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Principals' pedagogical knowledge of instructional practices

Carmen Poloni Benedict
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PRINCIPALS' PEDAGOGICAL KNOWLEDGE
OF INSTRUCTIONAL PRACTICES

by

Carmen Poloni Benedict

Bachelor of Arts
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1985

Master of Education
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1989

A dissertation submitted in partial fulfillment
of the requirements for the

Doctor of Education Degree in Educational Leadership
Department of Educational Leadership
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Entitled

Principal's Pedagogical Knowledge of Instructional Strategies

is approved in partial fulfillment of the requirements for the degree of

Ed.D.

Examination Committee Chair

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ABSTRACT

Principals' Pedagogical Knowledge of Instructional Practices

by

Carmen Poloni Benedict

Dr. Patti Chance, Committee Chair
Associate Professor of Educational Leadership
University of Nevada, Las Vegas

Recent federal legislation, Public Law 107-110 (No Child Left Behind Act of 2001), makes certain demands of schools and their instructional leaders, requiring schools to maintain an average yearly progress (AYP), proving student achievement over a recorded period of time. With a greater emphasis on student achievement, principals will need to be knowledgeable in the area of instruction in order to lead effectively their staffs in this age of accountability.

The purpose of this study was to determine principals’ pedagogical knowledge of research-based instructional practices that improve student achievement. In addition, the study examined principals’ and teachers’ perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement. This study looked at the practices of principals by examining three related areas: the research-based instructional practices proven to be most successful; the depth of principal knowledge regarding research-based instructional practices; and the degree to which principals apply their knowledge in supervisory practices.
This study employed both quantitative and qualitative methods in what Creswell (1994) called a dominant-less dominant design. A questionnaire and telephone interview were utilized to gather data. The population for this study was one hundred principals and three hundred teachers working in public elementary, middle, and high schools. The principals were the recipients of the 2004 NAESP and NASSP Principal of the Year Award. They selected three teachers from their schools to participate in the teacher questionnaires and interviews.

Results indicated that, in general, principals did have a sound pedagogical knowledge of research-based instructional strategies. Principals were able to identify many practices taken from research-based theories and seemed to encourage most of those practices. However, results also indicated that principals often encouraged certain conflicting practices. In addition, teachers' perceptions of principals' practices were sometimes in conflict with principals' perceptions. This was particularly evident in results taken from secondary principal and teacher data. In light of these findings, this study suggested some discrepancies between principals' perceived knowledge about research-based instructional practices and their actual pedagogical knowledge.
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Finally, I dedicate this work to my parents, Rodolfo and Cecilia Poloni, for their great sacrifices and their life-long dedication to our family.
CHAPTER 1

INTRODUCTION

Recent federal legislation has brought much attention and scrutiny to the instructional practices of teachers and principals in our public schools. Public Law 107-110 (No Child Left Behind Act of 2001 [NCLB], Elementary and Secondary Education Act, 2001), enacted into law on January 8, 2002, is a reauthorization of the original Elementary and Secondary Education Act (ESEA) passed initially in 1965. NCLB strives to "close the achievement gap with accountability, flexibility, and choice, so that no child is left behind" (NCLB, 2001). In order to measure the progress of school-aged children through the 12th grade, a baseline for the 2001-2002 school year was determined. This baseline then set the expectations for adequate yearly progress (AYP) for subsequent years. During this time states have defined AYP with the goal being that every child must be "proficient" at the end of 12 years in reading and math. States must use state-mandated standards to determine proficiency. Then they must set starting points or the initial bar based on the lowest achieving demographic subgroup and then define what the annual rate of progress will be during the 12-year span (NCLB, 2001; U.S. Department of Education, n.d.).

This type of systematic measurement of student achievement will have an impact on the administrator of tomorrow's schools and on the teachers who are
expected to help students achieve the determined standards set by their states (NCLB, 2001; U.S. Department of Education, n.d.). Schools which are designated as being in need of improvement based on their students’ achievement scores after a period of four years will lose much of their autonomy and be forced to follow a series of corrective actions that could include the replacement of staff or development of new curriculum. Schools who fail to meet their AYP for five years will be mandated to develop a plan which may include governance, state takeover, hiring of a private management firm, converting to a charter school, or significant staff restructuring (NCLB, 2001; U.S. Department of Education, n.d.).

The role of the principal has always been under the microscope. The influences of the site principal on student achievement and school culture have been noted in empirical literature for many decades (Brookover & Lezotte, 1979; Leithwood, Begley, & Cousins, 1992; Stogdill, 1948; Tannenbaum, Weschler, & Massarik, 1961), even though historical accounts suggest that the roles of American school teachers and administrators have remained relatively stable over the past century (Cuban, 1988; Hallinger, 1992; Tyack, 1990). Despite this relative stability, the principal’s role in education has gone through an evolution (Carlson, 1996; Chance, 1992; Hallinger, 1992; Hoy, 1994). For the most part, a nationwide trend towards school district consolidation, the profession’s emulation of corporate management, and the political nature of public educational institutions led the majority of principals to focus on areas other than instruction (Cuban, 1988; Senge, 1990). During the 1960’s and 1970’s, principals became increasingly responsible for managing federally-sponsored, funded
programs designed to assist special student populations. In addition, along with the curriculum reforms of the times, principals assumed the responsibilities that came with program and curriculum management (Hallinger, 1992; Tyack, 1990).

From the 1920's until the 1960's, the predominant role assumed by principals across this nation was one of administrative manager (Hallinger, 1992; Tyack, 1990). When the concept of instructional leadership first emerged, principals were thought to be effective if they led a school by doing the following: setting clear expectations, maintaining firm discipline, and creating high standards (Andrews & Soder, 1987; Barth, 2001; Quinn, 2002). By the 1980's the effective schools research called principals to engage more actively in leading the school's instructional program and in focusing staff attention on student outcomes (Brookover & Lezotte, 1979). As a result, instructional leadership became the new educational standard for principals (Hallinger, 1992).

Current research, however, reveals that the indicators for effective instructional leadership involve a number of variables that directly influence instruction: the influence of others to pair appropriate instructional practices with their best knowledge of subject matter, the focus on student active teaching, and the supply of resources and incentives to teachers to keep their focus on students (Andrews & Soder, 1987; Leithwood & Jantzi, 1999, 2000; Quinn, 2002). The principal of today, then, must be ready to lead in the area of instruction based on the research-based strategies that have been proven to be most successful if he/she is going to make any significant changes in the learning of his/her students (Neuman & Pelchat, 2001).

Today, federal legislation, NCLB, requires that everyone from state
departments of education to local education agencies to classroom teachers assume a portion of the responsibility for the assurance of a quality education in each individual school. However, much of the burden of ensuring students receive a quality education is still going to be on the shoulders of the school site principal who remains responsible for the hiring, supervising, and organizing of teachers (Hill, 2001; Wiles & Bondi, 1996). Seen as the instructional leader of the school site, the principal is the leader of the school, which is today viewed by much of the research as the unit responsible for the initiation of change, and not just the implementation of changes conceived by others, which was the predominant view during the 1970's and 1980's (Hallinger, 1992; Hill, 2001; Southworth, 2002).

Accountability is a key component of the federal legislation and of public opinion. There was great bipartisan support for NCLB when it was enacted in 2002. That support shows that Americans of this century are united for results (United States Department of Education, n.d.). Since 1965, states have received more than $130 billion of federal funding to help schools provide the best education possible for all children yet results have not matched the investment (United States Department of Education, n.d.). In order for funding to continue at the level necessary to make instructional improvements, schools will have to demonstrate continuous improvement evidenced by increases in student achievement scores for all sub-groups and federal money will be directly tied to those indicators of achievement. The principal, as the person responsible for the school site, will have to exercise his/her most developed skills as in instructional leader in order to meet the expectations of both federal law and public opinion.
According to Hallinger and Heck (1996), although results continue to be open to debate from research on the direct effects of the role of the principal on student achievement, there is little disagreement among researchers concerning the belief that principals do have an impact on the lives of teachers and students. In fact, Hallinger and Heck (1996, 1998) added that much of the research that has been done on the role of the principal and its power to affect and improve student achievement has suggested that schools that make a difference in students' learning are led by principals who make a significant and measurable contribution to the effectiveness of staff and in the learning of their students. Furthermore, researchers have determined that research on school effectiveness and leadership, whether focusing on instructional or transformational leadership, has concluded that principals do have a significant effect on student outcomes, even if in an indirect manner (Hallinger & Heck, 1996; Hallinger, 2003b; Heck, Larson, & Marcoulides, 1990). Additionally, these and other researchers have also concluded that principal leadership that makes a difference is aimed toward influencing internal school processes that are directly linked to student learning (Heck, Larsen, & Marcoulides, 1990; Hudgins & Cone, 1992; Leithwood & Jantzi, 1999, 2000; Quinn, 2002;). These processes range from school policies and norms to the practices of teachers (Hallinger & Heck, 1996). In order to meet the expectations of public opinion and the standards of this federal legislation, then, principals will now be called upon to exercise their knowledge and abilities in the area of instruction in order to ensure every child is receiving a quality education that will produce results (Fink & Resnick, 2001).
Statement of the Problem

Over the last two decades, a great deal of effort has been made by researchers in the study of the role of principal and its effects on student achievement (Andrews & Soder, 1987; Cheng, 1994; Hallinger, 2003a, 2003b; Heck, Larsen, & Marcoulides, 1990; Leithwood, Begley, & Cousins, 1992; Leithwood & Jantzi, 2000; Quinn, 2002). However, an extensive review of dissertations produced little related to measuring the pedagogical knowledge of principals in the area of instruction and the effects of that knowledge level on improving student achievement. Hallinger and Heck’s (1996) review of the empirical literature on the relationship between the principal’s role and school effectiveness during the period of 1980 to 1995 identified 40 studies. Despite the 40 studies used in Hallinger and Heck’s (1996) investigation, and the many others that have been written before and since that period of time, there is little known about the knowledge of instructional practices principals need to have in order to perform successfully as instructional leaders. Also, Leithwood and Jantzi (1999) contended that although principals and teachers are the two most frequently examined sources of leadership in schools, there is almost no evidence concerning the effects principals have on instruction. Leithwood and Jantzi (1999, 2000) further stated that not much is known about such critical matters as how these two sources of influence, namely teachers and principals, interact in schools.
Purpose of the Study

The purpose of this study was to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

This study looked at the practices of principals by examining three related areas. First, the work outlined which research-based instructional practices have shown to be most successful. Second, it sought to determine the depth of principal knowledge regarding research-based instructional practices. Third, the study sought to determine the degree of principals' pedagogical knowledge in their supervisory practices.

Conceptual Framework

The conceptual framework for this study was drawn from literature on research-based general instructional strategies that improve student learning. By reviewing effective instructional strategy theories related to student learning theory, this study focused on the content knowledge and practices of selected principals across the country in their roles as instructional leaders.

Education and the art of teaching and learning have been studied for decades, but many believe that it is the most recent research on teaching and learning that have made the most important instructional advancements of the recent past (Gardner & Hatch, 1989; Rosenshine, 1995; Sousa, 1998a, 1998b; Wesson, 2001; Wolfe & Brandt, 1998). As recently as 30 years ago, teaching
had not been systematically studied in a scientific manner. In fact, not until the beginning of the 1970's did researchers begin to look at the effects of instruction on student learning (Marzano, Pickering, & Pollock, 2001). Additionally, as has been noted in some work, never before have we known more about human learning (Sousa, 1998a). The combination of this relatively recent research has implications for the way teachers and principals will think about curriculum and instruction at their school sites.

Until recently, behaviorists from the 1920's all but eliminated any serious inquiry into cognitive processes underlying learning (Marzano, 1992). These learning theorists were less interested in the cognitive and intellectual abilities of those they studied than in the underlying learning processes, such as Pavlovian conditioning and instrumental learning as was described by Thorndike (1914), and in basic motivational or need systems. Simply, they were involved in scientific investigation of the more primitive processes, and in the simple kinds of learning that operate in animals and humans as well (Amsel, 1989). According to some, things have now changed. Learning theory has gone in two directions. One direction has moved away from the older affective concerns, and from stimulus-response associationism and behaviorism, and towards what is called “information processing, or “animal cognition” (Amsel, 1989, p. 34). The second direction is toward neuroscience, where at least in part, the stimulus-response and the newer cognitive approach seem to have found a way to co-exist (Amsel, 1989).

The two leading twentieth-century learning theories emphasized in today's classrooms are the S-R (stimulus-response) conditioning theories of the
behavioristic family, and the interactionist theories of the cognitive family which sees learning as a process of gaining or changing insights, outlooks, expectations, or thought patterns (Bigge & Sherman, 1999). The difference between the two families lies in the way in which learning is said to result. The behaviorist theorists interpret learning in terms of "changes in strength of S-R connections, associations, habits, or behavioral tendencies" (Bigge & Sherman, 1999, p. 11). The cognitive interactionists, on the other hand, define learning in terms of "reorganization of perceptual or cognitive fields so as to gain understandings" (Bigge & Sherman, 1999, p. 11).

