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Central Florida High School Principals' Perceptions Of The Florida School Indicators Report

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CENTRAL FLORIDA HIGH SCHOOL PRINCIPALS' PERCEPTIONS OF THE FLORIDA SCHOOL INDICATORS REPORT

by

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ABSTRACT

The purpose of this study was to identify the perceptions that central Florida public high school principals had regarding the Florida School Indicators Report (FSIR) and its usefulness. The FSIR, published by the Florida Department of Education, was designed to be a comprehensive, single source document for parents, lawmakers, and school administrators to compare key performance indicators to similar schools or districts state wide. It provided information on 74 different indicators of school or district performance.

A total of 70 public high school principals from 13 central Florida school districts responded to a postal survey and provided their perceptions regarding the importance of indicators in the FSIR, how they used the FSIR at their schools, and what barriers they felt affected the ability of their administrative staffs to collect and analyze data on the FSIR indicators. Eighteen of the 70 principals participated in follow-up telephone interviews.

Quantitative and qualitative analysis of the postal surveys and interviews revealed the principals perceived FSIR indicators related to Florida's mandated Florida Comprehensive Assessment Test (FCAT) as the most important indictors in the FSIR. The indicators FCAT Results and FCAT Writes were ranked first and second respectively in priority by the participating principals. This finding demonstrated the importance that principals placed on the state's high-stakes test. Other categories of FSIR indicators are were also ranked in the findings reported in this study, along with how the principals used the FSIR at their schools.

The data collected from the postal survey revealed there was a statistically significant relationship between the priority principals assigned to the FSIR indicators and their ability to collect and analyze data related to them. In addition, survey data allowed development of multiple regression models that could be used to predict the priority principals assigned to several FSIR categories of indicators based on the ability to collect and analyze data.

The study findings indicated that principals perceived lack of time for data analysis as the biggest barrier they faced when evaluating the FSIR indicators. After the lack of time, principals rated lack of administrator training in data analysis as the second biggest obstacle to using the FSIR. The findings indicated that principals felt the availability of data and technology were not significant barriers to their staff's ability to conduct data analysis on the FSIR.

The conclusions drawn from the study were that central Florida high school principals perceived the results on the state's mandated Florida Comprehensive Assessment Test (FCAT) to be the most important indicators in the FSIR. In addition, the research identified that the lack of time was the single greatest barrier principals encountered when it came to collecting and analyzing data on the FSIR. A lack of training programs in data collection and analysis for administrators was also noted in the findings.

This dissertation is dedicated to my wife Lynn. Without her support and encouragement this study would not have been possible.

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CHAPTER ONE: INTRODUCTION

In Florida, like other states that emphasize accountability in education, school administrators at the district and school levels are inundated with various types of reports comparing how their school or district is performing relative to similar schools and districts (Roeber, 2003). The Florida School Indicators Report (FSIR) is one such report that provides information on 74 different indicators of school or district performance. Published by the Florida Department of Education (FLDOE), the FSIR is designed to be a comprehensive, single source document for parents, lawmakers, and school administrators to compare key performance indicators to similar schools or districts statewide (Florida Department of Education [FLDOE] Florida Information Note, 2006).

Even though the FSIR contains valuable information regarding a school or district's performance, a drawback is that the report is not published until at least 12 to 18 months after the school year ends. For example, as of January 2007 the most currently available FSIR was for the 2004-2005 school year. This reduces the FSIR's usefulness because it arrives too late for administrators to use during the current school year, and well after the summer planning period when they typically restructure curriculum and instructional programs for the upcoming year. Because the information in the FSIR is important to their school's grade, administrators need to collect and analyze data on the FSIR indicators locally, thereby enabling them to make informed decisions that result in improved student performance during the current year. Given the limited time and resources administrators have available to collect and analyze data, on which FSIR indicators do they focus? Out of the 74 indicators in the FSIR, which ones do administrators deem most important to their school's performance?

This study identified which of the 74 indicators in the FSIR are perceived to be most important by high school principals in central Florida. In addition, the findings described how K-12 administrators in central Florida are currently using FSIR data at their schools and the challenges they face trying to collect and analyze data. The study also captured how technology and staff training affect the ability of administrators to collect and analyze FSIR data in a timely manner.

America's Infatuation with Accountability in Education

In 2002, Puriefoy and Edwards authored a report titled *Accountability for All: What Voters Want from Educational Candidates* that examined how the American public feels about education and what they want elected officials to do regarding it. As a group, Americans feel education is a top priority and 92% believe that providing all children with a quality education is an attainable goal. They also feel that quality schools promote a stronger family (24%), reduce crime (15%), and improve the local economy (20%).

When it comes to school accountability and quality, Americans believe elected officials should be held accountable for school quality and 72% believe their votes in local, state, and federal elections have an impact on the quality of their schools. A surprising 63% of Americans said that a candidate's stance on education was one of the most important factors in their vote. The results of Puriefoy's study indicated that Americans hold education as a high priority and this does have an effect on how politicians vote on legislation dealing with educational accountability (Puriefoy & Edwards, 2002).

One of the most contentious issues in the education accountability movement is the use of standardized tests as the primary measure of student performance (George, 2001; McColskey & McNunn, 2000; Puriefoy & Edwards, 2002). However, Americans strongly favor (74%) the use of standardized tests in determining if students should be promoted to the next grade. Only 24% had concerns that teachers would teach to the test, while only 8% cared if the use of standardized tests leads to higher dropout rates. When it comes to assessing school performance, 74% said student literacy should be the top criteria, followed by school budgets (67%), comparison of local schools to other schools in the state (66%), and then school safety (63%). In the area of students and teachers, 30% of Americans surveyed felt that both students and teachers should be held accountable when an individual student fails a standardized test (Puriefoy & Edwards).

Preparing Administrators to Deal with Accountability

With this increased emphasis on accountability, what is the effect on current and potential school administrators? Some researchers feel universities have stressed leadership and management theory in their educational leadership programs but they have not placed the same emphasis on developing the data collection and analysis skills administrators need in today's schools. Groff (2001) wrote, "Traditional training for principals has consisted of theory and policy taught by university professors relying on academic models. Candidates have been taught to manage with a top-down rather than a team approach. Although theory is an important component of principal training, recent studies have shown that the skills and qualities most necessary to succeed include

problem analysis, data collection, organizational ability, decisiveness, effective communication skills and stress tolerance" (p. 17).

Besides limited exposure to data analysis techniques in university graduate courses, many administrators lack the skills needed to use information technology effectively when it comes to collecting and analyzing student performance data. There is an abundance of information technology systems available commercially to assist administrators in collecting and analyzing data locally at the schools and then harvest it into meaningful information that can be used for decision-making. Creighton (2000) found that advances in technology make the collection of school data almost automatic, but principals lack the skills to perform data analysis in ways that can improve teaching and learning at the classroom level.

Summary of Literature Review

Examination of literature in the area of accountability and data collection revealed that no study has been published regarding the FSIR or how administrators in Florida feel about data use in schools. Most of the literature discussed the importance of using data to assess student performance, but they are general in nature (Creighton, 2000; Farnsworth, 2002; Lashway, 2002). With each state having different requirements for tracking accountability within schools there were few studies devoted to how schools actually collect and use data to ensure accountability mandates were being met (Buckley, 2006; D'Agostino, 2002; Koop, 2004).

The American Association of School Administrators (2002) provided some broad guidance that all administrators should follow with regard to using data. School

administrators should first formulate key questions they want to answer with the data. Questions such as how student achievement should be measured and what are the best indicators need to be compiled, and then the data collection plan can be created.

The data collected and analyzed should include but not be limited to: standardized test scores, grades, attendance rates, discipline incidents, and participation in extracurricular activities such as clubs, sports, and community service. Both qualitative and quantitative information needs to be collected and analyzed, and administrators need to consider students, parents, and teachers feelings in the analysis (American Association of School Administrators, 2002).

Lashway (2002) stressed that relying solely on standardized test results is a common pitfall that must be avoided. Schools should also include demographics of the student population such as gender, ethnicity, and socioeconomic station, along with teacher perception. Portfolios, presentations, and other performance tests need to supplement standardized test results to provide a more comprehensive assessment of student performance.

Heistad and Spicuzza (2002) published the results of a study that focused on measuring student performance in a single school district. They created the Minneapolis Public Schools (MPS) model of measuring school and student performance. The core indicators for the MPS model included such data metrics as student achievement relative to district and state standards, attendance rates, graduation percentage, and participation in advanced courses. The model stressed continuous improvement of student performance through the collection and analysis of student performance data.

The existing literature did reveal that Total Quality Management (TQM) and other improvement models used in business and industry have been implemented with some success in education organizations. Dahlgaard, Kristensen, and Kanji (2002) coined the term Total Quality in Education (TQE) and developed a list of performance attributes similar to TQM, whereby student performance could be measured and improved on a continual basis.

Two themes that surfaced in the literature were the lack of training for administrators in collection and analysis of student performance data and the limited skills most have in using technology to manipulate data. Groff (2001) identified the deficiency of universities to educate aspiring administrators in the skills to analyze data and make better decisions. He felt that universities' curriculum for administrators focused too much on management and leadership theory at the expense of practical training. Creighton (2000) investigated the statistics courses being taught to future administrators and found college professors spent the majority of time on inferential statistics used to conduct research projects and dissertations. He stressed that more descriptive statistics should be taught to help administrators improve their problem analysis and decision-making skills. His conclusions are based on the fact that principals are not interested day-to-day with proving or disproving hypothesis about their student population, as inferential statistics does based on sample data to estimate parameters about the population. Rather the principal generally wants to describe some characteristic about the entire student population such as percentile ranks. The principals' immediate interests lie in data for the current academic year, so instead of

computing inferential statistics, such as ANOVA, the typical principal needs simple descriptive statistics such as counts, averages, percents, ratios, and rates.

In terms of using technology, Brockmeier, Sermon, and Hope (2005) found that administrators lacked the skill to fully utilize technology to adequately collect and analyze data. This implies that even if the data were available, administrators may not be able to collect and analyze it in a timely manner to make decisions. Nichols (2002) also found that a lack of time to collect and analyze data due to other administrative duties was a main obstacle to the wide use of data in schools.

In summary, the review of existing literature revealed there are limited detailed research studies regarding how K-12 administrators perceive and use data in their schools to improve student performance. The findings in the literature review imply that more studies need to be conducted in how data are used at the district and school levels to improve student performance.

Purpose Statement

The purpose of this study was to determine the priorities that central Florida high school principals assign to the indicators in the Florida School Indicators Report (FSIR), and to document principals' ability to collect and analyze data locally on the various indicators. The thesis was that if the high priority indicators could be identified then this information may help principals formulate collection plans for data on FSIR indicators at their schools. The findings from this study should enable principals to provide assistance and data regarding the FSIR indicators directly to teachers in a timely manner that may result in improved student performance during the current year. An additional purpose of

the study was to identify training and technology that school districts might provide to administrators to make them more efficient at analyzing the FSIR indicators.

Statement of the Problem

A search of the ERIC and ProQuest research databases in December 2006 did not reveal any studies that examined how principals perceived the utility of the FSIR indicators and only limited research regarding the ability of administrators to collect and analyze data on student performance indicators. This implied that even if the indicators perceived to be important could be identified, little is known about the ability of administrators to adequately collect and analyze data on them. There could be a void of training or a lack of technology that needed to be identified before collection and analysis of indicator data are even possible.

Research Questions

The following research questions guided this study:

1. What priority do principals assign to each of the FSIR indicators?
2. What is the relationship between the priority assigned to the FSIR indicators and the ability to collect and analyze data locally at the schools?
3. Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?
4. What barriers do principals perceive to interfere with the collection and analysis of data on the FSIR indicators?

Florida School Indicators Report

The Florida School Indicators Report (FSIR) was an online interactive resource provided by FLDOE that provided data on each of the state's 67 school districts. It was designed as a single comprehensive report available to parents, lawmakers, and school administrators for them to compare schools and school districts. The FSIR was updated annually and complemented other reports on school accountability (FLDOE Florida Information Note, 2006). The FSIR consisted of 74 different indicators describing a school's performance, and the FLDOE assigned each of these indicators to one of 25 groups for calculation purposes (see Appendix A). Examples of indicator groups in the FSIR are Florida Comprehensive Assessment Test (FCAT) results, dropout rate, and per-pupil expenditures on students. The FCAT was a series of standardized tests in math, reading, science, and writing, and one of the main criteria for assessing school and district performance in Florida. Certain indicator groups such as SAT and ACT were not calculated but were reported to FLDOE from outside sources. The 25 groups were described in detail in the *Guide to Calculations for the Florida School Indicators Report*, which can be retrieved from the FLDOE website (Guide to Calculations for the Florida School Indicators Report, 2006).

As of February 2007, the FSIR contained data for eight school years (1997-1998 through 2004-2005). The data within the FSIR were grouped at the school, district, and state levels, and users could prepare and view their own customized reports for selected districts or schools (FLDOE Florida Information Note, 2006).

Overview of the Study Population

The population for the study consisted of 124 public high schools from 13 central Florida school districts. Only public high schools were chosen by the researcher because private schools in the state of Florida do not administer the Florida Comprehensive Assessment Test (FCAT), and many of the indicators in the FSIR were based on FCAT results. Charter and private schools also have other sources of funding outside of the normal channels for public schools and expenditures per student, which is another FSIR indicator, that are much different than public schools.

Demographics and enrollment varied across school districts in the study. In total there are 67 school districts in Florida, and the districts used in this study ranged from the 4th largest in the state, Orange County Public Schools with a total enrollment of over 175,000 in 2005, to the 42nd in the state, Sumter County Public Schools with a total enrollment of 7,400 students. Because Florida's school districts are organized along county lines rather than metropolitan areas, cities, and townships, they tend to have larger than average enrollments in their schools, especially high schools. In 2003-2004, Florida had on average the highest high school enrollment in the nation at 1,548 students. This was more than twice the national average for high schools, which was 758 students (National Center for Educational Statistics, 2006).

Assumptions

This researcher assumed that the high school principals participating were familiar with the FSIR and the primary data metrics used by the FLDOE to calculate FSIR results. In addition, much of the data used in this study to describe demographics

and school performance of the 13 participating districts was obtained from the FLDOE and the National Center for Educational Statistics, and it was assumed to be correct. The most current FSIR at the time of this study was for the 2004-2005 school year so all of the metrics reported are based on that report.

Delimitations

One delimitation of the study was that only 13 of the 67 Florida school districts were surveyed and the results reported describe the perceptions of high school principals in those districts. All the districts in the study were located in central Florida, and there may be some districts outside of this area where the perceptions vary from those reported.

Because Florida school districts are organized along county lines they averaged a higher student enrollment than districts in other states. Based on 2003-2004 school enrollments, seven of the districts in this study were ranked nationally in the top 100 largest districts. As a result, Florida's high schools have more students and typically they are more diverse demographically than the national average (National Center for Educational Statistics, 2006). Therefore, the perceptions of principals in this study tend to reflect those of administrators in larger high schools.

Only public high schools were included in the study because Florida legislation requires them to administer the FCAT, the main measure used by the state for assessing school and student performance and a basis for many of the indicators in the FSIR. Private schools were not required to administer the FCAT so the principals at those schools may have been indifferent to FCAT indicators.

Significance of the Study

The findings in the study identified which indicators in the FSIR that central Florida high school principals perceived to be the most important. This may help administrators prioritize what data they collect, how they collect and analyze it, and ultimately how the data can be used to improve student performance. In addition, the study revealed if the priority assigned to an individual indicator by the principals was related to the ability to collect and analyze data at the schools. This finding indicates whether principals prioritized the indicators based on ease of collection and analysis versus the impact to student performance. Another significant outcome was the documenting of items that affected the ability of school administrators to collect and analyze data at the schools. District level administrators should benefit from this portion of the study because it identified deficiencies and strengths in professional development and whether adequate technology exists at schools to collect and analyze FSIR data.

Organization of the Study

Chapter One introduced the purpose of this research study research questions to be investigated, listed the assumptions, identified delimitations, and provided an overview of the Florida School Indicators Report. The significance of the study was also provided. A review of literature regarding school accountability and its impact on administrators is provided in Chapter Two. The review of literature also contains an overview of items that could affect administrators' perceptions of accountability indicators such as education and training, competency in using technology, and time constraints due to other duties. Chapter Three contains the methodology used to conduct

this study. An analysis of the responses provided by high principals participating in the study is provided in Chapter Four. Both quantitative and qualitative analyses are included in Chapter Four along with the findings. The conclusions drawn from the study are listed in Chapter Five along with recommendations for future studies.

CHAPTER TWO: REVIEW OF LITERATURE

The review of literature in this study summarized the national accountability movement in education and then focused on the accountability requirements for schools in Florida. Next, literature regarding the need for data collection, the types of data that should be collected, how the data should be analyzed, and finally reporting to students, parents and the general public is described in detail. The literature review also identified the collection and analysis skills required of administrators to effectively use the data available at their schools. Because students and teachers are typically the creators of data their perceived skills in using technology are also included in the review of literature. The last area of literature reviewed is the availability of technology to collect and analyze data on site at schools and whether administrators feel they have the necessary skills to use the technology.

Accountability in American Schools

One needs to start in the 1970s to get a better understanding of how accountability in education originated in the United States. The push for accountability started when minimum competency testing (MCT) was initiated in public schools. In MCT, students were not compared or assessed against each other as occurs in norm referencing testing. Rather, MCT assessed how the individual student performed relative to a minimum competency standard for the subject or task. If the student could meet the minimum competency, then he or she was deemed to have learned what was expected. Most of the time it was the educators who were held accountable if the student did not meet standards (Benhuniak, 2003).

To raise the stakes in accountability for the student, results from MCTs were sometimes used to deny promotion or a diploma. These harsh accountability measures caught the attention of educational researchers. Jaeger and Tittle (1980) felt that schools were implementing MCT programs without looking at the long-term effects or consequences. They forecast that over the long term, schools would focus their curriculum toward the MCTs. This narrowed curriculum could have negative effects such as reduced student and teacher motivation.

As the popularity of MCTs waned in the early 1980s, reports such as *A Nation at Risk* (National Commission on Excellence) published in 1983 raised national concern about education. The nation turned its attention toward school and district accountability (Linn, 1998). As a result, the standardized tests of the 1980s and 1990s raised the stakes of accountability to include withholding financial resources from low performing schools. Even the security of teacher jobs and the ongoing existence of the schools themselves were subjected to the results of school wide standardized tests. According to Rose and Gallup (2001), 66% of the U.S. public felt this increased emphasis on accountability was needed and three fourths (75%) of the public supported President G. W. Bush's push to hold schools more accountable for how much students learned.

While the American public supported accountability in schools, educators have expressed concerns about narrowing curriculum, the decrease of critical-thinking and higher-order skills, along with reduced student and teacher motivation. McCloskey and McNunn (2000) reported that some schools were opting for short-term fixes to boost standardized test scores such as reduced emphasis on nontested subjects, elimination of projects that do not align with items on standardized tests, and using more classroom time

to practice standardized tests. They cited a study of 236 elementary schools in North Carolina in which 80% of the teachers reported that students spent at least 20% of their classroom time practicing for standardized tests. Researchers have offered some strategies for dealing with these problems, and many positive things have come about. First, the quality of standardized tests improved to include varied formats and students explaining their work rather than simple multiple choice or short answer questions. The use of technology also saw increased emphasis in both preparing students and collecting data. Administrators can now obtain customized reports from easy-to-use software in almost real time to help identify at-risk students (Gallagher, 2000).

President G. W. Bush's No Child Left Behind (NCLB) legislation, passed in January 2002, mandated accountability, and it was the cornerstone for the current accountability movement. NCLB requires each state establish their own accountability systems to ensure all students, including those who are disadvantaged, achieve academic proficiency (NCLB and Adequate Yearly Progress Fact Sheet, 2006). The state of Florida created the A+ Accountability System to ensure compliance with NCLB. The following is from the Florida Department of Education NCLB fact sheet taken from its website:

> Florida has adopted a single statewide accountability system for all public schools that includes multiple measures. These are: adequate yearly progress as defined by federal law, school grades, individual student progress towards annual learning targets to reach proficiency, and a return on investment measure that links dollars spent to student achievement. All

schools will be rated on each of these measures. Schools meeting all standards will be designated as highly effective and efficient.

Each of these elements informs parents, educators, and the community about different facets of a school's performance. No one element, on its own, can provide a complete picture. Florida's accountability system has been carefully constructed to ensure that we consider all aspects of a school's performance and therefore, there may be situations in which a school performs poorly in one or more of the elements but demonstrates higher performance in the others (NCLB and Adequate Yearly Progress Fact Sheet, 2006).

The mandates of NCLB require that all students be proficient by 2013-14. To comply, Florida set goals for reading and mathematics for each academic year in order to reach proficiency by the 2013-14 academic year. Table 1 lists Florida's annual goals (NCLB and Adequate Yearly Progress Fact Sheet, 2006).

How was student progress measured and were students making adequate yearly progress? High stakes standardized tests are the main measure of student academic progress under NCLB and the consequences are high for administrators, especially those at Title I schools. The penalties escalated to the point where, should a Title I school fail to meet adequate yearly progress goals for 5 consecutive years, the state could step in and make significant changes in the staff or convert the school to a private charter school and hire outside contractors to run the school (Guide to Calculating Adequate Yearly Progress, 2006).

Table 1

State of Florida Adequate Yearly Progress Goals

	Percent Proficient	
School Years	Math	Reading
2001-02	38%	31%
2002-03	38%	31%
2003-04	38%	31%
2004-05	44%	37%
2005-06	50%	44%
2006-07	56%	51%
2007-08	62%	58%
2008-09	68%	65%
2009-10	74%	72%
2010-11	80%	79%
2011-12	86%	86%
2012-13	93%	93%
2013-14	100%	100%

How does NCLB affect the decision-making of school principals? Luizzi (2006) conducted one of the few studies since NCLB that focused on principals and how they collected and used data to make decisions. His study of 170 Connecticut middle schools attempted to rank school principals' perceptions of NCLB and 13 areas of decision making. He found that principals perceived NCLB to have the greatest influence on decisions regarding professional development of staff members. After professional development, the principals felt that decisions regarding the assessment of student performance were second most important. The 11 remaining decision-making areas in rank order included: change initiatives and improvement efforts, quality of instruction,

resource allocation, personnel/staffing decisions, use of staff time, supervision of teachers, creating a school vision, budgetary decisions, student scheduling, curriculum offerings, and class sizes.

The Need for Data Collection

Making the right decisions to improve school performance requires the timely collection of data so administrators can get ahead of the accountability requirements and plan several years out. At the same time they must manage and track the performance in their school on a day-to-day basis. Data help measure student progress, ensure low performing students do not fall through the cracks, measure program effectiveness, guide curriculum development, help administrators allocate resources wisely, show trends, and most importantly promote accountability (Lashway, 2002).

Carter (1999) conducted a study of all 50 states to determine what accountability indictors they published. At the time of her study, 1999, 34 of the 50 states indicted they published some type of school level accountability indicators. It was interesting to note that 34 states had school level accountability systems in place before the passing of No Child Left Behind (NCLB) legislation in 2002. Upon examination, she found there were a total of 61 different school level indicators being reported by the 34 states. The state of Florida at that time, which was prior to NCLB and the Florida Schools Indicator Report, had an accountability indicator system called the Florida School Advisory Council Report and it contained 15 school level accountability indicators.

Schools generate an abundance of information and data such as standardized test results, attendance percentages, and the number of discipline incidents. When used correctly, they can lead to smarter decisions, defuse emotion in controversial issues, and set a forum for meaningful dialog with the educational community. The first pitfall to avoid was to using only standardized testing results. Schools should also draw on demographics of the student population such as gender, ethnicity, and socio-economic status as well as teacher perceptions on curriculum and student progress. Lastly, the community's attitudes toward the publication of the data must be considered (Lashway, 2002).

Another consideration besides accountability reporting when gathering data is the expectation of colleges and universities. State assessment tests may not be aligned with the universities' expectations for incoming freshmen. Conley and Brown (2003) conducted an analysis of 30 different state assessments and found that approximately half of the English and language arts assessments were in alignment with university expectations, while only about one-third of the mathematical assessments were. As a result, students were not prepared for the academic rigor expected when they enter the university.

When it comes to perceptions regarding accountability and using data to make decisions, administrators at the school and district levels feel much the same way (Buckley, 2006; Harrison, 2005). Buckley's study (2006) of ten school districts in Massachusetts found that school boards use data in three distinct patterns: active users, passive users, and non-users. Active users use student achievement data when making decisions or formulating policy. Thirty percent of the school boards in Buckley's study

were considered active users of data. Passive users use data to make decisions but it is not the primary driver in the decision-making process. Of the 10 districts in Buckley's study, five were categorized as passive users of data. The remaining two school districts in the study were deemed to be non-users of data and showed virtually no interest in the use of data to drive district decisions.

Harrison (2005) conducted his research on whether school principals held the same or different perceptions of accountability standards than their superintendents did. The intent was to see specifically if the two groups had perception differences regarding the No Child Left Behind Act (NCLB). The study included one hundred superintendents and 660 school principals from Indiana. Harrison's key finding was there was no statistically significant difference between superintendents' perceptions and those of principals regarding the accountability requirements of NCLB.

Collecting the Correct Data

A study titled *Using Data to Improve Schools: What's Working* by the American Association of School Administrators (2002) included a comprehensive guide of the data administrators should be collecting. It also suggested that before going out and collecting data, the administrator should first compile a list of key questions to include:

1. How should student achievement be measured?
2. Are goals for student achievement based on data elements aligned with the curriculum being taught?

