling-Hammond & McLaughlin, 1995). The collaborative process that allows teachers to share, reflect, and to try new approaches to an ever-changing technological environment is vital to student learning. It is commonly accepted that effective teachers benefit from discussion and reflection and from participating actively in learning and professional practices that will ultimately empower them within the classroom (Sutliff & Brown, 1999**).**

The NCLB Act is one political force that has created a sense of urgency for states to demonstrate accountability to parents and the community on student achievement. It has caused school districts to recognize the high percentage of students who are failing basic education and has prompted districts to direct schools to find ways to help teachers reconnect with the students and understand the diverse groups of students who enter the classrooms. This call for reform within the educational environment establishes a framework focused on better schools and improved outcomes from students. How to achieve this goal remains the puzzling question. Nevertheless, what is clear is that the "factory model" of education is no longer adequate for meeting the needs of today's educational classrooms (DuFour & Eaker, 1998, p. 22). The factory model is the view of the original educational concepts of the nineteenth and twentieth centuries

whereby students were the raw material and were transported along the assembly line. The emphasis was on the teachers pouring in subject material such as mathematics until the bell rang, and then students moved to the next station where the next group of teachers would assemble the grammar nuts and bolts. This occurred throughout the day until completion of the student's program. In general, there was little emphasis on creative practices. The school's time was spent focusing on procedures rather than student achievement. Because of this philosophy, it is believed that many educators lost sight of the need to embrace new concepts and bring creative practices to the classroom to meet the demands of the diverse cultural group of students (DuFour & Eaker, 1998).

The thought must then be if educators are to meet the challenges of the twenty-first century, they must abandon the outdated model of education and reach out to embrace a model that offers the best strategies to improve student achievement. The organization must understand the need for a change; "the system," as referred to by Senge (1990), is designed to produce the results it gets from the efforts that are put into the organization or system. For instance, changing middle school mathematics curriculum without simultaneously considering changes in instruction, assessment, and other parts of the system is likely to lead to a partial implementation of the new curriculum. True reform that results in real change and student improvement requires changing the organizational structure to include professional development and establish procedures that teachers could embed in their daily practices. Fullan (2001) believes that teachers are moral change agents who bring meaning to what students learn. Teacher collaboration is also important; this collaboration provides teachers with the opportunity to share best practices from classroom experiences as well as professional development activities. Fullan also suggests that teachers should have a moral commitment and shared responsibility to create a change within the

school that will transform the *status quo.* Houston (2001) underscores the importance of moral commitment to the superintendent of schools, which may be viewed as "the minister" motivating his congregation to higher powers. Ministers get their authority from on high. Thus, Houston suggests that when teachers work with other people's children and become responsible for them, they have a very powerful authority which should serve as the driving force for commitment to excellence. There should be a desire to create an environment wherein student learning and professional development are aligned on an ongoing basis and produce results of high student performance and achievement (Houston, 2001).

The responsibility of student achievement rests with the organization, which continues to learn and grow through individuals who learn within the organization. It must be noted, however, that individual learning does not guarantee organizational learning or growth; but without individual learning, no organizational growth will occur. It is this desire for learning that creates a drive toward a personal mastery goal and guides a teacher to the life-long learning experience. The desire to engage in professional development opportunities ultimately impacts the teachers' learning experiences. While a school district's vision might be to improve student achievement, there must be professional discipline exhibited over many years by the teachers as their actions lead to involvement in professional development activities.

Statement of the Problem

Schools are under continuous pressure to improve their academic standards. The need to demonstrate accountability within the classroom, improve students' test scores as measured by the Florida Comprehensive Assessment Test (FCAT), and ensure that no child is left behind are some of the reasons why educational leaders must examine how teaching practices impact student achievement, and what strategies such as professional development can be used to impact

learning and achievement. While teachers are held accountable for instructional delivery and increasing student achievement, they often do not have all of the skills needed to produce the desired outcomes. Skills such as desegregating of student data, analyzing the data, usage of current software to enhance classroom instruction, understanding the different cultures of students in an urban school, are all areas in which teachers need to have professional development training to improve their delivery of instruction. Consequently, the impact of professional development on teaching practices, teacher knowledge and skills, are very important to student achievement.

Current literature in the field of professional development is ongoing and researchers continue to examine the connection between professional development and student achievement, but there is little evidence to show what, if any, relationship exists between professional development and student achievement. Some studies suggest that professional development is a necessity in order to provide teachers with new skills that can result in increased student achievement and that change in teaching practices might impact student achievement (Darling-Hammond, 1997; Kelleher, 2003; Sparks & Hirsh, 1995). This study will continue the investigation in search of empirical evidence that might link professional development and student achievement.

Purpose of the Study

The purpose of this study was to investigate the impact of the intensity of professional development on student achievement as measured by the FCAT school grade, within a three-year time frame. The study was to determine if the professional development received over a three-year time period by teachers within the school would have an impact on students' achievement; and how the students' achievement might impact the schools' grade that is given by the State of

Florida. This school grade is to determine if the students and schools are meeting the accountability requirements for the No Child Left Behind Act.

The study examined schools from three different perspectives in relationship to their FCAT school grades and professional development. It examined schools that (a) had improved their FCAT school grades over the three-year time frame, (b) schools whose grade remained stable, and (c) schools whose grades had declined over the same time period. The study further investigated if the intensity of professional development activities was different in the three groups of schools classified as improved, stable, or declined.

Data was used from the District's Information Technology System and the Florida Department of Education to analyze the intensity of the professional development offerings to teachers within the schools when teachers were afforded the opportunity to increase their knowledge through professional development. The schools' performance grades were examined within this same time frame as they related to students' FCAT scores to determine what changes occurred over time and the relationship to student achievement and school improvement grades.

Significance of the Study

Professional development has multiple benefits in keeping teachers informed about new research and methods that have occurred in education that will ultimately impact the school and student achievement. When teachers become learners in their professional environment it provides them with new knowledge, new strategies, and renewed energy that will bring excitement to the classroom. These acquired benefits serve to improve student achievement. It is this improvement that federal, state, and local governments are demanding and school districts are emphasizing as a part of their accountability system. Thus, the significance of this study is to show that professional development, when used as a tool for teacher development, can increase

student achievement. If districts are to achieve high standards for improved student achievement they must take a closer look at the opportunities that are provided for professional development as a means of improving student achievement.

The delivery of instruction, the quality of education received by students and the lack of achievement continue to raise concerns about how teachers are teaching (Darling-Hammond 2000). Barton (2004) suggested that educators must look within themselves and hold themselves responsible for improving schools. He contends that the achievement gap is rooted in the government and the community, as well as families. All must assume responsibility for the underachieving child. The low birth weight of infants, lead poisoning, lack of parental care, hunger and malnutrition, parent(s) not reading to children, excessive television watching within the home, high student mobility, and lack of parent involvement with the school are all factors that correlate to underachievement within the schools (Barton, 2004).

Barton (2004) contends that the school plays an important role in bridging the gap with student achievement. He has identified six school factors that correlate with student achievement: (1) rigor of the curriculum, (2) teacher experience and attendance, (3) teacher preparation, (4) technology-assisted instruction, (5) class size, and (6) school safety.

While class size and school safety are factors in student achievement, the literature shows that teacher preparedness and professional development are also important factors affecting student achievement (Darling-Hammond, 2000; Guskey, 1997; Guskey & Sparks, 1996; Joyce, 1993).

Understanding the need to improve student achievement, school districts must focus on finding new ways to improve students' performances within the classroom and provide opportunities for teachers to improve their delivery within the classroom.

The school district should examine reform methods that include professional development activities, thus providing the opportunity for teachers and administrators to become equipped with a knowledge base that will empower them to deliver effective instruction and become more accountable for the overall achievement of the school. There is some evidence to suggest that teachers perform better if they are provided with opportunities to sharpen their skills and keep abreast of current trends and practices within the classroom (Cooney, 2003; Darling-Hammond, 1997; Darling-Hammond, 2000; Hayes-Mizell, 2002; The Edna McConnell Clark Foundation, 2002).

Despite the failures in student achievement, schools must continue to recognize the need for reform and innovative ways to improve students' performance and teachers' delivery of instruction. These factors supported the significance of this study to further investigate related concepts of professional development and student achievement specifically to middle schools in a large urban district in South Florida. This study will provide administrators and policy makers in the urban district in South Florida with precise data to draw upon in making decisions about the use of professional development activities to improve student achievement.

<div align="center">Research Questions</div>

The research questions that influenced this study as it investigated the relationship between professional development and student achievement are:

1. Is there a significant difference in the three year annual average number of professional development points among schools at different FCAT grade levels (A, B, C, D or F)?

2. Is there a significant difference in the average three year time trend in professional development points per school among schools classified as improved, stable or declined in FCAT grade levels?

3. Is there a significant difference in the three year annual average number of professional development points among schools classified as improved, stable, or declined?

Research Hypotheses

There is little data to show the relationship of professional development to student achievement; there is, however, some evidence to suggest that teachers perform better if they are provided with opportunities to sharpen their skills and keep abreast of current trends and practices within the classroom (Darling-Hammond, 1997).

The study examined three groups of schools: those schools that showed improvement over time, schools that remained stable over time and schools that showed a decline over time. The hypotheses that were investigated are:

Hypothesis 1: There is no difference in the three year annual average number of professional development points among schools at every different FCAT levels (A, B, C, D, and F).

Hypothesis 2: There is no difference in the average three year time trend in professional development points per school among schools classified as improved, stable or declined in FCAT grade levels.

Hypothesis 3: There is no difference in the three year annual average number of professional development points among schools classified as improved, stable, or declined.

Limitations

At the time of this study, professional development was not required of teachers within this school district. It was left solely to the discretion of the teacher and principal of a school to seek professional opportunities to enhance one's knowledge. Therefore, the intensity of

professional development might have been influenced by the teacher who was motivated to look for opportunities to expand individual knowledge.