Over the last three decades we have accumulated a great deal of research to devise a "truly learning-based model of instruction" (Marzano, 1992, p. 2). The cognitive research of recent past and current times reaffirms that human beings learn best when they are actively involved in interesting and challenging situations (Sousa, 1998a, 1998b). Studies have demonstrated that the easier it is for students to have more connections and interconnections in their learning, the easier it is for them to assimilate new information and to store it for long-term memory (Rosenshine, 1995).

In recent years, the most modern theories of learning have centered on active participation, cognitive processes, and association, from which a series of instructional frameworks have been developed (Orange, 2002). Having seen that these learning theories are effective and that connections do make a difference in learning, those in charge of curriculum design have focused more on interactive learning than the traditional methods of instruction. The more modern theories of learning have centered on the active learner, and there is
evidence to show that when teachers and principals follow these frameworks for active learning, learning will indeed improve (Costa & Liebmann, 1995; Marzano, 1998; Mercer & Lane, 1996). Tomlinson and Allen (2000), for example, outline a model for differentiated instruction that rests upon an active, student-centered, meaning-making approach to teaching and learning often called “constructivist”.

Cooperative learning, as outlined by Johnson and Johnson (1999) at the Cooperative Learning Center at the University of Minnesota, has also proven to have a tremendous positive effect on student learning. Cooperative learning results in process gain, greater transfer of what is learned from one situation to another, and allows for more time on task than does competitive or individualistic learning.

Recent research on teaching and learning has implications for the skills and knowledge that are required for today’s school leaders (Hudgins & Cone, 1992; King, 2002; McEwan, 1998; Quinn, 2002). The principal of today must be ready to guide, facilitate and entrust staff to take the appropriate and effective risks if any real, significant changes are going to take place in today’s classrooms (Blase & Blase, 1994, 1999, 2000; Day, Harris, & Hadfield, 2001; DuFour, 2002; Fink & Resnick, 2001; Hallinger, 2003b). Results of research concerned with such issues as effective schools, school improvement processes, and curriculum implementation consistently indicate that the role of the principal is an important one in the area of reform (Leithwood, Begley, & Cousins, 1992; McCall et al., 2001; Quinn, 2002). School leaders will not be able to take the role of instructional leader to the necessary levels if they are not well-versed in
learning theory and the most effective research-based teaching strategies (Fink & Resnick, 2001; Stoll, Bolam, & Collarbone, 2002).

Research Questions

Specifically, this study was guided by and sought to answer the following questions regarding the practices of principals in the area of instructional strategies:

- What is the perceived and actual pedagogical knowledge of principals about research-based instructional practices?
- To what extent are principals encouraging particular research-based practices?
- What are the prominent practices of principals when applying their pedagogical knowledge during their supervision of teachers?

Discussion of Research Design and Methodology

In order to utilize a workable sample of principals from across the country, this study used as its participants those principals who were the recipients of the “2004 Principal of the Year” awarded by both the National Association of Secondary School Principals (NASSP) and the National Association of Elementary School Principals (NAESP). Accordingly, this was a sample of convenience. Questionnaires were forwarded to those award-winning principals, a total of 50 from each of the two organizations, and their responses to 39 questions that focused on the content knowledge and practices of school principals in their role as instructional leaders were collected.

To further study the perception of teachers regarding their principals’
content knowledge and practices, the same principals were asked to select three teachers on their staffs to answer a series of questions. Prior to dissemination, questionnaires were examined by experts in the field of instructional supervision for content validity and survey design.

Definition of Terms

The following definitions are provided for concepts pertinent to this study:

**Behaviorism:** A learning theory that states “learning is a change in observable behavior, which occurs through stimuli and responses becoming related according to mechanistic principles” (Bigge & Shermis, 1999).

**Cognitive Strategy Instruction:** A model of instruction that looks to prepare learners for success in a variety of tasks by focusing on teaching the strategies needed to complete those tasks (Pressley & Assoc., 1990).

**Cognitivism:** A learning theory that states “learning is a process of gaining or changing insights, outlooks, expectations, or thought patterns” (Bigge & Shermis, 1999).

**Constructivism:** An approach to education that advocates an active, student-centered, meaning-making approach to teaching and learning (Tomlinson, 1999).

**Cooperative Learning:** “Cooperative learning is the instructional use of small groups in which students work together to maximize their own and each other’s learning” (Johnson & Johnson, 1999, p. 72).

**Descriptive Research:** Research interested in process, meaning, and understanding gained through words or pictures (Creswell, 1994).

**Differentiated Instruction:** A belief, or way of thinking about teaching and
learning, that advocates beginning where individuals are rather than with a
prescribed plan of action which ignores student readiness, interest, and learning
profile. It is accomplished through a range of instructional and management
strategies (Tomlinson, 1999).

Educational Research: “Educational research is scientific inquiry about an
educational question that provides an answer which contributes toward
increasing the body of generalizable knowledge about educational concerns
(Hopkins, 1980, p. 29).

Elementary Principal: An individual certified by his/her state to administer an
elementary school of any combination of grades 1-6, including elementary
schools of K-5, K-6, or any other combination. Someone who is responsible for
the operations and decisions of a school site. (National Association of
Elementary School Principals, n.d.).

Instructional Leadership: A series of behaviors designed to affect classroom
instruction. (Leithwood, 1994).

Learning Theory: “A systematic integrated outlook in regard to the nature of the
process whereby people relate to their environments in such a way as to
enhance their ability to use both themselves and their environments in a most
effective way” (Bigge & Shermis, 1999).

Mixed Methodology Design: The combination of qualitative and quantitative
approaches of research design in a single study (Creswell, 1994).

Research-Based Instructional Practice: A practice of instruction that is based on
theory which has been researched and investigated (Marzano, Pickering, &
Pollock, 2001).
Secondary Principal: An individual certified by his/her state to administer a secondary school of any combination of grades 6-12, including middle schools, junior high schools, and elementary schools of K-6 or K-8. Someone who is responsible for the operations and decisions of a school site (National Association of Secondary School Principals, n.d.)

Supervision: Supervision is a function emphasizing improvement of teaching and learning using diverse approaches (Harris, 1998).

Transformational Leadership: A series of behaviors that focuses on "increasing the organization’s capacity to innovate" (Hallinger & Heck, 1998, p. 169).

Triangulation: The use of two or more methods of data collection in the study of some aspect of human behavior (Cohen & Manion, 1989, p. 269).

Assumptions

Assumptions for this study include:

1. The participants in this survey were not believed to have any more skill or any greater knowledge base in the area of leadership and instruction simply because they were the recipients of a national award given by either the NAESP or the NASSP.

2. Participants in this study were chosen as a sample of convenience and were geographically representative of elementary and secondary principals throughout the nation.
Limitations

Limitations for this study include:

1. The process of gathering data for this study was limited to a paper/pencil questionnaire and phone interviews conducted to gather data from participants.

2. There was no direct observation of principals practicing in their roles as leaders. The research was perceptual in nature.

3. Because there was no direct contact with participants, the participants’ honesty had to be assumed during participation.

4. Principals were asked to select three teachers from their staffs to answer the teacher questionnaire. The researcher was not in control of that process, thus cannot be completely certain of the way the principal chose the teacher participants.

5. The researcher cannot be certain whether the participants actually completed the surveys or whether someone else might have completed them.

Delimitations

The delimitation of this study is as follows:

1. Generalizing from the findings is limited because those studied reflect a sample of convenience, and not a random sample.
Significance of the Study

An extensive review of dissertations produced very little related to measuring the pedagogical knowledge of principals in the area of instruction and the effects of that pedagogical knowledge level on improving student achievement. With the federal legislation’s demands on principals to produce student achievement results at their school sites, it is imperative that more be known about the actual pedagogical knowledge level of principals in regard to research-based instruction since research-based instruction is mandated by this legislation (NCLB, 2001). Without well-versed, knowledgeable, and skilled instructional leaders at the helm of public schools, leading teachers in their efforts to improve instruction for all children, schools will find it difficult to complete their visions based on sound, proven, research-based instructional practices (Andrews & Soder, 1987; Cheng, 1994; Quinn, 2002; Stoll, Bolam, & Collarbone, 2002; Tomlinson & Allen, 2000).

This study provided a snapshot of what supervising principals know and what they do not know about instructional practices and supervision. Such information may be useful in designing preparatory programs for pre-service administrators and professional development programs for existing administrators (Barnett, 2004; Caldwell, 2003; DuFour, 1999; Hill, 2001; Southworth, 2002). If we knew what principals perceive to be effective instruction and we found that they did not have a sound knowledge base about the practice of teaching, there would be room for growth and for change in our administrative preparation programs (Barnett, 2004; Blase & Blase, 2000; Caldwell, 2003; Leithwood, Begley, & Cousins, 1992; Rowan, 1995). Principals’
inability to depict effective teaching practices would weaken the credibility of principals leading reform (Murphy, 2002). This deficit among principal candidates would affect the hiring practices of districts across the country as district officials search to fill the many openings of the future in both teaching and administrative positions (Black, 2000). Furthermore, there would be ramifications regarding the ability to affect change in student achievement (Hallinger, 2003; Marsh & LeFever, 2004). There is little research in the area of principals' pedagogical knowledge and this study contributed to the research (Leithwood & Jantzi, 1999, 2000). Without a knowledgeable principal leading the school's effort to improve instruction for all students, positive change may be quite limited and difficult to sustain (Andrews & Soder, 1987; Cheng, 1994; Day, Harris, & Hadfield, 2001; Marsh & LeFever, 2004; Quinn, 2002; Tomlinson & Allen, 2000).

If we learn that principals do have a sound base knowledge of instructional practices but fail to implement those sound instructional practices, or do not use supervision/evaluation/coaching to improve these practices at their site, we will have to ask what ramifications might exist for any type of academic reform as outlined in the federal legislation (NCLB, 2001). Also, such results might address a need to look at what impedes a principal from using a knowledge base of research-based instruction to affect change (Neuman & Pelchat, 2001).

Summary

This study investigated the pedagogical knowledge of research-based instructional strategies of principals across the country. It also studied both principals' and teachers' perceptions of principal practices related to the
supervision of classroom instruction and the improvement of student achievement by surveying the 100 recipients of the 2003-2004 Principal of the Year Award as presented by the National Association of Elementary School Principals and the National Association of Secondary School Principals as well as three teachers from each of the 100 principals' school sites.

In order to study the aforementioned knowledge of principals, the study first outlined the most successful research-based instructional practices and then determined the depth of principal knowledge regarding these research-based instructional practices. Finally, the study sought to determine the degree of such knowledge in the instructional practices of principals as these educational leaders help to implement best instructional practices in the classroom.
CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The review of related literature found in this chapter supported the need for this study. The purpose of this study was to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers' perceptions of principal practices related to the educational leader's supervision of classroom instruction and the actions taken by that educational leader to improve student achievement.

This study looked at the practices of principals by examining three related areas: the research-based instructional practices that have shown to be most successful; the depth of principal knowledge regarding research-based instructional practices; and the degree to which principals apply their knowledge in their supervisory practices. To investigate these three areas to the fullest extent, theoretical concepts of leadership and learning were identified and explored. Secondly, pedagogical knowledge of principals was examined to determine the depth of knowledge that principals have regarding instruction and learning theory. Thirdly, practices of principals in their role as instructional
leaders were investigated to study the most effective leadership skills needed to improve instruction.

Included in the review of literature were the theoretical and historical perspectives of leadership and learning, the recent research-based instructional practices proven to be effective, and the behaviors of effective principals implementing these practices to improve student achievement.

Leadership Theory

Leadership, broadly defined in the literature for centuries, has always had tremendous influence on any organization (Bass, 1981; Bolman & Deal; 1994; Drake & Roe, 1986). The classic definition by Tannenbaum, Weschler, and Masarik (1961) provided some of the most critical dimensions of leadership. As stated in their work, leadership is "interpersonal influence directed through the communication process toward the attainment of some goal or goals." There is no lack of leadership theories available today for the working principal to study. The plethora of literature on the subject of leadership theory is abundant and extensive. Dating from the time of Greek and Latin classics, biblical times, and ancient Chinese philosophy, and concluding in today's modern world, the study of leadership has always been of keen interest to man (Bass, 1981; Johns & Moser, 1989; Kanji & Moura e Sa, 2001). In attempting to define leadership and frame a theory for its practice, researchers and theorists alike have filled the pages of professional literature from particular points of views. As a result, professional literature is laden with leadership theories that examine leadership
from a number of perspectives (Bennis, 1989; Bolman & Deal, 1997; Cheng, 1994; Senge, 1990; Sergiovanni, 1984; Yukl, 1994).

As in the case with the evolution of any global idea, leadership theory has undergone a number of changes, revisions, and rebirths. The classical theorists debated whether leadership was a function of the individual and his/her characteristics or whether the individual was shaped within a historical context in response to the needs or events of that society (McEwan, 1998). The theories of the first part of the 20th century were formulated to an extent around a simplistic, dualistic approach to leadership, namely with one dimension concerned with the interpersonal relationships of people and the other with the achievement of the task (Bass, 1981; Stogdill, 1974). Early theories included a list of characteristics or traits of leaders (Stogdill, 1948) which often focused on differentiating between leaders and non-leaders (Siegrist, 1999).