3. What are the best indicators of student achievement upon which the district or school should base its decisions?

4. What indicators of student achievement are collected regularly throughout the year so that informed decision-making can occur?

After formulating these questions, indicators of student performance must be collected. These indicators include test scores, rigor of course work, attendance rates, promotion and graduation rates, and participation in extra curricular activities such as sports, clubs, and community service. Qualitative information such as how parents, students, and teachers feel about the school and student progress should be collected along with the quantitative data (American Association of School Administrators, 2002).

By far the most widely used method for assessing student performance comes from standardized tests. Norm and criterion-referenced are the most common standardized tests, however they should not be the only tests used to measure performance. Portfolios, presentations, and other performance tests are being used to supplement standardized test results to provide a more encompassing assessment of academic performance (American Association of School Administrators, 2002).

Dombrower's (2002) dissertation's findings were typical of many districts prior to NCLB when it comes to formulating a data collection plan. Her study of a large school district in California found the district did not have a formal written policy or strategy regarding the use of data in its schools. Teachers, not the district, developed their own collection plans for data. In addition, her results concluded that the district did not encourage school or district level collaboration in data use so they could not leverage what the schools were doing and share it across the district.

Analyzing the Data

Heistad and Spicuzza (2000) developed the Minneapolis Public Schools (MPS) model of analyzing school and student performance. The MPS model takes into account much of the data already mentioned but goes on to include value-added student characteristics such as poverty, race, family composition, special education status, limited English status, and socio-economic considerations. The core indicators for the MPS model included: (a) Student achievement level compared to district and state standards; (b) Change in achievement level compared to performance standards; (c) Student achievement gain when compared with expected national growth; (d) Student achievement based on value-added characteristics; (e) Attendance and graduation rates; (f) School climate to include safety, discipline, and surveys; (g) Participation in advanced courses; and (h) credits earned each year for high school students. The MPS model stressed continuous improvement through the collection and analysis of school and student performance data.

Brown and Ing (2003) focused their research on measuring academic performance at low performing schools in California, which used the state's Academic Performance Indicator (API) to measure school and student progress. Brown and Ing's research identified the relationship between API scores and four socio-economic characteristics of California high schools. The four characteristics their research sought to tie to student performance were: percent of students receiving free or reduced lunch, percent of English language learners, percent of mobility in student enrollment, and percent of fully credentialed teachers. In the study, which contained over 800 California high schools, Brown and Ing found significant negative relationships between API scores and the

percent of student on free or reduced lunch (r = -.80) and non-English speakers (r = -.69). The percent of mobile students had a small negative relationship (r = -.19) to API scores. The last characteristic, the percent of fully credentialed teachers, had a positive correlation (r = .48) to the API scores.

Wiersma (2001) developed the Continuous School Improvement Questionnaire (CSIQ) that could be used in measuring educators' perceptions of factors that affect school improvement. The CSIQ was field tested on 2,093 educators, primarily teachers, at 79 schools in an attempt to create an instrument that measured variables in an educational setting. The questionnaire consisted of 72 items which were rated on a 6-point scale from "Is not present" to "Is present to a high degree." Wiersma conducted a factor analysis on the responses during the field test and identified six constructs that he felt could be used to assess school performance: learning culture, community of learners, sharing leadership, shared goals for learning, assessing student learning, and enabling the exceptional learner. The instrument works well with different types and levels of schools.

Reporting Results

Reporting assessment results is crucial to building public support in schools and strengthening community and parent involvement. As stated in Chapter One, 74% of Americans supported the use of standardized tests as the primary assessment measure of student performance (Puriefoy & Edwards, 2002).

A study by Owens and Peltier (2002) of 4,900 parents and guardians in Nevada indicated that they have a high interest in student performance on standardized tests.

Nevada required individual school accountability report cards containing results from the state's mandated standardized proficiency exam be sent to parents. The key findings in Owens and Peltier's study were: (a) 85% of the parents responding agreed that the information in the reports represented what they wanted to know about their child's school; (b) 73% felt more informed about their school because they received the report; and 81% placed high value on the standardized test score summary.

Ronald Costello, Assistant Superintendent of Noblesville, Indiana Schools, participated in the 1997 Indiana Association for Supervision and Curriculum Development's (IASCD) panel for Communicating Student Learning and he stated, "Each school year as Indiana educators prepare for the release of annual student performance information, we all cringe because we do not know how the information will be presented by the media or interpreted by the public." (p. 2). The panel concluded that Indiana's public interest regarding school reporting focused on the percentage of students passing the math and language arts portions of the state's mandated standardized tests, followed closely by the national percentile score for the Total Test Battery in language arts, reading, and mathematics. Key findings from the IASCD panel were: (a) the media wants to rank order the school reported data because that is the easiest way to compare schools and districts to each other; (b) politically, the Indiana Department of Education does not feel it can set expectations for student performance without adjusting for socio-economic factors; (c) businesses want workers with skills to meet the 21st century; (d) parents, and students, want to know how students are performing relative to each other; and (5) educators should be interested in whether individual students are improving (Costello, 1999).

An older study conducted by Barber, Paris, Evans, and Gadsden (1992) of two working-class suburbs in Michigan revealed that even before No Child Left Behind (NCLB), and the accountability movement, that parents felt positive toward using standardized test results to measure student performance. Barber et al.'s (1992) study, while rather small at 105 respondents, found that in 1992 a slight majority, 53%, felt that Michigan's mandated state assessments contributed to their child's achievement and 87% thought the state should require students to take the tests. As for how the information was reported, 63% were satisfied with how the information was conveyed by the state and only 32% rated newspaper or television as helpful and clear (Barber).

Roeber (2003) researched in the area of reporting school results and stressed that assessment results be shared with students, parents, district administrators, school board officials, and the public at large. He also stated that using radio and television, along with newspapers, to release assessment reports at the right time will help the public better understand the results.

Sharing assessment results with students is the teacher's responsibility. Roeber (2003) found that students want to know how they did on assessments and what help they can expect from teachers. Another advantage of sharing the results is to keep the students engaged in their learning. Teachers should provide a summary of the assessment results to the entire class and then sit down with students individually to discuss their results.

When it comes to sharing student results with parents, Roeber (2003) recommended elementary schools have teachers do this, while middle schools can use either the teachers or guidance counselors. At high schools this responsibility typically falls on the guidance counselor because students do not have the same teacher for all the

subjects assessed. There are two primary ways to report student results to parents: individual parent-teacher conferences, and sending the student's report home by mail or with the student. Roeber also recommended that principals share the overall school assessment with parents, and the best ways to do this are either a school/parent meeting or newsletter.

Reporting school assessment results to the district office and school board is also the principal's responsibility. This is usually done with three types of reports: the background report, assessment results, and follow-up reports. The background report should explain the purpose of the assessment program, how the results are used, who is assessed, and how the assessment is conducted. The assessment results report contains the actual scores and how to interpret them. Follow-up reports are provided periodically, and they focus on what the school is doing to improve results. The key here is for the administrator to demonstrate that progress is being made (Roeber, 2003).

When sharing assessment results with the public at large, Roeber (2003) stressed principals and districts need to focus on explaining results to the news media so they accurately report the results. News reporters may not be knowledgeable of assessment results, and the majority of citizens do not have school age children. It is important that principals or district officials sharing the results help the news media understand the purpose of the assessment program, how the results benefit/impact students, and how the information in the report will be used to address student strengths and weaknesses.

Total Quality Management in Education

Rather than create a totally new approach to using data for improving school performance, some researchers have tried to implement Deming's Total Quality Management (TQM) model in educational organizations (Arif & Scrabec (2003; Dahlgaard (1995)). TQM is a management process that relies on continuous quality improvement to lead an organization toward its goals. Everyone is involved in the TQM effort within the organization and the focus is on facts or data that can be continuously measured. When the total quality process is implemented in education then the term Total Quality in Education (TQE) is sometimes used (Dahlgaard, Kristensen & Kanji, 1995). Arif and Smiley (2003) identified eight factors that warranted TQM being implemented in higher education: a) declining enrollment; b) declining quality; c) increasing tuition; d) changing demographics; e) advancing technology; f) intensified competition amongst institutions; and g) employers demanding better quality graduates.

Table 2

Comparing TQM attributes to Those Used in TQE

TQM	TQE
Performance	Student Performance
Features	Degrees options, courses
Reliability	Capabilities and skills developed
Conformance	Conformance to national, state, and professional standards
Durability	
Serviceability	Marketability of learned skills/knowledge
Perceived Quality	Ability to meet professional requirements, accreditation, and contribute to improving society

When TQE is implemented then the traditional TQM attributes used in business must be redefined for education. Table 2 lists a comparison of TQM and TQE attributes. The TQM performance attribute when translated to TQE's student performance includes the following measures: standardized national tests, student satisfaction measures, industry feedback, and other quantitative measures such as grades. In TQE the student should be viewed as the beneficiary of the continuous improvement effort. Their skills, knowledge, and learning should be measured for improvement (Scrabec, 2000).

Groccia (1997) questioned the TQM maxim, "the customer is always right" (p. 32). He addressed this opposition to TQM in education by explaining that the student should be viewed as a learner and not a customer in the traditional business context. Students attend college to grow, expand their horizons, and become better prepared to succeed in society. Students learn when confronted with new concepts, ideas, and information with which they are unfamiliar. The student realizes the university is not selling a diploma, rather it provides a learning environment with a sharing faculty to help the student achieve their goals.

In 1990, George Westinghouse Vocational and Technical High School in New York City implemented TQM with some impressive results. In the late 1980s, George Westinghouse, an inner city school with 1,800 students at the time, decided something needed to be done to improve student performance. Over 70% of the school's students were Black and 23% were Hispanic. Many students came from single parent, low-income families with over 60% living in poverty. George Westinghouse had the typical problems of inner city schools: high attrition rates, students with low reading and math skills, lack of student and faculty motivation, and low self-esteem throughout the student

body. By 1996 the school had turned things around using TQM. Student dropout rates were only 2% compared to a citywide rate of 17%. In 1993 over 72% on the school's graduates went on to college and membership in the PTA increased from 12 members to over 200 from 1987 to 1991 (Schargel, 1996).

Lewis Rappaport (1996), the school's principal responsible for implementing the TQM program at Westinghouse, stressed that for TQM to work in a school there must be a leadership commitment, a clearly defined mission and vision, and most importantly that everyone understand TQM is not a quick fix but a long term process committed to continuous improvement in student performance. Teachers must apply quality processes in the classroom. Students are taught that it is important to "do it right the first time" (Rappaport, p. 74). To do this they are taught critical thinking, decision making, listening skills, how to properly take tests, and team building (Rappaport, 1996).

Divoky and Taylor (1996) provided a TQM framework for examining and evaluating an educational curriculum. The framework called for taking measurements of student performance and establishing a baseline from which improvement could be measured. One way to gather student performance measurements in the classroom was for teachers to use the Classroom Assessment Techniques (CATs) developed by Angelo and Cross (Soetaert, 1998). After student performance was measured then TQM process improvement tools such as control charts, effect diagrams, and Pareto diagrams are used to modify the curriculum. The changes in curriculum were continuously monitored, with the measurement process being reiterated to track improvement.

With the emphasis on accountability, teachers were more likely to feel anxiety and stress in their job. Since stress leads to higher teacher absenteeism and unproductive

teachers, researchers have looked at using TQM to reduce teacher stress. Reducing stress in the teaching staff reduces absenteeism, and improves teacher morale, both of which affect student performance (Van Der Lindl, 2001).

Implementing TQM or TQE require organizations to make adjustments in how they operate and even how they are structurally organized. One of these adjustments is more reliance on information technology and management information systems. Continuous improvement mandates the collection of data to measure progress and this requires sophisticated computers, software, and other information technology. School administrators need to recognize this and plan accordingly. These systems are the enablers that make successful TQM possible by making administrators and teachers more productive. With that said, any TQM or TQE program should include information technology and management information systems (Jabnoun & Sahraoui, 2004). The software used in education should establish relationships between curriculum, instruction processes, and assessment. The focus is moving toward outcomes-based education that improve the quality of teaching and education (Carter, 1995).

Competencies Required of K-12 Administrators

The research (Brockmeier; Creighton) indicated any school improvement effort that relied on the collection and analyses of data required computers and information technology, but are school administrators trained in how to use this type of technology? Creighton stated "The good news is that advances in technology make the collection of school data almost automatic. Principals must possess an understanding of data analysis and ways to use this analysis to improve teaching and learning in the classroom" (p. 5).

Several studies identified the need for staff development with regard to data analysis and collection (D'Agostino, 2002; Glenn, 2001; Jackson, 2006; & Koop, 2004). D'Agostino (2002) investigated how one California school district used data and he concluded that the primary roadblock to implementation of the district's data use plan was inadequate staff training in data analysis. Jackson (2006) did a qualitative study of 67 Title I secondary public school principals in Texas and principals being interviewed stated they were seeking additional training and development for staff in the area of data analysis to assist them in improving student performance.

The state of Rhode Island published a document called School Accountability for Learning and Teaching (SALT), which was designed to provide principals with the data they needed in order to make decisions and improve student performance. Glenn's (2001) dissertation examined how urban principals in four Rhode Island school districts used the data provided in SALT in their decision making. She found that 87% of the responding principals used SALT but that most did not share their findings with other principals. One of the more interesting finding in Glenn's study was that only 40% of the principals shared the SALT data with teachers and parents, the ones who probably needed to know it the most in order to improve student performance. In regards to training on how to use SALT, on 18% of the principals reported that they had received any type of training even though the use of SALT data was required by the state. The remaining 86% received training from the district, state, or other sources (Glenn, 2001).

Koop's (2004) study of 106 Utah schools supported the findings of D'Agostino and Jackson when it comes to the perceptions principals have regarding professional development and training in data collection and analysis. School principals in Koop's

study, as a group, did not feel professional development on the post-secondary, district, or state levels prepared them for their roles in school accountability.

The International Society for Technology in Education (ISTE) established the National Educational Technology Standards (NETS) for school administrators, which identified the core technology skills K-12 administrators needed in order to perform their jobs. The ISTE technology competencies in NETS for K-12 administrators were an attempt to specifically define the skills needed to collect and analyze data using technology. Two of these skills dealt directly with using technology for data analysis:

1. As educational leaders, administrators use data in making decisions.
2. As educational leaders, administers use technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and student learning. (Technology Standards for School Administrators (NETS), 2007).

Prior to the NETS standards, Peterson and Kelley (2001) compiled the following list of knowledge and skills needed by school principals:

1. Identifying the school's mission.
2. Providing instructional leadership.
3. Supervising staffs and administering policies.
4. Developing and managing budgets.
5. Building effective learning environments.
6. Establishing school cultures.

Note that competency in information technology or technology, in general, was not listed as a required skill. Brockmeier, Sermon, and Hope (2005) did a study of 268 elementary, middle, and high school principals from the state of Florida using an

instrument called the Computer Technology Survey and found some very strong evidence that principals are starting to realize the importance of using information technology. They found that 85% of the principals responding strongly agreed that more professional development is needed in assessing the impact of computer technology on student achievement, and using computers to collect and analyze student performance data. These researchers state, "As educational decision making becomes more and more driven by data, principals need to have expertise in this area" (Brockmeier, et al., p. 54). Another finding by Brockmeier's group was that 59% of the principals in the study agreed or strongly agreed that their technology expertise resulted in teachers and staff viewing them as a technology leader.

Schoeny, Heaton, and Washington's research (1999) listed the most important administrator uses of information technology to be:

1. Communicating with students, teachers, and parents.
2. Analyzing and organizing student performance data to make informed decisions.
3. Encouraging teachers to use technology.
4. Utilizing Internet resources for professional development.
5. Staying abreast of current research in education and technology.

The second use listed by Schoeny, et al., analyzing student data to make informed decisions, highlighted the need for administrators to be trained in this skill (Schoeny, et al., 1999). Staying abreast of current research was also important as schools integrate technology into the curriculum. The student-to-computer ratio decreased from 14:1 in 1992 down to 6:1 in 1998, with many states seeking a 1:1 ratio. However, the increase in

technology use in the classroom has not resulted in the intended student achievement (Anderson & Ronnkvist, 1999). The research indicated three reasons for this: limited administrator knowledge of how technology is effectively integrated into the classroom, lack of teacher training in technology, and the lack of computer skills among minority and lower socio-economic students. Brockmeier, et al. (2005) found that 50% of the principals surveyed reported they had not received the training that prepared them to integrate technology into the classroom.

Benson, Peltier, and Matranga's 1999 study of Washoe County School District administrators in Reno, Nevada also found administrators lacked the necessary skills to use information technology effectively in education. Only 34% of the district's administrators used computers to research student achievement, with less than one-half, 43%, using computers for data-driven decision making (Benson, et al. 1999).

Groff (2001) stressed that because of the increased emphasis on accountability, colleges and universities should teach administrators how to improve their skills in data collection and problem analysis. He stated that management and leadership theory is important but principals need to have better skills in how to analyze data and make decisions. In support of Groff's position, Creighton's research (2000) found that most statistics courses taught in colleges of education focused too much on inferential statistics which did not prepare aspiring administrators for what they needed in day-to-day decision making. He emphasized that principals need to be taught descriptive statistics. His justification was that principals were not interested in proving hypotheses based on samples of data using inferential statistics, rather they wanted to describe a particular

characteristic of the student body. He stated, "In most cases, the educator encounters data in the schools which are related to populations rather than samples" (p. 8).

Hallinger and Murphy (1987) found that research on school improvement indicated principals should pay greater attention to coordinating curriculum and monitoring student progress in the individual classroom and across grades. The bulk of the research implied that administrators and principals should focus on student performance but there is very little research dealing with the most effective way to do it.

In 2001, Paul George conducted a study of 50 principals and 25 district office administrators in Florida to evaluate their strategies for improving student performance. He was especially interested in districts and schools that had shown dramatic improvement. His analysis concluded there were 10 strategies these schools or districts implemented to raise student achievement.

> 1. *Set urgent goals*. School leaders should look for tasks that the faculty can accomplish, and will result in immediate student improvement. This will get the students and parents support, and buy some time for long term strategies to work.
>
> 2. *Engage school personnel*. Get the support of the teachers and administrators, and listen to their inputs. Expand and share decision-making to include faculty - make the teachers feel empowered.
>
> 3. *Use school achievement data*. In the most effective schools, analyzing student performance data, especially data on different ethnic and socio-economic groups is a high priority. Schools receive lower grades if minority students perform poorly, so there is a special focus on their performance.
>
> 4. *Professional development*. Successful schools conduct in-service educational training for faculty and staff that focuses directly on improving standardized test scores. A special emphasis is placed on developing the higher-order thinking skills of students.

5. *Align the curriculum*. This is the most contentious strategy when it comes to school improvement. Schools leaders have to be careful that curriculum it not aligned too closely to standardized tests or they will lose parent and teacher support.

6. *Increase time for academics*. Some districts are opting for a longer academic day, while others are shifting class time from non-tested subjects to those being tested. Other approaches include requiring more reading in class and at home, adopting block schedules to create longer class times, and in extreme cases removing low-performing students from non-tested subjects to focus on tested ones.

7. *Choosing instructional materials to support standards*. Successful schools use a combination of state and school-produced curriculum materials. Websites such as FCAT Explorer are also being used to supplement local school curriculum.

8. *Build interdisciplinary teams*. These teams have worked well in middle schools and the teams meet daily, or weekly, to compare evaluations and student work. It also provides a forum for the principal to meet with teachers to discuss student progress.

9. *Promote the test*. This is a public relations effort to get student, parent, and teacher support, and some of the more successful schools have solicited business and community partnerships to motivate students to do well on standardized tests. Offering prizes such as limousine rides, bicycles, and other incentives (many donated by businesses) are just some of the ways creative schools have sought to promote the test and motivate students.

10. *Redefine school leadership*. The best school principals deeply care about students and instruction, but they also realize that instructional leadership in this era of accountability requires students achieve certain standards. Professional survival of school administrators requires they maintain a balance between their core beliefs regarding education, and state-mandated accountability requirements (pp. 28-32)

Even though these strategies have shown to improve student performance, some of the principals surveyed believe the Florida's A+ Accountability Program is flawed and it is damaging the development of students. They also realize that their professional career is dependent on how their school performs so they have to balance their basic beliefs regarding education with accountability requirements (George, 2001).

There has been limited research in the information technology competencies, training, and professional development needed by K-12 administrators, with most of the research dealing with how technology is integrated into the curriculum (Testerman, Flowers, & Algozzine, 2001.) However, that will probably change with the increased emphasis on accountability and student performance. NCLB and state regulations regarding accountability require administrators collect and analyze student performance data to ensure students are meeting standards and making adequate yearly progress. When one factors in the proposed use of alternative measures for learning disabled students, the demand for data collection and analysis becomes even more important (Benson, et al. 1999).

Technology Skills of Teachers and Students

Accountability in schools and the increased use of technology are redefining competencies and standards for teachers (Moore, Knuth, Borse, & Mitchell, 1999). Wall and Walz (2003) stated "The potential for obtaining real-time data through immediate test scoring and feedback is a key advantage of technology delivered assessment and can be a significant motivator for persons taking assessment instruments. Individuals can learn their status on assessments quickly and use that information to take immediate action" (p. 669). Since teachers are the ones conducting most of the assessments they need to be adequately prepared.

The International Society for Technology in Education (ISTE) which was discussed previously in the review of literature regarding technology competencies for K-12 administrators also defined National Educational Technology Standards (NETS)

competencies for teachers. Specifically NETS stated teachers should "use technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning." (ISTE National Educational Technology Standards (NETS) and Performance Indicators for Teachers, 2007, p. 9)

The research indicated teachers do not feel they are properly trained on how to best use technology in the classroom and integrate it into the curriculum (Imbimbo & Silvernail, 1999; Rother, 2004; & National Center for Education Statistics, 1999). Since a majority of student performance data originates or is entered by teachers it is important that they know how to create and maintain the data properly. In 2000, the National Center for Education Statistics published that only 33% of full-time public school teachers felt they were well prepared to use computers and technology in classroom instruction (Jones, 2001). A similar study, again by the National Center for Educational Statistics, in 1998 found that only 20% of the teachers surveyed felt they were well prepared to integrate educational technology into their teaching methods (National Center for Educational Statistics, 1999).

In the 2004 *Teachers Talk Tech* survey, 80% of the teachers surveyed said they wanted more technology training. The results from *Teachers talk Tech* also stated that "…according to *Education Week* data, only 15 states require incoming teachers to take courses in technology, and only Florida and Georgia have such a requirement for their administrator candidates" (Rother, 2004, p. 43). Teachers participating in the survey felt that computer availability in the classroom increased student performance (81%) and

aided student performance on standardized tests (62%). The majority of teachers responding (57%) believed that computer technology increased parent-teacher communications (Rother).

Imbimbo and Silvernail's (1999) study of New York City teachers found that only 32% felt they were adequately prepared to use technology to actively engage students. The less experienced teachers, i.e., less than 4 years experience, rated themselves as significantly better prepared than the more experienced teachers with regards to using technology. Given that a majority of the teachers felt unprepared to use technology in the classroom it would seem the teachers would embrace technology training, however the study found that professional in-service training for educational technology had one of the lowest participation rates (65%) when compared with other in-service opportunities.

When it comes to how school principals perceive teacher competency in the use of technology, Truog's (1998) study of 255 principals in the upper Midwest indicated teachers needed additional training. Principals in the study rated approximately 42% of the teachers as proficient and they felt 8% were exceptional. They responded that 37% of the teachers had some acceptable levels of competency but needed additional training. Approximately one out of every 10 teachers (13%) was rated as "needs attention," i.e., not proficient.

If most teachers feel they are not prepared to use technology in the classroom then how about the students? After all, they are the ones being assessed and many times the assessments are computer based (Wall & Walz, 2003). Research shows that minority and low socio-economic students suffer from a lack of basic computer skills. This is mainly attributed to the fact that these students have fewer computers in their homes. Wall and

Walz (2003) stressed that females, ethnic minorities, and students of lower-socio economic status may be disadvantaged in computer based or internet testing situations. The comfort level of these students when using technology could lead to lower assessment scores.

According to a study by the U.S. Census Bureau in August 2000 titled *Home Computers and Internet Use in the United States*, over 53% of White students indicated they had at least one computer at home compared to 32% for Black and 33% for Hispanic students. When comparing socio-economic status, the difference in computer access was even more pronounced. Families with incomes of $50,000 or higher reported at least 75% had a computer in their home, compared to only 30% for families with incomes of $20,000 or less. This indicates that minority and lower socio-economic students are more likely to have less computer skills upon entering school than their peers (Newburger, 2001).

Commercial Management Information Systems for Education

Robinson and Timperley's (2000) study of how school performance was reported in New Zealand stated "School's reporting practices are likely to reflect their technical resources as well as policy requirements." (p. 74). This indicates that the availability of information technology to collect and analyze school performance data is important. Management information systems improve the ability of school administrators to collect and analyze school performance data, but can also lead to the proliferation of data for the sake of collecting it. While some school districts developed their own home-grown information systems to collect, store, and analyze data, most prefered to use

commercially available systems (American Association of School Administrators, 2002; Lashway, 2002). Barriers to successfully implementing information technology into education include cost, central district or state controls, slow decision making, inexperienced staff, and resistance to change. The Schools Interoperability Framework (SIF) is an information technology industry-wide initiative to develop an open specification for ensuring K-12 instructional and administrative software applications work together (Farnsworth, 2002).