Another limitation is the leadership within the school. The principal can motivate, encourage, recognize or reward teachers with grant funds for seeking professional development, or by making funds available to hire temporary teachers in order to provide time for regular teachers to become engaged in professional development opportunities during the work day. However, if a principal does not have the vision or the funds available, teachers may not use their school time to obtain professional development. The teacher will then have to seek professional development on their time, and this might limit teachers with various personal and professional commitments like those with families or teachers who might be involved in other income related activities.

Another limitation of this study is that the individual school and district do not have a measuring device to determine which teachers have received professional development outside of the school's organization, i.e. university courses for degree purposes or university courses taken to renew the teaching professional certification, thus making it difficult to credit and monitor in-service points that may be used to influence the school's professional development activities, teaching practices as well as student achievement. The inability to monitor in-service points outside of the school may result in failure to draw an authentic reflection of the intensity of professional development on student achievement, leaving the study to conclude only on the registered professional development points given within the Miami-Dade County Public Schools

Theoretical Framework

Professional development programs and activities should have clear and specific goals which are driven by what participants already know. It begins where teachers are, recognizing

their prior knowledge and experiences, and helps them move to where they would be more effective in their classroom practices. The theoretical perspective that best models this philosophy is the constructivist theory which is based upon the concept that learning is an ongoing process where each person acquires knowledge differently. An individual can construct new knowledge based upon their cultural, social and physical environment which may originate from past experiences (Bruner, 1966; Guzman, 2000)

Learning styles differ for each person; the meaning that is extracted by the learner becomes unique with each experience. This individualized learning style enables the learner to become more engaged in the collaborative planning and problem solving activities (Bruner, 1966; Guzman, 2000; Merriam & Caffarela, 1999). This process is a collaborative effort among teachers and is a strong element of the constructivist theory that ties into the professional development process.

The constructivist theory creates an environment that is very diverse. The learner can conceptualize learning from the real-world or real-life experiences; encouraging learners to build on this reality-based experience. It is authentic, its sources are rich and do not require the individual to memorize a theory. Contextual tasks are drawn from environmental interaction that encourages thoughtful reflection while emphasizing collaboration rather than competition (Guzman, 2000).

Guzman (2000) acknowledges the relevance of prior knowledge to the learning process and stated, "If I had to reduce all of educational psychology to just one principle, I would say: 'the most important single factor influencing learning is what the learner already knows'" (p.20). The concept of prior knowledge and teacher experience becomes the foundation from which teachers can continue to build new skills and adapt to new expectations. Guzman (2000) suggested that

the learner's past experiences serve as the foundation to build new knowledge, which the learner continues to build upon, taking learning to a new level. These experiences are then transformed into creative strategies that are infused into the classroom to improve student performance, which will ultimately increase student achievement. The learner needs to know why they need to learn something, why the information is important, and how they can apply this new knowledge. The learner needs to embed knowledge into the learning experience to derive greater appreciation for the learning process. Learning is maximized when adults are internally motivated (Knowles, Holton, & Swanson, 1998).

Adult learners want learning to be practical, relevant, and immediately applicable, mirroring the professional development process as embedded in the constructivist theory. The learner, thus, has the responsibility to construct meaning from experiences and to justify that meaning to others through critical discourse. Knowledge is influenced but not determined by external methods, such as lectures, textbooks, computers, and other aides or devices. The actual learning will be determined by the dynamic interaction of these various media and with the individual's experiences within the cultural environment. The conceptual framework for constructivist theory is embedded in the concept that the learner develops his/her frame of conceptual thinking from involvement within the environment. The learner evolves from the ongoing experiences that progress to verbal abstraction and meaning. This learning process takes on new meaning as the individual moves in and out of his environment. This notion supports the basis that the learner is able to develop different strategies and incorporate them into various topics; therefore, the learner develops a conceptual ecology before even stepping into a classroom. The constructivist environment through professional development provides the basis for new ideas going beyond the zone and encouraging the learner's autonomy, securing or

solidifying the experiences that bring authenticity to the tasks that are linked to prior experiences. To this end, learning becomes experientially based. This authentic process serves to enrich the basis for teaching and learning in the classroom and encourages the adult learner to want to engage in the professional development process.

Within the past few decades, theories in education have moved from teacher-centered to learner-centered philosophies. However, the academic arena must continue to recognize these changes and provide ways for adult learners to have creative ways to complete and enhance their education. It must also allow them to connect between their experience and new knowledge that floods the academic "real world" and to learn how to link it to the classroom. The constructivist theory supports the professional development process and provides the frame for teachers to learn and improve their teaching skills from prior knowledge that opens the doors for innovative methods through interactive classrooms that can improve learning for all students where the ultimate end is improved student achievement (De Valenzuela, Connery, & Musanti, 2000).

Definitions

The following definitions are used to provide understanding of the concepts used in this study:

Professional development: is defined as the maintenance and enhancement of the knowledge, expertise, and competence of professionals throughout their careers. It involves updating knowledge and skills on existing and new areas of practice, preparation for a changing role in the organization, new responsibilities and promotion, increasing competence in a wider contest with benefits to the professional community, and personal roles.

Professional learning community: is defined within this study as the school/organization where the members are engaged in ongoing study and constant practice of improving one's self

and working together with others to achieve what they cannot accomplish alone through the process of collaboration.

Intensity: refers to the average number of in-service points earned by the teacher and the school in professional development activities.

Classroom practice: is defined as the method used by the teacher to deliver instruction within the classroom.

Developmental Scale Score: (DSS) is a term used by the Florida Department of Education to define a "student's annual progress from grade to grade. The FCAT Development Scale Score for Reading and Mathematics ranges from 86 to 3008 across grades 3-10" (*Understanding FCAT Reports,* 2004).

Florida Comprehensive Assessment Test: (FCAT) is the "state of Florida's assessment that measures student performance on selected benchmarks in reading, mathematics, and science as defined by the Sunshine State Standards" (*Understanding FCAT Reports*, 2004).

Student achievement: is the mastery of the curriculum content outlined in the Florida Sunshine State Standards and measured by the achievement test, FCAT.

Time frame: is the three-year period that this investigation focused on, investigating the FCAT scores of the middle schools.

Time trend: refers to the increasing, or decreasing, or no changes over time.

School grade: is the alphabetical grade assigned to schools by the state based upon the FCAT scores of the students within a particular school.

<div align="center">Summary</div>

Education throughout the late 20th and early 21st centuries continues to be characterized by the constant reform efforts that are driven by political agendas proclaiming that schools are

failing across America and that children are not ready to face the challenges to prepare them to become productive citizens (A Nation at Risk, 1983; National Assessment of Educational Progress, 1994).

Increasingly, lessons of the past decades are being re-examined by educators and combined with new research about learning to establish the most effective ways to improve a failing education system. Professional development has long been looked upon among the strategies for improving instruction within the classroom. This belief has led the leaders in the professional development field to call for improved and increased professional development in order to build teachers' skills and knowledge as a strategy for increasing student achievement. This chapter provided support for the need to further examine the relationship between professional development and student achievement in middle schools.

CHAPTER 2

REVIEW OF THE LITERATURE

<u>Introduction</u>

This chapter presents a review of the literature addressing the focus of this study and explores the assumptions that (a) professional development is essential for improving student achievement, (b) professional development influences teaching practices which impact student achievement, (c) student achievement as measured by the FCAT scores is an important variable of school grades, and (d) the intensity of professional development activities has an impact on student achievement.

Today's reforms in education focus on the new expectations for professional development as a means to increase student achievement and align teaching with the academic standards that are established for student achievement (Sparks & Hirsh, 1997). To this end, it is important that teachers see the need and want to enhance their effectiveness within the classroom, believing that they can make a difference. It is believed that successful learning is linked to teachers who are well versed in their subject content area, are not afraid to try new ideas, and are committed to students and their learning. As new reforms are developed within the schools and new standards are established, it becomes necessary for leadership to focus more on providing opportunities for educators to strengthen their practices and broaden their circle of professionalism.

Professional Development is Essential for Improving Student Achievement

Sparks (2002) provided a rationale for sustained professional learning. He discussed the importance for change and offered detailed descriptions of what new forms of professional development might look like in schools. He suggested that professional development is a vision

of student learning with a data-driven format that brings student learning to life. Professional development transforms the teacher by enhancing their practices and providing a stronger foundation for change to occur within the school.

Elmore (2002) challenged the educator to become a more cosmopolitan professional. That is, he advocated for teachers and principals to learn to look outside of their own particular niches for practices that are likely to work in their settings and base their practice decisions on research. The teacher workday should include more opportunities to be observed, to observe other teachers, and to look at practices outside of their classroom setting as a means of stimulating their current practices. Elmore suggested that external systems provide an opportunity to ask the questions: whether the quality of teaching is what it should be and if the quality of student learning is what it should be. This external accountability motivates schools to focus more on the higher standards for students.

Newcomb (2003) used Senge's *The Fifth Discipline* to build on organizational learning and asserts, "Kids learn in schools that learn." In order for children to learn well, the total organization must become learners. They must become aware of the need for change, collaboration, vision, and understanding in meeting the classroom challenges. Parents are also charged with the responsibility of professional learning. The total system must change, which ultimately leads to the change in the school and in students' achievement.

Darling-Hammond (1997) stressed the importance of professional development to teaching in the 21st century. America's teachers are being asked to update teaching strategies. They are required to pay closer attention to curriculum changes; to the learning styles of learners who enter the classroom; and to the necessity of engaging learners in activities to help them become better writers, mathematicians, and historians. Darling-Hammond continues to affirm the

need for teachers to be better prepared when they enter the classroom which requires ongoing professional learning opportunities that afford teachers the opportunity to connect with the students and create engaging learning environments.