In more contemporary times, most researchers have focused on studying what leaders actually do versus focusing on what traits they have (Johns & Moser, 1989). Consequently, subsequent theories have grown to be more complex and more sophisticated than their predecessors of the distant past and include a number of perspectives from which to view leadership, its roles, its influence, and its effectiveness (Bennis, 1989; Bolman & Deal, 1997; Cheng, 1994; Senge, 1990; Sergiovanni, 1984). Today’s leadership theories correspond more closely with the emerging view that cultural or transformational leadership is most effective in meeting the needs of our organizations (Cunningham & Gresso, 1993; Northouse, 1997) or that vision (Bennis, 1989) is the key component in running an effective organization. In any case, it is a view of
leadership that brings more to the table than a long list of character traits. Each theory in its own right addresses the characteristics of leadership, the role of leadership, and the effects of leadership on the organization at large.

Organizational Theory

A review of the history of organizational theory gives context and meaning to the study of leadership, and, in particular, to educational leadership. The influences of business, society at large, and scientific inquiry have had enduring effects on the educational leaders of today and have shaped who they are and what they do in our schools. In some respects the educational leader has changed dramatically from the leader of yesterday (Johns & Moser, 1989), and in some cases he/she has remained very similar to his/her predecessors (Hallinger, 1992).

From roughly 1900-1930, classical organization theories, epitomized by the work of Taylor (1947), focused on efficiency and rationality. During this period, organizations gave little thought to the human factor of an organization. Under this view, good leaders were bureaucratic by nature and in action (Chance, 1992; Hoy, 1994).

With the industrialization of the United States came the emergence of organizational theory, and leaders were deemed effective when they were able to produce in an efficiently-run organization, treating workers as appendages of the "machine" (Carlson, 1996, p. 20). Throughout business, industry, and the educational system of that time, the demands of the daily responsibilities within the organization were handled competently, and personnel were organized into
structured curricular departments in order to produce efficient organizations where discipline prevailed. Schools were no different. Principals, like business leaders, were called upon for their managerial skills. Efficiency was the focus of that earlier era that extended in the case of education, in many ways, beyond those three decades to include to some extent the time between 1920's and 1970's (Culbertson, Jacobson & Ruller, 1960; Hallinger, 1992; Hoy, 1994).

An attack of the rigid, often de-humanizing, practice of looking at organizations began some time in the 1930's and with the critique of those earlier leadership theories came the human relations approach to leadership (Mayo, 1933). The discovery of the Hawthorne effect, where researchers discovered the importance of meeting the worker's needs in order to improve productivity, spawned the birth of a new type of organization, and thus a new type of leader. Although this approach to leadership did not gain a great degree of support at its inception, and in fact took longer to become a common practice among school administrators than the previous approach, it did have an effect on leadership theories and the principal's role in school administration, as leaders of business, industry, and education began to look at the human factors that influenced an organization (Carlson, 1996; Chance, 1992; Hoy, 1994; Johns & Moser, 1989).

Beginning in 1950, optimism about the power of scientific inquiry permeated organizational theory and leadership theory as it had the hard sciences. The result was a steady increase in behavioral science. The approach of behavioral science was a combination of ideas and constructs from the social sciences and has helped to shape theory in educational leadership, even if in
practice it restricts principals and administrators to a much too simple view of human interaction (Chance, 1992; Culbertson, Jacobson & Ruller, 1960).

Educational Leadership

Educational leadership has undergone an evolution, much like the evolution of organizational theory (Carlson, 1996; Chance, 1992; Hallinger, 1992; Hoy; 1994; Tyack & Honsot, 1982). As ideas changed in the last century concerning what makes for an efficient and high-functioning organization, so have the ideas surrounding effective leadership. In education, as in the world at large, the term leadership has undergone a number of changes in its definition and expectations, as the needs of society have evolved into more complex and demanding ones from the past (Hallinger, 1992; Hoy, 1994; Johns & Moser, 1989; King, 2002), and the role and responsibilities of the site principal have evolved with it.

During the earlier part of the last century, the predominant role of the site principal was one of administrative manager. Although at times there were occasional calls for principals to return to the classrooms as teachers, perhaps as an attempt to return to “their roots” (Cuban, 1988; Hallinger, 1992, p. 35; Tyack & Honsot, 1982), the greater role of the school site administrator was to emulate corporate management, building capacity within his organization for a smoothly-run operation. This view of the site principal as manager extended well into the 1960's and 1970's in many ways as the federal monies that were poured into the school system demanded accountability from school leaders.
As more federally-funded programs emerged during the 1960’s and 1970’s, often to address the unmet needs of designated student populations, principals became increasingly responsible for fiscal management. In order to meet the various requirements involved in properly implementing programs such as compensatory education, bilingual education, education for the handicapped, and other federal entitlements, the building supervisor found himself more obliged than ever to assume the often all-encompassing role of manager (Hallinger, 1992). Although the curriculum changes of those decades encouraged creativity and innovation, principals often found themselves buried deeper and deeper under the bureaucratic demands of the job (Hallinger, 1992). In fact, at times, as recently as today, the earliest role of the principal, that of bureaucrat (Cuban, 1988), has been difficult to change into a more comprehensive and contemporary role. The fact remains that our educational organizations remain highly bureaucratic, a fact that impedes leadership from evolving any differently than it has in the past (Hannay & Ross, 1997; Leithwood, Leonard, & Sharratt, 1997).

In the 1980’s the American public expressed a renewed interest in educational improvement and that interest, coupled with a decade of emerging research on instruction and the principals’ key role in instructionally-effective schools, catapulted instructional leadership into the foreground of school improvement (Brookover & Lezotte, 1979; Hallinger, 1992; Heck, Larsen, & Marcoulides, 1990; King, 2002; Leithwood, Jantzi, & Steinbach, 1999). Strong instructional leadership, either directly or indirectly, was proven to be correlated with school effectiveness (Andrews & Soder, 1987; Bossert, Dwyer, Rowan, &
Lee, 1982; Edmonds, 1979, Leithwood, Begley & Cousins, 1992) and the focus on instruction became even stronger.

By the mid-1980's, instructional leadership became the new educational standard for principals (Cuban, 1988; Hallinger & Wimpelberg, 1992; Wimpelberg, 1990). The public's renewed interest in educational improvement in the 1980's and the documented importance of principal leadership revamped and rejuvenated the role of principal as manager into one of instructional leader (Hallinger, 1992; Heck, Larsen, & Marcoulides, 1990; King, 2002; Leithwood, Jantzi, & Steinbach, 1999). The instructional leader was no longer viewed as the program or curriculum manager. High expectations for teachers and students meant principals would be held to higher standards. The instructional leader began to be viewed as the primary source of knowledge for development of the school's educational program. Whereas in past decades his effectiveness had been measured by efficiency, the 1980's began the work that is still evolving today, where the effectiveness of an educational leader is based on student achievement (Brookover & Lezotte, 1979; Hallinger & Wimpelberg, 1992).

During the past decade, the roles of principals have expanded to include a larger focus than simply managing the status quo (King, 2002). As a result, the principal of today must concern him/herself with curriculum and instruction, professional development, data-driven decision making, and accountability (King, 2002; Wiles & Bondi, 1996), while also promoting a positive culture, encouraging collaboration, problem-solving with his staff and creating a vision for the future (Bennis, 1984; Deal & Peterson, 1992; Sashkin, 1993; Sergiovanni, 1984; Sergiovanni, 1993). In addition to being a strong instructional leader, the
principal of today must also be what has been popularized as a “transformational leader” (Carlson, 1996; Hallinger, 1992; Leithwood, Jantzi, & Steinbach, 1999).

Interestingly, while literature on educational leadership is extensive, and contributions to the research of educational leadership continue to be produced, it is still difficult to accurately define. Researchers have sometimes limited their definition or expanded it in their attempt to encompass the magnitude of all the term suggests. Titles such as Bureaucrat, Instructional leader, Transformational Leader, Change Agent, Community Builder, Visionary have all been used to refer to the Principal in the context of educational leadership (Chance, 1992; Cuban, 1988; Deal & Peterson, 1992; Hallinger, 1992; Hudgins & Cone, 1992; Leithwood, Begley, & Cousins, 1992).

The role of the principal, influenced by organizational and leadership theories of the past 100 years, is still undergoing change, attempting to fulfill the multiple responsibilities that accompany the job. Principals, seen as the leaders within the organization called school, have had to demonstrate abilities in management, administration, instruction, collaboration, and vision, among others (Bolman & Deal, 1997; Carlson, 1996; Hoy, 1994; Leithwood, Jantzi & Steinbach, 1999). With the title of Principal comes a myriad of responsibilities that encompasses far more than the simple management skills of the past.

For all the changes in education in the last 100 years, one thing remains the same: student achievement is the primary concern and the goal of education. The evidence for the great focus on student achievement is found in recent federal legislation (NCLB, 2001) which requires adequate yearly progress (AYP) of every child. The principal, as the person responsible for the
instructional program at a school site, will be forced to demonstrate evidence of student gains in achievement (NCLB, 2001) or face the risk of facing a series of corrective actions such as the replacement of staff, the development of new curriculum, or the take-over of his/her school by the State. Wiles and Bondi (1996) noted, "If the supervisors are ignorant of this knowledge base (instruction), their role in improving instruction is severely limited to their own experience" (p. 93). The present conditions under which education has found itself, then, calls for the instructional leader to be a knowledgeable practitioner of teaching and learning as well as an effective leader of people (Hudgins & Cone, 1992; King, 2002; Quinn, 2002).

Theoretical and Historical Perspectives of Learning

Biologically, "Homo sapiens—the human being—is a species of mammal characterized by superior knowing and discerning abilities" (Bigge & Shermis, 1999, p. 2). Contrasted with the capacities of less advanced animals, the Homo sapien's potential for becoming human lies largely in his capacity to operate on an imaginative level of reality as he experiences the world through symbolism (Bigge & Shermis, 1999). In every aspect of their lives, people show a tendency to explore and to learn, and they derive satisfactions from their understanding and manipulating of the world in which they live. In their curiosity to explore and learn, some have become quite interested to try to learn exactly how they learn, and thus they have developed their respective learning theories.

Since the seventeenth century, many psychologists have concentrated upon developing systematic learning theories supported by experimentation.
While much has changed in the development of learning theories over the past three centuries, the basic quest to study what a human being learns, how a human being learns, and why a human being learns is as strong today as ever. According to Bigge and Shermis (1999), a new theory of learning, typically, is not translated into educational practice until 25 years or more have elapsed. Then, even as a new theory eventually comes to affect educational policy and procedures, it usually does not replace its predecessors, but rather competes with them. Consequently, as new theories have been introduced, they have been added to the old. This layering of often times competing theories has made the educational scene become more and more complex. New and veteran teachers and administrators alike are likely to adopt conflicting features from a variety of learning theories without ever realizing that their theories were basically contradictory in nature and could not be brought into harmony with each other (Bigge & Shermis, 1999). As Sousa (1998a) noted, "Never before have we known more about human learning... That's the good news" (p. 21). The bad news, to further quote Sousa (1998a), is "that this valuable information is not getting to the educational practitioner fast enough" (p.21). As a result, teachers, administrators, and policy makers are often working with conflicting theories or dated information.

While many learning theories exist, and subsequently so do their extending branches, the two leading twentieth-century learning theories are the conditioning theories (stimulus-response or S-R) of the behavioristic family, and the interactionist theories (which implies a cognitive process) of the cognitive family (Amsel, 1989; Bigge & Shermis, 1999; Glaser, 1984). For behaviorists,
learning is a change in observable behavior, which occurs through stimuli and responses. Stimuli, otherwise known as the causes of learning, are environmental agents that act upon an organism so as either to cause it to respond or to increase the probability of a response of a certain kind. Responses, or effects, are physical reactions of an organism to either external or internal stimulation (Amsel, 1989; Bigge & Shermis, 1999). For cognitive interactionists, learning is a process of "gaining or changing insights, outlooks, expectations, or thought patterns" (Bigge & Shermis, 1999, p. 11). These theorists also differ from their behaviorist counterparts in that they refer to their subjects as "person" not "organism", to their environment as "psychological" not "physical" or "biological", and to "action" or "reaction" as "interaction" (Bigge & Shermis, 1999, p.11).

Brain Research: What It Tells Us

Two major goals of today's schools are to help students retain information and to apply that information in a meaningful way (Marzano, Pickering, & Brandt, 1990). Skills such as paying attention, memorizing facts, and retaining information are still as important today as they were in the classrooms of the earlier part of the 20th century, yet more efforts are being made to include the skill of applying that knowledge. The work of Thorndike (1914) early in the last century, for example, with its emphasis on rote kinds of learning drew criticism from those who thought his psychology was mechanistic, yet his work did appeal strongly to a generation of educators who were looking for direction in pedagogical theory (Glaser, 1984).
Dewey, with his less empirical and more philosophical approach, attempted to focus on mental process, depicting learning in terms of aims, purposes and goals, and problem solving, but it was not a scientific psychology (Mc Donald, 1964). Thus, by the 1930’s and 1940’s, the dichotomous view of education as drill-and-practice on the one hand, and the development of understanding on the other, were very evident in education, and, still, the debate continues today (Glaser, 1984).