The majority of commercial software available to education can be categorized as student information systems (SIS), school administrative systems (SAS), or classroom management tools. SIS systems store and track individual student data such as personal information including: race and other demographics, class schedule, grades, and course history. SAS tools were originally developed for districts to manage programs such as food services, transportation, and human resources, but have evolved into tools that school-level administrators can use to analyze student performance. Classroom management tools enable individual teachers to track student attendance, grades, and other information about the students. It is possible to network classrooms and extract student performance data directly from teachers' computers (Farnsworth, 2002).

Some of the more popular commercial packages are Win School and a suite of software packages provided by Pearson School Systems. Win School by Chancery Student Management Solutions is a comprehensive, all encompassing package, that helps educators perform grading, attendance-taking, data analysis, scheduling of classes, and even keeping track of health issues with the students. It can handle up to 5,000 students in as many as 3,500 different classes (Chancery Student Management Solutions, 2006).

Pearson School Systems offers a variety of management information systems designed specifically for K-12 schools and tracking NCLB requirements. Pearson's SASI package offers a student information system for storing student records, enrollment, scheduling and attendance information. It is primarily a database management system with very little analysis capability. Sensitive demographic data such as gender, race, and socio economic status can be stored in a secure environment where only those with a need to know can access it (Pearson School Systems, 2006).

For analysis of student data, Pearson markets Benchmark and PASeries. Benchmark is a web-based program that administrators can use to measure, manage, and maximize student achievement. Using Benchmark, administrators can take multiple measures of student performance against pre-established standards several times throughout the school year. Benchmark provides a snapshot of student performance at key points during the year. Similarly the PASeries (Progress Assessment Series) software also measures student progress throughout the school year, but it provides the ability to forecast student progress toward state performance goals. PASeries lets administrators and teachers develop tests and make changes to curriculum based on national and state standards. PASeries is more powerful than Benchmark because it provides for this integration of state and national standards into the system (Pearson School Systems, 2006).

Mattei (2005) conducted a study in 15 Pennsylvania school districts to get administrators perceptions of Data-Driven Decision Making (D^3M) technology systems used to track and report accountability defined by No Child Left Behind (NCLB). All the participants (100%) responded that the D^3M technology was an effective tool when it

came to meeting the reporting demands defined by NCLB. The requirements of NCLB to report disaggregate student data in regards to race, ethnicity, and socio-economic status are extensive yet 58% said the D^3M system meet or exceeded their expectations. The responding administrators felt that D^3M increased their data productivity and as a result, data was viewed as an asset that needed to be collected, analyzed, and reported. Mattei found this "reflects a change in paradigm towards the use and proclivity of data" (p. 109, Mattei, 2005).

In summary, there were several management information systems currently available to administrators that can capture and store the essential data to adequately measure student progress. Administrators could use Win School, or a combination of Pearson's SASI, Benchmark and PASeries to collect and analyze student performance data to assess accountability at their school. When used properly these management information systems can improve productivity and change how administrator view the collection and analysis of data.

Summary of Literature Review

The review of literature finds that accountability in education is popular with the American public and politicians. The increased emphasis on accountability is well documented in the literature and NCLB holds school administrators to high standards when it comes to student performance. The literature also reveals the need for data collection and analysis down to the individual student. The majority of the literature published since 1980 regarding accountability in education stressed that school principals should focus on data when making decisions and formulating policies. However, there

was limited published research since No Child Left Behind (NCLB) legislation was enacted in 2002 regarding how principals should collect, analyze, and use the data in their decision-making process in regards to improving student performance. This level of data collection and analysis is labor intensive, and requires K-12 administrators to identify the most important data to collect and to do so in a timely manner that enables them to make decisions that will ultimately improve student performance.

This indicates a void in the base of knowledge regarding data collection and analysis. While general and theoretical knowledge of data use in schools is valuable, the review of literature reveals that more detailed studies are needed on which data indicators are actually being used day-to-day in schools. In addition, more research is needed on training administrators in using statistical methods and technology to harvest and use the data available at schools. This study will identify which data areas are perceived to be most important to administrators at the high school level, and specifically to administrators in the state of Florida. The intent is to add to the body of knowledge in the areas of data collection and analysis by focusing on school level data use.

CHAPTER THREE: METHODOLOGY

This chapter will restate the four primary research questions to be answered. In addition, the population participating in the research will be described along with the research instrument used in the study. Next, a discussion of the instrument's reliability and validity is presented along with definitions of the dependent and independent variables used in the study. Lastly, the data collection methodology will be explained in detail and an overview of the data analysis techniques provided.

Research Questions

The following research questions guided this study:

1. What priority do principals assign to each of the FSIR indicators?
2. What is the relationship between the priority assigned to the FSIR indicators and the ability to collect and analyze data locally at the schools?
3. Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?
4. What barriers do principals perceive to interfere with the collection and analysis of data on the FSIR indicators?

Population

The population for the study included 124 high school principals in the 13 central Florida school districts of Brevard, Citrus, Flagler, Lake, Marion, Orange, Osceola, Pasco, Pinellas, Polk, Seminole, Sumter, and Volusia. School districts in Florida were much larger than the national average because they were organized along county lines instead of metropolitan areas, cities, or townships. This results in fewer high schools per

county, and they tended to be larger than others across the nation (FLDOE Florida Information Note, 2004). In a 2003-2004 study by the National Center for Educational Statistics, Florida led the United States with the highest mean number of students enrolled in high schools (1,548 students per school); the national average was 758 students (National Center for Educational Statistics, 2006). Approximately 51% of Florida high schools had enrollments of 1,500 or more students in the 2002-2003 school year, and of all the high schools in the state over 17% had more than 2,500 students enrolled (FLDOE Florida Information Note, 2004).

The enrollment in the participating school districts varied from 7,416 in Citrus County, ranking it 42nd out of 67 districts in Florida, to over 175,000 for Orange County, fourth largest district in the state. Based on 2003 enrollment, a report by the National Center for Educational Statistics titled *Digest of Education Statistics* ranked seven of the school districts in this study as being in the top 100 largest districts in the United States: Orange County Public Schools (12th), Pinellas County Schools (22nd), Polk County Public Schools (34th), Brevard Public Schools (43rd), Seminole County Public Schools (54th), Volusia County Schools (57th), and Pasco County School District at 70th (National Center for Educational Statistics, 2006). There was also a wide range of enrollment growth represented by the school districts in the study. Between 2001 and 2005 Flagler County Schools had the highest percentage of enrollment growth in the state at 54%. Of the 13 districts that participated, only Pinellas County, with a negative 2% growth, showed a decline in enrollment. Table 3 lists each of the school districts participating in the study, their 2005 K-12 enrollment, and the number of public high schools in the district (Florida Department of Education [FDOE], 2006). In addition, the

table contains the ranking of each district, out of 67 districts in Florida, based on enrollment in 2005 and percent change in enrollment from 2001 to 2005.

Table 3

Central Florida School Districts Participating in the Study

School District	2005 Total K-12 Enrollment and (Ranking)	% Change in Enrollment from 2001 to 2005 and (Ranking)	Number of Public High Schools
Brevard	75,160 (10)	4% (37)	15
Citrus	15,835 (33)	4% (39)	3
Flagler	11,034 (36)	54% (1)	2
Lake	38,052) (20)	24% (4)	8
Marion	42,026 (18)	7% (29)	7
Orange	175,307 (4)	12% (17)	17
Osceola	49,449 (14)	32% (2)	8
Pasco	62,768 (13)	19% (7)	13
Pinellas	112,127 (7)	-2% (55)	18
Polk	89,483 (8)	10% (20)	13
Seminole	67,473 (11)	8% (26)	9
Sumter	7,416 (42)	16% (7)	2
Volusia	65,599 (12)	5% (35)	9
Total	811,729		124

Note. The enrollment and percent change rankings are out of 67 school districts.

Demographics across the participating districts are shown in Table 4. Minority student enrollment ranged from only 13% in the Citrus County School District to 65% in Osceola's district. The two districts with the highest minority percentages, Orange and Osceola, both had large Hispanic enrollments. The Orange County School District had a Hispanic enrollment of 29%, while Osceola's enrollment was 48% Hispanic.

Table 4

Demographics of Students Enrolled in Participating School Districts

School District	Minority Enrollment	Limited English Proficient Enrollment
Brevard	27%	1%
Citrus	13%	1%
Flagler	28%	2%
Lake	34%	3%
Marion	37%	2%
Orange	64%	10%
Osceola	65%	13%
Pasco	21%	2%
Pinellas	35%	2%
Polk	44%	3%
Seminole	39%	4%
Sumter	29%	3%
Volusia	33%	1%
Mean	36%	4%

The high Hispanic enrollments in Orange and Osceola resulted in Limited English Proficient percentages of approximately 10%, the highest for any of the counties in the study (FLDOE, 2006). Dr. Lee Baldwin, Director of Accountability, Research, and Assessment for Orange County Public Schools, stated that 133 different languages were spoken in that district alone (L. Baldwin, personal communication, December 10, 2006).

According to the FLDOE online FSIR reports for 2004-2005, none of the participating school districts had a high school dropout rate higher than 5%, but attendance rates did vary. The measure for absenteeism in the FSIR was the percent of students absent over 21 days during the school year (Absent 21+ Days). Five of the participating districts: Brevard, Citrus, Pinellas, Polk, and Seminole had much lower absentee rates than the others (less than 10% for Absent 21+ days). The school districts of Orange, Osceola, Pasco, Sumter, and Volusia all had an Absent 21+ Days percentage between 11 and 19%, while Lake, Marion, and Flagler had 20% or higher. Flagler had the highest with 21% of its students absent at least 21 days.

The percentage of students enrolled in the free or reduced lunch program, a measure of socioeconomic status, did vary widely in the districts studied (see Table 5). The percentage enrolled at the district level was not available in the FSIR but it could be obtained for the individual schools from the FLDOE online FSIR reports for 2004-2005. Of the 124 schools participating in the study, FLDOE published the percentage of students enrolled in the free or reduced lunch program for just 116 of them. Enrollment in the program ranged from as low as 6% to a surprising 94% at one of the schools. Over a quarter (27%) of the schools in the study had at least 50% of their students enrolled in the program.

Table 5

Percentage of Students Participating in Free or Reduced Lunch Program

Percent of Students Enrolled in Free or Reduced Lunch Program	Number of Schools (%)
0 - 9%	4 (3%)
10 - 19%	18 (16%)
20 - 29%	18 (16%)
30 - 39%	30 (26%)
40 - 49%	19 (16%)
50 - 59%	11 (9%)
60 - 69%	8 (7%)
70 - 79%	5 (4%)
80 - 89%	2 (<2%)
90 - 100%	1 (<1%)
Total	116

Academic performance was another area in which schools in the population differed. Table 6 shows the grade distribution for the 124 high schools in the population. The *2006 Guide to Calculating School Grades,* published by the FLDOE Division of Accountability, Research, and Measurement, was the directive by which all public schools in Florida were assigned a grade. The primary measure used to calculate school grades was the Florida Comprehensive Assessment Test (FCAT), and the grades for schools ranged from "A" to "F", much like student grades. The grade of "A" was given to the top performing schools and only 17% of Florida's 381 public high schools received an "A" grade in 2006 (School Grades by School Type, 2006). In contrast, a grade of "F"

indicated the school's performance, measured primarily by FCAT results, was well below state standards. It should be stressed that the second criteria, after FCAT results, in calculating a school's grade was the percentage of students taking the FCAT. To achieve an "A" the school must have tested at least 95% of the students, and grades of "B," "C," and "D" required that at least 90% be tested (Guide to Calculating School Grades, 2006).

Table 6

Distribution of FLDOE Grades for Districts Participating in Study

School Grade	Number (percentage) of Schools Receiving the Grade
A	21 (17%)
B	29 (24%)
C	48 (39%)
D	18 (15%)
F	2 (< 2%)
Other Grades	6 (3%)
Total	124

Note. A grade of "Other" indicates school data were incomplete or the school was new.

To better understand how the school grade was calculated by FLDOE for the schools in the population an overview, of the criteria is provided in Appendix B. This grading criterion was important to school principals and how they perceived the indicators reported in the FSIR.

Instrumentation

The data in the study were collected through an instrument created by the author called the Florida School Indicators Report Survey for High School Principals, and a copy is provide in Appendix C. It consisted of four sections (see Table 7) with the first containing a list of the 25 FSIR indicator groups (e.g., FCAT results, dropout rate, and number of discipline incidents). High school principals participating in the study were asked to rate each of the indicator groups based on four separate categories:

> Category 1 - The priority (low, medium, or high) assigned by the principal to the indicator group for analyzing student performance for their school.
>
> Category 2 - The availability of computer hardware and software (extensive, adequate, or limited) at the school to collect, analyze, and share data on the indicator group.
>
> Category 3 - The ability and skill of administrative staff at the school (extensive, adequate, or limited) to collect and analyze data on the indicator group.
>
> Category 4 - The amount of time administrative staff members at the school (extensive, adequate, or limited) have available to collect and analyze data on the indicator group.

The second section of the instrument asked principals to rate how the lack of time, training, technology, and data affected their ability to collect and analyze FSIR data at their school. A five point Likert-type scale was used with no effect corresponding to a value of 1 and a large effect corresponding to 5. In the second section principals were also asked to list other items that affected their staff's ability to collect and analyze data on the FSIR indicators, along with providing information on any particular training or technology the principals may have found to be useful at their school.

Table 7

Sections of the Research Instrument

Section	Response Options
Section One - 25 FSIR indicator groupings in alphabetical order	3 Point Scale
Category 1 - Priority assigned to the indicator	(High, Medium, Low)
Category 2 - Availability of computer hardware and software Category 3 - Ability/skill of administrative staff Category 4 - Amount of time staff members have available	(Extensive, Adequate, Limited)
Section Two - Items affecting the ability of administrative staff to collect and analyze data	
Time, Training, Technology, and Data	5 point Likert-type scale (no effect to large effect)
Section Three - How do you use the FSIR indicators at your school	
Attendance, Discipline, ESE needs, Student Performance, School Expenditures, Staff Qualifications, and Teacher Qualifications	Check Boxes
Section Four - Respondent Demographics	
Respondent Demographics (Gender, Education, and Experience) Approval to conduct interview and request copy of results	Check Boxes

In the third section of the instrument principals were asked to provide information on the various ways they used FSIR indicators at their school. A total of nine check boxes were provided in this section. There were seven check boxes for attendance, discipline, Exceptional Student Education (ESE), student performance, school expenditures, staff qualifications, and teacher qualifications so the principals could select

the ones that applied to their schools. Two additional check boxes were provided to indicate whether the principal had other uses for FSIR data not listed on the instrument or if they did not use FSIR data at all. There was also an open ended question where principals were asked to explain how they used the FSIR indicators. The last item in section three was an open ended question asking principals to list any data items they would like to know more about or whether they wished to know how other principals were using data.

The fourth and final section of the instrument asked the principals to provide information on their gender, education level, and the number of years they had served as a principal. The principals were also asked if the researcher could contract them for a follow-up interview and whether they would like a copy of the results from the study.

Score Reliability

Individual reliability coefficients were calculated for responses obtained from sections one, two, and three of the research instrument to verify consistency of the responses from the participating principals. The reliability of demographic data in section four was not calculated. The reliability of responses to section one is discussed first followed by those for sections two and three. Gliem (2003) recommends a Cronbach's alpha of .8 or higher as a reasonable goal for reliability.

Reliability of Section One Responses

Cronbach's alpha coefficients were computed on responses for each category in section one of the survey instrument. Reliability results for responses from all four

categories are presented in Table 8. The reliability of Category 1 responses were considered reliable with $\alpha = .86$, while Categories 2, 3, and 4 reliability coefficients were deemed highly reliable ($\alpha > .9$) (George & Mallery, 2003). Additional reliability analysis for subscales created from responses to the four categories in section one is presented in the validity analysis section of this study. The responses to section one were used to answer research questions 1, 2, and 3.

Table 8

Reliabilities of Categories 1, 2, 3, and 4 in Section One of Survey Instrument

Category	Cronbach's Alpha Coefficient
1 - Priority Assigned to the Indicator	.86
2 - Availability of Computer Hardware and Software	.93
3 - Ability/skill of Administrative Staff	.94
4 - Amount of Time Staff Members have Available	.94

Reliability of Section Two and Three Responses

The reliability of responses to the second section of the instrument: the affects of time, training, technology, and data on the staff to collect and analyze FSIR indicators, were judged to be fairly reliable with a Cronbach's alpha coefficient of .69 (George & Mallery, 2003). These responses were used to answer Research Question 4. Section

three responses, how principals use the FSIR indicators, had a Cronbach's alpha value of .71 indicating they were reliable (George & Mallery). Section three responses were used in answering research question 1.

In summary, the responses submitted by the participants in sections one, two, and three of the instrument were considered to be reliable given the Cronbach's alpha coefficients computed. These responses formed the basis for the data analysis in order to answer the four primary research questions in the study.

Validity of Scores Produced from the Instrument

Prior to finalizing the instrument it was administered to four administrators from one of the participating high schools to verify content validity. They provided feedback on the instrument's applicability. Once finalized, the instrument was reviewed by a principal at a different high school to determine its usefulness in realistic conditions. To verify construct validity of the responses within each of the four categories in section one the researcher used factor analysis. The analysis of validity for Category 1 responses is presented first because these responses dealt with the perceived priority that the principals assigned to the FSIR indicator groupings, the focus of this research study, and were deemed the dependent variable. The analysis of validity regarding Category 2, 3 and 4 responses is also presented.

Validity and Factor Analysis of Category 1 Responses

Exploratory factor analysis on the responses to Category 1, Priority you assign to this indicator, was used to ascertain construct validity of the responses and identify inter-

relationships amongst the 25 FSIR indicator groupings. The use of factor analysis requires the researcher to balance two conflicting requirements: to identify the fewest number of factors possible and the need to explain as much of the variance as possible (Pallant, 2004). Tabachnick and Fidell (1996) recommend researchers adopt exploratory factor analysis using different factors until a satisfactory solution is found that best describes the original data.

Factor analysis enabled the researcher to identify clusters of FSIR indicators that related to each other and locate outlier indicators that tended to isolate themselves. In addition, factor analysis was used to determine if the priorities assigned to the different 25 indicator groupings could be reduced to a smaller set of factors that could then be used in multiple regression analysis in order to answer Research Question 3 (Pallant, 2004).

According to Sapnas (2002), a sample size between 50 and 100 is adequate for factor analysis and the 70 survey responses from the participating principals falls in this range. Using the SPSS statistical package, the factor analysis technique of extracting principal components was attempted on Category 1 responses based on Kaiser's criterion that only factors with eigenvalues of 1.0 or more be retained (Pallant, 2004). First, Viramax rotation was accomplished with the assumption that the underlying factors were independent. Next Promax rotation was attempted because of the possibility that the factors may be correlated. The results of the two rotation techniques were very similar but Promax resulted in more distinct factor loading values. A scree plot is provided in Figure 1, and Table 10 lists the factor loading values for the individual FSIR groupings using Promax rotation and Kaiser's criterion that eignvalues must exceed 1.0.

The scree plot shows a distinct break after factor 2 and subtle breaks occur in the plot after factors 6 and 11. The first two factors account for only 32% of the total variance in the Category 1 responses while six and eleven factors account for approximately 59% and 79% respectively (see Table 9).

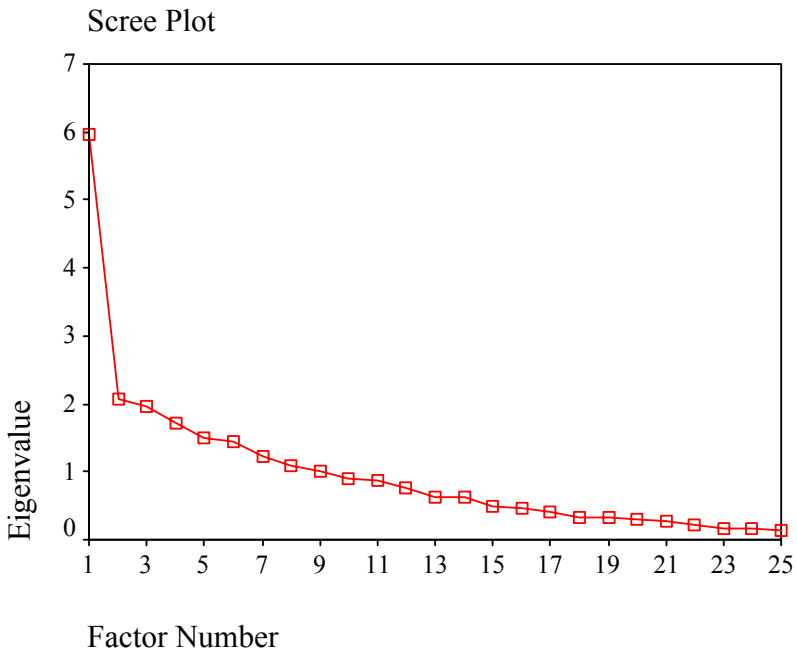


Figure 1. Scree Plot of Category 1 Responses

After viewing Table 9 and using Pallant's (2004) guidance "to find a simple solution with as few factors as possible; and retain the need to explain as much of the variance in the original data set as possible" (p. 153), the researcher elected to retain the nine factors which resulted in eigenvalues greater than 1.0. These nine factors accounted for 72% of the total variance in the Category 1 responses and provided in the researcher's opinion the fewest number of factors to adequately describe the 25 FSIR indicator groupings. The nine factors were used to summarize the findings for research questions 1

and 2, and create the multiple regression models used to answer research question 3. Table 11 contains descriptions of the nine factors, their corresponding FSIR indicator groupings, the loading coefficients for each indicator grouping, and reliability coefficients for responses contained in the factors.

Table 9

Factor Analysis Summary for Category 1 Responses

Factor	Eigenvalue	% of Variance	Cumulative %
1	5.97	23.88	23.88
2	2.06	8.24	32.12
3	1.95	7.80	39.92
4	1.72	6.91	46.83
5	1.51	6.03	52.87
6	1.46	5.82	58.69
7	1.23	4.90	63.59
8	1.09	4.34	67.93
9	1.02	4.07	71.99
10	.89	4.07	75.54
11	.87	3.54	79.02

Note. $N = 70$.

Table 10

Factor Loadings for Category 1 Responses with Promax Rotation

FSIR Grouping	Factor loading									Communality
	1	2	3	4	5	6	7	8	9	
#7	.94	-.14	-.04	.05	-.02	-.08	-.07	-.23	.03	.78
#19	.70	.36	-.17	.16	-.02	-.02	-.04	-.15	.09	.68
#23	.68	.02	.05	.20	.22	-.09	.04	.14	.01	.72
#17	.37	.36	.29	-.23	-.07	.02	.08	.02	.09	.59
#24	.37	.20	.26	.35	-.08	.03	.02	-.10	-.09	.58
#20	-.06	.85	-.26	.00	-.03	.09	.09	.18	.03	.63
#18	.21	.71	.21	-.09	-.06	-.06	-.12	.14	.15	.71
#6	-.14	.49	.09	-.02	.17	.14	-.04	-.44	-.25	.65
#9	-.23	.08	.77	.13	.28	-.16	-.19	.25	.12	.79
#14	.43	-.09	.76	-.17	-.15	.00	-.08	.06	-.04	.76
#13	-.10	-.23	.73	-.02	-.10	.14	.38	-.03	-.12	.67
#1	.03	-.07	-.10	.89	-.02	.04	.07	-.04	.04	.75
#15	.22	-.02	.06	.86	.01	.08	.01	.13	.12	.83
#22	.06	.02	-.12	-.05	.96	.01	-.06	.01	.16	.86
#21	-.06	-.15	.31	.08	.75	-.01	.09	-.24	.02	.84
#5	-.19	.14	-.04	.10	.07	.88	-.03	.29	-.09	.83
#4	-.08	.11	-.01	.03	-.06	.80	-.19	-.17	.20	.71
#10	.42	-.25	.07	-.03	-.05	.58	.07	.13	.05	.66
#12	-.10	.08	.02	.11	-.16	-.12	.87	.08	.20	.73
#11	.08	-.10	-.03	-.05	.30	-.03	.72	.08	.00	.70
#16	-.23	.32	.17	.04	-.08	.12	.16	.87	.05	.77
#8	-.03	.23	.01	.01	-.05	-.08	.50	-.53	.07	.70
#2	.05	.14	-.03	-.04	.12	-.01	.19	.16	.88	.80
#3	.17	-.07	.00	-.09	.23	.31	.02	-.18	.56	.64
#25	.32	.24	-.10	-.21	.27	.02	.08	.13	-.44	.64

Note: $N = 70$.