Darling-Hammond and McLaughlin (1995) suggested that professional development is to improve student achievement and should involve teachers as both learners and teachers. They further suggest that educational reform be used as a tool to constantly shape and reshape ideas for professional development, for example, reviewing curriculum guidelines frequently and testing information and assessment tools and how they relate to the reform changes. Course mandates works best if teachers are given the opportunities to explore new information. Professional development helps teachers to explore opportunities to integrate theory with classroom practices. It serves as the bridge to connect teaching with the student and brings meaning to learning.

The Holmes Group (1995), a consortium of research universities, public school districts, and organizations representing professional educators formed a partnership with leading educational organizations which focused on the importance of professional development schools. The Holmes Group (1995) suggested that if reform is to occur, K-12 schools and universities must collaborate to create changes in the K-12 teaching environment. Opportunities must be provided for teachers' learning and for teacher empowerment. The need for partnerships between schools of education, the university, and the educational professions is an effort of the educational community and the political forces all coming together to strengthen higher education and the education profession.

Bunting (2002) discussed the importance of teachers understanding their needs and being willing to address those needs through professional development. Teachers should also be self-

directed and willing to make changes as well as be open to learning through discussions, reflections and active participation in the learning process.

A Nation at Risk (1983) reported on the state of the nation at risk. It suggested that Americans need to improve educational standards. Americans need to come to an understanding of the issues of education that help to shape the directions for the country. It reported that student achievement ranked last when compared to the industrialized nations; "some 23 million American adults are functionally illiterate by the simplest test of everyday reading, writing, and comprehension" (p. 3). It suggested that all Americans, regardless of economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit.

Westhaver (2003) believed that the classroom teacher is an esteemed member of the educational environment. There must be support and significant investments made to maintain the value that is needed for students to achieve academic success and for America to remain competitive with the rest of the industrialized world. Without qualified innovative teachers in the classroom, the investment in education has little value. Education is in a crisis and the United States must continue to call for accountability and improvement within schools. Westhaver continues to suggest the need to develop strategies that will help students and teachers deal with problems through professional development.

DuFour & Eaker (1998) explored professional learning communities and how they contribute to professional development. They suggested that the most sustained school improvement is building learning communities, which is the art of getting teachers to actively engage in meaningful interaction with each other through the collaborative process. They reviewed educational reform efforts during the twentieth century with emphasis on restructuring.

The complexity of the change process is examined in their work as well as the importance of embedding a change initiative in the schools in an attempt to improve teaching practices in a professional learning community. The concepts of shared decision making, mission, and vision are stressed as important elements in the staff development process.

Professional Development Influences Teaching Practices, Which Impacts Student Achievement

Porter, Garet, Desimone, Yoon, and Birman (2000) focused on professional development and how to use strategies to promote higher-order teaching within the classroom. The report also focused on the effects of professional development on improving classroom teaching practices. They took data from a sample of teachers to examine what impact professional development may have on the teachers involved in the program. The report found that teachers in the same school have quite different teaching practices, and the teaching practices did not change as much as was expected. The report suggested that, regardless of the average change over time in teaching practice in the sample studied, individual teachers do vary in their classroom practices and variations do occur in the classroom practice of individual teachers from year to year. These findings imply that the positive effects of professional development on teaching practice would increase if districts and schools provided a more intensive and consistent program of high-quality professional development for their teachers.

Darling-Hammond and Lieberman (1996) suggested that the success of high standards within our schools depends largely on the success of teachers and their ability to acquire the content knowledge and the instructional practices necessary to teach at a high level of academic standards. It is suggested that workshops that are more than one day are far more beneficial for teachers. Opportunities are provided for them to question, analyze, and collaborate to stimulate

their thinking beyond the textbooks, developing new strategies that encourage critical thinking within the classroom.

Mahon (2003) suggested the need for sustained improvement in middle school students' performance, and this can be accomplished when professional development opportunities are provided to create a climate of intellectual development among teachers. The focus on professional development is on student results and student learning. Professional development is more effective when there is a relationship between the content and the teaching method. The teacher's pedagogy is expanded and supported by research-based methods, enhancing the teacher's ability to teach the subject's content and helping the student to master new skills. These programs are best reviewed through professional development opportunities.

Darling-Hammond (1997), in a report prepared for the National Commission on Teaching and America's Future, reported the commission's findings that it is difficult for schools and teachers to achieve new educational goals because they are lacking the educational skills needed, and teachers do not receive the support from the states and/or school districts. The report made several recommendations which included restructuring professional development activities where teachers will have continuous access to the latest knowledge about teaching and learning. The commission recommended that states, schools, and colleges organize teacher education and professional development around standards for students and teachers and embed professional development in teachers' daily work through joint planning, study groups, peer coaching, and research. The commission recognizes the importance of teaching practices within the classroom. When teachers received quality in-service or staff development based on the curriculum, they were learning new strategies that yielded higher achievement for students on state assessment measures. In addition, the report found that professional development was effective when

teachers were working directly with one another and with experts on new student curriculum

materials related to specific concepts. The report asserted that students' performance was higher

when teachers had extended opportunities to learn about content curriculum, such as

mathematics, that focused on enhancing teachers' understanding of mathematics, its teaching

strategies, and the implementation of new approaches.

Darling-Hammond (2003) suggested that there must be a paradigm shift from the way

teachers were trained to a model in which teachers are more engaged in research-based pedagogy

directly evaluating their practices and using colleagues for assistance. She suggested that this

kind of professional development helps teachers develop better self-esteem about their practices

while increasing learning gains for students in a time when accountability is at the top of the list

for student achievement. She purports that teachers need to have a deep understanding of the

subject matter so that they can help students create useful cognitive maps, relate ideas, and

address misconceptions. Teachers need to see how ideas connect; teaching must be experimental,

sustained, and intensive, addressing specific problems that stimulate critical thinking.

Fisher (2002) believed that, in order to hold teachers accountable, districts must provide

professional development that will teach the teachers how to teach the students. He proposed that

this is the first step to improving student achievement. Schools need to determine what strategies

are needed to bring meaning to the classroom and then develop professional development that

will teach those specific strategies. Strategies on which to focus are writing, reading aloud, KWL

(what I know, what I want to know, what I learned), reciprocal teaching, vocabulary

development, concept mapping, and structured note taking. These instructional strategies are

research-based and executable by all teachers. The belief is that when instruction is provided

students will achieve higher test scores.

After completing a study on a high school on the West Coast, Fisher (2001) described specific innovations to guide professional development activities. In his report, he asserted that significant attention has been given to improving student achievement and teacher accountability using different models. The models he examined focused on student outcomes rather than teacher processes, suggesting that the current systems of accountability are based on reading and mathematics scores, rather than on the procedures or processes teachers used to affect the outcome. Student test scores in reading and mathematics are used to measure accountability. Rarely is accountability measured by teachers' performance and strategies within the classroom. Instructors devoted their time to extending their knowledge on specific instructional strategies, improving their literacy as a means of improving student achievement. Teachers and administrators are held accountable in significantly improving student achievement.

Guzman (2000) asserted the importance of prior knowledge of the learner, is for the teacher to build new levels of knowledge. He postulates that these experiences are transformed into creative learning and help to promote the critical thinking of the learner. This prior knowledge concept supports the conceptual framework for professional development and the importance of building new knowledge.

Osterman and Kottkamp (1993) used the conceptual bases of reflective practices as a means of improving schools from within. The underlying assumption of their study was that professionals should engage in reflective practices to develop a new awareness of their own performance and to improve their practices through professional development opportunities. It is a way of having individuals work to improve the organization through improving themselves. Creating change and improving practices within the classroom ultimately impact student

achievement. Professionals must examine their own behaviors, review their performance, and make adjustments to create change in the classroom.

Timperley and Phillips (2003) suggested that changing expectations should become an integral part of all professional development aimed to improve achievement of students from low-income areas. They postulated that when teachers believe that students cannot achieve or their achievement is lower than other students the decisions that the teachers make toward the students are likely to include lessons that are non-challenging. Therefore, teachers will teach less to the students instead of more. Their study further suggested that any professional development to assist teachers in changed expectations about the progress of children can make a difference in schools and change the understanding of what children can and will learn.

Student Achievement as Measured by the FCAT Scores

Holloway (2003) asserted that the No Child Left Behind Act adds momentum to the states' accountability efforts that focused on professional development and the need to use student assessment results systematically to identify professional development needs and to design professional development opportunities for teachers. Holloway (2003) further suggested that teachers are trained on how to use formative assessment which can be used to guide instruction to enhance the individual student needs. Using data allows educators to focus on the specific needs of students, and professional development can then be planned around the student achievement goals, which become more meaningful to teachers enabling them to base their instructional decisions on what students need.

Guskey (2003) stated that the accountability requirements in the NCLB legislation focus on the regular assessment of student performance and evaluation of assessment results in terms of adequate yearly progress. The emphasis is on student improvement rather than on the status of

the student. Guskey (2003) suggested that educators must disaggregate data results by poverty, ethnicity, language, and disability status to ensure that all student groups are progressing proficiently, and this must be defined by each state's standards for learning. Florida's standards for learning and student learning gains are determined by the FCAT (Florida Department of Education, 2004).

Guskey (2003) asserted in his report on characteristics of effective professional development that the research supporting professional development is sometimes changeable and often conflicting. Nevertheless, he argues that there need to be criteria put in place for consistency on what is considered effective professional development. He notes that in spite of the lack of empirical research, teacher understanding of the content they are teaching and students' comprehension are essential factors to measure the effectiveness of professional development. This report also suggested that the time spent in professional development activities was unrelated to student improvements. Effective professional development requires time; however, that time must be well planned with appropriate goals and objectives that are focused on student outcomes. This conclusion was particularly important to this study as the research examined the relationship between time (the intensity) of professional development, and student achievement.