In recent times, researchers have devoted a great deal of their efforts to examining the human brain and learning more about the learning process from that point of view. While the focus among these scientists has been the same, similar conclusions interpreted from those studies have not always followed (Bruer, 1999; Chabris & Kosslyn, 1998; Chugani, 1998; Jensen, 1998; Rosenshine, 1995). Sousa (1998a, 1998b) described a popular idea found in the brain-based literature that there was a critical or sensitive period in brain development which lasts until a child is around 10 years of age. During this time, he stated that it was believed children learned faster, easier, and with more meaning than at any other time in their lives. Jensen (1998) added to the theory that “the brain learns fastest and easiest during the school years” (p. 32).

Wolfe and Brandt (1998), however, cautioned educators against any quick marriage between brain science and education, although they did conclude that some abilities were acquired more easily during certain “sensitive” periods, and they also added that during those years, the brain had a remarkable ability to adapt and reorganize. Chugani (1998) has been referenced by many educators when discussing this “window of opportunity” because of his work on the
measurement of glucose in children and adults and his findings that suggest that between ages 4 and 10, the amount of glucose a child's brain uses remains relatively stable, but by age 10, glucose utilization begins to drop off until it reaches adult levels at age 16 or 17. Thus, a child's peak learning years occur just as all those synapses are forming. However, as Bruer (1999) noted, in his critique of educators who jump too quickly to the claims of "brain-based" findings (p.650), neither Chugani nor any of his co-authors have studied how quickly or easily 5-year-olds learn as opposed to 15-year-olds. Bruer further noted that no other neuroscientists "have studied what high synaptic densities or high brain energy consumption means for the ease, rapidity, and depth of learning" (p.656).

Another popular idea among educators and researchers alike is the idea of "right brain versus left brain" (Bruer, 1999, p. 650). According to this traditional view of laterality, left-hemisphere-dominant individuals tend to be more verbal, more analytical, and better problem solvers. Females are thought to be more likely than males to be among these individuals. Those individuals believed to be right-hemisphere-dominant are more typically males, paint and draw well, are good at math, and deal with the visual world more easily than with the verbal. Much has been written about this view of brain laterality, whereby schools are described as overwhelmingly left-hemisphere by design, favoring girls more than boys. Although much has been written on teaching using this view of laterality, what brain scientists currently know about spatial reasoning and mental imagery provides counterexamples to former thought.

Two leading researchers in the field of spatial reasoning and visual imagery, Chabris and Kosslyn (1998) claimed that any model of brain
lateralization that assigned complex mental abilities, such as spatial reasoning, to one hemisphere or the other, was simply too crude to be scientifically or practically useful. Research over the last decade has shown that categorical and coordinate spatial reasoning are performed by distinct subsystems in the brain, subsystems which are located in both the left and the right hemisphere. In the case of visual imagery, there is also evidence that it is not a solely right-hemisphere task. Patients with brain damage, for example, can recognize visual objects and draw or describe those objects that are visible to them, yet they cannot answer questions that require them to generate a mental image (Farah, 1990).

Although differences among researchers continue to exist with regards to how the brain learns and which components it uses during the learning process, there have been some well-documented conclusions in brain research that human beings retain and learn new information best when they are able to make connections to prior learning and prior information (Caine & Caine, 1990, 1995; Glaser, 1984; Nummela & Rosengren, 1986; Sousa, 1998a, 1998b; Tileston, 2000; Wesson, 2001). A major area of research has been in the area of cognitive processing which has provided research on how information is stored and retrieved (Rosenshine, 1995). Out of this research results have demonstrated that the information in our long-term memory is stored in interconnected networks called knowledge structures. Important for processing information and solving problems are the size of these structures, the number of connections between pieces of knowledge, the strength of the connections, and the organization and richness of the relationships. The stronger the connections
and interconnections, the stronger the ties between the connections, and the better organized the knowledge structure, the easier it is for students to assimilate new information and use prior knowledge for problem solving (Caine & Caine, 1990, 1995; Nummela & Rosengren, 1986; Rosenshine, 1995; Wessen, 2001). Education then, according to this research, becomes a process of developing, enlarging, expanding, and refining students' knowledge structures (Nummela & Rosengren, 1986; Rosenshine, 1995).

As neuroscience reveals more about the brain, we now need to reconsider our teaching practices (Caine & Caine, 1995; Hardiman, 2001; Nummela & Rosengren, 1986; Sousa, 1998a, 1998b). Educators are often engaging in practices that teach today's students with a knowledge base about learning that has not changed since the 1960's, rather than using the available information from research to reform the instructional components of our modern schools (Hardiman, 2001). Researchers have outlined principles for brain-based learning to assist educators in making stronger connections between the workings of the human brain and the practice of teaching and learning.

Caine and Caine (1990) outlined 12 principles for brain-based learning that demonstrate the ways in which educators need to approach teaching and learning. These principles include the following: the brain is a parallel processor; learning engages the entire physiology; the search for meaning is innate; the search for meaning occurs through patterning; emotions are critical to patterning; every brain simultaneously perceives and creates parts and wholes; learning involves both focused attention and peripheral perception; learning always involves conscious and unconscious processes; two types of memory are in play.
(spatial memory system and a set of systems for rote learning); the brain understands and remembers best when facts and skills are embedded in natural spatial memory; and each brain is unique. Regardless of the list of principles utilized by any particular educator, the evidence supports the theory that strong connections, formed when children are stimulated and supported in their learning, mean a better functioning brain for life (Caine & Caine, 1990, 1991; Nummela & Rosengren, 1986; Sousa, 1998a, 1998b; Wesson, 2001).

Rote learning, for example, while it can also lead to permanent storage, is often used by students to carry information just long enough to take a test and then discard it (Sousa, 1998a, 1998b). Sylwester (1995) stated that memorization only taps into one part of the brain, thus educators must engage the brains of children more fully with a variety of hands-on and problem-solving experiences. Utilizing higher order thinking skills, which engages the brain's frontal lobe, helps learners make connections between past and new learning (Sousa, 1998a, 1998b). It is through these connections that students can then begin not only to retain information more successfully, but also to apply that information in meaningful ways (Caine & Caine, 1990, 1991, 1995; Sousa, 1998a, 1998b).

Thinking, problem solving, comprehension, and learning are based on knowledge, and students continually try to understand and think about the new in terms of what they already know (Glaser, 1984). If that is true, and research has demonstrated that it is, then it seems best to teach such skills as solving problems and correcting errors of understanding in terms of knowledge domains with which individuals are familiar. To teach the abilities to make inferences and
to generate new information can be fostered by insuring maximum contact with prior knowledge that can be restructured and further developed (Glaser, 1984). Effective thinking is the result of "conditioned" knowledge. That knowledge, associated with the conditions and constraints of its use, is then used and transferred to domains of related knowledge. The skills involved probably then become more generalizeable and what was once not accomplishable by a student is now accomplished even in a novel situation.

Four Components of Curriculum in Planning Instruction

In the quest for developing curriculum and planning instruction that is relevant, meaningful, and effective, educators often err. Those in charge of the decision-making process involved with curriculum and instructional development often choose one particular model or framework to guide those decisions, rather than utilizing a combination of resources to improve education. Maker (1982b) defined a teaching-learning model as a "structural framework that serves as a guide for developing specific educational activities and environments" (p. 1). According to Maker, a model can be highly theoretical and abstract, or it can be a more practical structural framework. Regardless, the distinguishing features common to these teaching-learning models are (a) an identified purpose or area of concentration; (b) underlying explicit and implicit assumptions about the characteristics of learners and about the teaching-learning process; (c) guidelines for developing specific day-to-day learning experiences; (d) definite patterns and requirements for these learning of their effectiveness (Maker, 1982b, p. 1).
Joyce and Weil (1972) identified more than 80 models of teaching and divided them into four families. The four groups are social interaction models, emphasizing the relationships of the individual to society and to other groups; information-processing models, focusing on the ways people handle information, organize data, sense problems, and generate solutions; personal models, sharing an orientation toward the development of self-concept; and behavior modification and cybernetic models, emphasizing changes in observable behavior based on efficient sequencing of learning tasks along with manipulation of antecedents and consequences. The area of focus in these various models is very broad or quite narrow. Each model might have different purposes or areas of concentration, but it is not necessarily exclusive to another. Each model makes theoretical assumptions regarding the nature of the learner and the nature or effectiveness of certain teaching methods, yet these assumptions can be sometimes highly theoretical and complicated or relatively simple. Along with the guidelines for development of specific learning experiences, these models also state associated requirements or standards by which their appropriateness is judged. Finally, all teaching-learning models have some basis in research (Maker, 1982a, 1982b).

According to Maker (1982b), “no one model by itself provides a comprehensive approach, and no model by itself should be expected to be a comprehensive approach” (p. 413). In fact, the key to successfully developing curriculum and planning instruction is to know which parts of the models are best in meeting the educational goals for the wide variety of students in the classroom. Educators need to assess models. The most effective strategy in
selecting a model, after the appropriateness and comprehensiveness of the different models have been assessed, is to employ a combination of options. The key is to adopt complementary models and adapt each of them to form a comprehensive approach. With this strategy, equal emphasis would be placed on each curricular modification, increasing the possibility of developing a well-integrated program (Maker, 1982b).

The most effective curriculum, using any of the research-based models available, is one in which attention is paid to four factors: content, process, product, and learning environment (Gallagher, 1975; Maker, 1982a, 1982b; Renzulli, 1977). Modifications must be quality changes rather than quantity, and they must build upon and extend the characteristics that make up the children in classrooms. Content modifications consist of the ideas, concepts, descriptive information, and facts that are presented to the student. Content can assume a variety of forms and can differ in its degree of abstractness, complexity, organization, and subject areas covered. Process includes teaching methods and the thinking skills or processes developed in the students (Engelmann & Carnine, 1982; Foster, 1996). Products can be tangible or intangible, sophisticated or unsophisticated, but are, nevertheless, the “ends” of instruction. Products can include reports, stories, plays, dances, ideas, speeches, pictures, and illustrations. They can involve detailed, original work, or simple paraphrasing or copying (Costa & Kallick, 2000; Mayer, 1992; Pressley & Associates, 1990). The learning environment, which refers to the setting in which learning occurs, can be described in terms of both the physical setting of the school and

Research-Based Frameworks

The body of knowledge around classroom learning has grown dramatically in the past twenty-five years (Cuban, 1984; Wiles & Bondi, 1996). Marzano has described what has always been considered the "art" of teaching as rapidly becoming what will be known as the "science" of teaching (Marzano, Pickering, & Pollock, 2001). Teaching had not been systematically studied in a scientific manner until about 30 years ago, although certain effective teaching strategies did exist before 1970 (Marzano, Pickering, & Pollock, 2001). The new era of modern educational research, according to Wiles and Bondi (1996), began with a review of previous research by Rosenshine and Furst in the late 1960's (Rosenshine & Furst, 1969). The positivism of this review, which identified eleven teaching behaviors that seemed significant in promoting positive student outcomes, defined teacher research in the 1970's and 1980's and remains the basis of many teacher education programs and staff development designs even today (Rosenshine & Furst, 1969; Wiles & Bondi, 1996). While some of the earlier studies of teaching and learning are not as sophisticated as the ones produced today, "the real value of the early process-product studies of that early period was that they showed teaching as a multidimensional act, with emphasis on some set of skills for some specified purpose" (Wiles & Bondi, 1996, p. 60).

Current research, growing from the initial research in the 1970's, has shown that an individual teacher can have a powerful effect on his/her students.
even if the school does not (Wang, Haertel, & Walberg, 1990, 1994; Wright, Horn, & Sanders, 1997). Most recently, Sanders and his colleagues analyzed the achievement scores of more than 100,000 students across hundreds of schools, and concluded that the individual classroom teacher has even more of an effect on student achievement than originally thought in previous research (Wright, Horn, & Sanders, 1997).

In his meta-analysis of research studies on instructional strategies that could be used by teachers in K-12 classrooms, Marzano identified nine categories of strategies that have a strong effect on student achievement: identifying similarities and differences; summarizing and note taking; reinforcing effort and providing recognition; homework and practice; nonlinguistic representations; cooperative learning; setting objectives and providing feedback; generating and testing hypotheses questions, cues, and advance organizers (Marzano, Pickering, & Pollock, 2001). Some of the studies reported effect sizes either much higher or much lower than average, which led the researcher to note that instructional strategies, while proven to be effective in some cases, are tools only. Furthermore, while these strategies can be considered good tools, they should not be expected to work equally well in all situations (Marzano, Pickering, & Pollock, 2001). This conclusion further supports other studies that emphasize the need for a well-rounded, balanced approach to teaching in order to reach all types of learners (Marzano, Pickering, & Pollock, 2001; Tomlinson, 1999; Tomlinson & Allen, 2000; Tomlinson, Moon, & Callahan, 1998).