Table 11

Category 1 Factor Descriptions and Reliability Coefficients

FSIR Indicators Associated with Factors	Factor Loading
Factor 1: Teacher Demographics and Graduate Performance ($\alpha = .71$)	
Indicator Group #7 - Follow-up on graduates	.94
Indicator Group #10 - Graduation rate	.42
Indicator Group #23 - Teachers with advanced degrees	.68
Indicator Group #24 - Teachers' average years of experience	.37
Indicator Group #25 - Teachers teaching out of field	.32
Factor 2: Sources of School Costs ($\alpha = .72$)	
Indicator Group #20 - Percent of students with disabilities	.85
Indicator Group #18 - School staff percentages	.71
Indicator Group #6 - FCAT NRT results	.49
Indicator Group #19 - Stability rate	.36
Indicator Group #17 - School operating costs	.36
Factor 3: Sources of School Revenue ($\alpha = .61$)	
Indicator Group #9 - Percent of gifted students	.77
Indicator Group #14 - Per pupil expenditures	.76
Indicator Group #13 - Number of students in school in October	.73
Factor 4: Results of College Entrance Exams ($\alpha = .76$)	
Indicator Group #1 - SAT Results	.89
Indicator Group #15 - ACT Results	.86

Note. $N = 70$

FSIR Indicators Associated with Factors	Factor Loading
Factor 5: School Discipline	
(α = .79)	
Indicator Group #22 - Out of school suspensions	.96
Indicator Group #21 - In school suspensions	.75
Factor 6: FCAT Performance	
(α = .57)	
Indicator Group #5 - FCAT Writes	.89
Indicator Group #4 - FCAT Results	.80
Factor 7: Student Demographics	
(α = .63)	
Indicator Group #12 - Limited student proficient/ESOL	.87
Indicator Group #11 - Incidents of crime and violence	.72
Indicator Group #8 - Percent of students on free or reduced lunch	.50
Factor 8: Overall School Grade	
(Reliability coefficient not computed because Factor 8 contains 1 item)	
Indicator Group #16 - School Grade	.87
Factor 9: Student Attendance & Dropout Rate	
(α = .60)	
Indicator Group #2 - Attendance	.88
Indicator Group #3 - Dropout rate	.56

Note. $N = 70$.

Validity and Factor Analysis of Category 2, 3, and 4 Responses

The factors identified for Categories 2, 3, and 4 were not used in the data analysis presented in chapter four but are presented here to demonstrate construct validity and for the benefit of future research studies. The factor loading tables and scree plots used to determine the factors for Categories, 2, 3, and 4 are contained in Appendix G, and descriptions of the individual factors for each category are provided below in Table 12.

Table 12

Factor Descriptions for Category 2, 3, and 4 Responses

Category	Factor Descriptions
Category 2 - Availability of computer hardware and software	1. Gifted Students and School Discipline 2. Sources of School Revenue 3. FCAT Performance 4. Student and Staff Makeup 5. College Entrance Exam Results 6. School Attendance and Graduation Rate
Category 3 - Ability/skill of administrative staff	1. Operating Costs and Teacher Demographics 2. School Discipline and Student Demographics 3. FCAT Performance and School Attendance 4. College Entrance Exam Results 5. Low Socio-Economic Students
Category 4 - Amount of time staff members have available	1. Staff Demographics and Student Discipline 2. FCAT Performance 3. Cost of Operating the School 4. Student Demographics 5. College Entrance Exam Results

Exploratory factor analysis was computed on the responses to Categories 2, 3, and 4 of section one of the instrument to identify the underlying factors of each and confirm construct validity within each category. The loading factors displayed in bold print of Tables 39, 41, and 43 which are located in Appendix G list the individual FSIR indicators that comprise each factor for Categories 2, 3, and 4.

The six factors identified in Category 2 accounted for 68% of the variance in the responses for that category (see Table 38 in Appendix G). This category required principals to rate the availability of computer hardware and software at their school to collect and analyze data on each FSIR indicator grouping. The six factors identified with eigenvalues greater than 1.0 were: (1) Gifted Students and School Discipline, (2) Sources of School Revenue, (3) FCAT Performance, (4) Student and Staff Makeup, (5) College Entrance Exam Results, and (6) School Attendance and Graduation Rate. The results of exploratory factor analysis on Category 2 responses confirm construct validity within the category and indicated how computer hardware and software was used at the various schools. The individual FSIR indicator groupings that comprise each factor and their respective loading values are provided in Table 39 located in Appendix G along with the scree plot.

As for Category 3, the five factors listed in Table 12 accounted for 68% of the variance in the responses (see Table 40 in Appendix G). In Category 3 principals rated the ability/skill of the administrative staffs at their school to collect and analyze data on the FSIR indicator groupings. The five factors with eigenvalues greater than 1.0 were: (1) Operating Costs and Teacher Demographics, (2) School Discipline and Student Demographics, (3) FCAT Performance and School Attendance, (4) College Entrance

Exam Results, and (5) Low Socio-Economic Students. The factor analysis results indicate evidence of construct validity. The individual FSIR indicator groupings that comprise each factor and their respective loading values are provided in Table 41 located in Appendix G along with the scree plot.

The five factors in Category 4 accounted for 70% of the variance in the responses (see Table 42 in Appendix G). Category 4 responses required principals to rate the amount of time the administrative staff had available to collect and analyze data on the FSIR indicator groupings. The five factors with eigenvalues greater than 1.0 were: (1) Staff Demographics and Student Discipline, (2) FCAT Performance, (3) Cost of Operating the School, (4) Student Demographics, and (5) College Entrance Exam Results. The factor analysis results indicate construct validity within the Category 4 responses. The individual FSIR indicator groupings that comprise each factor and their respective loading values are provided in Table 43 located in Appendix G along with the scree plot.

Summary of Validity and Factor Analysis

In summary, the technique of exploratory factor analysis, specifically principal component analysis using SPSS, was used to identify the basic factors, i.e., constructs, of the responses to Categories 1, 2, 3, and 4. The inter-relationships identified through factor analysis for the responses indicate evidence of construct validity for scores produced from each of the four separate categories. Evidence of reliability was presented for the responses to Category 1, which was the dependent variable, since those factors formed the basis for answering the four research questions.

Dependent and Independent Variables

The dependent variables for the regression models used to answer Research Question 3, "Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?", were the responses to Category 1 for each of the nine factors identified in factor analysis. The dependent variables for the nine factors represented the perceived priority principals assigned to the 25 FSIR indicator groupings measured in the survey instrument. The responses to Category 2, 3, and 4 were the independent variables in the study and they included the availability of computer hardware and software, the ability/skill of the administrative staff, and the amount of time the staff had available to collect and analyze data at the school.

Data Collection Methodology

This section provides an overview of the approval process required by the various school districts participating in the study. In addition, a description is included of the methodology used to distribute the survey instruments to the districts and conduct the follow-up telephone interviews.

District Approval Process

Before the instrument could be administered to the high school principals in the target population, approval had to be granted by the school districts. Each district had its own policies and procedures for conducting research in their schools so approval had to

be sought with each individual district. Once the districts approved the research, the instrument was mailed to principals in the population via the U.S. Postal Service.

In May 2006, each school district targeted for the study was contacted to obtain approval to conduct the research in their district. The districts of Flagler, Lake, Osceola, and Sumter did not require any formal documentation and approved the research after receiving a follow-up email describing the study. For the remaining districts, specific procedures were required and these varied by district such as IRB approval forms and a detailed description of the study. All 13 districts granted approval for surveying their high school principals by September 2006.

One of the districts limited the research to only four of its 13 high schools. The district did not provide rationale for its decision. All the districts delegated actual participation in the research to the individual principals. As a result, some principals chose not to participate in the study.

Distributing Instrument to the Districts

The University of Central Florida's Institutional Review Board approved the research in October 2006 and each high school principal was sent a personal email explaining the purpose of the research and letting them know of upcoming correspondence. The instrument was administered to each high school principal in the study population via mail in accordance with the five contact formats in Dillman's (2000) Tailored-Design Method. First, a personalized prenotice letter was sent to all principals in October 2006, introducing the study, explaining its purpose, and stating the actual instrument would arrive within in a week. The prenotice letter stressed that all high

school principals in central Florida would benefit from their participation in the study and the sharing of their experience with regards to using data. Approximately one week after the prenotice letter was mailed, a personalized cover letter, a copy of the survey instrument, and a self-addressed envelope in which to return the completed instrument were mailed to each high school principal in the target population. Every school in Florida has its own unique identification number assigned by FLDOE for FSIR reporting purposes, and this number was used to code the individual instruments. The number was a numerical value between two and four digits in length, and the school numbers were placed on the individual survey instruments prior to mailing them to the high school principals. This coding technique enabled the researcher to identify non-respondents for follow-up correspondence and contact principals who agreed to an interview.

Two weeks after the researcher received a completed instrument in the mail, a thank you postcard was sent to the principal thanking them for participating in the study. Replacement instruments along with another self-addressed envelope and a follow-up letter were mailed to all non-respondents in November 2006, four weeks after the initial survey was mailed. The final mailing to non-respondents occurred in December 2006, eight weeks after the initial survey. In this mailing, another copy of the instrument was included along with a cover letter asking the non-respondents to please complete the survey and return it via mail (Dillman, 2000). All the responses from the participating principals were received by January 2007. Each principal completing the postal survey was asked if they could be contacted for a follow-up telephone interview, and these were accomplished during December 2006 and January 2007. The interviews provided first hand perceptions of how principals felt about the FSIR indicators.

Copies of the informed consent forms provided to the principals are located in Appendix E. In addition, samples of the introductory email message, along with the various cover letters and other documents used in the study, can be found in Appendix F.

Data Analysis Methodology

This section provides an overview of how the researcher analyzed the data collected from the instruments and interviews in order to answer the four research questions. Table 13 lists how the responses to the various items in the instrument were coded for analysis purposes. In addition, the researcher conducted follow-up telephone interviews with selected principals to gather additional information regarding how they used FSIR indicators in their school. Interview questions were also asked to determine how principals perceived the use of information technology at their school with regards to data analysis and whether they felt their staffs had adequate training in data analysis.

Research Question 1

For Research Question 1, "What priority do principals assign to each of the FSIR indicators?" both quantitative and phenomenological analysis were used. The quantitative analysis consisted of computing and analyzing descriptive statistics for the responses to Category 1, the priority principals assigned to the FSIR indicators, and section two, how principals use the FSIR indicators at their school. Phenomenological analysis was conducted on responses received from the three questions that were answered in the telephone interviews.

First, descriptive statistics were computed on responses to Category 1, the priority principals assigned to the FSIR indicators. This was accomplished by assigning a numeric coding value of 1, 2, or 3 to the Category 1 responses from the participating principals (see Table 13). Median values were computed for each FSIR grouping in Category 1 and all the coded responses for individual FSIR groupings were summed to

Table 13

Coding of Research Instrument

	Response Option on Instrument	Coding Value
Section One		
Category 1	High Medium Low	3 2 1
Categories 2, 3, and 4	Extensive Adequate Limited	3 2 1
Section Two		
Items affecting the ability of administrative staff to collect and analyze data	Time Training Technology Data	1,2,3,4, or 5
Section Three		
FSIR Indicators Used at School	Check Box	1 if checked, 0 otherwise

compute a total value. The sum totals of the 25 indicator groupings were then rank-ordered to identify the highest priority FSIR indicator groups as perceived by the respondents. This provided a basis by which to compare the priorities that principals

assigned to each indicator group. Next, composite values of Category 1 responses were calculated for each of the nine factors listed in Table 11 and descriptive statistics computed in order to compare the nine factor subscales to determine the perceived priority relative to each other. The procedure describing how the composite values were computed is provided in Chapter Four.

Descriptive statistics were also computed on responses to section three of the instrument, how principals use FSIR indicators at their school, in order to determine the usefulness of the FSIR. This analysis helped formulate the findings regarding how principals felt about the importance of the individual indicators.

The phenomenological analysis of telephone interview questions provided data to supplement the quantitative analysis of the instrument's responses. The combination of quantitative and phenomenological analysis provided the foundation to answer research question 1.

Research Question 2

Research Question 2, "What is the relationship between the priority assigned to the FSIR indicators and the ability to collect and analyze data locally at the schools?" was determined by computing correlation coefficients between Category 1 responses and those for Categories 2, 3, and 4 in each of the nine Category 1 factors. This enabled the researcher to identify if relationships existed between the priority assigned to a FSIR indicator grouping and the availability of technology, the ability/skill of the administrator to analyze data, or the amount of time the administrator could devote to collecting and analyzing data. The same procedure that was used to create the nine composite values for

Category 1 in order to answer research question 1 was used again, except this time composite values were created for all four categories. This provided four composite values that represented Categories 1 - 4 responses for each of the nine Category 1 factors. The last step consisted of computing correlation coefficients between the composite values in Category 1 and those for Categories 2, 3, and 4 for each factor.

Research Question 3

Multiple regression models were used to answer Research Question 3, "Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?" This was accomplished by performing multiple regression analysis on the composite values created for calculating correlation coefficients in Research Question 2 and treating responses to Category 1 as the dependent variable. The composite responses from Categories 2, 3, and 4 for the nine factors were assigned as independent variables. The data analysis resulted in multiple regression models for six of the nine Category 1 factors.

Research Question 4

Both quantitative and phenomenological analysis were used to answer Research Question 4, "What barriers do principals perceive to interfere with the collection and analysis of data on the FSIR indicators?" First, descriptive statistics were computed on the responses to the 5 point Likert-type scale in section two of the instrument. This provided a basis by which to compare the barriers regarding the lack of time, staff training, technology, and data. The median and range values (i.e., minimum and

maximum) of the responses were calculated along with a sum total in which to compare the results.

The phenomenological analysis of telephone interview questions was conducted to supplement the quantitative analysis of the instrument's responses. The combination of quantitative and phenomenological analysis provided the foundation to answer Research Question 4.

Summary

The purpose of this study was to determine the priority that central Florida high school principals assigned to the indicators in the Florida School Indicators Report (FSIR) and to document their ability to collect and analyze data locally on the various indicators. This chapter stated the research questions that guided the study, and the target population was characterized to indicate how diverse the student enrollments were in the high schools where principals participated in the study. Next, the research instrument was described, along with the reliability and validity of the responses. The reliability coefficients indicated the instruments' responses were reliable and factor analysis was used to confirm construct validity. Practicing K-12 administrators were consulted to verity content validity and ensure the usefulness of the instrument.

The dependent and independent variables used in the study were also described. Because the study focused on the perceptions that principals had of the FSIR, the priority they assigned to the various FSIR indicators were determined to be the dependent variable. The items affecting the ability of administrators to collect and analyze data on the indicators: availability of computer equipment, ability/skill of the administrative staff,

and the amount of time devoted to data analysis duties, were classified as the independent variables.

Lastly, the data collection methodology was presented and an overview of the data analysis techniques provided. Data on the principals' perceptions were collected by conducting a postal survey and follow-up telephone interviews. Prior to the postal survey the 13 school districts were contacted in order to gain their approval to conduct the research. All 13 districts agreed to participate and a total of 115 public high schools were identified in the target population. Chapter four contains the results and findings that resulted from analyzing the postal surveys and telephone interviews, and chapter five summarizes the conclusions from the research study.

CHAPTER FOUR: ANALYSIS OF DATA

The study sought to identify the perceptions that central Florida high school principals have of the Florida School Indicators Report (FSIR) and its usefulness. This chapter presents the results from the quantitative data analysis of the survey instrument responses and a qualitative analysis of the follow-up interviews, along with the findings as the data related to the four research questions. The analysis presented in this chapter established the foundation for the conclusions and recommendations that are discussed in Chapter Five of the study.

Description of Sample Population

The original target population for the study was 124 public high school principals in the central Florida school districts of Brevard, Citrus, Flagler, Lake, Marion, Orange, Osceola, Pasco, Pinellas, Polk, Seminole, Sumter, and Volusia. One school district only approved four high schools to participate out of 13 in the district, reducing the actual population down to 115. The initial mailing of the research instruments to all 115 principals occurred in October 2006 and was followed up 30 days later by another mailing to all non-respondents. The last and final mailing was sent in December 2006, four weeks after the second mailing. The mailing effort resulted in 70 usable instruments for a 61% return rate. Green and Boser (2001) recommend a target response rate for postal surveys dealing with education surveys to be 70% $\pm$ 20% and the results from this study fall within that range indicating an acceptable response rate.

Responses for several demographic items were collected to describe the principals who actually participated in the study. There were 24 female (34%) and 46 male (66%) principals who responded to the study. Additional statistics were collected on the graduate degrees held by the participating principals, along with their experience levels. Table 14 contains the education levels of the participants. Florida requires all principals to have at least a master's degree and that degree is most prevalent for the respondents.

Table 14

Education Level of Respondents

Response	*n* (%)	Male *n* (%)	Female *n* (%)
Master's Degree	52 (74%)	35 (67%)	17 (33%)
Specialist Degree	7 (10%)	6 (86%)	1 (14%)
Doctoral Degree	11 (16%)	5 (46%)	6 (54%)
Total	70	46	24

Respondents were also asked to provide the years of experience they had as a principal. The majority (70%) had at least 6 years of experience, and Table 15 lists the various experience levels of all the participating principals.

Table 15

Experience Level of Respondents

Response	*n* (%)	Male *n* (%)	Female *n* (%)
Less than 5 years	21 (30%)	9 (43%)	12 (57%)
6-10 years	24 (35%)	20 (83%)	4 (17%)
11-15 years	10 (14%)	7 (70%)	3 (30%)
16-20 years	5 (7%)	4 (80%)	1 (20%)
21+ years	10 (14%)	6 (60%)	4 (40%)
Total	70	46	24

The number of principals who responded in the study by school grade as assigned by FLDOE in 2005-2006 is listed in Table 16. These data are presented to show the diversity of the schools in the study whose principals actually participated. The table also lists the number and percentage of schools in the study population receiving that same grade. Principals at high performing schools, those receiving either an "A" or "B", may perceive the importance of the FSIR indicators differently from principals at lower performing schools so it was important not to have a preponderance of principals from either high or low performing schools. The data in Table 16 show the percentages of responding principals by school grade closely corresponds to that of the population.

Table 16

Response by School Grade Compared to Population

School Grade	Responding *n* (%)	Population *n* (%)
A	12 (18%)	21 (17%)
B	22 (31%)	29 (24%)
C	22 (31%)	48 (39%)
D	10 (14%)	18 (15%)
F	0 (0%)	2 (<2%)
I, P, or no grade	4 (6%)	6 (3%)
Total	70	124

Telephone Interviews

Telephone interviews were granted by 18 (12 male and 6 female) of the 70 principals participating in the study (26%) and were used to gather personal perceptions from the principals that could not be captured in the mail survey. Masters degrees were most prevalent with 11 interviewees holding that degree, while just three had specialist degrees and four had doctorates. Eight interviewees had less than 5 years experience, seven had 6-10 years, three had 11-15, and only one had 21+. The telephone interviews were voluntary and conducted in a structured, open-ended manner during December 2006 and January 2007. The interview questions provided information about how principals perceived and used the FSIR indicators at their schools and the roles that information technology and training played in collecting and analyzing data on the FSIR indicators.

The researcher scheduled the telephone interviews in advance via email and asked the principals to allow 15 minutes. There were six questions, three dealing with how principals used FSIR indicators and three asking how training and information technology affected data collection and analysis. The interview questions are listed below and sought to capture the principals' personal perceptions in regards to research questions 1 and 4.

1. Which FSIR indicators do you currently use in your school?

2. Do you find any particular indicators more beneficial than others when it comes to analyzing student performance?

3. How do you use the indicators?

4. Does information technology affect your ability to collect and analyze data on the indicators? If yes, then how?

5. Is there any particular information technology that your school needs to collect and analyze data on the indicators?

6. Do you feel your administrative staff has adequate training to collect and analyze data on the indicators? If yes, then what training have they received? If no, then what training do they need?

Prior to the interviews, each principal was emailed a list of the 25 FSIR indicator groupings along with a copy of the six questions so they could review them in advance. The researcher transcribed the significant statements extracted from the principals by hand, and none of the telephone interviews were recorded in order to protect the privacy of interviewees. Phenomenological analysis was chosen to analyze the interview questions because it "is a specialized method for describing the different ways in which people conceptualize the world around them" (Gall, 2007, p. 497). The phenomenological analysis of interview questions 1, 2, and 3 is presented in the analysis

of research question 1, how principals perceived the FSIR indicators. This analysis was accomplished to supplement the quantitative findings of research question 1. The intent was to gain insight into why the high school principals may have ranked the FSIR indicators the way they did in Category 1.

A phenomenological analysis of questions 4, 5, and 6 is presented in the analysis of research question 4 and provides insight of how principals perceived the use of information technology and administrator training when it comes to collecting and analyzing FSIR data at their schools. This analysis supplemented the quantitative findings presented in Research Question 4.

Research Question 1

What priority do principals assign to each of the FSIR indicators?

In order to answer Research Question 1, both quantitative analysis on the survey responses and qualitative analysis of the telephone interviews were performed. Quantitative analysis techniques were used to analyze the responses to Category 1 in section one of the instrument and also for the responses to section three. In Category 1 the principals ranked the priority of each FSIR indicator grouping as low, medium, or high. The responses to the check boxes in section three provided data on how the principals used the indicators. The qualitative analysis technique of phenomenological analysis was used to analyze telephone interview questions 1, 2, and 3.

Quantitative Analysis of Priorities Assigned to the Indicators in Category 1

The results in Table 17 reflect the FSIR indicators that were perceived to be the most important to high school principals in central Florida. Indicator groupings with a median of three were perceived to be high priority by the majority of the responding principals, followed by indicator groupings whose median was two, and finally those with a median of one. The overall sum provides an indication of the importance principals assigned to particular indicator groupings relative to each other.

The percent of high, medium, and low response are listed in Table 17 to provide a comparison of how the participating principals rated the priority of each of the 25 indicator groupings. For example, the highest ranked indicator grouping by overall sum was FCAT Results, and 99% of the principals participating (69 out of 70) gave it a high priority. In contrast, the lowest ranked indicator grouping was Follow-up of Graduates with a median value of one indicating that the majority of principals (54%) gave it a low priority. Ten of the 25 indicators (40%) had a median value of three which corresponded to high priority, while 14 (56%) had a median of two implying those were perceived to be medium priority. Follow-up of Graduates was the only indicator out of 25 to have a median value of one or low priority. This finding is significant and may indicate principals are not concerned with students once they graduate from their school or that data on follow-up of graduates are difficult to collect and analyze.

Table 17

Priority of FSIR Indicator Groupings in Category 1

FSIR Indicator Groupings	Sum	Median	Response (%)		
			High	Med	Low
4 - FCAT Results	209	3	99	1	0
5 - FCAT Writes	206	3	94	6	0
2 - Attendance	198	3	83	17	0
16 - School Grade	197	3	86	10	4
3 - Dropout Rate	176	3	56	40	4
10 - Graduation Rate	176	3	60	31	9
20 - Students w/disabilities	175	3	57	36	7
6 - FCAT NRT Results	170	3	51	40	9
12 - Limited English Proficient/ESOL	166	3	50	37	13
25 - Teachers teaching out of field	165	3	53	30	17
13 - Number students in October	163	2	47	39	14
11 - Incidents of crime and violence	160	2	47	34	19
18 - School Staff	157	2	44	36	20
8 - Free or Reduced-Price Lunch	153	2	37	44	19
22 - Out of School Suspensions	152	2	33	51	16
15 - SAT Results	146	2	27	54	19
19 - Stability Rate	141	2	30	41	29
1 - ACT Results	132	2	19	51	30
21 - In School Suspensions	132	2	21	46	33
17 - School Operating Costs	127	2	16	51	34
24 - Teachers, avg. years of experience	127	2	10	61	29
23 - Teachers with advanced degrees	122	2	13	49	39
14 - Per-pupil Expenditures	122	2	17	40	43
9 - Gifted Students	118	2	11	46	43
7 - Follow-up of Graduates	115	1	19	27	54

Note. $N = 70$.

Next, the nine Category 1 factors identified in factor analysis were analyzed using descriptive statistics to determine their relative priority. The nine Category 1 factors are listed in Table 11, which is located in Chapter 3, and a composite measure was created for each factor in order to measure its perceived priority. This composite measure was an average created by summing all the coded Category 1 responses for the FSIR indicators comprising a particular factor (see Table 11) then dividing by the number of FSIR indicators in the factor. For example, the composite measure for Factor 1, Teacher Demographics and Graduate Performance, was calculated by summing the coded Category 1 responses for indicators 7, 10, 23, 24, and 25, then dividing by five. Nine composite measures, one for each factor, were created for each of the 70 principals who responded.

The composite measure for Factor 2 was created by dividing the sum for coded Category 1 responses to indicators 6, 17, 18, 19 and 20 by five. To calculate the composite measure for Factor 3, the coded Category 1 responses to indicators 9, 13, and 14 were summed then divided by three. The composite measure for Factor 4 was calculated by summing the coded Category 1 responses to indicators 1 and 15 then dividing by two. Factor 5's composite measure was obtained by summing the coded Category 1 responses to indicators 21 and 22 then dividing by two. Factor 6 also contained two indicators, 4 and 5, so those coded responses were summed and divided by two. There were three indicators in Factor 7, numbers 8, 11, and 12, so those coded Category 1 responses were summed and divided by three. Factor 8 consisted of a single indicator, number 16, so it was not necessary to create a composite measure. The last

factor was 9 and its composite measure was calculated by summing the coded responses to indicators 2 and 3 then dividing by two.

Next descriptive statistics were computed to rank the nine factors by the means of the composite measures (see Table 18). The factor FCAT Performance was perceived to have the highest mean priority ($M = 2.96$, $SD = .16$) of the nine factors. This finding corresponds to the review of literature regarding the high importance administrators place on standardized test results (American Association of School Administrators, 2002). Overall School Grade was perceived to be the second most important factor ($M = 2.81$, $SD = .49$). Since FCAT scores in Florida are used to compute overall school grades (see Appendix B), the researcher performed an independent t-test using the means of Category 1 responses as the dependent variable for the two factors FCAT Performance and Overall School Grade to determine if there was a statistically significant difference between the mean perceived priorities. The variances of the composite measure means were not homogeneous based on Levene's test of equality of variances ($F = 28.09$, $p < .01$), therefore the SPSS t-statistic for equal variances not assumed was used (Pallant, 2004). The results of the t-test indicated there was a statistically significant difference between the means ($t = 2.44$, $p = .017$) in FCAT performance ($M = 2.96$, $SD = .16$) and Overall School Grade ($M = 2.81$, $SD = .49$). The results of the t-test are presented in Table 19.