The Florida Department of Education (2004) stated that the purpose of the Florida Comprehensive Assessment Test is to assess the achievement of higher-order cognitive thinking of students who are presented with the Sunshine State Standards for reading, writing, mathematics, and science. It further compared the performance of Florida students in reading and mathematics to the performance of students across the nation on the norm-referenced test (NRT).

The Guide to Calculating School Grades (2003) provided the guidelines used to determine school performance grades for the 2003 school year and shows how it differs from the 2002 calculation. The school performance grades are determined by the accumulation of percentage points for six measures of achievement. Each of the measures represents the percent of students attaining the criteria. They are:

1. the percent of students meeting high standards in reading,

2. the percent of students meeting high standards in mathematics,

3. the percent of students meeting high standards in writing,

4. the percent of students making learning gains in reading,

5. the percent of students making learning gains in mathematics, and

6. the percent of lowest-performing students making learning gains in reading.

In addition, schools are also evaluated on the basis of the percent tested, adequate progress of the lowest 25%, and similar reading learning gains. This report provided a detailed description of each of these categories and showed how the calculation is summed.

School Performance Grading Criteria

Guide to Calculating School Grades (2004) states that school grades are awarded by giving one point for each percent of students who score high on the FCAT and/or make annual learning gains. In addition, schools earn one point for each percent of students who scored in achievement levels 3, 4, or 5 in reading and mathematics. The writing examination is averaged with the percent of students scoring 3.5 and above to yield the percent meeting minimum and higher standards. Schools earn one point for each percent of students on the combined measure. Schools earn one point for each percent of students who make learning gains in reading and mathematics.

Students can demonstrate learning gains by improved achievement levels from 1-2, 2-3, 3-4, or 4-5; maintain their score within the high levels of 3, 4, or 5; or demonstrate more than one year's growth within achievement levels 1 or 2. In addition, special attention is given to the reading gains of students in the lowest 25% in levels 1, 2, or 3 in each school (p. 3).

Schools also earn one point for each percent of the lowest performing readers who make learning gains from the previous year. Students who are included in the school grade calculations are standard-curriculum students who were enrolled in the same school in both October and February of the testing year. Speech-impaired; gifted; hospital/homebound; and Limited English Proficient students with more than two years in a bilingual program are also included (p. 3).

The Guide to Calculating School Grades (2004) describes the school performance grading scale and the total points a school must earn to receive a performance grade:

Table 1

School Performance Grading Scale

Grade	Total points
A	410 and above
B	380-409
C	320-379
D	280-319
F	Less than 280

Understanding FCAT Reports (2001-2004) is a report published by the Florida Department of Education that provided explanation of reports that were developed by the State of Florida in order to create an understanding of the Florida Comprehensive Assessment Test. It

was used in this study to better understand the achievement levels described and the success rate of a student in relationship to the Florida Sunshine State Standards.

The Intensity of Professional Development Activities on Student Achievement

Darling-Hammond and Berry (1998) supported the need for the intensity of professional development to raise teaching standards that ultimately impact student achievement. The report suggested that parents support the idea of the need for quality in the delivery of instruction as the main factor that matters when it comes to student learning, and that there is a connection between good teachers and improved student achievement. The report further suggested, not only does teacher education matter but also the amount of continued education; the more teacher education and professional development, the better the chance for teachers to raise their teaching standards. It purports more is better than less, especially when teaching includes years of experience embedded with solid curriculum. The practical experiences are most beneficial and can be obtained through professional development over time.

Parsad, Lewis, and Farris (2000) reported their analysis of the findings of the sample survey conducted by the National Center for Education Statistics (NCES) (1998 and 2000). The key findings from the report suggested that the amount of hours related to professional development may have some impact on the delivery of instruction from the classroom teacher and may impact student achievement. The intensity of the professional development is more likely to improve teaching.

Summary

The literature presented in this chapter addressed professional development and student

achievement, professional development and teaching practices, student achievement as measured

by the FCAT scores, and the intensity of professional development activities and its impact on

student achievement. These four areas support the assumption of this study that professional

development is essential for improving teaching to impact student achievement. The literature

also highlights the intensity, or the amount of professional development received by teachers as

they become better prepared for the classroom. The assumption that more professional

development might be needed to enhance the instructional practices is extracted and will be

explored in the data analysis. Another assumption that teachers need professional development

beyond the one-time workshop or university class is evident within the literature and supports the

conceptual basis for this study. More professional development is needed to give teachers new

insights and stimulate them to include higher-order/critical thinking strategies in their classroom

practices. Given the knowledge obtained from the experts within the literature, it is perceived

that data from this study will make a meaningful contribution to the field of professional

development and student achievement. The data will also contribute to the new area of

educational accountability (FCAT school grades) and its impact on teacher delivery of

instruction as well as student achievement. The information on the FCAT, school grades, and

student performance on the FCAT is scarce. This study will contribute to the expansion of

information and literature and become a resource for educational experts who continue to pursue

ways to improve student achievement. Chapter 3 will describe the research design of this study.

CHAPTER 3

METHODOLOGY

The methodology of this study used quantitative research to examine the relationship between the intensity of professional development and student achievement in middle schools in a large urban school district in South Florida as measured by the Florida Comprehensive Achievement Test (FCAT). This chapter provides a description of the research design, population and sample, procedures, as well as materials, data collection, and data analysis.

Research Design

The research design was nonexperimental because there was no manipulation of the independent variable by the researcher and there was no random assignment of participants. The data on which the conclusions were based was archival. It sought to investigate the relationship between professional development and student achievement as measured by FCAT school grades in middle schools (Gay & Airasian, 2000).

In this study the groups were predetermined by the FCAT school grades and were identified by the Florida Department of Education. Professional development points were predetermined by the number of points earned by the teachers within the schools over the three-year time frame and cannot be manipulated or controlled by the researcher.

The schools in this study were identified by the Florida Department of Education and for purposes of this study were grouped into three different groups of schools and were categorized as (1) schools wherein the school's FCAT grade improved over a three-year time frame, (2) schools wherein the school's FCAT grade remained stable over a three-year time frame, and (3) schools wherein the school's FCAT grade declined over a three-year time frame. School grade is

defined as the letter grade (A, B, C, D, or F) given to the school by the Florida Department of Education based upon the cumulative FCAT achievement scores earned by the students within the school.

The statistical measures used in this study are, a one way analysis of variance (ANOVA), t-tests and repeated measures to investigate the significant difference in professional development points among schools with different FCAT school grade. The ANOVA was also used to examine if the time trend in the average number of in-service points earned per teacher over the three-year time frame was different for the three groups of schools that were previously described.

Figure 1 is a visual of the possible representation and relationship between professional development and categories of schools as determined by the FCAT grades.

Figure 1

Relationship between Professional Development and Student Achievement
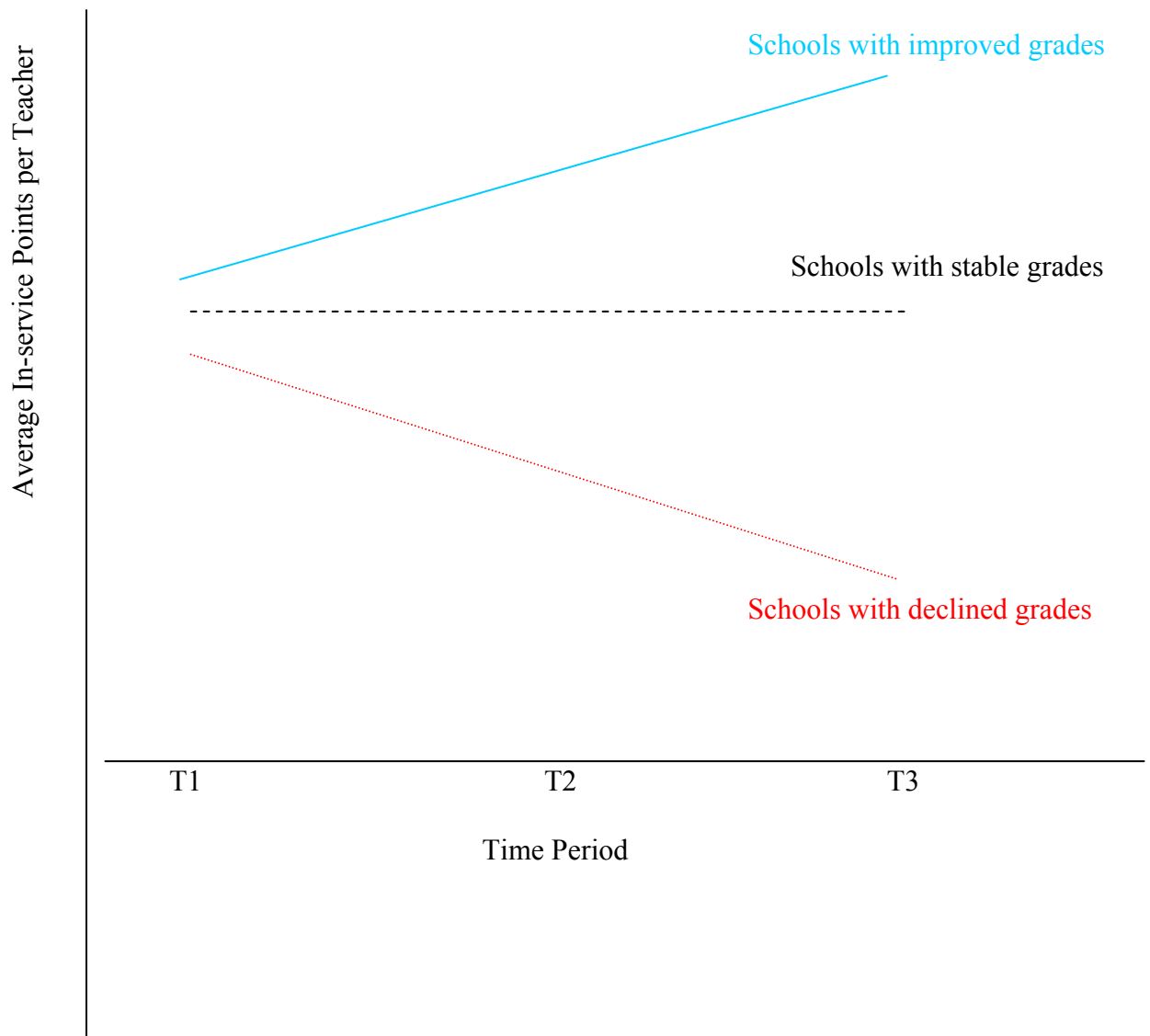
Time period = T1 = 2001 - 2002 Year; T2 = 2002 - 2003 Year; and T3 = 2003 - 2004 Year

Population and Sample

The sample of schools was composed of all middle schools within a large urban school district in South Florida, serving diverse ethnic backgrounds including Exceptional Student Education (ESE) students and Limited English Proficient (LEP) students. The schools do not include Exceptional Education Centers, or Alternative Education Centers, which require special district approval for enrollment.