Some of the present day's most successful frameworks or teaching models have paid particular attention to the importance of a balanced approach
to teaching and to the four aforementioned factors: content, process, product, and learning environment found in Maker's (1982a, 1982b) contributions. Educators who have developed the most successful, popular, and enduring teaching-learning models or frameworks are the ones who take into consideration the whole child and the entire learning process, rather than simply the content or product (Costa & Kallick, 2000; Hunter, 1984; Hunter, 1995; Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, et al., 1988; Marzano, Pickering, & Pollock, 2001). In this chapter, the works of three such educators will be discussed: Robert Marzano, Arthur Costa, and Madeline Hunter.

Marzano's Dimensions of Learning is an instructional program that grew out of the comprehensive research- and theory-based framework on cognition and learning called Dimensions of Thinking. The program asks educators to use what is now known about how children learn when they are determining what instructional tools and strategies will be utilized in the classroom. Marzano's model of classroom instruction is structured on the premise that the process of learning involves the interaction of five types, or dimensions, of thinking (Marzano, 1992; Marzano, Pickering, & Brandt, 1990; Marzano, Pickering, & Pollock, 2001). These five dimensions of thinking consists of the following: positive attitudes and perceptions about learning, thinking involved in acquiring and integrating knowledge, thinking involved in extending and refining knowledge, thinking involved in using knowledge meaningfully, and productive habits of mind.

The premise of the five dimensions of thinking emphasizes that learning is "a process of constructing meaning" (Marzano, 1992, p. vii). These five types of
thinking illustrated by the five dimensions of learning do not function in isolation
or in a linear order, but rather they interact and can occur simultaneously in any
variety of combination. The key to successful implementation of the Dimensions
of Learning framework is to create a balance among the five dimensions of
thinking, taking into consideration content, process, product and learning
environment when planning instruction (Marzano, 1998; Marzano, Pickering, &

At a very basic level, the Dimensions of Learning framework requires
utilizing five sets of questions that focus on each of the five dimensions during
the planning of a unit. These questions help determine how the teacher will
develop positive attitudes about the learning climate and classroom tasks; how
the teacher will teach declarative and procedural knowledge; what information
will be extended and refined and what activities will be used to help students
extend and refine knowledge; what are the big issues and what types of products
will students create; which mental habits will be emphasized and introduced, and
how will the mental habits be reinforced (Marzano, 1992).

During the development of the Dimensions of Learning framework, the
developers found that teachers familiar with the framework use one of three
basic planning models which have in common one primary characteristic. Each
of these three models deals with positive attitudes and perceptions about
learning (Dimension 1) and productive habits of mind (Dimension 5) as
“background considerations” (Marzano, 1992, p. 153). Positive attitudes and
perceptions and productive habits of mind are seen as learning goals in any unit
for any grade level of instruction in any content area at any grade level. In other
words, they are the environment in which content instruction occurs. Consequently, teachers usually make decisions about these two dimensions after they have planned for Dimensions 2, 3, and 4.

Regardless of which planning model is used by educators or the outcomes which have been identified, the true artistry involved in using the Dimensions of Learning framework resides in the sequencing of learning activities. “The diversity of instructional activities implicit in the Dimensions framework calls for a variety of instructional models, two of which are particularly suited to Dimensions, presentation classes and workshop classes” (Marzano, 1992, p. 159). A successful unit of instruction is seen as a dance between these two types of classes.

In presentation classes, the teacher charts the direction of learning, and in workshop classes, students have more control over their learning. Presentation classes are geared toward helping students acquire and integrate new knowledge (Dimension 2) and extend and refine that knowledge (Dimension 3). Although these types of classes are meant to be teacher-driven, they are not to be associated with a didactic approach to instruction. The instructional activities used in presentation classes are still highly constructive and learner-centered as students are still responsible for a great deal of the learning that takes place, using prior knowledge, organizing that knowledge, and applying it to new information. This type of presentation class also demonstrates some, but not all, of the characteristics of the methodologies described by Hunter in her work, including some type of anticipatory set, a closure activity, and modeling (Hunter, 1982, 1984).
The structure of the workshop approach makes it an ideal tool for facilitating the more student-directed activity of using knowledge in meaningful ways (Dimension 4). While the workshop approach has traditionally been associated with the reading and writing processes, other processes such as decision making, investigation, experimental inquiry, problem solving, and invention used across various content domains will certainly be addressed by this approach (Marzano, 1992). Generally, a workshop class has three parts: a mini-lesson, an activity period, and a sharing period, with a specific function for each of the components.

To ensure learning is optimized, it is important that presentation classes and workshop classes support each other. Specifically, it is important that, in any unit of instruction, the presentation and workshop classes be staggered to reach every student. Staggering presentation and workshop classes maximizes the opportunities for providing guidance and direction during the important phases of learning to ensure learning is occurring and to reduce the likelihood of boredom.

According to Costa, if we believe that there has been a shift away from the industrial model of society to a learning model of society, then the focus of education needs to shift also (Costa & Garmston, 1997). We now need to provide skills and practice for our students that allow for life-long learning. In order to do this, paradigm shifts are necessary in education. Such shifts are necessary to support a curriculum that values what Costa calls the "interaction of process and content, growth and development" (Costa & Liebmann, 1997, p. 32). Costa identified the "New Basics" of education as the following: thinking, communicating, and collaborating linked to computer literacy, and added to the
traditional three R's (reading, writing, and arithmetic) (Costa & Liebmann, 1995, 1997). The factors contributing to this new set of basic skills are technology, the rapid pace of change, the necessity of being a life-long learner, and diversity in our modern world (Costa & Liebmann, 1997).

In order to better equip students for the life and work of the future, we must recognize the fact that real life demands processes and content. Students entering tomorrow's workplace need to enter it fully equipped with skills of a life long-learner, one who can think for himself, be self-directing, and be self-initiating. (Costa & Garmston, 1997; Costa & Liebmann, 1995). Costa proposed that curriculum based on discrete disciplines and presented in an existing body of knowledge deceives students into thinking that they cannot construct meaning for themselves (Costa & Liebmann, 1995). This type of separation of the disciplines produces episodic learning, which serves only to pass an exam but does nothing for accumulating wisdom or developing meaning (Costa & Liebmann, 1995). He further believed strongly in the duality that both content and process are required components of learning and that the two must be intertwined and asked educators and other stakeholders to address the purpose behind content (Costa & Garmston, 1997). His suggestion was to view content from the perspective of how it enhances and accomplishes the development of process (Costa & Garmston, 1997).

Perhaps a necessary shift in values is first required in order for educators to be successful in creating meaningful learning experiences for students. Costa advocated that a shift from valuing knowledge acquisition to valuing knowledge production was necessary (Costa & Liebmann, 1995). Schools often teach,
assess, and reward the acquisition of content knowledge and convergent thinking with a limited range of acceptable answers (Costa & Garmston, 1997). Real life, however, demands much more than simply knowing one set of answers. It demands processes and content, including the need for communication, decision-making, systems thinking, teamwork, and life-long learning (Costa & Garmston, 1997; Costa & Liebmann, 1995; SCANS Report, 1992).

Costa (Costa & Garmston, 1997) described in detail what is meant by processes. Processes are evident at three levels: skills, operations, and dispositions. Skills are discreet and include comparing and classifying, listening, asking questions, and multiplying fractions. Operations are larger strategies that are employed through time. They require and include clusters of numerous skills, such as those used in communicating. Dispositions are habits of mind. Habits of mind are not mastered, but rather are attitudes. They include the act of persevering and the willingness to change one’s mind if new information is acquired. Skills enable operations, and through time, they are habituated into dispositions.

The goal of habits of mind is to help students see that the responsibility for thinking is theirs. There are 16 habits of mind as outlined by Costa in his work (Costa & Kallick, 2000). They include persisting; managing impulsivity; listening with understanding and empathy; thinking flexibly; thinking about thinking (metacognition); striving for accuracy; questioning and posing problems; applying past knowledge to new situations; thinking and communicating with clarity and precision; gathering data through all the senses; creating, imagining, and innovating; responding with wonderment and awe; taking responsible risks;
finding humor; thinking independently; and remaining open to continuous learning (Beyer, 1988; Costa & Kallick, 2000). When thinking becomes the content, students grasp that mastering the habits of mind is the classroom goal. At that point they spend less time trying to calculate what the teacher's intentions are for the class. The goals are well-defined and well-communicated. Students in an effective classroom that uses the habits of mind understand it is a sign of excellence to have more than one solution to a problem. They understand it is commendable to take time to reflect and to change answers as new information is made available to them (Costa & Kallick, 2000). Experience says that it takes from three to four years of well-defined instruction with qualified teachers and carefully constructed curriculum materials for the habits of mind to succeed and to see significant and enduring changes in students' behaviors (Costa & Kallick, 2000).

Costa's work on the habits of mind focused a great deal on the learning environment. He referred to this type of learning environment as a thoughtful environment (Costa & Kallick, 2000). Students, he claimed, need to work in a "rich, responsive environment" (Costa & Kallick, 2000, p. 3), where there is a variety of data sources, where people ask questions, and where there is room for exploration. A "thoughtful" environment is full of thought as well as being caring and sensitive to the needs of its learners. In order to create an atmosphere where students experience and practice the habits of mind, educators must learn to practice five kinds of response behaviors to students and their learning: silence, provision of data; acceptance without judgment; clarification as a way of understanding; and empathy (Costa & Kallick, 2000).
Silence provides students an opportunity to reflect. Research shows reflection increases student confidence, student-to-student interaction, and the number and length of student response. Questions from the teacher are also formulated at a higher level of Bloom's taxonomy and students tend to ask more questions during a lesson in which silence is used strategically (Costa & Kallick, 2000). Data must be provided in the classroom so students can process the data by comparing, classifying, making inferences, or drawing causal relations. It is necessary for teachers to know how to respond to questions so that the answers that are given to students not only provide them with information, but also with direction, and the assistance to reflect and to think. In any learning environment, research has already indicated the need for learners to feel they are in a safe place where they can take risks, make decisions, and explore in order to maximize their learning (Sousa, 1998a, 1998b). Costa was quick to warn us, however, of the dangers of rewarding in order to create motivation (Costa & Kallick, 2000). Praise, if given, should have criteria given for the praise. This allows students to understand the reason for the praise and, more importantly, allows them to duplicate the action for that praise in the future. When teachers clarify it is not so as to change or redirect how a student thinks or feels, but rather as a way to understand. A teacher using clarifying questions must demonstrate to students that the response is worthy of more exploration and consideration, thus emphasizing the process of questioning and thinking. Finally, empathy for a response acknowledges cognition and accepts feelings. It shows understanding for the frustration and confusion that is part of the learning process.

Language is a foundation for the habits of mind. Both internal language
(the language to think) and expressive language (the language to communicate) are needed and must be learned by students in order to be successful. Costa reminded educators to be mindful of their own language so they can help students build a vocabulary that increases their academic performance. In order to increase this academic vocabulary, Costa suggested teachers use cognitive terms as often as possible when teaching, allowing students to practice them, hear them often, recognize them, and eventually apply them to their learning. Using and teaching mindful language helps to grow intelligent behavior (Costa & Kallick, 2000).

Learning, however, does not occur solely through auditory means. In fact, the brain is capable of absorbing 36,000 images every minute, which means that approximately between 80% and 90% of all information received by the brain is received through the eyes (Costa & Kallick, 2000). The human brain, as a result, has evolved to become positively imbalanced toward visual imaging for information processing. Teachers must then assist students to use their visual strengths. Three such tools proposed by Costa are the following: brainstorming webs, task-specific graphic organizers, and thinking-process maps. Any of these tools teach organization as well as creativity and they use visual clues to do so (Costa & Kallick, 2000).

The message of Costa was to build lessons that encourage self-reflection and self-direction. He contended that teachers must build lessons with the habits of mind in sight, considering content, processes/skills, habits of mind, and assessment; by directly teaching the habits of mind; or by using the habits of mind to look inside the text. In any of the three aforementioned lessons, the act
of thinking is encouraged and time is given to that act so as to create life-long
learners who are equipped to meet the challenges of their future (Costa & Kallick,
2000).

Hunter's instructional model, long known among educators, is still a strong
model of instruction today (Wolfe, 1998). Although in the past it has been more
closely aligned with teacher-directed instruction, it is not entirely didactic, nor
does it intend for students to remain passive learners. In fact, Hunter
emphasized that teaching is decision-making, and the more we know about the
science of teaching, the better we can artistically apply that knowledge (Hunter,
1979, 1982, 1984; Wolfe, 1998). Hunter's model focused on the application of
research to help teachers make more informed and appropriate decisions in the
plan and implement their lessons, they may decide to use some or all of the
seven teaching steps outlined by Hunter because of their appropriateness to a
particular learning situation.

The seven elements in the model are as follows: anticipatory set,
objective and purpose, input, modeling, checking for understanding, guided
practice, and independent practice (Hunter, 1982, 1984). For some educators,
these seven elements have become synonymous with seven steps of lesson
planning. While it is true that the thrust of this model is in the planning and the
delivery of instruction in a logical sequence, it does not demand the teacher
adhere to the elements as specific steps in a lesson design. These elements
simply ensure students are provided with enough background and enough
information at the beginning of the learning process so as to allow them to make
the necessary links to new knowledge. Supported by research, Hunter suggested a systematic consideration of the seven elements listed is influential in learning (Russell & Hunter, 1976).