The ranking of Teacher Demographics and Graduate Performance at seventh out of the nine factors (see Table 18) was an unexpected finding that did not correspond to any research reviewed in the literature. Another surprising ranking was that Sources of School Revenue was perceived to be the least important of the nine factors. With education funds short in Florida the researcher expected this factor to be ranked higher.

Table 18

Descriptive Analysis of the Composite Measures of the Category 1 Factors

Category 1 Factor	*M*	*SD*
FCAT Performance	2.96	.16
Overall School Grade	2.81	.49
Student Attendance	2.67	.42
Student Demographics	2.28	.56
Sources of School Costs	2.20	.48
School Discipline	2.03	.64
Teacher Demographics and Graduate Performance	2.01	.48
Results of College Exams	1.99	.62
Sources of School Revenue	1.92	.53

Note. $N = 70$.

Table 19

Independent *t*-test Summary of FCAT Performance and School Grade

	FCAT Performance		Overall School Grade			
	M	*SD*	*M*	*SD*	*df*	*t*
Composite Measure of Category 1 Priority	2.96	.16	2.81	.49	83	2.44*

Note. Variance not assumed homogeneous. $N = 70$, $*p < .05$.

Quantitative Analysis of How Principals Use the FSIR Indicators

Responses to the third section of the instrument indicated how principals were currently using the FSIR indicators at their schools. There were nine checkboxes along with a response area for principals to list any uses that did not correspond to one of the checkboxes. Of the 70 principals participating in the study, 69 responded in section three. Table 20 shows the responses to the checkboxes.

Eighty percent of the participating principals used the FSIR to analyze student performance and this was the most frequently selected response. Closely following student performance came analyzing attendance (79%), discipline issues (70%), and then the needs of exceptional student education (67%). The other categories selected had less than a majority of the principals using those indicators. Only 3% of the responding principals (2 out of 69) indicated that they did not use the FSIR.

In addition to the checkboxes, responding principals could list items they wanted to know more about or what other principals were doing in a particular area regarding data collection. The following is the list of other items they provided with the number of principals listing that item in parenthesis: Lexiles (11), Read 180 (3), Kaplan Scores (1), Write Score (1), and FCAT Explorer (9). Lexiles, Read 180, Kaplan Scores, and Write Score are commercial products available to improve reading performance. FCAT Explorer is a FLDOE website that provides sample FCAT questions so students may practice taking the FCAT. As for requesting information regarding what other principals were doing there were two responses: the placement of incoming 9th graders in remedial math and reading classes and the development of school improvement plans.

Table 20

How FSIR Indicator Data is Currently Being Used

Checkbox	% Selected by Principals	Ranking
Analyzing Student Performance	80%	1
Analyzing Attendance Issues	79%	2
Analyzing Discipline Issues	70%	3
Analyzing Exceptional Student Education (ESE) Needs	67%	4
Analyzing Teacher Qualifications	46%	5
Analyzing Staff Qualifications	36%	6
Analyzing School Expenditures	29%	7
Other Uses of FSIR Indicators	3%	8
Do not use FSIR Indicators	3%	9

Note. $N = 69$.

Phenomenological Analysis of Interview Questions 1, 2, and 3

The answers to interview questions 1, 2, and 3 all dealt with how principals perceived and used the FSIR indicators at their school. Since the 18 interviews were structured, the researcher did not have to contend with extraneous statements not dealing with the interview questions. Tables 21, 22, and 23 contain the significant replies of principals regarding those questions.

Table 21

Responses to Interview Question 1

Which FSIR indicators do you currently use at your school?
1. Of course school grade comes first then indicators dealing with student performance: FCAT reading, writing, and math. I also look at discipline, attendance, and dropouts.
2. School grade comes first then FCAT scores, especially the ones for reading and math. As for the other indicators they are too old when the FSIR comes out.
3. I use the school grade as my prime indicator then FCAT results. I also use some of the discipline data especially in and out of school suspensions. As for data on the students I track the number of disabled students because we are one of the schools in our county that handles disabled kids. We also have a high number of students on free and reduced lunch.
4. We use school grade but since we are an IB school FCAT is really not a factor. All our students must pass the 8th grade FCAT in order to be admitted. I am concerned about the teacher qualifications because we want highly qualified teachers in the IB program.
5. I only worry about the school grade and FCAT scores, everything else in the FSIR is too old to worry about.
6. School grade is the big deal to me, then FCAT scores. I also like to review the teacher qualifications like experience and teaching out of field.
7. We have some gang issues at our school so I look at discipline first. The suspensions and incidents of crime are important to me. Of course school grade and FCAT scores are one of our main focus areas. I also look at student demographics because that has some bearing on our gang problem.
8. I'm not a big fan of the FSIR because the information is outdated. I do look at the school grade of course and FCAT scores. After that I would have to say that in and out of school suspensions are important for us to track.
9. After school grade the next thing I look at is FCAT scores, then suspensions.
10. We are an IB school and overall school grade is the bottom line. We have to keep our "A" as an IB school. As for discipline we do not have any problems because all of our kids are here to learn.

Which FSIR indicators do you currently use at your school?
11. I have 77% of my students reading at Level 1 or 2 so FCAT scores is my main focus. We want to raise our school grade from a "D" to at least a "C" so I suppose school grade is important to me. With a lot of my kids coming from low income families I watch the number on free and reduced lunch and my suspensions.
12. For me the bottom line is school grade and FCAT results.
13. I suppose I would say FCAT scores and school grade are pretty much it.
14. We're a "C" school and have been for several years so I am concerned about the school's grade obviously. After that I think FCAT results are my next biggest concern.
15. School grade for sure then probably FCAT results.
16. The FSIR is so outdated when you get it about the only things of value are school grade and FCAT scores because those only change once a year. Everything else is too dynamic.
17. Discipline is a big deal to me so I look at that. Most of our kids come from low income families so I look at free and reduced lunch. Of course school grade and FCAT scores are important but we're a "C" school struggling to raise our grade.
18. Before your study I really never looked at the FSIR to tell you the truth. I would have to say that school grade is the only thing I see of importance in that report.

Table 22

Responses to Interview Question 2

Do you find any particular indicators more beneficial than others when it comes to analyzing student performance?
1. We use FCAT scores to place kids in remedial classes for reading and math.
2. Because of the age of the indicators I would say FCAT scores are the only ones we use and those are to identify kids for remediation.
3. We have a lot of weak readers so I use the FCAT reading scores to place student in the remedial reading classes.
4. Since FCAT is not a factor I would say ACT and SAT scores because most of our students are trying to get into prestigious colleges.
5. I use FCAT scores.
6. FCAT scores.
7. For me, I look at FCAT scores in reading first because we have so many poor readers.
8. Not really, but I suppose I would have to say FCAT scores.
9. FCAT scores is my prime focus.
10. My parents are really concerned about ACT and SAT scores so those are a big deal.
11. FCAT reading scores is the big one for me.
12. FCAT reading then math scores.
13. No doubt that would be FCAT scores.
14. I'm really looking at FCAT reading scores.
15. FCAT math and reading.
16. I use FCAT results from year to year.
17. I think FCAT scores would be the one that is most important to us.
18. Like I said earlier I do not use the FSIR but I would have to say FCAT scores because we do track those.

Table 23

Responses to Interview Question 3

How do you use the indicators?
1. We use FCAT scores to place kids in remedial reading and math like I mentioned before. I also like to look at our discipline from year to year.
2. To put my weak readers in remedial classes to improve their scores.
3. Like I said earlier we put our weak readers in remedial classes using the scores. I also track the number of our disabled students from year to year.
4. Track our college entrance scores.
5. To identify students who are weak in reading and math.
6. The reading coach and I use them to place kids in our remediation programs.
7. I use FCAT scores to assign students to classes and teachers. Some teachers are better with weaker kids than others. Like I said earlier, we have a gang problem so I look at incidents of crime.
8. I just use the FCAT scores to place students in reading classes.
9. To assign students to reading classes.
10. Like I mentioned earlier ACT and SAT are a big deal around here so I track those from year to year.
11. With so many weak readers we use FCAT scores so assign students to reading classes.
12. To put kids in the best reading and math classes to improve their scores.
13. FCAT scores are used to assign kids to the reading remediation classes.
14. To find those kids who are weak in reading.
15. We put kids in math and reading classes by how they do on the FCAT.
16. FCAT scores are used to put students in the classes.

How do you use the indicators?
17. We use FCAT scores to place our kids in reading classes and I do look at the discipline trends from year to year.
18. We do use FCAT scores for reading and math to identify our weak students.

Phenomenological analysis of telephone interview questions 1, 2, and 3 was used to reduce the individual responses to the three questions into themes that captured the principals' perceptions regarding the FSIR (Gall, 2007). Table 24 contains those themes along with verbatim examples taken from the interviews. The two themes that emerged were that central Florida principals, as a group, perceived the school's grade and results of FCAT scores to be the most important indicators in the FSIR and the ones they reference the most. When it comes to using the FSIR, the dominate theme that emerged was FCAT results were used to place students in the most appropriate reading and math courses in order for them to improve their FCAT scores.

The two themes identified through phenomenological analysis provided further evidence to support the quantitative results that high school principals in central Florida perceive FCAT scores to be the most important. The two analysis techniques, quantitative and qualitative, support each other in regards to answering research question 1.

Table 24

Themes Regarding Principals' Perceptions of the FSIR

Theme	Verbatim Examples
1. School Grade and FCAT scores are perceived to be the most important indicators in the FSIR	For me the bottom line is school grade and FCAT scores. Of course school grade comes first then indicators dealing with student performance. I only worry about the school grade and FCAT scores, everything else in the FSIR is to old to worry about. School grade is the big deal to me, then FCAT scores.
2. FCAT scores reported in the FSIR are used primarily to place students in state mandated remedial reading and math classes.	We put kids in math and reading classes by how well they do on the FCAT. Like I said earlier we put our weaker readers in remedial classes using the scores. The reading coach and I use them (FCAT scores) to place kids in our remediation programs.

The last step of phenomenological analysis was to formulate a textural description describing the principals' perceptions of the usefulness of indicators in the FSIR (Gall, 2007). The synthesis from phenomenological analysis of interview questions 1, 2, and 3 resulted in the following textural description which supported the quantitative analysis for research question 1.

> The central Florida high school principals perceive school grade and FCAT results to be the most important indicators in the FSIR. In an effort to meet the mandates of FLDOE the principals feel "school grade comes first then FCAT scores." Principals tend to use the FCAT results to identify and place students in remedial reading and math classes in order to improve their FCAT scores, "we put kids in math and reading classes based on how well they do on the FCAT."

Research Question 2

What is the relationship between the priority assigned to the FSIR indicators and the ability to collect and analyze data locally at the schools?

In order to answer Research Question 2, relationships were sought between the dependent variable for each FSIR indicator, i.e., the response to Category 1, and each of the independent variables for the indicator, which were the responses to Categories 2, 3, and 4. The independent variables represented the three criteria to collect and analyze data on the indicator: availability of computer equipment, skill of administrators, and the amount of time available to administrators to perform data analysis duties. The definition of each category is repeated below:

> Category 1 - The priority (low, medium, or high) assigned by the principal to the indicator group for analyzing student performance for their school.
>
> Category 2 - The availability of computer hardware and software (extensive, adequate, or limited) at the school to collect, analyze, and share data on the indicator group.
>
> Category 3 - The ability and skill of administrative staff at the school (extensive, adequate, or limited) to collect and analyze data on the indicator group.
>
> Category 4 - The amount of time administrative staff members at the school (extensive, adequate, or limited) have available to collect and analyze data on the indicator group.

The data were examined to determine if relationships existed between the dependent variables in the nine Category 1 factors and the three corresponding independent variables in Categories 2, 3, and 4. Separate correlation coefficients were computed between Category 1 responses and those for Categories 2, 3, and 4 in each of the nine Category 1 factors. Since the response values for Categories 1 - 4 were ordinal they first had to be converted to continuous measures before correlation coefficients

could be calculated. It should be noted that evidence of reliability and validity does not exist for the Categories 2, 3, and 4 factors since their responses resulted in different factor subscales than Category 1. This is considered a limitation of this research study.

The same procedure that was used to create the 9 composite measures for Category 1 in order to answer research question 1 was used again, except this time composite measures were created for Categories 1, 2, 3 and 4. These composite measures were averages created by summing the coded responses within Categories 1, 2, 3, and 4 separately for each of the 9 factors (see Table 11) then dividing by the number of FSIR indicators in the Category 1 factor. For example, the composite measure for Factor 1, Teacher Demographics and Graduate Performance, was calculated by summing the coded Category 1, 2, 3, and 4 responses for indicators 7, 10, 23, 24, and 25, then dividing each of the four sums by five. Nine sets, one for each factor, of composite measures, four measures in a set, were created for each of the 70 principals who responded. This created four composite scaled measures on the interval 1 to 3 that represented the responses to Categories 1, 2, 3, and 4 for each of the nine Category 1 factors. It was not possible to code Factor 8, Overall School Grade, into a composite continuous measure because it contained only one indicator, therefore Spearman's rank order correlation was computed for this factor.

The last step consisted of computing Pearson correlation coefficients between Category 1 and Categories 2, 3, and 4 using the composite values. The resulting correlation tables for each of the nine factors are located in Appendix H and a summary of just the correlations between the dependent variable and each of the independent variables for the nine factors is presented in Table 25.

The findings displayed in Table 25 indicated that there was a statistically significant relationship between the priority assigned to an FSIR indicator and the ability to collect and analyze data for each of the nine factors ($p < .05$). The correlation coefficients were all positive and ranged from .25 to .53, which indicated that overall the responses to Categories 2, 3, and 4 for each of the 9 factors had about the same relationship to Category 1, the priority that principals assigned.

Table 25

Correlations Between Priority and the Ability to Collect and Analyze Data

	Pearson Correlation Coefficients		
Category 1 Factor	Category 2 (Computer Equipment)	Category 3 (Ability/Skill)	Category 4 (Time Available)
1. Teacher Demographics and Graduate Performance	.46**	.40**	.49**
2. Sources of School Costs	.36**	.47**	.27*
3. Sources of School Revenue	.47**	.41**	.48**
4. Results of College Entrance Exams	.41**	.24*	.43**
5. School Discipline	.46**	.53**	.40**
6. FCAT Performance	.44**	.39**	.22*
7. Student Demographics	.27*	.39**	.45**
8. Overall School Grade	.32**	.37**	.22*
9. Student Attendance	.30**	.40**	.25*

Note. *$p < .05$, **$p < .01$.

Evidence of score reliability and validity based on the results from factor analysis was presented in chapter three. The nine resulting factors for Category 1 were used in this analyses. Although exploratory factor analysis was computed on responses from Categories 2, 3, and 4 and presented in chapter three, these factors were not used in any of the analyses. Thus readers should be aware that the results presented below are preliminary because the responses from Categories 2, 3, and 4 lack evidence of validity.

The largest correlation coefficient for the factor Teacher Demographics and Graduate Performance was between Categories 1 (priority) and 4 (amount of time available) with $r(68) = .49$, $p < .001$, while the smallest was between Categories 1 (priority) and 3 (ability of administrative staff), $r(68) = .40$, $p < .001$. The relationship between Categories 1 and 2 (availability of computer equipment) was $r(68) = .46$, $p < .001$. This indicated that the time available to analyze data, with a medium effect on perceived priority, had the most impact when it came to teacher demographics and graduate performance (Cohen, 1988).

In the second factor, Sources of School Costs, Category 3 (the ability/skill of administrators) had a medium effect on Category 1 (priority) with $r(68) = .47$, $p < .001$ (Cohen, 1988). The relationship between Categories 1 (priority) and 2 (availability of computer equipment) had a correlation coefficient of $r(68) = .36$, $p = .001$, while the correlation coefficient between Categories 1 (priority) and 4 (amount of time available) was only $r(68) = .27$ at $p = .011$. The findings indicated that when it comes to FSIR indicators dealing with school costs that the ability/skill of the administrator to collect and analyze data had the most effect on the priority assigned (Cohen, 1988) .

The Pearson correlation coefficients for factor 3, Sources of School Revenue, indicated that the relationships between Category 1 and Categories 2, 3, and 4 were about the same. The correlation value for Categories 1 (priority) and 2 (availability of computer equipment) was $r(68) = .47$, at $p < .001$, and those for Category 1-3 and 1-4 were .41 and .48 respectively with $p < .001$ for both. The resulted indicated that in regards to Sources of School Revenue that all three independent variables had a medium effect on the priorities perceived by the principals (Cohen, 1988).

The fourth factor, Results of College Entrance Exams, indicated that relationships between Categories 1 (priority) and 2 (availability of computer equipment), $r(68) = .41$ at $p < .001$, and Categories 1 and 4 (amount of time available), $r(68) = .43$ at $p < .001$, were about the same. This showed that the availability of computer equipment and the amount of time available to administrators both had a medium effect on the perceived priority of FSIR indictors when it came to dealing with college entrance exams (Cohen, 1988).

In factor five, School Discipline, Category 3 (ability of administrative staff) had the most effect on Category 1 (priority) with $r(68) = .53$ at $p < .001$ (Cohen, 1988). The relationships between Category 1 (priority), and Categories 2 (availability of computer equipment) and 4 (amount of time available) were about the same at $r(68) = .46$ and $r(68) = .40$ respectively with $p < .001$ for both. This demonstrated that the priority assigned to discipline indicators corresponds to the ability and experience of administrators more than computer equipment or available time.

In factor six, FCAT Performance, Category 2 (availability of computer equipment) had a medium effect on Category 1 (priority) with $r(68) = .44$ at $p < .001$ (Cohen, 1988). This indicates that the priority assigned to FCAT indicators has

a stronger dependence on the availability of computer equipment than the ability of administrative staff or the amount of time available to administrators.

The correlation coefficients for factor seven, Student Demographics, indicated that the relationship between Category 1 (priority) and Category 4 (amount of time available) was the strongest with the amount of time having a medium effect at $r(68) = .45$ at $p < .001$ (Cohen, 1988). The effect between Category 1 (priority) and Categories 2 (availability of computer equipment) and 3 (ability of administrative staff) were weaker at $r(68) = .27$ and .39 respectively (Cohen, 1988).

The results for Overall School Grade, factor 8, showed that Category 3 (ability of administrative staff) had a medium effect on the perceived priority with $r(68) = .37$ at $p = .002$ (Cohen, 1988). This finding indicated that the competency of the administrative staff had the strongest relationship to the priority the principal assigned to this indicator. The next strongest relationship was Categories 1 (priority) and 2 (availability of computer equipment) at $r(68) = .40$, $p < .001$, i.e. medium effect, and the weakest relationship was Categories 1 (priority) and 4 (amount of time available) with $r(68) = .27$ at $p = .012$ (Cohen, 1988).

The ninth factor, Student Attendance, yielded the strongest effect, i.e. medium, between Category 1 (priority) and Category 3 (ability of administrative staff) with $r(68) = .40$ at $p < .001$ (Cohen, 1988). Both Categories 1 (priority) and 2 (availability of computer equipment) at $r(68) = .30$ and Categories 1 (priority) and 4 (amount of time available) with $r(68) = .25$ demonstrated a medium effect (Cohen, 1988).

In summary, the findings indicated there was a statistically significant relationship between the priority a principal assigned to the FSIR indicators and the ability to collect

and analyze data on the indicators. The relationships varied between the dependent variable and each independent variable depending on the Category 1 factor.

Research Question 3

Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?

In order to answer Research Question 3 separate multiple regression models were created using the factors identified in factor analysis of the Category 1 responses, the priority that principals assigned to each of the indicators (see Table 11) as the dependent variables. The assumptions of independence, normality, homoscedasticity, and linearity were examined prior to model testing (Shavelson, 1996). Inspection of the normal probability plots and standardized residual scatterplots in each of the nine Category 1 factors revealed that six of the nine factors met the assumptions (Pallant, 2004). The six factors chosen for multiple regression analysis were: Teacher Demographics and Graduate Performance, Sources of School Costs, Sources of School Revenue, Results of College Entrance Exams, School Discipline, and Student Demographics.

Multiple regression models were generated to determine if the perceived priority of the dependent variable in the six Category 1 factors could be predicted using their corresponding independent variables. Since the response values for Categories 1 - 4 were ordinal they first had to be converted to continuous measures before multiple regression models could be calculated. The same composite measures created for Category 1, 2, 3, and 4 responses in order to calculate correlation coefficients for research question 2 were used to develop the multiple regression models.

Multiple Regression Equations

In order to condense the length of text in the regression equations, acronyms are used to describe the dependent and independent variables:

Category 1, (P) - Priority principals assign to this indicator (dependent variable)

Category 2, (ACE) - Availability of computer equipment

Category 3, (AAS) - Ability/skill of administrative staff

Category 4, (ATA) - Amount of time staff members have available

Table 26

Multiple Regression Equations for Category 1 Factors 2, 3, 4, 5, and 7

Category 1 Factor	Multiple Regression Equation	$F_{3,66}$	R^2
1	P = .94 + .22(ACE) + .06(AAS) + .33(ATA)	8.70**	.28
2	P = 1.12 + .04(ACE) + .49(AAS) - .03(ATA)	6.36**	.22
3	P = 0.45 + .36(ACE) + .04(AAS) + .40(ATA)	10.47**	.32
4	P = 1.09 + .30(ACE) - .17(AAS) + .44(ATA)	7.02**	.24
5	P = 0.78 + .03(ACE) + .41(AAS) + .17(ATA)	9.35**	.30
7	P = 1.18 - .10(ACE) + .26(AAS) + .40(ATA)	6.98**	.24

Note. $N = 70$, $^{**}p < .01$.

The multiple regression models for Factors 1, 2, 3, 4, 5, and 7 are presented in Table 26 and a detailed analysis is provided below for the multiple regression model calculated for Factor 1, Teacher Demographics and Graduate Performance, along with its corresponding tables. An analysis of the other five models is also presented, however the tables for those models have been placed in Appendix I should the reader need to view them. Multiple regression models were not computed for Factors 6, 8, and 9 because they did not satisfy the assumptions of independence, normality, homoscedasticity, and linearity.

The multiple regression model for Factor 1, Teacher Demographics and Graduate Performance, indicated there is a statistically significant relationship between the priority a principal assigns to an indicator and the linear composite of computer availability, the ability of staff members, and the amount of time available to analyze data ($F_{3,66} = 8.70$, $p < .001$). In addition, the regression model for Factor 1 indicated approximately 28% of the variance observed in the priority assigned can be accounted for in the linear combination of the responses to Categories 2, 3, and 4. The multiple regression equation for Factor 1, Teacher Demographics and Graduate Performance, is:

$$P = .94 + .22(ACE) + .06(AAS) + .33(ATA)$$

If ACE, AAS, and ATA are rated as low, limited, and limited respectively, and in turn coded as 1, 1, and 1 in the equation, then the expected priority assigned to the Factor 1 indicators is 1.55. A unit increase in ACE will increase the expected priority by .22, while unit increases in AAS or ATA will raise the priority by .06 and .33 respectively.

Tables 27, 28, and 29 list the descriptive statistics, correlations, ANOVA results, and the coefficients for the Factor 1 multiple regression model. Only one of the three independent variables, the amount of time available to analyze data (ATA), was deemed statistically significant in the model at $p = .019$.

Depending upon the Category 1 factor of interest in Table 26, the linear combination of the three independent variables can be used to explain between 22% and 32% of the variance observed in the perceived priority assigned. All six models in Table 26 are statistically significant at $p < .01$.

Table 27

Descriptive Statistics and Intercorrelations for Factor 1 Regression Model

Variable	*M*	*SD*	1	2	3
Priority assigned to this indicator (P)	2.01	.48	.46**	.40**	.49**
Predictor variables					
1. Availability of computer equipment (ACE)	1.94	.49	--	--	--
2. Ability of administrative staff (AAS)	1.96	.49	.72**	--	--
3. Amount of time available (ATA)	1.60	.46	.59**	.57**	--

Note. **$p < .01$.

Table 28

One-Way Analysis of Variance for Factor 1 Regression Model

Model	*df*	*SS*	*MS*	*F*
Regression	3	4.43	1.48	8.70**
Residual	66	11.20	.17	
Total	69	15.63		

Note. $R^2 = .28$, $^{**}p < .01$.

Table 29

Regression Analysis Summary for Factor 1 Regression Model

Variable	*B*	*SE*	*β*
Availability of computer equipment (ACE)	.22	.15	.23
Ability of administrative staff (AAS)	.06	.15	.06
Amount of time available to analyze data (ATA)	.33	.14	.32*

Note. $R^2 = .28$ ($N = 70$, $^{*}p < .05$).

The model for Factor 2, Sources of School Cost, was statistically significant ($F_{3,66} = 8.70$, $p = .001$) and indicated that approximately 22% of the variance observed in the priority assigned could be accounted for in the linear combination of the responses to Categories 2, 3, and 4. The variable AAS was the only independent variable that was statistically significant at $p = .007$.

The model for Factor 3, Sources of School Revenue, was statistically significant ($F_{3,66} = 10.47$, $p < .001$), and the linear combination of responses to Categories 2, 3, and 4 accounted for approximately 32% of the variance in the dependent variable, perceived priority. Only the independent variable ATA was found to be statistically significant at $p = .006$.