The researcher selected this urban school district because it would yield an adequate sample size for the following reasons: 1) accessibility to data, 2) the many questions posed by educators in the district concerning the FCAT scores and its impact on teaching in the classroom, 3) the decline in student FCAT scores as well as the resulting decline in FCAT school grades within this school district. The literature is scarce on FCAT scores or school grades and its impact on student achievement and professional development. This study will add to the data sources on FCAT school grades, school achievement, professional development, and student achievement as it relates to the FCAT scores.

The demographics for schools in this district are ethnically diverse, showing White Non-Hispanic at 10%, Black Non-Hispanic at 29%, Hispanic at 59%, and others at 2%, with an enrollment of over 369,000 students in elementary, middle, and senior high. The demographics for middle schools involved in this study showed White Non-Hispanics at 10%, Black Non-Hispanics at 29%, Hispanic at 59% and others at 2%, an enrollment over 80,000 students, evidence of a large urban school district. The overall population for teachers in the middle schools who participated in teacher in-service over the three-year timeframe is also ethnically diverse: White 30%, Black 32%, Hispanic 36%, and others at 2%. District-wide, there is a

similar distribution of teacher ethnicity: White at 30%, Black at 27%, Hispanic at 41%, and others at 2% (District & School Profiles 2002 – 2004)

These demographics provide an understanding of the make up of the overall districts' population.

The schools' FCAT grades were determined by the accumulation of percentage points for six measures of achievement that are determined from the students' FCAT scores in reading, mathematics, and writing. The measures are:

1. the percent of students meeting high standards in reading,

2. the percent of student meeting high standards in mathematics,

3. the percent of students meeting high standards in writing,

4. the percent of students making learning gains in reading,

5. the percent of student making learning gains in mathematics, and

6. the percent of the lowest performing students making learning gains in reading (2004
    Guide to Calculating School Grades Technical Assistance Paper, pp. 2-3).

The study also did not involve teachers. The computerized data stored with the Information Technology Services (ITS) of the district was requested and used to determine the total in-service points earned by teachers within a school. Teachers were unknown to this study and were identified only by gender and ethnicity.

Instrumentation

There were no instruments designed or used for this study. However, the study used the Florida Comprehensive Achievement Test (FCAT) data that was released by the Florida Department of Education (2002, 2003, and 2004) and data from the school district Information Technology Systems (ITS) for Professional Development In-service Points (PDIP) earned during

the 2001 – 2002, 2002 – 2003, and 2003 - 2004 school years by teachers within the middle schools.

For purposes of understanding the Florida Comprehensive Assessment Test (FCAT) this study reviewed the procedures for the development of the FCAT and its reliability and validity provided by the state.

The *Florida Department of Education Assessment & Accountability Briefing Book* (2004); *Understanding FCAT Reports* (2002, 2003, 2004) shows that the FCAT is the instrument used by the state to measure students' knowledge and achievement. It was designed to assess the levels of students' achievement level of the Sunshine State Standards in reading, mathematics, science, and writing. There are five levels of proficiencies reported for the test Levels 1 through 5, with Level 1 being the lowest and level 5 the highest. Students must obtain a level 3 or above to have demonstrated proficiency in the areas tested (Florida Comprehensive Assessment Test, 2004).

The FCAT is part of a program established by the Office of Assessment and Evaluation of the State of Florida to measure student achievement of the Sunshine State Standards. Citizens and educators are selected and trained using the Sunshine State Standards and Florida Comprehensive Assessment Test item specifications. The participants included teachers, administrators, business leaders, universities, professional organizations, and nationally known educators who formed committees that developed test items and conducted reviews to determine whether the passages or items were appropriate for the grade level for which each test was designed (pp. 16-19). These individuals were also asked to evaluate whether the items measured the benchmarks, and if they were clearly worded, whether items have one and only one correct answer, as well as the level of difficulty. These committees also represented various groups that

are potentially affected by the types of biases that may be viewed across the state, i.e. Title I

Program, English for Speakers of Other Languages (ESOL) and Equal Education Opportunity

(EEO). LEP students are assessed with accommodations, but no adjustments are made in their

test scores. Every attempt is made to have representation from the general population to study

biases in the item content of the test. The participants reviewing the tests are required to meet

once a year to discuss and review field-test responses and to verify the range of student responses

that represent each item or prompt (*Florida Department of Education Assessment &*

Accountability Briefing Book, 2004; *Understanding FCAT Reports,* 2002, 2003, 2004).

There was also no instrument designed or used to measure the professional development

in-service points. Points earned by the teachers within the schools were obtained from the

Information Technology Services of the school district. The data was compiled through the

District's mainframe that tracks the professional development in- service points reported for all

instructional personnel within the District. The points were accumulated by the teachers from the

hours engaged in professional development activities during the specific school year. The report

showed that 51% of the teachers participated in professional development in each of the years for

this study. The description of the professional development that were taken showed that courses

were subject content related and can be defined as courses designed to assist teachers in

improving their classroom practices. This data was used to determine the average number of in-

service points earned by teacher and the school during the school year.

Reliability and Validity

The Florida Department of Education Assessment & Accountability Briefing Book

(2004) reported that internal consistency was determined for the FCAT using Cronbach's Alpha

and Item Response Theory (IRT) marginal reliabilities. The FCAT reliability was measured by

several methods on a scale from 0.00 to 1.0. The higher the index value the stronger the test reliability. This information is compiled and reported by the State of Florida and is designed to give the citizens an understanding of the reliability and validity of the test (pp. 17 – 27). The report data showed that the FCAT is a highly reliable test for assessing the educational achievement of students in Florida schools, and the content validity supports the Florida Sunshine State Standards (SSS) and meets the professional standards for standardized achievement tests. (*Florida Department of Education Assessment & Accountability Briefing book, 2004*).

The Assessment and Accountability Briefing Book (2004) reported some of the steps used by the state to determine high content validity were as follows:

1. Educators and citizens judged the standards and skills.

2. Item specifications were written.

3. Test items were written according to the guidelines provided by the item specifications.

4. Test items were pilot tested using randomly selected groups of students at appropriate grade levels.

5. All items were reviewed for cultural, ethnic, language, and gender bias, and for issues of general concern to Florida citizens.

6. Items were field tested to determine their psychometric properties, etc.

The FCAT technical reports provided evidence and support that the FCAT reading and mathematics tests have substantial reliability and validity (Assessment & Accountability Briefing Book).

Data Collection Procedures

The researcher began collecting the data for this study by obtaining permission from the Barry University Institutional Review Board (IRB). This study was deemed exempt by the IRB because all data obtained for the study was available to the public via the World Wide Web (Internet) and through the school district's Information Technology Services (ITS). In addition, a statement of the research problem, a literature review, an explicit statement of the questions to be addressed, and a statement of the design and methods of analysis along with a guarantee to ensure that all rights of participants/organizations are respected were submitted to the school district in which the research was conducted.

The study did not involve students or names of personnel/teachers within the school district. The researcher requested data that reflected the number of in-service points earned by each teacher in each of the middle schools in the district, a cumulative total of the points earned per teacher, a cumulative total of the points earned per school, and the ethnicity and gender of each teacher who had earned in-service points for the time period of this study. The time period of the study was: the 2001-2002, 2002-2003, and 2003-2004 school years.

This data on in-service/professional development points is often used by teachers for re-certification purposes and is available to individual teachers upon request. Additional information was obtained on the District's summary reports for each school from the (*District & Schools Profiles (2002 - 2004)*).

The data collected focused primarily on teacher in-service points. The points accumulated by each teacher were totaled and divided by the total number of teachers to get the average points per teacher and points per school were totaled and divided by the total number of schools

to get the average points per school. The results yielded the average number of in-service points earned by the teacher and the average number of in-service points earned per school.

The researcher obtained information on FCAT school grades from the Florida Department of Education's web site (www.fldoe.org). This information was used to categorize the school grades into the three categories for purposes of this study. Category one focused on schools that improved over the three-year time period of this study; category two focused on schools whose school grades remained stable over the three-year time period; and category three focused on schools whose school grades declined over the three-year time period.

There were no instruments designed or used for this study. However, because the FCAT is an assessment instrument and is used as the measure to determine school grades as well as students' achievement gains, data was obtained from the Florida Department of Education's web site through the Assessment & Accountability Briefing Book (2004) on the reliability and validity of the FCAT assessment test. This information was used to provide an understanding of the areas being measured and how school grades were determined. Information was also obtained from the report Understanding FCAT Reports (2002, 2003, and 2004), to provide additional understanding of the development of the FCAT assessment. This information is also provided to parents and citizens via the individual schools and is available for print via the Internet.

There was no need to modify any of the data collected. The data collected will be maintained and filed in the researcher's home office for a five-year time period.