Hunter viewed teaching as an applied science "which is generalizable to all goals in all content and always mindful that an art exists beyond that science" (Hunter, 1984, p. 170). As such, decisions need to be made with the best information available to the instructor so that those same decisions will ultimately have a positive effect on the learner (Hunter, 1979). While students assuming responsibility for their own learning is a major goal of instruction, Hunter believed the accountability for students' learning remains with the teacher (Hunter, 1979, 1982, 1984).

Decisions in the following three areas need to be made by every instructor prior to teaching: content, learner behavior, and teacher behavior (Hunter, 1979, 1982, 1984). Regardless of whether long-term goals have been set by school districts, state mandates, or other stakeholders, the teacher must ultimately decide what he/she will teach on the following day of every lesson and must base those decisions on where students are presently in their learning, what their needs and limitations are, and the degree of intellectual complexity of the new learning that each student, with reasonable probability, can achieve. As such, an anticipatory set is helpful in developing a mental set in the students that cause them to focus on what will be learned. By linking prior knowledge to present learning, evoking emotions, or stimulating thought, the teacher then is able to facilitate student learning while also gathering diagnostic data of his/her own regarding his/her students' learning levels. Once engaged, the teacher must
then state the objectives and purpose of that lesson so as to better prepare students for what they will be held responsible. The objective and purpose, when stated to students, also indicates the importance of that learning and allows them to identify its use for the future (Hunter, 1982, 1984).

A second decision surrounds learner behavior. The question asked becomes what the student will do to learn (i.e., read, listen, observe, discuss, experiment, record). In making such a decision regarding learning behavior, the teacher must consider two factors: the appropriateness of what it is the student will be asked to do in order to achieve what he is being asked to learn, and the effectiveness of those actions for that student's abilities and learning style. The learning behavior is what Hunter referred to as input system (Hunter, 1984).

Without analyzing the learning styles of students, teachers fail to deliver instruction in ways that are effective for all students and often tend to make students dependent on mastering one preferred learning behavior rather than help them develop a repertoire of learning behaviors that they can apply to various learning situations outside of that lesson (Hunter, 1979, 1982, 1984). The combination of appropriate behavior and the specific content being learned constitutes the instructional objective for that student. That objective may be in any three of the domains: affective, psychomotor, or cognitive; and objectives may be set by students, teachers, or both. The responsibility belonging to the teacher is to guarantee that decisions that promote successful student achievement are made and implemented (Hunter, 1982, 1984).

Once the first two decisions have been made and the instructional objective determined, the teacher can then make the decisions that utilize
principles of learning to affect students' motivation, the rate and degree of that learning, and the retention and transfer of that learning to new situations (Hunter, 1979). Such new learning situations might require problem solving, decision making, and creativity. It is in the use of these principles that the artistry of teaching occurs. It is at this time that teachers must use their own creativity to relate to, motivate, encourage, and inspire their students so that learning becomes more meaningful and more useful (Hunter, 1979, 1982, 1984).

Hunter referred to the seven elements as “basic white sauce” (Hunter, 1984, p. 175). She described them as such because in her interpretation, just as a “basic white sauce” can be found in the most basic as well as most elaborate culinary recipes, they can also be found in the most basic of lesson designs as well as in the most intricate. The mistake many have made, however, was to consider the seven steps of lesson design as being a rigid measuring stick for correctness in teaching. Hunter argued that was never the intent. Rather, teachers can use the elements or steps to make the appropriate decisions regarding instruction and what is needed to add to students' learning in the future (Hunter, 1982, 1984; Wolfe, 1998).

It is incorrect to assume that all elements must be in every lesson in order for that lesson to be considered complete. It is within the teacher's expertise and knowledge base to make the appropriate decisions of omitting, reviewing, or embellishing on any given step in the course of her lesson (Hunter, 1982, 1984; Wolfe, 1987). In fact, Hunter stated that only the teacher is in a position to make that final decision. The responsibility of that decision, however, lies with the teacher.
For example, when modeling for students the intent of the final product, teachers can use a variety of examples to facilitate rather than restrict student initiative and creativity. While checking for understanding teachers can choose to make diagnosis as a separate step in the teaching process or in combination with the guided practice period. If during a period of guided practice, under direct teacher supervision, the teacher realizes that in fact there is a need to re-teach, review, or stop altogether, he/she has the means and the creativity, the thoughtful mind, to redirect students so that the appropriate learning can continue later. After all these steps have, in some form or other, been taken, and students are free to undergo independent practice, the responsibility of the teacher as lead instructor does not go away. Hunter believed in the empowerment of teachers to make the necessary decisions regarding planning and instruction, provided those decisions are always thoughtful and theory-based (Hunter, 1979, 1982, 1984).

Within each of the aforementioned frameworks, educators have choices to make concerning the instructional perspectives they will select for delivering instruction, the social orientation of learning, the goals for learning, and the systemic structure of the learning. Research has indicated that a variety of instructional tools available to teachers today have proven to be effective when used knowledgeably and consistently in the classroom. Teaching has been found to be effective when the educator is prepared to identify the needs of his/her students and then use that information to formulate a balanced, multi-faceted approach as dictated by those needs (Engelmann & Camine, 1982; Johnson & Johnson, 1999; Rosenshine & Furst, 1969; Svinicki, 1998; Tomlinson, 1999; Wang, Haertel, & Walberg, 1993/1994).
Summary

With the recent federal legislation (NCLB, 2001) comes much attention and scrutiny to the arena of public education. In particular, the instructional practices of teachers and principals in our public schools are under fire in the media, in state legislative sessions, and in local P.T.A. meetings. The type of systematic measurement of student achievement, as dictated by NCLB, will have an impact on the administrator of tomorrow's schools and on the teachers who are expected to help students achieve the determined standards set by their respective states.

The role of the principal has always been under the microscope. The influences of the site principal on student achievement and school culture have been noted in empirical literature for many decades (Brookover & Lezotte, 1979; Leithwood, Begley, & Cousins, 1992; Stogdill, 1948; Tannenbaum, Weschler, & Massaik, 1961), even when historical accounts suggest that the roles of American school teachers and administrators have remained relatively stable over the past century (Cuban, 1988; Hallinger, 1992; Tyack, 1990). Despite this relative stability, the principal's role in education has gone through an evolution, as described in the various stages noted in the literature (Carlson, 1996; Chance, 1992; Hallinger, 1992; Hoy, 1994).

From the 1920's until the 1960's, the predominant role assumed by principals across this nation was one of administrative manager (Hallinger, 1992; Tyack, 1990). When the concept of instructional leadership first emerged, principals were thought to be effective if they led a school by doing the following: setting clear expectations, maintaining firm discipline, and creating high
standards (Andrews & Soder, 1987; Barth, 2001; Quinn, 2002). By the 1980’s the effective schools research called principals to engage more actively in leading the school’s instructional program and in focusing staff attention on student outcomes (Brookover & Lezotte, 1979). As a result, instructional leadership became the new educational standard for principals (Hallinger, 1992).

Current research, however, reveals that the indicators for effective instructional leadership involve a number of variables that directly influence instruction: the influence of others to pair appropriate instructional practices with their best knowledge of subject matter, the focus on student active teaching, and the supply of resources and incentives to teachers to keep their focus on students (Andrews & Soder, 1987; Leithwood & Jantzi, 1999, 2000; Quinn, 2002). The principal of today, then, must be ready to lead in the area of instruction based on the research-based strategies that have been proven to be most successful if he/she is going to make any significant changes in the learning of his/her students.

Seen as the instructional leader of the school site, the principal is the leader of the school, which is today viewed by much of the research as the unit responsible for the initiation of change, and not just the implementation of changes conceived by others, which was the predominant view during the 1970’s and 1980’s (Hallinger, 1992). In order for funding to continue at the level necessary to make the necessary instructional improvements, schools will have to demonstrate continuous improvement evidenced by increases in student achievement scores for all sub-groups and federal money will be directly tied to those indicators of achievement (NCLB, 2001). The principal, as the person
responsible for the school site, will have to exercise his/her most developed skills as in instructional leader in order to meet the expectations of both federal law and public opinion.

There is little disagreement among researchers concerning the belief that principals do have an impact on the lives of teachers and students. In fact, Hallinger and Heck (1998) added that much of the research that has been done on the role of the principal and its power to affect and improve student achievement has suggested that schools that make a difference in students' learning are led by principals who make a significant and measurable contribution to the effectiveness of staff and in the learning of their students. Furthermore, researchers have determined that research on school effectiveness and leadership, whether focusing on instructional or transformational leadership, has concluded that principals do have a significant effect on student outcomes, even if in an indirect manner (Hallinger & Heck, 1996; Heck, Larson, & Marcoulides, 1990).

In order to meet the expectations of public opinion and the standards of this most recent federal legislation, then, principals will now be called upon to exercise their knowledge and abilities in the area of instruction in order to ensure every child is receiving a quality education that will produce results. More than ever, if principals are to have any type of influence on student achievement and if they are to have any success in implementing effective change in their schools, principals will have to demonstrate sound pedagogical knowledge.
CHAPTER 3

METHODOLOGY

Introduction and Review of the Study

The No Child Left Behind Act of 2001 (NCLB, 2001) has brought much attention and scrutiny to the instructional practices of teachers and principals in our public schools. NCLB strives to "close the achievement gap with accountability, flexibility, and choice, so that no child is left behind" (NCLB, 2001). In order to measure the progress of school-aged children through the 12th grade, a baseline for the 2001-2002 school year was determined. This baseline then set the expectations for adequate yearly progress (AYP) for subsequent years. During this time states have defined AYP with the goal being that every child must be "proficient" at the end of 12 years in reading and math. States must use state-mandated standards to determine proficiency. Then they must set starting points or the initial bar based on the lowest achieving demographic subgroup and then define what the annual rate of progress will be during the 12-year span (NCLB, 2001; U.S. Department of Education, n.d.).

This type of systematic measurement of student achievement will have an impact on the administrator of tomorrow's schools and on the teachers who are expected to help students achieve the determined standards set by their states. Schools which are determined to be in need of improvement based on their
students' achievement scores after a period of four years will lose much of their autonomy and be forced to follow a series of corrective actions that could include the replacement of staff or the development of new curriculum (NCLB, 2001).

Principals' actions have always been scrutinized by research and by the public. The influences of the site principal on student achievement and school culture have been noted in empirical literature for many decades (Brookover & Lezotte, 1979; Leithwood, Begley, & Cousins, 1992; Stogdill, 1948; Tannenbaum, Weschler, & Massarik, 1961), even when historical accounts suggest that the roles of American school teachers and administrators have remained relatively stable over the past century (Cuban, 1988; Hallinger, 1992; Tyack, 1990). Current research, however, reveals that the indicators for effective instructional leadership involve a number of variables that directly influence instruction: the influence of others to pair appropriate instructional practices with their best knowledge of subject matter, the focus on student active teaching, and the supply of resources and incentives to teachers to keep their focus on students (Andrews & Soder, 1987; Leithwood & Jantzi, 1999, 2000; Quinn, 2002). The principal of today, then, must be ready to lead in the area of instruction based on the research-based strategies that have been proven to be most successful if he/she is going to make any significant changes in the learning of his/her students.

Today, federal legislation, NCLB, requires that everyone from state departments of education to local education agencies to site teachers assume a portion of the responsibility for the assurance of a quality education in each individual school. However, much of the burden of ensuring students receive a
quality education is still going to be on the shoulders of the school site principal who always has been responsible for the hiring, supervising, and organizing of teachers (Wiles & Bondi, 1996). Seen as the instructional leader of the school site, the principal is the leader of the school, which is today viewed by much of the research as the unit responsible for the initiation of change, and not just the implementation of changes conceived by others, which was the predominant view during the 1970's and 1980's (Hallinger, 1992).

Accountability is a key component of the federal legislation and of public opinion (U.S. Department of Education, n.d.). Since 1965, states have received more than $130 billion of federal funding to help schools provide the best education possible for all children yet results have not matched the investment (U.S. Department of Education, n.d.). In order for funding to continue at the level necessary to make instructional improvements, schools will have to demonstrate continuous improvement evidenced by increases in student achievement scores for all sub-groups and federal money will be directly tied to those indicators of achievement. The principal, as the person responsible for the school site, will have to exercise his/her most developed skills as in instructional leader in order to meet the expectations of both federal law and public opinion.

According to Hallinger and Heck (1996), although results continue to be open to debate from research on the direct effects of the role of the principal on student achievement, there is little disagreement among researchers concerning the belief that principals do have an impact on the lives of teachers and students. Furthermore, researchers have determined that research on school effectiveness and leadership, whether focusing on instructional or transformational leadership,
has concluded that principals do have a significant effect on student outcomes, even if in an indirect manner (Hallinger & Heck, 1996; Heck, Larson & Marcoulides, 1990). Additionally, these and other researchers have also concluded that principal leadership that makes a difference is aimed toward influencing internal school processes that are directly linked to student learning (Heck, Larsen, & Marcoulides, 1990; Hudgins & Cone, 1992; Leithwood & Jantzi, 1999; Quinn, 2002). In order to meet the expectations of public opinion and the standards of this federal legislation, then, principals will now be called upon to exercise their knowledge and abilities in the area of instruction in order to ensure every child is receiving a quality education that will produce results.