Analysis of Factor 4, Results of College Entrance Exams, resulted in a statistically significant ($F_{3,66} = 7.02$, $p < .001$) multiple regression model that accounted for approximately 24% of the variance in the perceived priority. Both ACE and ATA were deemed statistically significant at $p = .026$ and .013 respectively.

The model for Factor 5, School Discipline, was statistically significant ($F_{3,66} = 9.35$, $p < .001$) and accounted for approximately 30% of the variance in perceived priority. In this model only AAS was statistically significant at $p = .038$.

The last model computed was for Factor 7, Student Demographics, and it also was statistically significant ($F_{3,66} = 6.98$, $p < .001$) with 24% of the accountability in perceived priority attributed to the model. Only ATA was statistically significant at $p = .007$.

In summary the findings indicated that it was possible to predict the perceived priority in six of the nine Category 1 factors representing the dependent variable, perceived priority, using a multiple regression model. The six multiple regression models presented were statistically significant at $p < .01$ and explained between 22% and 32% of the variance in the perceived priority depending on the factor of interest.

Research Question 4

What barriers do principals perceive to interfere with the collection and analysis of data on the FSIR indicators?

In order to answer Research Question 4, both quantitative analysis on the survey responses and qualitative analysis of the telephone interviews were performed. Quantitative analysis techniques were used to analyze the responses to section two of the instrument. In this section principals were asked to rate how four items: the lack of time, training, technology, and data, affected the ability of their school's administrative staff in regards to collecting and analyzing data. The principals responded by marking a 5 point Likert-type scale that ranged from no effect to a large effect. Phenomenological analysis was used to analyze questions asked during telephone interviews to obtain the principals' perceptions of how information technology and training affected the staff's ability to collect and analyze data.

Quantitative Analysis of Section Two Responses

The second section of the instrument asked participating high school principals to rate how the lack of time, training, technology, and data affected their staff's ability to collect and analyze FSIR data. Sixty nine of the 70 respondents completed section two. The measurement for the responses consisted of a 1-5 Likert type scale with 1 corresponding to No Effect, 3 - Limited Effect, and 5 - Large Effect. Analysis of the data in section two consisted of computing descriptive statistics and frequencies on the responses for each of the four areas: time, training, technology, and data. Then sums were then rank-ordered to determine how the principals perceived the areas affected the

ability of staff members to collect and analyze the data. Table 30 lists the sums, medians, and ranges of responses to the four barriers, while Table 31 provides the response percentages for each barrier. When the sum of responses were compared in Table 30 the lack of time for administrative staff to collect and analyze data was perceived to be the biggest barrier, followed by lack of training, then the lack of technology, with lack of data to analyze perceived to have the smallest impact.

The lack of time with a median value of 4.0 and a 44% response rate for item 5 (large effect) indicated participating principals felt that this barrier was the greatest impediment to their ability to collect and analyze data. A wide majority (77%) of the principals who responded to section two rated the lack of time as either a 5 (large effect) or 4 (slightly less than a large effect) when it comes to affecting their collection and analysis ability.

Table 30

Descriptive Statistics for Barriers to Collecting and Analyzing Data

Barrier	Sum of Responses	Median Response	Range Min/Max
Lack of Time	285	4.0	1/5
Lack of Training	206	3.0	1/5
Lack of Technology	167	2.0	1/5
Lack of Data	143	2.0	1/5

Note. $N = 69$.

Table 31

Responses to Barriers Affecting Collecting and Analyzing Data

Barrier	No Effect (#1) Responses and (%)	Slight Effect (#2) Responses and (%)	Limited Effect (#3) Responses and (%)	Slightly Large (#4) Responses and (%)	Large Effect (#5) Responses and (%)
Lack of Time	3 (4%)	4 (6%)	9 (13%)	23 (33%)	30 (44%)
Lack of Training	4 (6%)	17 (24%)	29 (43%)	16 (23%)	3 (4%)
Lack of Technology	17 (25%)	21 (30%)	23 (34%)	3 (4%)	5 (7%)
Lack of Data	22 (32%)	28 (41%)	13 (19%)	5 (7%)	1 (1%)

Note. $N = 69$.

The lack of training for administrative staff was perceived to be the second largest barrier with a median response of 3.0. A majority (71%) of the principals rated this barrier as 3, 4, or 5 indicating that they perceived this barrier to have at least a limited effect on collecting and analyzing data.

In regards to the lack of technology affecting the collection and analysis of data, 75% of the responding principals rated this barrier as 2, 3, 4, or 5 indicating they felt it had some affect. Only 25% felt the lack of technology had no effect on their collection and analysis efforts. The median response for this barrier was 2.0.

The lack of data was the lowest ranked barrier when comparing the sums of the responses in Table 30. This barrier had a median response of 2.0 and 32% felt it had no effect on their ability to collect and analyze data at their school. Only 27% rated this barrier as 3, 4, or 5 (limited, slightly large, or large effect).

In summary, the findings resulting from the analysis of the responses to section two of the instrument indicated that the lack of time was perceived to be the most significant barrier administrators faced when it came to collecting and analyzing data at their schools. After the lack of time, principals perceived the lack training, technology, and data, in that order, to impede their efforts to collect and analyze data.

Phenomenological Analysis of Interview Questions 4, 5, and 6

The responses to interview questions 4, 5, and 6 dealt with how principals perceived the role of information technology and administrator training for collecting and analyzing data on the FSIR indicators. The findings from phenomenological analysis of these questions supplemented the quantitative analysis presented on research question 4 earlier. Tables 32, 33, and 34 contain the significant replies of principals regarding those questions. The replies to the three interview questions were reduced to three themes which are located in Table 35.

Table 32

Responses to Interview Question 4

Does information technology affect your ability to collect and analyze data on the indicators? If yes, then how?
1. Yes, the school does not have enough information technology to adequately collect and analyze data.
2. No, we have what we need.
3. Yes, we have a lot of IT but the interface between our equipment and the district is broken so it is hard for us to access the data.
4. No problems when it comes to technology.
5. No, we have plenty of IT.
6. No, the district provides data to the schools.
7. No, we have more than enough information technology to do data analysis.
8. No, we have plenty of technology but it is not easy to use.
9. No, we have everything we need.
10. No, training on how to use the technology is the issue.
11. No.
12. No, we have what we need.
13. Yes, I have to compile all the data myself.
14. No, we have too much IT and sources of data.
15. No, the district does a good job providing us with the data we need.
16. No, the data warehouse in Volusia County is very extensive.
17. No, we have all we need.
18. No, technology is not a problem.

Table 33

Responses to Interview Question 5

Is there any particular information technology that your school needs to collect and analyze data on the indicators?
1. Yes, the school needs more computers.
2. None.
3. Yes, we need a better interface between our school computers and the county.
4. No, we keep all kinds of data and are constantly picking them apart.
5. No, we have more than we need and the district provides good support.
6. Not really.
7. No.
8. Yes, disaggregating FCAT from district down to teacher level. The data is there but it is not easy for the teacher to use.
9. No.
10. We don't need any new information technology but the system we have is not user friendly.
11. No, the district has a system called IDEAS that we use for data analysis.
12. No.
13. Yes, I would like a system that will let me request data myself.
14. No, we have more than we can use. Time and training are lacking but not IT.
15. No.
16. Yes, we need centralized scanning and printers to import and print the data provided by the county.
17. No, we do not need any additional IT at this time.
18. No, we have what we need.

Table 34

Responses to Interview Question 6

Do you feel your administrative staff has adequate training to collect and analyze data on the indicators? If yes, then what training have they received? If no, then what training do they need?
1. No, we do not have enough training in technology or data analysis and need it badly.
2. No, the staff is not trained and there is not enough time.
3. No, not even close. There is not enough time but I would make time available if the staff knew how to do data analysis.
4. No, we need FCAT Star training.
5. No, we need both time and training.
6. Yes, we received district training but we are under manned.
7. Yes, but it is not a job I give to them. I do it myself.
8. No, we do not have enough data analysis and computer training to do the job.
9. Yes, I trained the staff myself on what I wanted.
10. No, and the district does not know how to help us. Few people at the district level actually understand what happens at the school.
11. Yes, we put together our own in-house training.
12. Yes, we used a consultant about a year ago to come in and train us. Plus the district provided some training and we have an in-house program.
13. No, none of my APs can do data analysis. They all need SASI training.
14. No, the biggest challenge is training and time management.
15. No, the staff needs more training and there is not enough time. The teachers are not trained on how to use data.
16. No, some of the staff is trained but not all of them. We just don't have enough time to do data analysis.

Do you feel your administrative staff has adequate training to collect and analyze data on the indicators? If yes, then what training have they received? If no, then what training do they need?
17. No, but we are getting there. We need workshops for teachers and administrators.
18. No, some training is need in data analysis plus there is not enough time.

Table 35

Principals' Perceptions of Information Technology and Training

Theme	Verbatim Examples
1. Principals feel they have enough information technology to adequately perform data collection and analysis.	No, we have plenty of IT. No problems when it comes to technology. No, we have what we need. No, technology is not a problem.
2. Principals feel there is a lack of staff training when it comes to collecting and analyzing data.	No, we do not have enough training in technology or data analysis and need it badly. No, the biggest challenge is training and time management. No, but we are getting there. We need more workshops for teachers and administrators.
3. Principals feel there is not enough time to adequately collect and analyze data.	There is not enough time but I would make it available if the staff knew how to do data analysis. We just don't have enough time. Some training is needed in data analysis plus there is not enough time.

The last step of phenomenological analysis was to formulate a textural description describing the principals' perceptions of how information technology and training affected their ability to collect and analyze data on the FSIR indicators (Gall, 2007). The synthesis from phenomenological analysis of interview questions 4, 5, and 6 resulted in the following textural description, which supported the quantitative analysis for research question 4.

> Central Florida high school principals perceive there is adequate information technology at their schools to support data collection and analysis of FSIR indicators. They feel "technology is not the problem" when it comes to data analysis. However, the principals feel administrative staffs as a whole have not received the necessary training to adequately collect and analyze data nor do they have the time to devote to those duties. They feel "the biggest challenge is training and time management."

One interesting item to note is that younger principals tended to embrace information technology for data analysis more than the older principals. They seemed more versed in how information technology could help in data collection and analysis.

Summary

This chapter has presented an analysis of data generated by the 70 principals who responded to the mail survey, along with the telephone interview replies from the 18 principals who participated in follow-up telephone interviews. The respondents' perceptions of indicators in the FSIR and how they collected and analyzed data on the indicators were used to answer the research questions that guided this study. A discussion of the results of the data analysis, along with the conclusions and recommendations for further studies are presented in chapter five.

CHAPTER FIVE: DISCUSSION OF FINDINGS AND RECOMMENDATIONS

Chapter Five provides a discussion of the findings regarding the data analysis presented in Chapter Four. First, the statement of the problem this research attempted to investigate is represented along with the purpose of the study. Next, a summary of findings is presented for each of the four research questions. The chapter concludes with recommendations for future research in the area of data collection and analysis.

Statement of the Problem

A search of the ERIC and ProQuest research databases in December 2006 did not reveal any studies that examined how principals perceived the utility of the FSIR indicators and only limited research regarding the ability of administrators to collect and analyze data on student performance indicators. This implied that even if the indicators perceived to be important could be identified, little is known about the ability of administrators to adequately collect and analyze data on them. There could be a void of training or a lack of technology that needed to be identified before collection and analysis of indicator data are even possible.

Purpose Statement

The purpose of this study was to determine the priorities that central Florida high school principals assigned to the indicators in the FSIR and to document principals' ability to collect and analyze data locally on the various indicators. The thesis was that if the high priority indicators could be identified, then this information may help principals

formulate collection plans for data on FSIR indicators at their schools. The findings from this study should enable principals to provide assistance and data regarding the FSIR indicators directly to teachers in a timely manner that may result in improved student performance during the current year. An additional purpose of the study was to identify training and technology that school districts might provide to administrators to make them more efficient at analyzing the FSIR indicators.

Summary and Discussion of the Findings

Data collected through postal survey questionnaires and telephone interviews were used to answer the four research questions in this study. A total of 70 public high school principals in 13 central Florida school districts responded to the postal survey and 18 of them participated in follow-up telephone interviews. Quantitative analysis techniques were used to analyze responses to the postal survey and qualitative analysis in the telephone interviews. A summary of the findings for each research question follows.

Research Question 1

What priority do principals assign to each of the FSIR indicators?

A list of the priorities assigned to each FSIR indicator is provided in Table 17 of Chapter Four and Table 36 below summarizes those findings. The Factor column in Table 36 lists the nine factors, which can be thought of as areas of interest, identified using exploratory factor analysis of the questionnaire responses. The right most column in Table 36 contains the FSIR indicator number used by FLDOE, the description, and how it was ranked by the principals with 1 being the highest priority and 25 the lowest.

Table 36

Principals Perceptions of FSIR Indicators

Perceived Priority	Factor/Area of Interest	FSIR number, Description and (Ranking)
Highest	FCAT Performance	4 FCAT Results (1) 5 FCAT Writes (2)
·	Overall School Grade	16 School Grade (4)
·	Student Attendance	2 Attendance (3) 3 Dropout Rate (5)
·	Sources of School Costs	20 Students with disabilities (7) 6 FCAT NRT Results (8) 18 School Staff (13) 19 Stability Rate (17) 17 School Operating Costs (20)
·	Student Demographics	12 Limited English Proficient/ESOL (9) 11 Incidents of Crime and Violence (12) 8 % Free or Reduced-Price Lunch (14)
·	School Discipline	22 Out of School Suspensions (15) 21 In School Suspensions (19)
·	Results of College Exams	15 SAT Results (16) 1 ACT Results (18)
·	Teacher Demographics And Graduate Performance	10 Graduation Rate (6) 25 Teachers teaching out of field (10) 24 Teachers, avg. years of exp. (21) 23 Teachers with advanced degrees (22) 7 Follow-up of Graduates (25)
Lowest	Sources of School Revenue	13 Number of students in October (11) 14 Per-pupil Expenditures (23) 9 Gifted Students (24)

These findings indicated that central Florida public high school principals perceived scores on Florida's mandated FCAT assessment to be the highest priority indicators in the FSIR. As a group, FSIR indicators dealing with FCAT performance were perceived as the highest priority by the principals in this study. Over 90% of the principals participating rated the FSIR indicators for FCAT Results and Writes as a high priority at their school. Graduation Rate, which was affected by FCAT scores, and FCAT Norm Referenced Test (NRT) Results were also rated as high priority by a majority of the principals, 60% and 51% respectively. This perception demonstrated that the majority of the principals felt that student performance on the FCAT was the highest priority FSIR indicators at their school.

These results were consistent with the review of literature. Luizzi (2006) reported that principals perceived NCLB to have the greatest influence on decision-making. Florida's A+ Program, which mandated NCLB compliance at the school and district levels at the time of this study, relied on FCAT scores in evaluating school performance (George, 2001). This finding is also consistent with McCloskey and McNunn's (2000) study which found teachers were spending a high percentage of classroom instruction time preparing students for standardized tests, emphasizing the emphasis that schools placed on the results of the tests.

The second most important indicator as perceived by the principals was School Grade which was to be expected because it was calculated using FCAT results. Eighty-six percent of the principals rated School Grade as a high priority at their school and 10% gave it a medium priority. Only 4% of the principals rated it as a low priority. Since school grades in Florida relied on FCAT scores at the time of this study, the finding

supported those of Luizzi's (2006); principals perceive indicators of NCLB compliance as important when making decisions. None of the other literature reviewed addressed the importance of school grade.

School Attendance and Dropout Rate were found to be the third most important area of interest for the FSIR indicator groups. Eighty-three percent (n = 58) of the principals said Attendance was a high priority while 56% (n = 39) rated Dropout Rate high on their priorities. These findings indicate principals are stressing many of the indicators that the American Association of School Administrators (2002) published in its study regarding the need to collect data on attendance, graduation, and promotion rates.

FSIR indicators dealing with sources of school costs were perceived to be the fourth most important area of interest. Of the five indicators included in this area of interest item, only the number of students with disabilities had a majority of high priority responses (57%) from 40 principals. The other four indicators: School Staff Percentages, Stability Rate, School Operating Costs, and Per-pupil Expenditures, all received a majority of medium priority responses.

Student demographics were the fifth most important area of interest with none of the four indicators receiving a majority of high priority responses. The highest rated indicator in student demographics was the number of Limited English Proficient/ESOL students and it received just 50% of high priority responses. The median response for the other three indicators in this area of interest corresponded to a medium priority rating on the instrument. Follow-up of Graduates was the lowest rated of all 25 FSIR indicator groupings, indicating that principals had little interest in tracking their graduates. Brown and Ing's (2003) study found that disadvantaged students (ESOL students, students with

high mobility rates, and those on free/reduced lunch) performed at lower levels on standardized tests than their peers so perhaps Florida principals should place a higher priority on analyzing student demographics data in the FSIR.

The sixth most important area of interest dealt with school discipline. There were two types of suspensions tracked in the FSIR indictors, in and out of school suspensions. The principals participating in this study perceived the number of out of school suspensions to be a higher priority than the number of in school suspensions. Thirty-three percent rated the number of out of school suspensions as a high priority while only 21% (n = 15) felt that the number of in school suspensions warranted a high priority rating. The American Association of School Administrators (2002) stressed that school administrators need to analyze data on student discipline in their data collection plans.

The results of college entrance exams, specifically ACT and SAT scores, were perceived to be the seventh most important area of interest. Both types of college entrance exams tracked in the FSIR were perceived to have a medium priority by the principals. Fifty-four percent (n = 38) rated SAT Results as medium priority and 51% (n = 36) gave the same rating to ACT Results. None of the research reviewed discussed the priority that principals should place on college entrance exams.

Teacher demographics were perceived one of the lower rated areas of interest, coming in at eighth. Only one indicator in this area received a majority of high priority responses and that was Teachers Teaching Out of Field which received 53% (n = 37) of high priority responses. The average years of experience for teachers was ranked 21st out of the 25 FSIR indicators, while the percentage of teachers with advanced degrees was ranked 22nd. This finding was not indicative of Luizzi's (2006) study where he

found middle school principals in Connecticut rated staffing decisions, including who teaches classes and the number of classes, as somewhat important to principals, i.e. 6th out of 12th in decision-making priorities. McColskey and McMunn (2000) also found teachers to be critical to the success in school accountability and dealing with high-stakes mandated testing.

The low ratings for teacher qualifications in this finding may be somewhat misleading. Principals do have a high interest in the quality of their teachers but because teachers were in such short supply, especially teachers in the areas of math, reading, and science, that principals usually have to hire who is available (Critical Teacher Shortage Areas, 2005).

The lowest rated area of interest was sources of school revenue. Funding for Florida's schools was based on the classification of students, i.e. gifted was a classification, and the number of students enrolled at the school in October of the school year. Students classified as gifted result in higher funding for schools and that was why the FSIR indicator dealing with the number of gifted students was included in this area of interest. Forty-seven percent of the principals (n = 33) rated the number of students enrolled in October as a high priority FSIR indicator. The percent of principals (11%) rating the number of gifted students was high priority was lower than expected.

Research Question 2

What is the relationship between the priority assigned to the FSIR indicators and the ability to collect and analyze data locally at the schools?

The survey instrument contained four categories in the first section. The first category was the priority the principal assigned to a particular FSIR indicator grouping and the other three categories dealt with criteria that affected the ability of administrative staff to collect and analyze data at their school. The three criteria were the amount of computer hardware and software available at the school to collect and analyze data, the ability/skill of the administrative staff to collect and analyze data, and the amount of time staff members had available for data collection and analysis. Separate relationships were identified between the priority assigned and the three criteria.

In regard to the priority assigned and the availability of computer hardware and software, the researcher found a statistically significant relationship ($p < .01$) with a moderate correlation, $r(68) = .46$ (Cohen, 1988). This indicated there was a relationship, but not a strong one between the priority assigned and the availability of technology to collect and analyze school data.

Between the priority assigned and the ability/skill of staff members to collect and analyze data, the study results indicated a statistically significant relationship ($p < .01$) and a moderate correlation, $r(68) = .47$ (Cohen, 1988). The findings concluded there was a relationship between the priority assigned and the ability of staff to collect and analyze data.

In reference to the priority assigned and the amount of time staff members have available to collect and analyze data, there was a statistically significant ($p < .01$)

relationship with moderate correlation, $r(68) = .40$ (Cohen, 1988). This finding indicated that the priority assigned to indicators is dependent somewhat on the amount of time administrators have available to collect and analyze data.

In summary, statistically significant relationships existed between the priority assigned to the indicators and the three criteria measuring the ability to collect and analyze data. All three criteria had similar correlation coefficients with the priority assigned, between .40 and .50, indicating moderately strong positive relationships (Cohen, 1988). This finding indicates that all three collection and analysis criteria have a relationship to the priority assigned and the strengths of the relationships are about the same.

None of the research in the review of literature dealt with the relationship between school performance indicators and the ability to collect and analyze data, but both Creigton (2000) and Lashway (2002) reported that technology, specifically information technology, had advanced to the point where real-time data collection and analysis of school performance indicators were possible. The findings in this study indicated that the availability of technology did not have a dominant relationship with the principals' perceived priority of the FSIR indicators.

Evidence of score reliability and validity based on the results from factor analysis was presented in chapter three and the nine resulting factors for Category 1 were used in the analyses. Although exploratory factor analysis was computed on responses from Categories 2, 3, and 4 and presented in chapter three, these factors were not used in the analyses. Thus readers should be aware that the results on research questions 2 and 3 are preliminary because the responses from Categories 2, 3, and 4 lack evidence of validity.

Research Question 3

Is it possible to predict the priority that a principal assigns to an FSIR indicator given the ability to collect and analyze data locally at the school?

The findings indicated it was possible to predict the priority that a principal might assign to a particular FSIR area of interest given the administrative staff's ability to collect and analyze data. Depending upon the FSIR area of interest, the linear combination of the three collection and analysis criteria in the instrument can be used to explain between 22% and 32% of the variance observed in the perceived priority.

The data obtained from the responses were used to create six different statistically significant ($p < .01$) multiple regression equations that could be used to predict the priority assigned to various FSIR areas of interest. The six multiple regression equations are located in Table 26 of Chapter 4 and they can be used to predict the priority of the following FSIR areas of interest: Teacher Demographics and Graduate Performance, Sources of School Costs, Sources of School Revenues, Results of College Entrance Exams, School Discipline, and Student demographics. The predicted priority of the area of interest was the dependent variable and there were three independent variables: the availability of computer equipment, the ability/skill of administrative staff, and the amount of time that staff members had available to perform data analysis duties.

Below is the general form of the multiple regression equations along with descriptions of the dependent and independent variables.

$$P = a + b_1 \cdot ACE + b_2 \cdot AAS + b_3 \cdot ATA$$

Where:

P - Predicted priority principals assigned to the FSIR area of interest.

ACE - Availability of computer equipment to collect and analyze data on the indicator.

AAS - Ability/skill of administrative staff to collect and analyze data on the indicator.

ATA - Amount of time staff members have available to collect and analyze data on the indicator.

The domain for the independent variables ACE, AAS, and ATA is 1, 2, or 3 with 1 equaling limited, 2 indicating adequate, and 3 representing extensive capability.

None of the research in the review of literature dealt with the predictability of school performance indicators and the ability to collect and analyze data, but Creigton (2000) and Lashway (2002) reported that information technology made near real-time data collection and analysis of school performance indicators possible. The findings in this study indicated that technology did not have a dominant relationship when it came to predicting the principals' perceived priority of the FSIR indicators. The three independent variables contributed about the same weight toward the predicted priority in the regression equations with none of them being dominant. The ranges of the b_i coefficients for the various regression equations were -.17 to .44.

Research Question 4

What barriers do principals perceive to interfere with the collection and analysis of data on the FSIR indicators?

High school principals participating in the study felt that the lack of time for staff personnel to collect and analyze FSIR data at their schools was the most significant

barrier they faced. Approximately 44% (n = 31) of the principals participating indicated the lack of time had a large effect on their staff's ability to collect and analyze FSIR data, and 90% (n = 62) indicated that the lack of time had a limited to large effect on their staff. Only 4% (n = 3) rated the lack of time as having no effect on their staff's ability to collect and analyze data. The median response to lack of time on the survey instrument was 4.0.

The second most significant barrier identified was the lack of staff training in collecting and analyzing data. The data revealed that 70% (n = 48) of the principals responding felt the lack of training had a limited to large effect on their staff's ability to collect and analyze data. Of all the principals responding only 6% (n = 3) said the lack of training had no effect. The median response to lack of staff training on the survey instrument was 3.0.

The third most significant barrier was the lack of technology with 45% (n = 31) of the principals responding that it had a limited to large effect on their staff's ability to collect and analyze data. In the interviews most principals felt their school had adequate information technology to collect and analyze data so it was not a significant barrier to the staff. One fourth (25%) of the principals (n = 17) said that the lack of technology had no effect of their staff's ability to collect and analyze data. The median response was 2.0.

The fourth, and lowest rated barrier, was the lack of data. Only 27% (n = 18) of the principals felt that the lack of data had a limited to large effect on their staff's ability to analyze the FSIR. A majority (73%, n = 50) rated the lack of data has having no effect

or a slight effect. Approximately 32% (n = 22) felt that the lack of data had no effect on their staff's ability to adequately collect and analyze data on the indicators. The median response was 2.0.