Data Analysis

The computer software program, Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The in-service points for the three groups of schools were summarized

with descriptive statistics, means, and standard deviations for each group. The scores were compared to detect any significant differences among the groups over the three-year timeframe.

Three research questions guided the study:

1. Is there a significant difference in the 3-year annual average number of professional development points among schools at different FCAT grade levels (A, B, C, D or F)?

2. Is there a significant difference in the average 3-year time trend in professional development points per school among schools classified as improved, stable or declined in FCAT grade levels?

3. Is there a difference in the 3-year annual average number of professional development points among schools classified as improved, stable or declined?

The data was analyzed using the SPSS software for statistical calculation. A one-way ANOVA was used to show the average level of professional development among the three grade levels of schools. The linear regression was used to measure the slope of the time trend line for professional development.

The purpose of this study was to investigate the relationship between professional development and student achievement in middle schools in a large urban school district in South Florida. The task was to review the data to determine if the intensity of professional development received over the time frame made a significant difference in middle school FCAT schools grades. The research of this study was accomplished through the data collected and analyzed and will be presented in Chapter 4 of the study and discussed further in Chapter 5 with recommendations for future studies**.**

CHAPTER 4

RESULTS

Introduction

Chapter 4 presents the results of this study as it explored the following research

questions:

1. Is there a significant difference in the 3-year annual average number of professional

    development points among schools at different FCAT grade levels (A, B, c, D or F)?

2. Is there a significant difference in the average 3-year time trend in professional

    development points per school among schools classified as improved, stable or declined

    in FCAT grade levels?

3. Is there a difference in the 3-year annual average number of professional development

    points among schools classified as improved, stable or declined in FCAT grade levels?

The research questions provided a framework for the research hypotheses that examined the

relationship between the intensity of professional development activities in the middle schools

over a three-year timeframe and student achievement as measured by the schools' FCAT grades

within the same three-year timeframe.

The study examined the middle schools within the school district that received

professional development activities over a three-year timeframe. The schools are classified as

middle by their grade levels: grades 6, 7, and 8. This sample of schools does not include charter

schools, alternative schools, or exceptional student education centers, which require special

application or district assignment for placement and are not considered standard middle schools.

The teachers in the middle schools sampled included 1209 males and 2911 females, a

total of 4120 teachers that participated in professional development and received in-service

points over the three-year timeframe. The schools' FCAT letter grade was obtained from the

Florida Department of Education archives for the three-year timeframe.

Exploratory Data Analysis

In order to identify middle schools in the three categories, improved school grades, stable

school grades, and declined school grades, the researcher first determined all of the different

"patterns" of school grades for the middle schools over the three years. Therefore, schools with

similar or identical patterns were categorized into the same classification to determine the

different patterns of school grades.

As shown in Table 2, there were 15 different patterns of school grades. These 15 different

patterns of grades were placed into four classifications, three of which were already anticipated

for the analysis. They are (1) schools that improved their letter grade; (2) schools that had the

same letter grade; and (3) schools whose letter grade declined. A fourth unanticipated category

was discovered during the analysis: schools whose scores both improved and declined. The

schools within this fourth category were few in number (n=5) and could not be classified as

improved, stable, or declined.

Table 2

Pattern of Grades

Pattern of grades	Number of schools	Percent	Valid percent	Cumulative percent
AAA	7	13.2	13.2	13.2
AAB	4	7.5	7.5	20.8
ABB	2	3.8	3.8	24.5
BAB	1	1.9	1.9	26.4
BBB	5	9.4	9.4	35.8
BBC	5	9.4	9.4	45.3
CBC	4	7.5	7.5	52.8
CCC	9	17.0	17.0	69.8
CCD	7	13.2	13.2	83.0
CDD	2	3.8	3.8	86.8
CDF	1	1.9	1.9	88.7
DCC	1	1.9	1.9	90.6
DDC	1	1.9	1.9	92.5
DDD	1	1.9	1.9	94.3
DDF	3	5.7	5.7	100.0
Total	53	100.0	100.0	

The number of schools and classification of grade patterns are shown in Table 3.

Table 3

Classification of Grade Patterns

	Number of schools	Percent	Valid percent	Cumulative percent
Down	24	45.3	45.3	45.3
Steady	22	41.5	41.5	86.8
Up	2	3.8	3.8	90.6
Up and down	5	9.4	9.4	100.0
Total	53	100.0	100.0	

Classification of Professional Development

The "time trend" in the average professional development points earned per teacher over the three-year timeframe was used as the measure of change in the intensity of professional development. A time trend was calculated for each school separately. The time trend line is the regression line for the three data points. Specifically, the measure of change in the intensity of professional development is the slope of the trend line, which is the regression coefficient for the time variable. The regression is used to calculate the time trend in a more rigorous and objective way rather than a subjective way like "eye balling each line."

Figure 2 illustrates the regression time trend line for a school that increased the intensity of professional development activities.

Figure 2

Regression Line: Schools that Increased Intensity of Professional Development
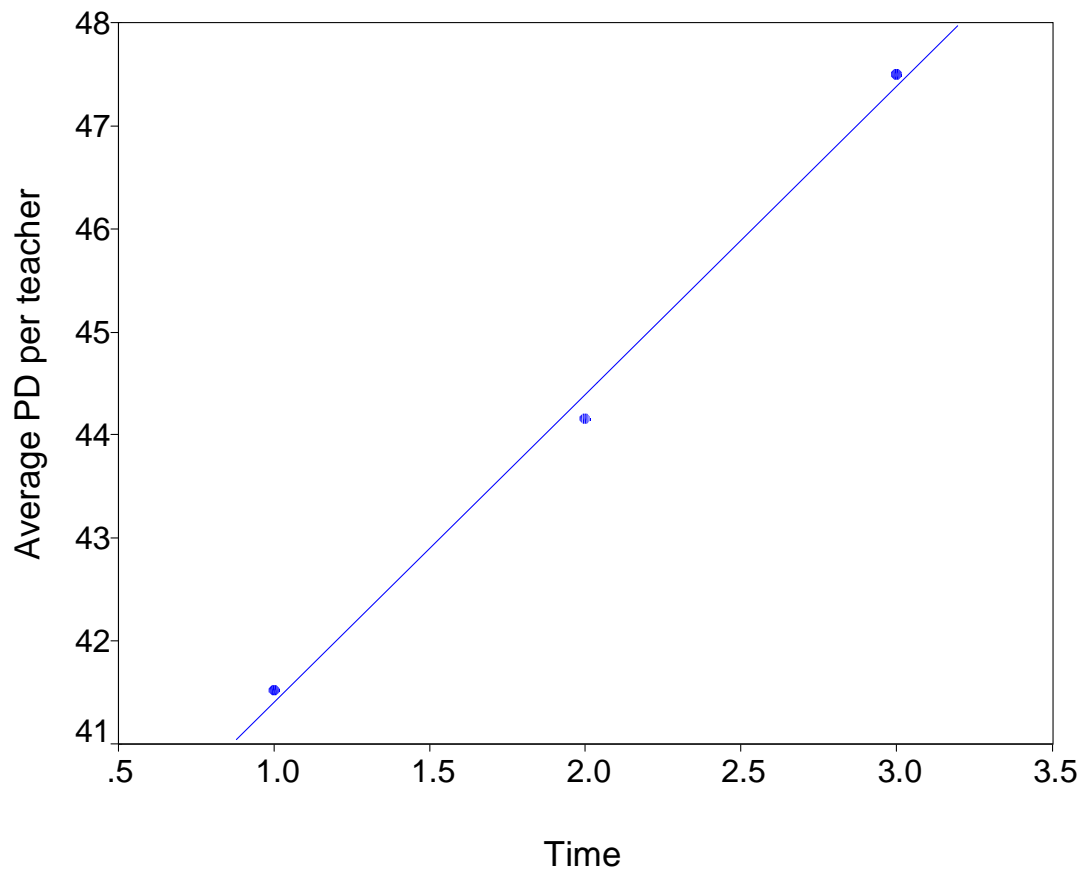
PD is measured by the total number of in-service points earned by teachers in a given school, divided by the number of teachers in that school.

Time is a three-year timeframe beginning with: Year 1.0, 2001 - 2002; Year 2.0, 2002 - 2003; Year 3.0, 2003 - 2004.

Figure 3 illustrates the regression time trend line for a school that decreased the intensity of professional development activities