This study sought to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

Both quantitative (mailed questionnaires) and qualitative (semi-structured telephone interviews) methods were employed to remain focused on the goals of this study and to be able to confirm (with quantitative research methods) as well as to discover (with qualitative research methods) the pedagogical knowledge base of principals across the country (Gall, Borg, & Gall, 1996). Quantitative and qualitative methods of research have had a long history in educational research and both methods can be helpful in educational research (Creswell, 1994; McMillan & Schumacher, 1997). Although there is a strong historical tradition in educational research to use numbers and measurements, as with quantitative
techniques, with qualitative techniques, where data is collected in the form of words rather than numbers, much can be learned about the participants and the objectives of the study (Creswell, 1994; McMillan & Schumacher, 1997; Spradley, 1980). In order to describe more accurately the phenomenon studied in this research, a mixed design using both qualitative and quantitative methods of research was chosen (Creswell, 1994).

In an attempt to eliminate biases that can arise when a researcher relies too heavily on any one data collection technique, triangulation was exercised through the use of quantitative and qualitative data collection (Creswell, 1994; Gall, Borg, & Gall, 1996, McMillan & Schumacher, 1997). The process of using multiple data-collection methods, data sources, and analysis to check the validity of the findings strengthened the study as well as eliminated biases. This researcher chose to vary her methods of data collection by analyzing the answers of a pencil-paper questionnaire and by collecting information through a number of selected telephone interviews, to note both the simple and straightforward answers provided on the pencil-paper questionnaire and the more elaborate descriptions given by participants in a telephone interview.

Chapter 3 describes the procedures and constructs utilized by the researcher to address the problem statement identified in Chapter 1.

Statement of the Problem

Federal legislation has brought much attention and scrutiny to the instructional practices of teachers and principals in our public schools. Additionally, the recent research on teaching and learning has implications for
the skills and knowledge that are required for today's school leaders (Hudgins & Cone, 1992; King, 2002; McEwan, 1998; Quinn, 2002). The principal of today must be ready to guide, facilitate and entrust staff to take the appropriate and effective risks if any real, significant changes are going to take place in today's classrooms (Blasé & Blasé, 1994; Blasé & Blasé, 1999). Results of research concerned with such issues as effective schools, school improvement processes, and curriculum implementation consistently indicate that the role of the principal is an important one in the area of reform (Leithwood, Begley, & Cousins, 1992). School leaders will not be able to take the role of instructional leader to the necessary levels if they are not well-versed in learning theory and the most effective research-based teaching strategies.

A great deal of effort has been made by researchers over the last two decades, in the study of the role of principal and its effects on student achievement (Andrews & Soder, 1987; Cheng, 1994; Hallinger, 2003a, 2003b; Hallinger & Heck, 1996; Heck, Larsen, & Marcoulides, 1990; Leithwood, Begley, & Cousins, 1992; Leithwood & Jantzi, 2000; Quinn, 2002). Despite this effort, however, there is little known about the knowledge of instructional practices principals need to have in order to perform successfully as instructional leaders (Leithwood & Jantzi, 1999, 2000).

**Purpose of the Study**

The purpose of this study was to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers'
perceptions of principal practices related to the supervision of classroom
instruction and the improvement of student achievement.

This study also looked at the practices of principals by examining three
related areas. First, the study outlined which research-based instructional
practices have been proven to be most successful. Second, it sought to
determine the depth of principal knowledge regarding research-based
instructional practices. Third, the study sought to determine the degree of such
knowledge in the supervisory practices of principals.

Research Questions

The study was guided by and attempted to answer the following
questions:

• What is the perceived and actual pedagogical knowledge of principals
  about research-based instructional practices?

• To what extent are principals encouraging particular research-based
  practices?

• What are the prominent practices of principals when applying their
  pedagogical knowledge during their supervision of teachers?

Instrumentation

A survey is a frequently used tool in the collection of data about
characteristics, experiences, and opinions of participants in order to generalize
the findings to a population that the sample is intended to represent (Gall, Borg,
& Gall, 1996; Hopkins, 1980). Surveys can be an effective means to gather
information on a variety of topics of interest. The use of surveys in educational
research is effective when it is impossible to directly observe the participants in
the study (Gall, Borg, & Gall, 1996; Hopkins, 1980). The most common type of
survey, the questionnaire, is normally mailed to a sample of individuals who
record their responses, then mail back the questionnaire to the researcher.
Survey research methods are often used to collect descriptive data that are
quantitative (Crowl, 1996, p. 11).

Questionnaires and interviews are used extensively in educational
research to collect information that is not directly observable (Gall, Borg, & Gall,
1996, p. 288). Questionnaires can be used to learn about opinions, activities, and
endeavors of the respondents (Johnson, 1977; McMillan & Schumacher, 1997).
Interviews and questionnaires can also be used to inquire about feelings,
motivations, attitudes, and experiences of individuals. In fact, a wide range of
educational problems can be investigated with questionnaires and interviews
(Gall, Borg, & Gall, 1996).

For this study, a questionnaire was created consisting of 10 demographic
questions, 84 Likert-type scale items, and 11 open-ended questions (See
Appendix I, Principal Survey and Appendix II, Teacher Survey.). Of the 84
possible Likert-type scale items in each questionnaire, 32 questions specifically
related to the pedagogical knowledge base of principals and the instructional
practices of principals, and seven questions specifically related to the resources
used by principals when making decisions regarding instruction. One
questionnaire was administered to each of the 100 principals used in the study.
Each principal was asked to select three teachers who, in turn, were to complete
the teacher questionnaire. Both questionnaires contained parallel items asking
principals and teachers to answer the same questions pertaining to 1) research-based instructional practices and 2) instructional practices of principals. Two question matrices were developed to link each questionnaire item to an individual instructional practice and to concepts of learning theories (See Appendix III and Appendix IV.).

Semi-structured telephone interviews were conducted in addition to the mailed questionnaires as a secondary means of collecting teachers' and principals' perceptions (Gall, Borg, & Gall, 1996). An interview protocol was developed and followed to investigate further the research question of this study (See Appendix V.).

Population

The population for this study was those principals who were the recipients of the "2004 Principal of the Year Award" bestowed upon them by both the National Association of Secondary School Principals (NASSP) and the National Association of Elementary School Principals (NAESP). The population consisted of one hundred principals, fifty of them representing fifty public secondary schools and fifty of them representing fifty public elementary schools. These schools were located in rural, suburban, and urban areas throughout the United States. A sample of three teachers from each of the one hundred schools was chosen by the principal to participate in the teacher survey. A sample of three principals and four teachers who agreed to be interviewed after taking the survey was then selected to participate in a semi-structured telephone interview.
Design of the Study

This study utilized both quantitative and qualitative methods to determine principals’ pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals’ and teachers’ perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

Quantitative data, in terms of descriptive statistics, were employed to gain an understanding of the principals’ knowledge base of research-based instructional practices. The same quantitative data were also used to gain an understanding of teachers’ perceptions of principal practices as they relate to the supervision of classroom instruction and the improvement of student achievement. The study employed qualitative data to gain knowledge from a randomly selected group of teachers and principals to further describe phenomena with verbal descriptors. As cited by Creswell (1994), the use of both types of data strengthened the study.

There are several advantages that result from combining quantitative and qualitative methods. Complementary phenomena may emerge, one method informs the other, and mixed methods add scope and breadth to a study (Creswell, 1994; Fraenkel & Wallen, 2000; Gall, Borg, & Gall, 1996; Thomas, 1999). Triangulation helped to eliminate biases that might have resulted from relying exclusively on any one data-collection method. Exclusive reliance on any one method may bias or distort the researcher’s picture of the particular piece of reality he seeks to study (Creswell, 1994; Gall, Borg, & Gall, 1996).

The study’s quantitative method of data collection used a researcher-
developed questionnaire that employed a Likert-type scale to obtain information on the depth of principals' pedagogical knowledge base as it pertains to research-based instructional practice. The study also used that same quantitative method of data collection to gain an understanding of teachers' perceptions of the practices of their principals in the area of student achievement improvement and staff supervision. Crowl (1996) and Cohen and Manion (1989) have stated that surveys are used extensively in educational research to collect information that is not directly observable. From this type of instrumentation, the researcher was able to learn a great deal from the participants chosen for the study without having to be directly involved in field observations. Thus, due to the geographical distribution of the participants of this study, a questionnaire was deemed most appropriate. In addition, questionnaires secure data at a minimum of time and expense (McMillan & Schumacher, 1997; Miller, 1991) without compromising quality in the research design.

The questionnaire used in this study was the product of a collaborative effort among three doctoral candidates. Likert-type questions in the questionnaire addressed three areas of instructional leadership: professional development, supervision, and instruction. While participants were asked to answer questions in all three areas of instructional leadership, this researcher focused on the 32 Likert-type questions that specifically addressed research-based instructional strategies found in the frameworks of three different authors: Arthur Costa, Madeline Hunter, and Robert Marzano. Questions for the questionnaire were designed from a review of the literature, and reflected the themes of the content of that literature. In addition to questions addressing the
instructional strategies found in the frameworks of the three aforementioned authors, certain questions in this study addressed practices that were not found in any of the three frameworks. Participants were also asked to answer seven questions that specifically addressed their decision-making practices. The open-ended questions included at the end of the questionnaire were designed to gain insight into the background of the principals and teachers involved in the study and to gain insight into their feelings regarding their personal experiences in instructional leadership preparation and teaching preparation programs.

Interviews based on responses from the mailed questionnaire were also conducted to collect data by randomly selecting from those participants who volunteered to participate in this last phase of data collection. Merriam (1998) suggested that all forms of qualitative research provide data collection through interviews. The main purpose of an interview is to obtain information when behaviors and feelings cannot be observed (p. 72). Merriam further noted that interviewing is necessary to describe past events that are no longer possible to replicate. Furthermore, interviewing can be used to collect data from a large number of people representing a broad range of ideas (Merriam, 1998; Miller, 1991).

Gall, Borg, and Gall (1996) outlined three basic approaches to collecting qualitative data through open-ended interviews: the informal conversational interview, the general interview guide approach, and the standardized open-ended interview. This study included interviews with follow-up questions that were created from the categories outlined in the review of the literature because
distance prohibited the researcher to personally observe participants in their working environment.

**Procedure for Collecting Data**

Approval and permission for the collection of data was obtained by the University of Nevada, Las Vegas to conduct research with human subjects. A copy of this letter is on file at the University of Nevada, Las Vegas.

The *Instructional Leadership Inventory* questionnaire, a researcher-developed instrument, was used to measure secondary and elementary principals' and teachers' responses regarding principals' pedagogical knowledge of research-based instruction and the practices of those principals as school instructional leaders. On this questionnaire, item responses ranged as follows: 1) Not at all, 2) To a slight extent, 3) No opinion, 4) To some extent, 5) To a great extent. Participants were instructed to choose the number (1-5) that most accurately described their perceptions for each item at the time of their participation.

A panel of experts established the face and content validity of the questionnaire. This panel of experts included Sally Zepeda, from the University of Georgia, an expert in Supervision; and George Pawlas, from the University of Central Florida, an expert in Instructional Leadership and Professional Development. By reviewing their suggestions, the researcher was able to adjust and modify the questionnaire to improve the research tool.

Pilot testing of a questionnaire is essential in the use of survey research before using that questionnaire in a study (Gall, Borg, and Gall, 1996; Fink &
Kosecoff, 1998; Johnson, 1977; Miller, 1991). A pilot test helps to produce a questionnaire that is usable and one that will provide the information the researcher is seeking. Important to a questionnaire used in research is its face and content validity. To that end, Creswell (1994) and Hopkins (1980) asserted that piloting a questionnaire is useful to establish face validity and to improve questions, format, and scales. Hopkins (1980) also added that a pilot study should be used to check on how well design procedures are articulated and to identify any areas where logic and mechanical detail need additional attention (p. 182).

This questionnaire was piloted in the Clark County School District, using a principal participant and three teacher participants from an elementary school, middle school, and high school campus. The principals completed a principal questionnaire and then asked three teachers from their schools to serve in the piloting of the teacher questionnaires that accompanied the principal questionnaire during the formal procedures of this study. The following steps were taken in the piloting of this study: (a) telephoning the principals explaining the purpose of the study, (b) mailing a packet including cover letter with instructions and four titled questionnaires to the sites (one for the principal and three for the teachers the principal selected to participate). Each questionnaire included an attached blank sheet with instructions to place comments aimed to improve the ease of administration, the format, scaling, and also to eliminate vague questions (Cohen & Manion, 1989; Creswell, 1994; Miller, 1991). Self-administered questionnaires are heavily dependent on the clarity of their language, and pilot testing is a useful method of determining whether people
understand the directions provided and the language of the questions asked (Fink & Kosecoff, 1998; Thomas, 1999).