In summary, the findings indicated that the lack of time was single largest barrier that principals faced when it came to collecting and analyzing data at their schools. After the lack of time was the lack of training, technology, and data in that order.

The review of literature was void of studies dealing with how much time was needed to conduct data analysis at the school or district levels but the findings in this study imply that there was not enough time available for the administrators in central Florida high schools to accomplish this task.

The finding regarding the need for administrator training in data analysis and the use of technology supported the conclusions of numerous researchers (Brockmeier et al. (2005), Creighton (2000), George (2001), Groff (2001), Jackson (2006) and Koop (2004)). School districts should investigate the training opportunities available regarding data collection and analysis, along with training on using technology to assist in data analysis.

The finding that the lack of technology had some impact on the ability to collect and analyze data at schools supported the research of Creighton (2000) and Lashway (2002). While information technology for data collection and analysis was becoming more commonplace in school there was still a long way to go before it was prevalent and administrators know how to use it.

Lashway (2002) stated "Schools generate an abundance of information. Principals, wearily confronting a steady flow of forms they are required to fill out, know

the list well: lunch counts, attendance records, test scores, discipline referrals, and dozens more." (p. 1). Lashway felt that there was an abundance of data in schools but administrators have a hard time making use of it. The findings in this study confirm those of Lashway. High school principals in central Florida felt there was plenty of data at their schools, or accessible at the district level, in order for them to make informed decisions. However, as a group they indicated there was not enough time available in administrators' schedules for them to properly collect and analyze the data.

Discussion of Implications and Recommendations

The data in this study revealed central Florida high school principals perceived indicators dealing with Florida's mandated FCAT examination were the highest priority ones in the FSIR. This finding does have implications on how principals lead their schools and ultimately affects students, parents, and teachers. Given these findings, it was likely that principals may create school improvement plans and make strategic decisions regarding school performance using standardized test scores as the main criteria. The perceptions of principals in this study regarding the importance of standardized test scores do correspond to the studies and articles in the review of literature. In their 1980s study, Jaeger and Tittle expressed concern that school administrators would become fixated on standardized test scores and focus their curriculum toward those tests. Based on the research in this study that trend was occurring in Florida. The state mandated remedial math and reading classes for students scoring level 1 or 2 on the FCAT and those required classes resulted in fewer electives being offered by high schools in central Florida. Based on the research in this study it

appeared that FCAT scores were driving the decision-making process of most high school principals in central Florida.

When it came to barriers affecting how schools collect and analyze data, the findings for Research Question 4 indicated the lack of administrator time devoted to this task was apparent. This implied that even if the information technology was in place at the schools to collect and analyze data, and the administrative staff was trained in data analysis, there may not be enough hours in the duty day for administrators to adequately collect and analyze the data. Based on the findings it appeared to this researcher that the issue was a matter of time management rather than prioritization. Most of the principals responding in the study felt data collection and analysis were important, they just did not have enough administrative personnel to do the task. A reassignment of administrative duties may be needed in order to free up time for data analysis, or in more extreme cases additional personnel may be required. Some schools in the study use teachers with computer and analytical skills to augment the administrative staff and these teachers perform data analysis duties in addition to teaching. This option seems viable at almost any high school and should be considered by principals who have small administrative staffs.

The findings in this study identified the lack of data analysis training available to central Florida administrators. Without the proper education or training in data analysis, administrators will continue to rely on standardized test scores because they are easy to collect and analyze. University courses or workshops are needed that train Florida K-12 administrators how to collect and analyze data in order to verify that students are learning to the levels required in the state's Sunshine Standards. Perhaps sabbaticals for

university professors are needed so they can spend time at schools observing how data is collected, analyzed, and used by administrators to make decisions. This will enable universities to create courses devoted to the operational use of statistics that practicing K-12 administrators could use in their schools.

If administrators are trained to collect and analyze data on how students are performing relative to the Florida Sunshine Standards for K-12 education then they may not have to rely on FCAT results at the end of the school year, they can instead track students' performance weekly or monthly against the Sunshine Standards. This researcher recommends administrators track the percentage of students who have mastered the various Sunshine Standards. If administrators are prepared on how to collect and analyze data regarding student progress toward mastering each of the Sunshine Standards then they may have better indications of how students are likely to perform on the FCAT.

As for the availability of technology, this study found that there was an abundance of commercial information systems available on the market to assist in data collection and analysis of school performance data. This finding supports that of Creighton (2000) regarding the proliferation of technology that makes the collection of school data almost automatic. However, before they expend resources on these systems, districts need to first compose detailed data collection and analysis plans at the school level that track student performance against the Sunshine Standards. Once these data collection and analysis plans were developed then the districts should look for information systems that will enable administrators to collect and analyze data at that level.

Recommendations for Future Research

Further research is suggested in the following areas:

1. A similar study needs to be conducted that includes high school principals from northern and southern Florida school districts to gather perceptions about the FSIR that may be different from those in this study.
2. Similar studies should be conducted surveying elementary and middle school principals since the FSIR indicators are different from those at the high schools.

3. A study needs to be conducted on how administrators are trained to collect and analyze data on the FSIR indicators and whether this training is adequate for them to perform their duties. This type of study may enable school districts and universities to identify training deficiencies in order to develop courses and work shops dedicated to providing better data analysis training to current and prospective administrators.
4. A study is recommended on the time available for administrators to collect and analyze data on FSIR indicators and formulate strategies for improving student performance. This type of study may benefit school districts as they assess administrative personnel needs.
5. A study is recommended on the use of information technology in central Florida high schools to determine its effectiveness in analyzing and collecting data. The availability of information technology seems to be abundant in central Florida schools however administrators may not be using it effectively in data analysis.

APPENDIX A: INDICATORS IN FLORIDA SCHOOL INDICATORS REPORT

INDIVIDUAL INDICATORS CONTAINED IN THE FSIR

Absences: Students Absent 21+ Days (%)
American College Test (ACT)/ Composite Score
American College Test (ACT)/ Percent of 12th Graders Tested
American College Test (ACT)/ Number Tested
Disabilities (%)
Dropout Rate
Finance - Operating Costs ($)
Finance - Per Pupil Expenditures/ Exceptional ($)
Finance - Per Pupil Expenditures/ Regular ($)
Finance - Per Pupil Expenditures/ At-Risk ($)
Finance - Per Pupil Expenditures/ Vocational ($)
FCAT - Math/Grade 9 Math-- Number Tested
FCAT - Math/Grade 9 Math-- Percent Scoring At Level 1
FCAT - Math/Grade 9 Math-- Percent Scoring At Level 2
FCAT - Math/Grade 9 Math-- Percent Scoring At Level 3
FCAT - Math/Grade 9 Math-- Percent Scoring At Level 4
FCAT - Math/Grade 9 Math-- Percent Scoring At Level 5
FCAT - Math/Grade 10 Math-- Number Tested
FCAT - Math/Grade 10 Math-- Percent Scoring At Level 1
FCAT - Math/Grade 10 Math-- Percent Scoring At Level 2
FCAT - Math/Grade 10 Math-- Percent Scoring At Level 3
FCAT - Math/Grade 10 Math-- Percent Scoring At Level 4
FCAT - Math/Grade 10 Math-- Percent Scoring At Level 5
FCAT - Reading/Grade 9 Reading-- Number Tested
FCAT - Reading/Grade 9 Reading-- Percent Scoring At Level 1
FCAT - Reading/Grade 9 Reading-- Percent Scoring At Level 2
FCAT - Reading/Grade 9 Reading-- Percent Scoring At Level 3
FCAT - Reading/Grade 9 Reading-- Percent Scoring At Level 4
FCAT - Reading/Grade 9 Reading-- Percent Scoring At Level 5
FCAT - Reading/Grade 10 Reading-- Number Tested
FCAT - Reading/Grade 10 Reading-- Percent Scoring At Level 1
FCAT - Reading/Grade 10 Reading-- Percent Scoring At Level 2
FCAT - Reading/Grade 10 Reading-- Percent Scoring At Level 3
FCAT - Reading/Grade 10 Reading-- Percent Scoring At Level 4
FCAT - Reading/Grade 10 Reading-- Percent Scoring At Level 5
FCAT - Writing Assessment Grade 10-- Number Tested
FCAT - Writing Assessment Grade 10-- Percent Scoring Three or Higher
FCAT - Math/NRT/ Grade 9 Math-- Number Tested
FCAT - Math/NRT/ Grade 9 Math-- (Median National Percentile Rank)
FCAT - Math/NRT/ Grade 10 Math-- Number Tested
FCAT - Math/NRT/ Grade 10 Math-- (Median National Percentile Rank)
FCAT - Reading/NRT/ Grade 9 Reading-- Number Tested
FCAT - Reading/NRT/ Grade 9 Reading-- (Median National Percentile Rank)

FCAT - Reading/NRT/ Grade 10 Reading-- Number Tested
FCAT - Reading/NRT/ Grade 10 Reading-- (Median National Percentile Rank)
Follow-up of Prior-Year Graduates/ Of Continuing Ed. % Employed
Follow-up of Prior-Year Graduates/ Continuing Education (%)
Follow-up of Prior-Year Graduates/ All Employment Full and Part Time (%)
Follow-up of Prior-Year Graduates/ Of Employed Part-Time (%)
Graduation Rate
Incidents of Crime and Violence/ Violent Acts Against Persons
Incidents of Crime and Violence/ Alcohol Tobacco and Other Drugs
Incidents of Crime and Violence/ Property
Incidents of Crime and Violence/ Fighting and Harassment
Incidents of Crime and Violence/ Weapons Possession
Incidents of Crime and Violence/Other Nonviolent Incidents/Disorderly Conduct
Incidents of Crime and Violence/ Total
Limited English Proficient (%)
Stability (%)
Scholastic Assessment Test (SAT)/ Mean Score
Scholastic Assessment Test (SAT)/ Percent of 12th Graders Tested
Scholastic Assessment Test (SAT)/ Number Tested
School Grades
School Number
School Staff/ Administration (%)
School Staff/ Instruction (%)
School Staff/ Support (%)
School Staff/ Total
Student Membership/ Number of Students
Suspensions/ In-School (%)
Suspensions/ Out-of-School (%)
Teachers - Advanced Degrees (%)
Teachers - Average Years of Experience
Classes Taught by Out-of-Field Teachers (%)

25 INDICATOR GROUPINGS IN THE FSIR

1. American College Test (ACT) results - (# students tested and composite score)
2. Attendance - (% absent 21+ days)
3. Dropout Rate - (% of 9-12 graders)
4. FCAT Results - (% of Level 1s, 2s, 3s, 4s, & 5s)
5. FCAT Writes - (% of students scoring 3 or higher)
6. FCAT Norm-Referenced Test Results - (# of students tested and median national % ranking for grades 9 and 10)
7. Follow-up of Graduates - (% of graduates working or attending college)
8. Free or Reduced-Price Lunch - (% of students body eligible)
9. Gifted Students - (% of student body)
10. Graduation Rate - (% of 9th graders who actually graduated
11. Incidents of Crime and Violence - (number of reported incidents)
12. Limited English Proficient/ESOL - (% of students in LEP or ESOL programs)
13. Number of students in school as of October
14. Per-Pupil Expenditures – by program area (total school costs per unweighted FTE student by program area)
15. Scholastic Assessment Test (SAT) results - (# of students tested & % of 12th graders tested)
16. School Grade (letter grade A-F)
17. School Operating Cost - (total school operating costs per unweighted FTE student)
18. School Staff - (Total staff, %'s comprising instructional, administrative, and support
19. Stability Rate - (% of students in October who are still present in February)
20. Students with disabilities - (% of enrollment)
21. In-School Suspensions - (% of enrollment)
22. Out-of-School Suspensions - (% of enrollment)
23. Teachers with advanced degrees - (% of instructional staff)
24. Teachers – average years of experience
25. Teachers teaching out of field - (% of core academic classes taught by out of field teachers)

APPENDIX B: SUMMARY OF FLORIDA SCHOOL GRADING CRITERIA

Below is a summary of the Florida school grading criteria taken directly from *2006 Guide to Calculating School Grades* published by FLDOE.

> The FCAT is the primary measure of students' achievement of the Sunshine State Standards. School grades are determined by the accumulation of percentage points for six measures of achievement in addition to two other conditions.
>
> Section *6A-1.09981(6)(a)-(f)* of the State Board Rule describes the six performance measures included in the overall grade for a school. Points are calculated as follows:
>
> 1. One point for each percent of students who meet high standards by scoring at or above FCAT Achievement Level 3 in reading.
>
> 2. One point for each percent of students who meet high standards by scoring at or above FCAT Achievement Level 3 in mathematics.
>
> 3. One point for each percent of students who meet high standards by scoring 3.5 or higher on the FCAT writing assessment. In the event that there are not at least 30 eligible students tested in writing, the district average in writing is substituted.
>
> 4. One point for each percent of students making learning gains in reading.
>
> 5. One point for each percent of students making learning gains in mathematics.
>
> 6. One point for each percent of the lowest performing students making learning gains in reading. In the event that there are not at least 30 eligible students, the school's reading learning gains are substituted.
>
> These points are added together and converted into a school grading scale which is displayed in Table 26 below.

Table 37

2006 Florida School Grading Scale

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

In addition to the accumulation of percentage points for each of the six performance measures, schools are also evaluated on the basis of two other conditions:

1. Percent Tested: Schools earning enough total points to receive a grade of A must also test at least 95% of their eligible students. All other letter grade designations are based on a minimum of 90% tested. If any school tests fewer than 90% of their students, the school will initially receive an "I" (incomplete). After investigation, if the percent tested remains less than 90%, the final grade will be lower than indicated by the total points accumulated.

2. Adequate Progress of the Lowest Students: Schools earning enough points to receive a C or above must demonstrate that at least half of the lowest students make annual learning gains. For a school to be designated a grade of A, adequate progress of the lowest students must be met in the current year. For a school to be designated a grade of B or C, adequate progress of the lowest students must be met in the current or previous year. The final grade will be reduced one letter grade for schools failing to meet this criterion.

For purposes of this calculation, the lowest students are the lowest quartile (or 25%) of students scoring in levels 1-3 of the FCAT reading in each grade. The lowest 30 students are substituted when there are not 30 in the lowest quartile. In the event that there are not 30 eligible students scoring in FCAT Achievement Level 3 or below, the percent of students making annual learning gains in reading for all students is substituted for this performance measure. (Guide to Calculating School Grades, 2006, pp. 3-4)

APPENDIX C: SURVEY INSTRUMENT

Florida School Indicators Report Survey for High School Principals

School Number Assigned by FLDOE: _____

Instructions: Below are the 25 different groupings for the Florida School Indicators Report. Please circle a separate response in Categories 1, 2, 3, and 4 for each indicator group. For example, in the first indicator, ACT results, you might have High for Category 1, Limited for Category 2, and Adequate for Category 3, and Limited for Category 4. It is important that you circle a separate response in each of the four categories.

FSIR indicator groupings in alphabetical order	**Category 1** **Priority you assign to this indicator** at your school for analyzing student performance.			**Category 2** **Availability of computer hardware and software** at your school to collect, analyze, and share data on this indicator.			**Category 3** **Ability/skill of administrative staff** at your school to collect and analyze data on this indicator.			**Category 4** **Amount of time staff members have available** at your school to collect and analyze data on this indicator.		
	High **H** ▼	Medium **M** ▼	Low **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼
1. American College Test (ACT) results (# students tested and composite score)	H	M	L	E	A	L	E	A	L	E	A	L
2. Attendance (% absent 21+ days)	H	M	L	E	A	L	E	A	L	E	A	L
3. Dropout Rate (% of 9-12 graders)	H	M	L	E	A	L	E	A	L	E	A	L
4. FCAT Results (% of Level 1s, 2s, 3s, 4s, & 5s)	H	M	L	E	A	L	E	A	L	E	A	L
5. FCAT Writes (% of students scoring 3 or higher)	H	M	L	E	A	L	E	A	L	E	A	L
6. FCAT Norm-Referenced Test Results (# of students tested and median national % ranking for grades 9 and 10)	H	M	L	E	A	L	E	A	L	E	A	L
7. Follow-up of Graduates (% of graduates working or attending college)	H	M	L	E	A	L	E	A	L	E	A	L
8. Free or Reduced-Price Lunch (% of students body eligible)	H	M	L	E	A	L	E	A	L	E	A	L
9. Gifted Students (% of student body)	H	M	L	E	A	L	E	A	L	E	A	L
10. Graduation Rate (% of 9th graders who actually graduated)	H	M	L	E	A	L	E	A	L	E	A	L

Please Continue on Next Page

FSIR indicator groupings in alphabetical order	Category 1			Category 2			Category 3			Category 4		
	Priority you assign to this indicator at your school for analyzing student performance.			**Availability of computer hardware and software** at your school to collect, analyze, and share data on this indicator.			**Ability/skill of administrative staff** at your school to collect and analyze data for this indicator.			**Amount of time staff members have available** at your school to collect and analyze data on this indicator.		
	High **H** ▼	Medium **M** ▼	Low **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼
11. Incidents of Crime and Violence (number of reported incidents)	H	M	L	E	A	L	E	A	L	E	A	L
12. Limited English Proficient/ESOL (% of students in LEP or ESOL programs)	H	M	L	E	A	L	E	A	L	E	A	L
13. Number of students in school as of October	H	M	L	E	A	L	E	A	L	E	A	L
14. Per-Pupil Expenditures – by program area (total school costs per unweighted FTE)	H	M	L	E	A	L	E	A	L	E	A	L
15. Scholastic Assessment Test (SAT) results	H	M	L	E	A	L	E	A	L	E	A	L
16. School Grade (letter grade A-F)	H	M	L	E	A	L	E	A	L	E	A	L
17. School Operating Cost (total school operating costs per unweighted FTE student)	H	M	L	E	A	L	E	A	L	E	A	L
18. School Staff (Total staff, %'s comprising instructional, administrative, and support)	H	M	L	E	A	L	E	A	L	E	A	L
19. Stability Rate (% of students in October who are still present in February)	H	M	L	E	A	L	E	A	L	E	A	L
20. Students with disabilities (% of enrollment)	H	M	L	E	A	L	E	A	L	E	A	L
21. In-School Suspensions (% of enrollment)	H	M	L	E	A	L	E	A	L	E	A	L
22. Out-of-School Suspensions (% of enrollment)	H	M	L	E	A	L	E	A	L	E	A	L
23. Teachers with advanced degrees (% of instructional staff)	H	M	L	E	A	L	E	A	L	E	A	L

Please Continue on Next Page

FSIR indicator groupings in alphabetical order	Category 1			Category 2			Category 3			Category 4		
	Priority you assign to this indicator at your school for analyzing student performance.			**Availability of computer hardware and software** at your school to collect, analyze, and share data on this indicator.			**Ability/skill of administrative staff** at your school to collect and analyze data for this indicator.			**Amount of time staff members have available** at your school to collect and analyze data on this indicator.		
	High **H** ▼	Medium **M** ▼	Low **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼	Extensive **E** ▼	Adequate **A** ▼	Limited **L** ▼
24. Teachers – average years of Experience	H	M	L	E	A	L	E	A	L	E	A	L
25. Teachers teaching out of field (% of core academic classes taught by out of field teachers)	H	M	L	E	A	L	E	A	L	E	A	L

Items Affecting the Ability of Administrative Staff to Collect and Analyze Data

For each of the following, please circle the single response that best describes the effect that item has on the ability of you and your staff to collect and analyze student performance data at your school. Staff personnel may be assistant principals, deans, clerical personnel, and others who collect and analyze student performance data at your school.

Items affecting the ability to collect and analyze data	No Effect		Limited Effect		Large Effect
Lack of **time** due to other administrative duties	1	2	3	4	5
Lack of staff **training**	1	2	3	4	5
Lack of **technology**, both computers and software	1	2	3	4	5
Lack of **data** to analyze	1	2	3	4	5

Please list any other items that affect your staff's ability to collect and analyze data in the box below. In addition, please provide any training or technology that you have found to be effective in data collection and analysis at your school. You may include additional pages if necessary.

Please Continue on Next Page

How do you use the FSIR indicators at your school?

Please check the various ways you currently use **FSIR indicators** at your school. Check all that apply.

- □ analyzing attendance issues
- □ analyzing discipline issues
- □ analyzing ESE needs
- □ analyzing student performance
- □ analyzing school expenditures
- □ analyzing staff qualifications
- □ analyzing teacher qualifications
- □ other uses, please list: _____
- □ do not use FSIR indicators

Please explain how you use FSIR indicators at your school and list any measurement tools such as Lexiles to measure reading proficiency, Quantiles for math, or FCAT Explorer for FCAT readiness. Also list any data items you would like to know more about, or like to know what other principals are doing in a particular area.

Please provide the following information regarding your gender, education level, and experience as a principal.

Gender:

- □ Male
- □ Female

Education Level:

- □ Master's Degree
- □ Specialist Degree
- □ Doctoral Degree

Total number of years as a principal:

- □ Less than 5 years
- □ 6-10 years
- □ 11-15 years
- □ 16-20 years
- □ 21+ years

May I contact you for a follow up interview? □ YES □ NO

Would you like a copy of the results describing what other principals are doing with data? □ YES □ NO

**** Thank you for your time in completing this questionnaire. ****

APPENDIX D: INSTITUTIONAL REVIEW BOARD APPROVAL

University of Central Florida

Office of Research & Commercialization

October 12, 2006

William L. Gaught
4908 Petra Court
Winter Springs, FL 32708

Dear Mr. Gaught:

With reference to your protocol #06-3867 entitled, "Central Florida High School Principals' Perceptions of the Florida School Indicators Report," I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office. **This study was approved on 10/10/06. The expiration date for this study will be 10/09/2007.** Should there be a need to extend this study, a Continuing Review form must be submitted to the IRB Office for review by the Chairman or full IRB at least one month prior to the expiration date. This is the responsibility of the investigator.

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board through use of the Addendum/Modification Request form. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur.

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Joanne Muratori

Joanne Muratori
UCF IRB Coordinator
(FWA00000351 Exp. 5/13/07, IRB00001138)

Copies: IRB File
Debbie Hahs-Vaughn, Ph.D.

JM:jt

12201 Research Parkway • Suite 501 • Orlando, FL 32826-3246 • 407-823-3778 • Fax 407-823-3299

APPENDIX E: INFORMED CONSENT LETTERS

University of Central Florida

Informed Consent for Research
University of Central Florida

Dear Educator,

I am a graduate student at the University of Central Florida working on my doctoral degree in Educational Leadership and I am asking you to participate in my dissertation research. The purpose of the study is to investigate how high school principals perceive the usefulness of information in the Florida Schools Indicator Report (FSIR), published annually by the Florida Department of Education, and the ability to collect and analyze data on the indicators at your school.

The anticipated benefits of the study are: (1) to contribute to the existing literature on data collection and analysis in K-12 schools, (2) to provide Central Florida principals with a prioritize list of FSIR indicators that they may use in analyzing student performance, and (3) to investigate the relationship between the usefulness of FSIR indicators, and the ability of K12 administrator to collect and analyze data on them.

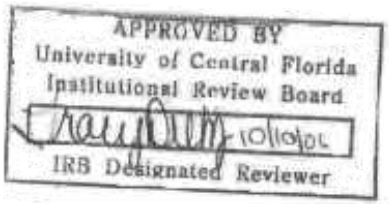
As a research participant you will be asked to identify the priority you place on each FSIR indicator, the availability of technology at your school to collect data on the indicator, and the ability of your administrative staff to analyze the data collected. The survey should take approximately 15 minutes to complete and all responses are confidential. Each survey form contains the school identification number assigned by FLDOE. This identification number will only be used to track the surveys that have not been returned and the results will be reported in aggregate, with no school or individual being identified separately. Once the study is completed a copy of the results will be provided to each principal who participated so they might use them in formulating a data collection strategy at their respective school. It is possible that the results of this dissertation may be published in scholarly journals or presented at professional conference.

Your participation is voluntary and there are minimal risks associated with this research. You must be 18 years of age or older to participate, and there is no compensation or other direct benefits to you as a participant in this study. Should you have any questions please contact myself (Bill Gaught) at (407) 699-8416 or my faculty supervisor, Dr. Debbie Hahs-Vaughn, at (407) 823-1762 or by email at dhahs@mail.ucf.edu. Research at the University of Central Florida involving human participants is carried our under the oversight of the Institutional Review Board (IRB). Questions or concerns about research participants' rights may be directed to the Institutional Review Board Office, IRB Coordinator, University of Central Florida, Office of Research & Commercialization,12201 Research Parkway, Suite 501, Orlando, FL 32826-3246. The telephone number is (407) 823-2901.

Completion of the survey constitutes your informed consent. Thank you for agreeing to participate in this research study.

Sincerely,

Bill GaughtDoctoral Student
University of Central Florida
Email: william.gaught@verizon.net



Informed Consent

October 15, 2006

Dear Educator:

I am a graduate student at the University of Central Florida and recently you completed a questionnaire that I mailed to your office surveying the usefulness of information in the Florida Schools Indicator Report (FSIR). On the questionnaire you checked a box granting a follow up interview. The interview will be scheduled at your convenience and conducted over the telephone. It will not be taped, should take approximately 15 minutes, and your identity will be kept confidential in the final manuscript. Enclosed is a copy of the questions I will be asking and you will not have to answer any question you do not wish to answer. You must be 18 years of age or older to participate.

There is no compensation or other direct benefits to you as a participant in this interview, and the risks are minimal. You are free to withdraw your consent to participate and may discontinue your participation in the interview at any time without consequence.