Figure 3

Regression Line: Schools that Decreased Intensity of Professional Development

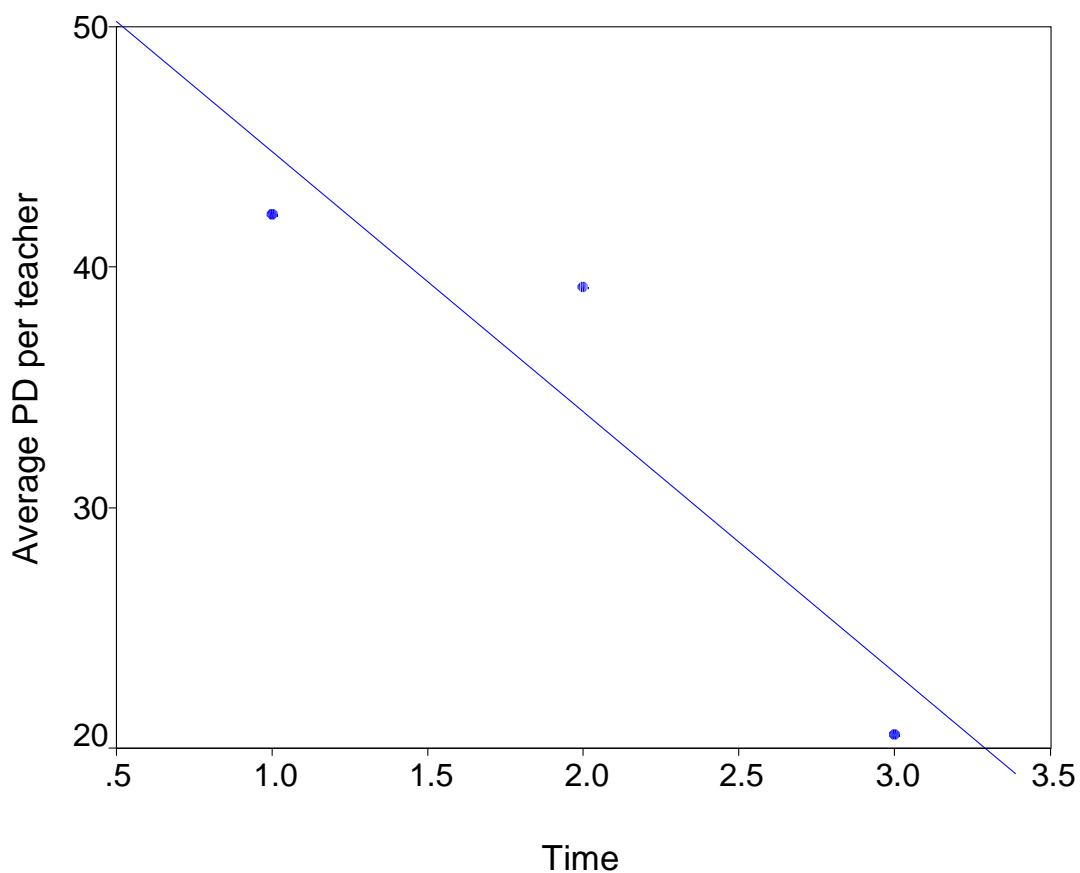Professional Development (PD) is measured by the total number of in-service points earned by teachers in a given school, divided by the number of teachers in that school.

The results of the hypothesis testing yielded four classifications in the pattern of school grades:

1. Schools whose grades improved (n=2). This sample size was so small that it was impossible to utilize it for hypothesis testing.

2. Schools whose grades remained stable (n=22).

3. Schools whose grades declined (n=24).

4. Schools whose grades improved and declined (n=5).

The fourth classification was not anticipated and was ambiguous in terms of the interpretation of whether the schools had improved or declined. Because these schools could not be objectively classified as up, improved, stable or declined, they could not be used for hypothesis testing. In addition, the sample size was too small (n=5) and had no clear interpretation of change. Consequently, this leaves two classifications of grade patterns, stable and declined grades, which were used for hypothesis testing. Category 4 schools were omitted from the data analysis since they were not included in the original design.

Results of Hypothesis Testing

Hypothesis 1: There is no difference in the 3-year annual average number of professional development points among schools at every different FCAT level achieved.

The concept of "student achievement" was operationalized as the typical grade the school received over the three-year period. The school's typical grade is defined as the grade received in two or more time periods. This was related to average professional development points per teacher over the three-year period, and it was related to average professional development points per school over the three-year period.

As shown in Table 4, there are four groups of schools defined by their typical grade.

Table 4

Typical Grade

Typical grade	Number of schools	Percent	Valid percent	Cumulative percent
A	11	20.8	20.8	20.8
B	13	24.5	24.5	45.3
C	21	39.6	39.6	84.9
D	8	15.1	15.1	100.0
Total	53	100.0	100.0	

A one-way analysis of variance was conducted to evaluate the relationship between intensity of professional development and student achievement. The independent variable, the student achievement factor, included four levels of school grades A, B, C, or D.

The dependent variable was the average number of professional development points per teacher in each school. The ANOVA yielded significant results $F(3, 49) = 7.44, p < .001$. The strength of the relationship between student achievement and the intensity of professional development as assessed by η^2 was strong student achievement associated with 31% of the variance of professional development per teacher. Follow-up tests were conducted to evaluate pairwise differences among the means. The means and standard deviations for the four student achievement groups are shown in Tables 5 and 6.

Table 5

Means and Standard Deviations for Schools' Average Professional Development among Schools Grouped by Typical FCAT Grade

Variable	A Schools		B Schools		C Schools		D Schools	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Average PD per teacher	41.23	1.80	36.39	1.64	36.83	1.30	28.21	2.11
Average PD per school	3275.33	790.85	2752.62	730.12	2831.17	593.80	1752.29	391.55

There was a significant difference in the means between the A, B, and C schools and the D schools, but no significant differences among the A, B, and C schools. The D schools showed a lower intensity of professional development in comparison to the A, B, and C schools.

The hypothesis test was repeated using average professional development points per school as the measure of intensity of professional development. As shown in Table 5, the ANOVA yielded significant results, $F(3, 49) = 8.75$, $p < .001$. The strength of the relationship between student achievement and the intensity of professional development, as assessed by η^2, was strong student achievement associated with 35% of the variance of professional development per school.

Table 6

One-Way Analysis of Variance for Effects of Schools' Typical FCAT Grade on Two Measures
of Intensity of Professional Development

Variable and source	df	SS	MS	F
Average PD per teacher				
Between groups	3	796.73	265.58	7.44[***]
Within groups	49	1749.07	35.70	
Average PD per school				
Between groups	3	11133498	3711166	8.75[***]
Within groups	49	20776537	424010	

[***] $p < .001$.

Follow-up tests were conducted to evaluate pairwise differences among the means. The

means and standard deviations for the four student achievement groups are shown in Table 6.

There was a significant difference in the means among the A, B, C schools and the D schools,

but no statistically significant differences among the A, B, and C schools. The D schools showed

a lower intensity of professional development in comparison to the A, B, and C schools. Thus the

researcher rejects Hypothesis 1.

Hypothesis 2: There is no difference in the average 3-year time trend in professional

development points per school among schools classified as improved, stable or declined in

FCAT grade levels.

An independent-samples t test was conducted to evaluate the hypothesis that schools with

stable FCAT grades will have a bigger time trend in professional development points than

schools with falling FCAT grades as shown in Table 7.

Table 7

Mean Differences for Time Trend in PD between Schools with Steady FCAT Grades and Schools with Falling FCAT Grades

Time trend	Stable		Declining		
	M	*SD*	*M*	*SD*	*t* (44)
Professional development points	2.771	6.32	.625	5.30	0.218

While the time trend was higher for the stable schools (M = 2.771, SD = 6.32) than for the declining schools (M = 0.625, SD = 5.30), the test did not yield significant results, *t* (44) = 1.251, *p* = .218 as shown in Table 6. The evidence was not strong enough to demonstrate a relationship between falling levels of professional development activity and declines in student achievement as measured by falling school grades. The researcher failed to reject Hypothesis 2.

Hypothesis 3: There is no difference in the 3-year annual average number of professional development points among schools classified as improved, stable or declined in FCAT grade levels.

An independent-samples *t* test was conducted to evaluate the hypothesis that schools with stable FCAT grades will have a higher average intensity of professional development points as compared to schools with declining FCAT grades.

While the average number of professional development points per teacher was higher for the schools with stable grades (M = 37.03, SD = 7.55) than for the schools with declining grades (M = 34.88, SD = 7.20), the test did not yield significant results, *t* (44) = 0.99, *p* = .327, as shown in Table 7. Therefore, there is not enough evidence to demonstrate a relationship between the average level of professional development activity and declining school grades. The result is the

same when professional development activity is measured as the average number of points per

school. Thus, the researcher failed to reject Hypothesis 3.

Table 8

Mean Differences for Average PD point per Teacher between Schools with Steady FCAT Grades
and Schools with Declining FCAT Grades

	Steady		Down		
Average	M	SD	M	SD	t (44)
Professional development points	37.03	7.55	34.88	7.20	0.99

A second independent-samples t test using a different measure of professional

development was conducted to evaluate the hypothesis that schools with stable FCAT grades had

a higher intensity of professional development points as compared to schools with falling FCAT

grades.

While the average number of professional development points per school was higher for

the stable schools (M = 2788.18, SD = 606.46) than for the declining schools (M = 2668.83, SD

= 1000.44), the test did not yield significant results, t (44) = 0.48, p = .631 as shown in Table 8.

Lower levels of professional development activity are not associated with declining student

achievement as measured by declining school grades. Thus, the researcher failed to reject

Hypothesis 3.

Table 9

Mean Differences for Average PD point per School between Schools with Steady FCAT Grades and Schools with Declining FCAT Grades

	Steady		Down		
Average	*M*	*SD*	*M*	*SD*	*t* (44)
Professional development points	2788.18	606.46	2668.83	1000.44	0.48

Summary

Chapter 4 reported the results of the hypotheses testing. Schools which attained a grade of A, B, or C have more professional development activity than schools which earned a grade of D. Regardless of whether professional development activity was measured as points per teacher or points per school. Therefore, the researcher rejected Hypothesis 1.

In addition, the time trend in professional development points was equal among the three groups of schools and classified as improving, remaining stable, or declining in FCAT grades. The evidence was not strong enough to demonstrate a statistically significant association between lower levels of professional development activity and declines in student achievement as measured by falling school grades.

Hypothesis 3 further suggests that lower levels of professional development activity are not associated with declining student achievement as measured by falling school grades over a three-year time period.

Chapter 5 provides an analysis of the findings on the relationship between professional development and student achievement as measured by FCAT school grades. It will also revisit the limitations of the study as well as implications of this research study. It will also provide

recommendations for future research regarding the impact of professional development on

student achievement.

CHAPTER 5

SUMMARY AND CONCLUSIONS

<u>Introduction</u>

The findings of the study suggested that schools with grades of A, B, or C as measured by student achievement on the FCAT had more professional development activities than schools with a grade of D regardless of whether professional development activities were measured as points per teacher or points per school. However, the evidence was not strong enough to demonstrate an association between lower levels of professional development activities and declines in student achievement as measured by falling school grades. Furthermore, lower levels of professional development activities were not associated with declining student achievement as measured by falling school grades.

The sample size (n=2) of schools with improved grades was not great enough to complete a hypothesis test to determine if higher levels of professional development might have impacted the two schools. However, the implications are that more professional development might have an impact on student achievement as measured by the schools' FCAT grades.

The results of this study can be generalized by the sample size of the school population as well as the limitation of the categories of schools. The study did not compare elementary or secondary high school populations. However, the conclusion drawn is that the average level of professional development activities is not associated with declining student achievement when measured by declining school grades.

Consistency with the Literature

Throughout the literature, there is evidence that suggests the need for professional development to improve student achievement. Sparks (2000) suggested that when intensive

professional development is offered over time and teachers obtain a deeper knowledge of the subject matter, there will be a dramatic improvement in the quality of teaching and in student achievement. Senge (2003) suggested that children learn in schools that learn. The entire school population (teachers, principals, staff, and other workers) needs to improve their performance through continuous learning.

Sparks (2000), in an interview with Kati Haycock, Director, Education Trust and former executive vice-president and chief operating officer of the Children's Defense Fund, suggested the following: (1) "Intensive professional development over time rooted in new curriculum and in a deeper knowledge of the subject matter" works in high poverty schools. (2) When schools create a support structure for teachers, they create an environment for dramatic improvement in the quality of teaching and in student achievement (p. 37). While the schools examined in this study are not defined as high poverty schools, the implications are that intensity of professional development might influence student achievement.

Darling-Hammond (2004) suggested that teachers need a deep understanding of the subject matter. To provide this kind of expertise to students, districts must pay closer attention to professional development to support new and veteran teachers.

The researcher conceptualizes, that while the literature supports more professional development to affect higher student achievement, the evidence in this study is not strong enough to demonstrate a clear relationship between low levels of professional development activities and declining school grades.

The study began with the concept of accountability being a concern within the educational arena across the United States. Accountability for student improvement is a key focus for Florida's system for school improvement. The state has made the statewide assessment

program FCAT a basis for school improvement and accountability. The student achievement data from the annual results of the FCAT identifies for the state those schools that improve, decline, or remain stable. Yearly adequate progress is also tracked. The results of this study verify that further studies are needed to provide adequate evidence to establish a relationship between professional development and student achievement as related to FCAT school grades.

Significance to Practitioners

The significance of these findings to the practitioners is that more professional development may enhance the teacher's knowledge and skills which could result in high-quality teaching and learning that may result in a higher performing school; however, less professional development or no professional development does not decrease the level of high performance in the school. The results of this study will assist educational leaders in assessing the professional development program to determine if more professional development might have an impact on student achievement. It will also provide support for future studies on the impact of professional development on school grades at other levels of education, i.e., elementary and high schools within large urban school districts. There is evidence to show that schools with satisfactory student achievement had more professional development than schools that had poor student achievement. These findings might encourage teachers and educational leaders to increase the intensity of professional development within the schools as one of the strategies to improve student achievement.

Limitations of the Study

Several limitations affected the design and implementation of this study and must be considered in the interpretation of the findings and its conclusions. The limitations are as follows:

1. Professional development was not required for teachers during the time frame for which this study was conducted. It was left solely to the discretion of the teacher and principal of a school to seek professional opportunities to enhance one's knowledge. To this end, the average level of professional development might be influenced by the motivation of the teacher to seek opportunities to expand individual knowledge. These factors no doubt influence the intensity of professional development in a school. The teacher may or may not have been motivated to pursue professional development points.

2. The leadership factor exists within the school. If the principal is a motivator and believes that professional development can make a difference, he/she might provide opportunities for teachers to become involved in professional development by making funds available to hire temporary teachers, which would allow teachers time to attend professional development activities during the instructional day. On the other hand, if a principal does not have the vision to promote student achievement through professional development, teachers will have to seek opportunities on their own.

3. Another limitation is this study reflects only those professional development activities offered within the school district and does not reflect professional development activities received outside of the school district. For example, university courses, partnerships with universities as learning communities, and professional conferences are not included.

4. Failure to submit professional development points may also result in an inaccurate picture

of the intensity of professional development within the school.

5. The population examined represents only middle schools within the school district and the results cannot be generalized to elementary or secondary schools.

6. The study did not take into consideration the cultural elements with the middle/secondary schools, such as student attendance as well as free and reduced lunch programs that produce economically differences within a school.

7. Another limitation is that this study only looked at one large urban school district. It did not do a comparison with other urban school districts within the state of Florida.

8. The research may have yielded different results if the time factor for professional development had been longer than the three years of this study.

9. The literature is limited on student achievement and the FCAT. This may be due to the limited time that the FCAT has been used to demonstrate accountability within schools in the State of Florida and the small amount of research on its impact. Perhaps with time, research will provide more evidence on the FCAT and its impact on Florida schools.

10. Student achievement is clearly tied to the factors identified in the Florida Statues, (Section 1008.34 F.S.) that define critically low performing schools and students' achievement; these factors are not based on the professional development training or the amount of professional development that teachers may or may not have within a school.

11. Student achievement is defined narrowly in this study only as it relates to the FCAT scores in reading, writing, and mathematics and the schools' grades. It does not review students' achievement on a national level when compared to the Norm Referenced Test that is administered to middle grade students in Florida school districts.

12. This study considered only the intensity of professional development without regard to

the content of the professional development that was taken by the teacher.

Recommendations for Further Research

The researcher suggests that the relationship between professional development and school grades be investigated in elementary and secondary schools. In addition, a fourth category of schools that showed a change in more than one direction could be added to the grouping of schools studied. Another recommendation is to consider the factor of educating English Language Learners in elementary, middle, and secondary schools. A valid question for investigation is: How do the FCAT scores affect the school grades of English Language Learners also known as students with Limited English Proficiency? This district has a large number of students of other languages enrolled in the district. What impact might there be from these students with Limited English Proficiency on the schools' FCAT grades? A further recommendation involves examining and comparing professional development and student achievement as measured by the schools' grades with the neighboring counties of similar demographics, i.e., in neighboring counties. Perhaps future studies could also employ a longer timeframe to track changes, noting changes in leadership over time, i.e., a change in superintendent and other high-level district leaders who might introduce policy changes that would affect student achievement as well as the intensity of professional development. Further studies may also examine the type of professional development that the teacher received over the timeframe investigated, i.e. subject content, reading, writing, mathematics, educating language learners, or using technology to see if teachers are more receptive to earning professional development points for certain types of professional development. Future studies may also explore the culture of the schools, the student's attendance, students' mobility rate, as well as

teacher morale. A final recommendation is to examine how schools really improve and what percent of the student's achievement impacts the school improvement or FCAT grade.

Conclusions

This study was prompted by the following questions:

Q1. Is there a significant difference in the 3-year annual average number of professional developments points among schools at different FCAT grade levels (A, B, C, D or F)? The study revealed satisfactory student achievement (school grades of A, B, or C) among those that received more professional development activities than schools with low student achievement (school grade of D). However, the evidence was not strong enough to demonstrate a statistically significant association.

Q2. Is there a significant difference in the average 3 –year time trend in professional development points per school among schools classified as improved, stable or declined in FCAT grade levels?. The statistical evidence, again, was not strong enough to suggest that there were significant changes within the three years.

Q3. Is there a difference in the 3-year annual average number of professional development points among schools classified as improved, stable or declined? The evidence demonstrated a difference in two categories of schools: schools whose grades remained stable and schools whose grades went down. A fourth group emerged that the researcher was unable to define because of ambiguity. In addition, the number of schools (n= 5) in that category was too low to perform a hypothesis test. Further studies on a larger sample are recommended to investigate the relationship between professional development and school grades as determined by student achievement on the FCAT.

Pertinent literature supports the relationship between professional development for teachers and student achievement (Darling-Hammond, 2004; Sparks, 2000). However, while the research shows better schools had more professional development and poor schools had less, the evidence does not show that increasing the number of professional development opportunities will improve the schools' grades or student achievement. It also does not show that by reducing professional development, schools' grades will decline. There is not enough evidence to show that FCAT scores will increase by increasing professional development; nor is there evidence to support that FCAT scores will decrease by fewer professional development opportunities. The implications drawn from this study suggest that there may be other variables along with professional development that might influence a school's grade. Some of these variables are: student's attendance, student mobility rate, teachers' attendance within the school, teacher morale and mobility rate, as well as parental involvement. These variables may be defined as the culture of a school. Therefore, future research might review the "culture" of a school in relationship to the intensity of professional development and student achievement. Perhaps changing the culture of the school is what needs to occur instead of an increase in professional development as the literature suggested.

Improved school grades and student achievement are also impacted by the leadership within the schools. Fullan (2003) states … "perhaps the most important and the most difficult job of an instructional leader is to change the culture of a school…a school's culture has far more influence on life and learning in the school than the president of the country, the state department of education, the superintendent, the school board, or even the principal" (pp. 55-56). It is clear from the literature that leadership is important and that teachers need to achieve a deep understanding of the subject matter so that they can impart upon students the depth of knowledge

that will ultimately allow students to reach high standards and improve student achievement. Perhaps increased professional development may be a part of a healthy culture, and a healthy culture may improve FCAT scores. What is known from this study is that schools with satisfactory student achievement (A, B, or C grades) have more professional development activities than schools with poor student achievement (D grades). The evidence is not strong enough to suggest that professional development by itself is the central factor for improving student achievement as measured by the FCAT scores.

Clearly, future research is needed to address this critical topic of professional development and student achievement. In an era where accountability is the key word in education, where students are identified as at-risk, and where schools are classified as low-performing, school districts, in addition to national and state governments, need to continue to investigate ways to improve schools and student achievement. Perhaps this study will influence leaders to rethink the role of professional development in middle schools. Educational specialists should continue to search for ways to connect professional development and new reforms to improve students' achievement. The think tank continues, as accountability becomes the watchdog that shapes educational reform in the twenty-first century.

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