Should you have any questions please contact me at (407) 699-8416 or my faculty supervisor, Dr. Debbie Hahs-Vaughn, at (407) 823-1762 or by email at dhahs@mail.ucf.edu. Research at the University of Central Florida involving human participants is carried our under the oversight of the Institutional Review Board (IRB). Questions or concerns about research participants' rights may be directed to the Institutional Review Board Office, IRB Coordinator, University of Central Florida, Office of Research & Commercialization,12201 Research Parkway, Suite 501, Orlando, FL 32826-3246. The telephone number is (407) 823-2901.

Please sign and return this copy of the letter in the enclosed envelope. A second copy is provided for your records. By signing this letter, you give me permission to report your responses anonymously in the final manuscript to be submitted to my faculty supervisor as part of my course work.

Sincerely,

Bill Gaught
UCF Graduate Student
Email: william.gaught@verizon.net

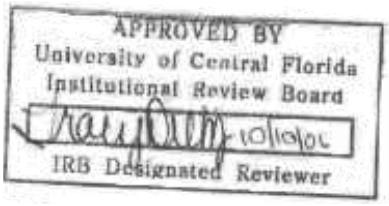
____ I have read the procedure described above for the FSIR telephone interview and voluntarily agree to participate.

/

Participant Date

/

Principal Investigator Date



APPENDIX F: SAMPLE CORRESPONDENCE

Sample Email Sent to Principals After District Approved the Research

Dear

I teach at Winter Springs High School in Seminole County and currently I am working on my doctorate in Educational Leadership at the University of Central Florida. In addition, I perform data analysis for our school's principal, Dr. XXXXXX, and prior to becoming a teacher through Troops-to-Teachers I spent 22 years in the Air Force where I did analysis of education and training programs.

Within a few days you will be receiving a package in the mail asking you to complete a questionnaire for my doctoral dissertation. Mr. XXXX at your school district has approved the study and I hope you will find time to complete the questionnaire when it arrives in the mail. In the study I am surveying over 120 high school principals throughout central Florida asking them how they use data to improve student performance. My intent is to collect information about how principals are using data in their schools, and then provide a package back to the principals so they can see what other schools are doing. Attached are some data analysis reports that we provide to our teachers at Winter Springs High School so you can see the type of products I hope to provide back to you for participating in the study. The sample reports show how we are using Lexiles to predict FCAT DSS scores, and ultimately improve the FCAT results of our weakest readers. We have found our teachers like the reports and the FCAT reading grades for our lowest performing students continue to improve.

I want to stress that the attached samples were created using Microsoft Word, Excel, and Access, which are software programs that many schools currently have. Realizing your time is valuable, I want to assure you that the results and products that you receive back from this
study will be high quality and something you can put to use immediately in your school.

Sincerely,

Bill Gaught
UCF Doctoral Student

University
of
Central Florida

Sample Prenotice Letter

October 20, 2006

Dear,

Within the next few days you will be receiving a questionnaire titled "Florida School Indicators Report Survey for High School Principals". Your input is greatly appreciated and will help determine which indicators in the Florida School Indicators Report are most important to administrators like yourself. This study will consolidate replies from high school principals across 13 Central Florida school districts, many in schools like yours, and each principal participating will receive a copy of the results.

The questionnaire is brief and should require 15 minutes to complete. I realize how busy your schedule is and would like to thank you for your time in assisting with this research project. The quality of our research is dependent on experienced administrators like yourself.

Sincerely,

Bill Gaught
Doctoral Student, Educational Leadership
University of Central Florida

University of Central Florida

Sample Questionnaire Cover Letter

October 25, 2006

Dear

Enclosed is the "Florida School Indicators Report Survey for High School Principals". Your assistance in our research is greatly appreciated, and it will benefit current and future school administrators. Once you have completed the questionnaire please return it to my office using the self addressed envelope provided.

This survey is voluntary, however the insights and knowledge you have to share by completing the questionnaire are very valuable to our research. Please be assured that all answers are confidential and the number of your school has automatically been placed on the top of the questionnaire for tracking purposes only. Participation from experienced administrators like yourself is greatly appreciated.

In closing let me thank you for taking the time to help with our research, and should you have any questions or comments please give me a call at 404-699-8416 or send me an email at william.gaught@verizon.net.

Sincerely,

Bill Gaught
Doctoral Student, Educational Leadership
University of Central Florida

Sample Thank You Postcard

July 15, 2006

Dear ,

You should have received a questionnaire titled "Florida School Indicators Report Survey for High School Principals" within the past few days. I hope you have found the time to complete and return the questionnaire. If not, then could you please drop it in the mail today. Your input is important to my research here at the College of Education. Each principal participating in the research study will receive a copy of the consolidated results from high school principals in 13 Central Florida counties.

If you have already returned the questionnaire then please accept my sincere thanks. If you need another copy then please give me a call at 407-699-8416 or email me at william.gaught@verizon.net.

Sincerely,

Bill Gaught
Doctoral Student, Educational Leadership
University of Central Florida

University
of
Central Florida

Sample Replacement Letter

November 20, 2006

Dear

A couple of weeks ago I mailed you a copy of a questionnaire titled "Florida School Indicators Report Survey for High School Principals". I have not received your completed questionnaire and wanted to follow-up. It is experienced administrators like yourself that I really need input from the most.

The replies we have received so far from K-12 administrators throughout Central Florida has yielded some very important information regarding their opinions of the indicators contained in the Florida School Indicators Report. Your input will help ensure the research reflects the opinions of experienced administrators.

I have enclosed another copy of the questionnaire and a preaddressed envelope should you need it. Please be assured that all answers are confidential and your name will be removed from the questionnaire when it arrives at our office.

In closing I hope you will fill out and return the questionnaire. Should you have any questions or comments please give me a call at 407-699-8416 or send me an email at william.gaught@verizon.net.

Sincerely,

Bill Gaught
Doctoral Student, Educational Leadership
University of Central Florida

University
of
Central Florida

Sample Final
Contact Letter

December 1, 2006

Dear

During the past two months we have mailed your office several times asking if you could complete a questionnaire titled "Florida School Indicators Report Survey for High School Principals" within the next couple of days. Your reply is greatly appreciated.

As our research draws to a close we are contacting experienced administrators like yourself one last time to ask for their input in completing the questionnaire. Your answers would help ensure we have the most comprehensive data for our research. I hope you can find the time to complete this voluntary questionnaire and return it to our office in the preaddressed envelope provided. Let me stress that all answers are confidential.

In closing I would like to thank you for your time and willingness to consider our request. Should you have any questions or comments please give me a call at 407-699-8416 or send me an email at william.gaught@verizon.net.

Sincerely,

Bill Gaught
Doctoral Student, Educational Leadership
University of Central Florida

APPENDIX G: FACTOR ANALYSIS TABLES AND SCREE PLOTS

Table 38

Factor Analysis Summary for Category 2 Responses

Factor	Eigenvalue	% of Variance	Cummulative %
1	9.37	37.49	37.49
2	2.32	9.29	46.79
3	1.60	6.42	53.20
4	1.38	5.51	58.71
5	1.29	5.18	63.89
6	1.11	4.44	68.33

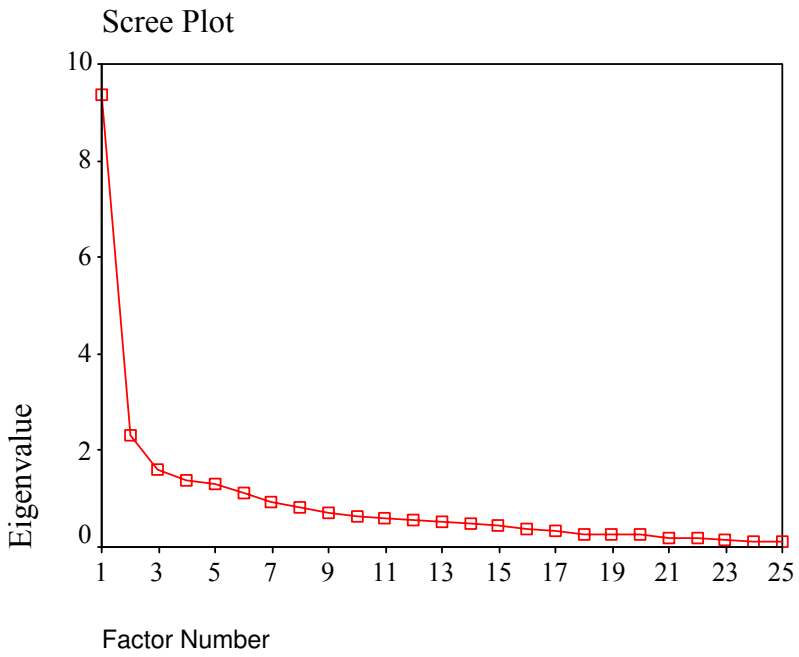


Figure 2. Scree Plot of Category 2 Responses

Table 39

Factor Loadings for Category 2 with Promax Rotation

FSIR Grouping	Factor loading						Communality
	1	2	3	4	5	6	
#9	**.88**	-.22	.17	-.14	-.09	.01	.56
#21	**.82**	.09	.05	-.11	.08	.03	.74
#22	**.79**	-.01	.11	.04	.06	-.05	.74
#10	.58	.34	.03	-.04	-.28	**.47**	.78
#25	**.50**	.09	-.13	.21	-.06	.19	.50
#13	.45	-.30	-.12	**.33**	.41	-.04	.66
#14	-.03	**.84**	.03	.01	-.08	.17	.72
#17	.00	**.79**	.00	.01	.16	-.03	.74
#7	-.27	**.75**	-.09	-.10	.28	.35	.71
#23	.11	**.38**	-.15	.29	.33	-.07	.66
#24	.37	**.37**	-.22	.30	-.04	.05	.66
#4	-.03	.04	**.87**	.03	-.04	.16	.80
#5	.13	-.08	**.79**	.07	.03	.12	.78
#6	.30	.02	**.64**	-.26	.29	.04	.62
#20	-.03	-.12	.18	**.84**	.02	-.05	.74
#18	-.17	.27	-.03	**.75**	-.12	.13	.60
#12	.08	-.02	-.19	**.63**	.13	.10	.54
#16	.13	.34	.30	**.47**	-.22	-.39	.74
#1	-.08	.04	.03	.02	**.83**	-.05	.66
#15	-.08	.32	.13	-.15	**.73**	.10	.70
#19	.01	**.41**	.17	.15	.47	-.21	.74
#11	.26	-.10	-.04	.07	.43	**.40**	.63
#3	.08	.31	.17	-.08	-.07	**.73**	.71
#2	-.31	-.23	.40	.49	.08	**.50**	.73
#8	.13	.04	.06	.40	.00	**.47**	.63

Note: Boldface indicates loading factors used for FSIR indicators. $N = 70$.

Table 40

Factor Analysis Summary for Category 3 Responses

Factor	Eigenvalue	% of Variance	Cummulative %
1	10.39	41.57	41.57
2	2.71	10.85	52.43
3	1.48	5.91	58.33
4	1.32	5.30	63.63
5	1.02	4.07	67.70

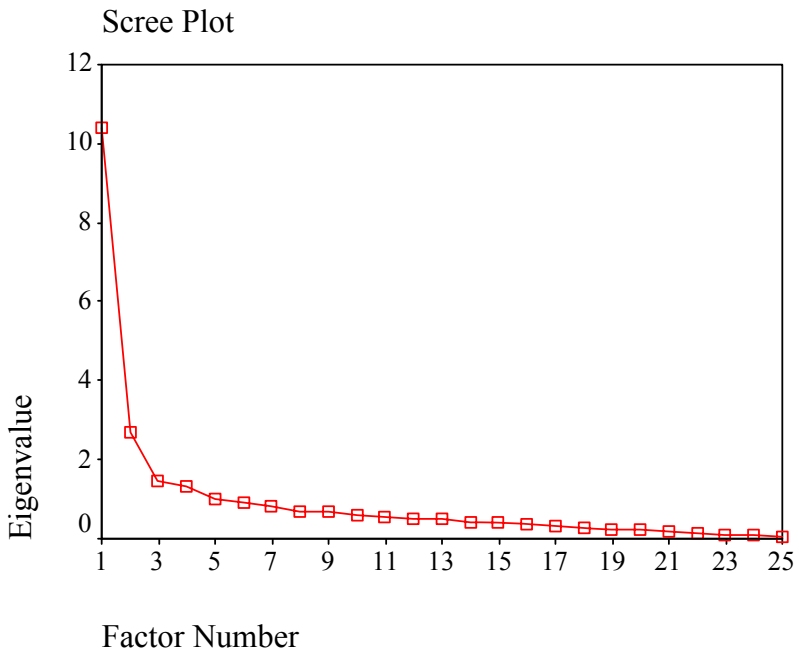


Figure 3. Scree Plot of Category 3 Responses

Table 41

Factor Loadings for Category 3 with Promax Rotation

FSIR Grouping	Factor loading 1	2	3	4	5	Communality
#14	**.95**	-.32	-.06	.18	.14	.84
#17	**.90**	-.11	-.09	.04	.13	.77
#23	**.72**	.17	-.04	.07	-.03	.70
#25	**.67**	.17	.09	-.27	.17	.64
#19	**.63**	.30	-.01	.11	-.24	.71
#10	**.51**	.08	.37	-.21	.30	.69
#18	**.37**	.27	-.05	.32	.10	.60
#22	.14	**.85**	-.09	-.03	.03	.78
#21	.25	**.80**	-.10	-.17	.06	.75
#11	-.36	**.79**	-.09	.27	.25	.68
#13	.08	**.78**	.04	.00	-.25	.66
#12	-.22	**.65**	.10	.20	.24	.66
#24	**.36**	.40	-.30	.33	.14	.66
#9	.22	**.36**	.19	.14	.02	.51
#5	-.04	-.14	**.91**	.19	-.07	.80
#6	.11	-.07	**.89**	-.12	.09	.76
#4	-.19	-.12	**.81**	.30	.07	.74
#2	-.20	.30	**.54**	-.07	.23	.57
#20	.24	.25	**.31**	.29	-.18	.62
#1	.00	.02	.11	**.75**	.13	.68
#15	.11	.09	.11	**.69**	.03	.72
#16	.12	.20	**.33**	.35	-.28	.55
#3	.13	.21	.02	-.06	**.65**	.61
#7	.25	-.32	-.05	**.43**	.64	.64
#8	.04	.16	.31	-.03	**.50**	.57

Note: Boldface indicates loading factors used for FSIR indicators. $N = 70$.

Table 42

Factor Analysis Summary for Category 4 Responses

Factor	Eigenvalue	% of Variance	Cummulative %
1	10.66	42.63	42.63
2	2.64	10.57	53.20
3	1.42	5.71	58.92
4	1.40	5.58	64.50
5	1.25	5.01	69.51

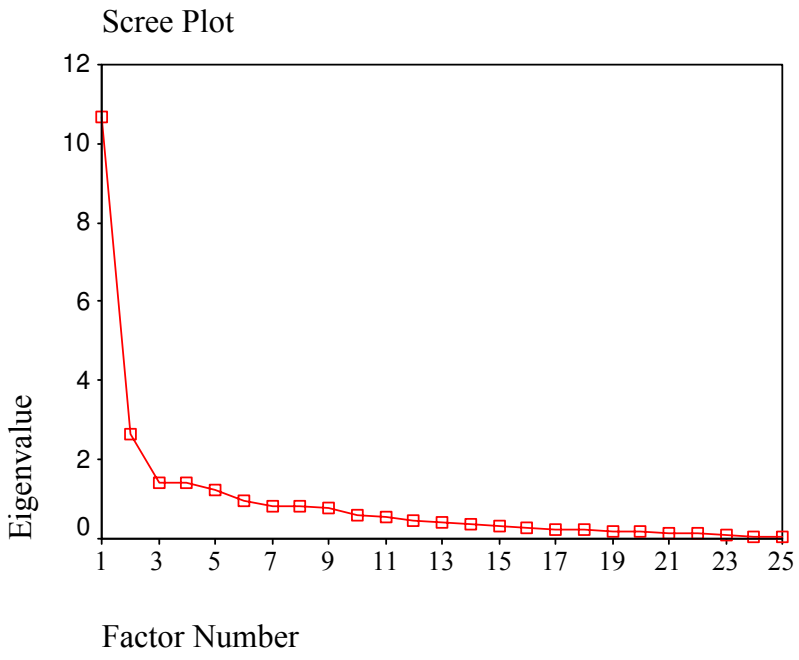


Figure 4. Scree Plot of Category 4 Responses

Table 43

Factor Loadings for Category 4 with Promax Rotation

FSIR Grouping	Factor loading 1	2	3	4	5	Communality
#24	**.94**	-.21	-.07	-.05	.15	.74
#13	**.91**	-.10	-.26	.14	.13	.75
#23	**.73**	-.05	.13	-.04	.06	.63
#21	**.68**	.08	.14	-.04	.10	.69
#25	**.67**	.00	.18	.23	-.41	.73
#22	**.67**	.18	.01	.03	.14	.73
#18	**.56**	.33	.17	-.01	-.15	.67
#19	**.52**	.12	.18	-.02	.19	.60
#4	-.08	**.97**	-.08	.14	-.12	.88
#5	-.18	**.95**	.01	.21	-.10	.75
#16	.09	**.92**	.10	-.35	-.01	.75
#6	-.01	**.74**	-.06	.10	.08	.66
#20	**.32**	.53	-.19	.15	.06	.61
#7	-.18	-.12	**.84**	.18	.09	.92
#14	.11	.06	**.83**	-.23	.13	.80
#17	.27	.03	**.75**	-.02	-.12	.80
#2	-.20	.19	-.07	**.72**	.24	.69
#11	.36	.02	-.21	**.68**	-.10	.65
#3	-.01	-.08	.36	**.68**	-.12	.62
#10	.22	-.16	.46	**.55**	-.03	.78
#12	.18	.16	-.13	**.54**	.15	.58
#8	-.24	.17	.29	**.44**	.33	.57
#1	.10	-.14	-.04	.07	**.75**	.55
#15	.08	.09	.26	-.02	**.68**	.75
#9	.39	-.02	-.01	.06	**.52**	.57

Note: Boldface indicates loading factors used for FSIR indicators. $N = 70$.

APPENDIX H: CORRELATION TABLES

Table 44

Factor 1 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.46**	--		
Category 3 - Ability/skill of administrative staff	.40**	.72**	--	
Category 4 - Amount of time staff members have available	.49**	.59**	.57**	--

Note. $^{**}p < .01$.

Table 45

Factor 2 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.36**	--		
Category 3 - Ability/skill of administrative staff	.47**	.72**	--	
Category 4 - Amount of time staff members have available	.27*	.56**	.60**	--

Note. $^{*}p < .01$, $^{**}p < .05$.

Table 46

Factor 3 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.47**	--		
Category 3 - Ability/skill of administrative staff	.41**	.64**	--	
Category 4 - Amount of time staff members have available	.48**	.39**	.52**	--

Note. **p < .01.

Table 47

Factor 4 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.41**	--		
Category 3 - Ability/skill of administrative staff	.24*	.55**	--	
Category 4 - Amount of time staff members have available	.43**	.52**	.63**	--

Note. **p < .01, *p < .05.

Table 48

Factor 5 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.46**	--		
Category 3 - Ability/skill of administrative staff	.53**	.85**	--	
Category 4 - Amount of time staff members have available	.40**	.51**	.55**	--

Note. **p < .01.

Table 49

Factor 6 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.44**	--		
Category 3 - Ability/skill of administrative staff	.39**	.60**	--	
Category 4 - Amount of time staff members have available	.22*	.39**	.40**	--

Note. **p < .01, *p < .05.

Table 50

Factor 7 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.27*	--		
Category 3 - Ability/skill of administrative staff	.39**	.63**	--	
Category 4 - Amount of time staff members have available	.45**	.54**	.52**	--

Note. **p < .01, *p < .05.

Table 51

Factor 8 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.32**	--		
Category 3 - Ability/skill of administrative staff	.37**	.58**	--	
Category 4 - Amount of time staff members have available	.22*	.43**	.53**	--

Note. **p < .01, *p < .05.

Table 52

Factor 9 Correlations for Priority and Ability to Collect and Analyze Data

	Category 1	Category 2	Category 3	Category 4
Category 1 - Priority assigned to indicator	--			
Category 2 - Availability of computer hardware and software	.30**	--		
Category 3 - Ability/skill of administrative staff	.40**	.54**	--	
Category 4 - Amount of time staff members have available	.25*	.47**	.54**	--

Note. **p < .01, *p < .05.

APPENDIX I: MULTIPLE REGRESSION TABLES

Table 53

Descriptives and Correlations for Factor 2 Regression Model

Variable	M	SD	1	2	3
Priority assigned to this indicator	2.20	.48	.36**	.47**	.27*
Predictor variables					
1. Availability of computer equipment	2.15	.45	--	.72**	.56**
2. Ability/skill of administrative staff	2.13	.46	.72**	--	.60**
3. Amount of time available for staff	1.82	.46	.56**	.60**	--

Note. **p < .01, *p < .05

Table 54

Regression Analysis Summary for Factor 2 Regression Model

Variable	B	SEB	β
Availability of computer equipment	.04	.17	.04
Ability/skill of administrative staff	.49	.18	.46*
Amount of time available for staff	-.03	.15	-.03

Note. R^2 = .22 (N = 70, *p < .01).

Table 55

One-Way Analysis of Variance for Factor 2 Regression Model

Model	df	SS	MS	F
Regression	3	3.61	1.20	6.36**
Residual	66	12.47	.19	
Total	69	16.08		

Note. **p < .01

Table 56

Descriptives and Correlations s for Factor 3 Regression Model

Variable	M	SD	1	2	3
Priority assigned to this indicator	1.92	.53	.47**	.41**	.48**
Predictor variables					
1. Availability of computer equipment	2.07	.46	--	.64**	.39**
2. Ability/skill of administrative staff	2.05	.48	.64**	--	.52**
3. Amount of time available for staff	1.69	.45	.39**	.52**	--

Note. **p < .01

Table 57

Regression Analysis Summary for Factor 3 Regression Model

Variable	B	SEB	β
Availability of computer equipment	.36	.15	.31*
Ability/skill of administrative staff	.04	.16	.04
Amount of time available for staff	.40	.14	.33**

Note. R^2 = .32 (N = 70, **p < .01, *p < .05).

Table 58

One-Way Analysis of Variance for Factor 3 Regression Model

Model	df	SS	MS	F
Regression	3	6.27	2.09	10.47**
Residual	66	13.17	.20	
Total	69	16.08		

Note. **p < .01

Table 59

Descriptives and Correlations for Factor 4 Regression Model

Variable	M	SD	1	2	3
Priority assigned to this indicator	1.99	.61	.41**	.24*	.43**
Predictor variables					
1. Availability of computer equipment	1.84	.63	--	.55**	.52**
2. Ability/skill of administrative staff	1.99	.60	.55**	--	.63**
3. Amount of time available for staff	1.56	.52	.52**	.63**	--

Note. **p < .01, *p < .05

Table 60

Regression Analysis Summary for Factor 4 Regression Model

Variable	B	SEB	β
Availability of computer equipment	.30	.13	.30*
Ability/skill of administrative staff	-.17	.15	-.16
Amount of time available for staff	.44	.17	.37*

Note. R^2 = .24 (N = 70, *p < .05).

Table 61

One-Way Analysis of Variance for Factor 4 Regression Model

Model	df	SS	MS	F
Regression	3	6.29	2.10	7.02**
Residual	66	19.70	.30	
Total	69	25.99		

Note. **p < .01

Table 62

Descriptives and Correlations for Factor 5 Regression Model

Variable	M	SD	1	2	3
Priority assigned to this indicator	2.03	.64	.46**	.53**	.40**
Predictor variables					
1. Availability of computer equipment	2.21	.68	--	.85**	.51**
2. Ability/skill of administrative staff	2,18	.68	.85**	--	.55**
3. Amount of time available for staff	1.81	.60	.51**	.55**	--

Note. **p < .01

Table 63

Regression Analysis Summary for Factor 5 Regression Model

Variable	B	SEB	β
Availability of computer equipment	.02	.18	.02
Ability/skill of administrative staff	.40	.19	.42*
Amount of time available for staff	.17	.14	.15

Note. R^2 = .30 (N = 70, *p < .05).

Table 64

One-Way Analysis of Variance for Factor 5 Regression Model

Model	df	SS	MS	F
Regression	3	8.48	2.83	9.35**
Residual	66	19.96	.30	
Total	69	28.44		

Note. **p < .01

Table 65

Descriptives and Correlations for Factor 7 Regression Model

Variable	M	SD	1	2	3
Priority assigned to this indicator	2.28	.56	.27*	.39**	.54**
Predictor variables					
1. Availability of computer equipment	2.23	.49	--	.63**	.54**
2. Ability/skill of administrative staff	2.27	.53	.63**	--	.52**
3. Amount of time available for staff	1.84	.52	.54**	.52**	--

Note. **p < .01, *p < .05

Table 66

Regression Analysis Summary for Factor 7 Regression Model

Variable	B	SEB	β
Availability of computer equipment	-.10	.17	-.09
Ability/skill of administrative staff	.26	.15	.25
Amount of time available for staff	.40	.14	.37**

Note. R^2 = .24 (N = 70, **p < .01).

Table 67

One-Way Analysis of Variance for Factor 7 Regression Model

Model	df	SS	MS	F
Regression	3	5.14	1.71	6.98**
Residual	66	16.19	.25	
Total	69	21.32		

Note. **p < .01

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