Piloting the questionnaire was expected to help target a high return rate during the final research, as it would allow the researcher to readdress unclear questions and reword, when necessary, for greater clarity. Checking the instrument for ease of reading and understandability was done by the researcher to enhance the experience for the study’s participants and to encourage them to participate in the study. Gall, Borg, and Gall (1996) ascertained that because educators are a homogenous group, questionnaires mailed to them generally expect to yield a higher percentage of replies than the general population. These researchers further suggested a return rate of 66% or more from the pilot group. Results that are lower than this rate of return require significant changes before being ready for dissemination among the population at large.

Protocol for a general interview guide approach was also reviewed and prepared before actual contact was made with participants. This involved outlining a set of topics to be explored with each respondent (Gall, Borg, & Gall, 1996). Semi-structured questions where respondents would have no choices from which to select an answer were written in anticipation of the telephone interviews. Also, to ensure the interviewer would have greater latitude in asking broad questions in any order deemed appropriate, unstructured questions were formulated and approved by the researcher’s doctoral advisor prior to making the formal contacts with participants of the study.

The telephone interview was piloted using the principal and selected teachers at the same schools used to pilot the questionnaires. Although
interviews can provide a researcher with valuable data, Henerson, Morris, and Fitz-Gibbon (1987) warned that interviews are also susceptible to bias. The interview, therefore, was piloted to ensure unbiased data would be obtained in the official interviews conducted for this study. The researcher was forced to remain alert as to her delivery of questions, her verbal and body language, and also to the tone of the questions asked. Any possibly threatening questions were eliminated or rewritten, as suggested by noted researchers (Fink & Kosecoff, 1998; Gall, Borg, & Gall, 1996; Henerson, Morris, & Fitz-Gibbon, 1987).

Following the advice of Gall, Borg, and Gall (1996), pilot interviews were tape-recorded to allow the researcher time for reflecting and for gaining insight as to how to develop the greatest rapport and cooperation between her and her participants.

Questions for the interviews were prepared ahead of time, and included a series of semi-structured and unstructured questions, allowing the interviewer the ability to probe more deeply. Open-ended questions were used specifically to obtain additional information that might be useful in this study as suggested by Borg, Gall, and Gall (1996) and McMillan and Schumacher (1997). In order to gain more insight and delve more deeply into the answers of the respondents in the interview, the researcher sometimes probed by asking for more details, for clarification, or for examples (Merriam, 1998).

Once the questionnaire and semi-structured telephone protocol was finalized, a three-stage process was used for mailing the questionnaire, as recommended by Creswell (1994) and Gall, Borg, and Gall (1996). This process included the following steps: (a) preparing and mailing an initial packet of the
complete questionnaire with a cover letter introducing the researcher and the research study to each school’s principal and teachers (See Appendix VI and Appendix VII.); (b) sending postcard reminders to each non-responding principal; (c) sending a second complete mailing of the questionnaire and a new cover letter to any principal who had not responded or whose teachers had not responded by the original response deadline.

Each complete mailing included a stamped, self-addressed return envelope, cover letter, and questionnaire for each of the participants. The questionnaires were titled to identify principal and teacher responses. One questionnaire for the principal to complete was clearly marked for the principal and the other three questionnaires in the packet were clearly marked for the teacher participants to complete. Each principal’s cover letter clearly asked him/her to complete the principal questionnaire, mail it back to the researcher in the envelope provided, and distribute the remaining three teacher questionnaires to three teachers of their choice. Each teacher’s cover letter clearly asked him/her to mail the completed questionnaire directly to the researcher in the envelope provided. Principals and teachers participating in the study were also asked if they would be willing to participate in a telephone interview after completing the questionnaire. From the list of teachers and principals who agreed to participate in such an interview, a random sample of four teachers and three principals was selected. Each telephone interview was recorded and transcribed to preserve the obtained data.
Analysis of the Data

Once the mailed questionnaires were returned to the researcher, the results were analyzed using descriptive statistics. Descriptive statistics are measures of central tendency such as mean, median, mode, and measures of variability such as standard deviation, variance, and range (Gall, Borg, & Gall, 1996; Johnson, 1977; McMillan & Schumacher, 1997; Thomas & Nelson, 1996).

According to Gall, Borg, and Gall (1996), research in its most basic form involves the description of natural or manufactured phenomena. They further stated that descriptive research is the basis for many future discoveries. Descriptive research often involves reporting the characteristics of one sample at one point in time. The values of mean, median, mode, and standard deviation were made from each questionnaire item. A frequency distribution was made for each questionnaire item showing how frequently each variable occurred. From the frequency distributions, percentages were computed and displayed in tables that indicated the number of respondents who marked a particular category in relationship to the total number of respondents (Orlich, 1978).

Orlich (1978) stated that the reporting of percentages and means are adequate analytical methods, with the use of computed means from Likert-type responses being most useful to researchers. This same type of Likert-type scale for each questionnaire allowed for the computation of means for each questionnaire item. Means helped illustrate agreements and disagreements among respondents.

Immediately after the collection of data from the survey responses was completed, the data were coded and entered into the statistical program, SPSS.
Each respondent was assigned an identification code to protect privacy and to identify the respondent easily (Gall, Borg, & Gall, 1996). Item responses were coded according to each subject's circled responses for each questionnaire item based on a Likert-type (1-5) scale. Once the data from the mailed questionnaire were coded and entered into the program, descriptive statistics were computed, describing the population's responses (Gall, Borg, & Gall, 1996).

Continuous data checks were done to ensure accuracy of data entry and data analysis. Data displays were visibly inspected for input errors. The analysis results were checked, recalculated, and re-examined after a waiting period (Fink & Kosecoff, 1998).

Each principal and teacher telephone interview was taped and transcribed to preserve the obtained data (Merriam, 1998). These interviews were analyzed to determine themes, factors, and characteristics. The semi-structured telephone interviews involved a series of structured questions that were followed by probing, open-ended questions to obtain additional information. Although a list of probing questions was developed prior to the interviews, it was impossible to suggest which ones would actually be asked in the interviews as their use depended on the depth and clarity of the answers given by the participants. Merriam (1998) implied that probing can come in the form of asking for more details, for clarification, or for examples. This researcher attempted to probe for detail, clarification and example to better describe the phenomena under study.

Each interview tape was clearly labeled and an interviewer's journal was kept to document interviews and all contacts with respondents. Names were not used, but rather letters were assigned to ensure privacy (Gall, Borg, & Gall,
Creswell (1994) suggested that data collection involves the following: setting boundaries for study, collecting data by interviews, and establishing interview protocol. Data organizing was done in advance as protocol for data entry, as suggested by Creswell (1994). This protocol was prepared in advance to record all data for analysis. Interviews were then quickly transcribed after the interview's completion (Silverman, 2001; Spradley, 1980).

Data analysis consisted of emergent categories, themes, or patterns collected from the interview process. Domains were developed that are internally consistent with the study's constructs but distinct from one another (Creswell, 1994; Spradley, 1980).

Limitations

It is important to note the possible limitations in the measures used in any research study. Miller (1991) reported on the following limitations associated with mailed survey techniques. These include:

1. Response rates to mail questionnaires usually do not exceed 50% when conducted by private and relatively unskilled persons, making intensive follow-up efforts a requirement to increase returns.

2. Those who answer the questionnaire may differ significantly from non-respondents, thereby biasing the sample. This creates a collection of individuals about whom virtually nothing is known. Consequently, although special efforts must be made to assess how non-respondents compare with respondents, the follow-up efforts bring the researcher up
against persons who cannot be located, who may be inaccessible, or who are unreachable (p. 141).

Isaac and Michael (1981) noted that surveys, with the exception of those based on a search of records, are "dependent on direct communication with persons having characteristics, behaviors, attitudes, and other relevant information appropriate for a specific investigation" (p. 128). Because of this unique characteristic, surveys are said to be reactive in nature as they involve the respondent by eliciting a reaction from them. Isaac and Michael (1981) go on to list the following as risks in survey research, such as in the use of questionnaires:

1. Surveys only tap respondents who are accessible and cooperative.
2. Surveys often make the respondent feel special or unnatural thereby producing responses that are artificial or slanted.
3. Surveys arouse "response sets" such as acquiescence or a proneness to agree with positive statements or questions.
4. Surveys are vulnerable to over-rater or under-rater bias, leading to a participant's tendency to give consistently high or low ratings (p. 128).

Furthermore, with the many obligations in a professional's work schedule, conflicts and time constraints might hinder a respondent's ability to fully participate in a written questionnaire survey. Particular attention was paid as to the timing of the issuance of these questionnaires, but no guarantee could be made that the arrival of said questionnaires would not be inopportune for the respondents (Orlich, 1978).

Likewise, the interview also presents problems when attempting to collect
accurate information from chosen participants. Henerson, Morris, and Fitz-Gibbon (1987) warned that interviews present two major disadvantages that could hinder the research process. First, they are very time-consuming. Second, they allow the interviewer to unduly influence the respondent in a number of ways. The respondent may become worried about why he/she is being questioned. He/she may become anxious over the process. He/she may become worried about what he/she is expected to say and how the responses will be interpreted. The interviewer, according to Henerson, Morris, and Fitz-Gibbon (1987), is, in effect, the evaluation instrument, and the slightest hint of disapproval or encouragement either in voice or physical reaction could influence a respondent’s answers (p. 26).

The interview, as a research tool, has definite limitations (Borg, 1981; Henerson, Morris, Fitz-Gibbon, 1987). Response effects based on an interpersonal situation, eagerness on behalf of the respondent to please the interviewer, a vague antagonism arising between interviewer and respondent, or the tendency of the interviewer to seek out answers that support his preconceived notions can plague the study (Borg, 1981). In evaluating survey research, special attention must be paid to the specific questions asked and to the procedure that was used to select the sample.

Reliability refers to “the accuracy (consistency and stability) of measurement by a test” (Isaac & Michael, 1981, p. 125). To that end, the wording of any questionnaire needs to be clearly understandable, unambiguous, reflecting the same meaning to those who are participating in its completion. A
review of the questionnaire by field experts and a pilot test was used to address reliability, and, in turn, to develop a more reliable instrument.

The researcher in this study also added yet another limitation to the study. Although every measure was taken to remain emotionally unattached and unbiased during the collection of data and its ensuing analysis, Gall, Borg, and Gall (1996) warned that the researcher has an emotional stake in the outcome of any research that may make that individual susceptible to bias. This researcher has been a secondary school teacher and principal and, thus, has certain thoughts and prejudices with regards to instruction, leadership, and the general field of education. Every attempt was made to remain objective and unbiased by seeking the advice and guidance of other researchers and by checking for omissions, errors, or unconscious biases (Gall, Borg, & Gall, 1996; McMillan & Schumacher, 1997).

Summary

Federal legislation and a push to standards-based education, student achievement, and a strong, comprehensive education for all children have refocused educators to pay close attention to instructional practices. Principals, as instructional leaders expected to complete effective reform in today's classrooms, must be prepared to answer the call. This study investigated the pedagogical knowledge of research-based instructional practices of principals across the country. It also studied both principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement by surveying the 100 recipients of the 2004
Principal of the Year Award as presented by the National Association of Elementary School Principals and the National Association of Secondary School Principals, as well as three selected teachers from each of the 100 principals' school sites.

In order to thoroughly study the aforementioned skills of principals, the study first outlined the most successful research-based instructional practices and then determined the depth of principal knowledge regarding these research-based instructional practices. Finally, the study sought to determine the degree of such knowledge in the supervisory practices of principals.
CHAPTER 4

ANALYSIS AND INTERPRETATION OF THE DATA

Introduction

A great amount of attention and scrutiny of the instructional practices of teachers and principals in our public schools has been brought to the forefront with the passage of Public Law 107-110, No Child Left Behind Act of 2001 (NCLB, 2001). Today, principals are being monitored even more closely as they attempt to lead their schools to meet the challenging standards of this federal legislation. Although everyone from state departments of education to local education agencies to classroom teachers assume a portion of the responsibility for the assurance of a quality education in each individual school, much of the burden of ensuring students receive a quality education is still going to be on the shoulders of the school site principal as it is the principal who has always been responsible for the hiring, supervising, and organizing of teachers (Wiles & Bondi, 1996). The principal, then, seen as the instructional leader of the school site, which is today viewed by much of the research as the unit responsible for the initiation of change, has a tremendous responsibility to deliver a quality educational program (Hallinger, 1992).

Hallinger and Heck (1996) concluded that although results continue to be open to debate from research on the direct effects of the role of the principal on
student achievement, there is little disagreement among researchers concerning the belief that principals do have an impact on the lives of teachers and students. Furthermore, researchers have determined that research on school effectiveness and leadership has concluded that principals do have a significant effect on student outcomes, even if in an indirect manner (Hallinger & Heck, 1996; Heck, Larson & Marcoulides, 1990). Additionally, other researchers have also concluded that principals who aim toward influencing internal school processes that are directly linked to student learning are exercising principal leadership that makes a difference in student achievement (Heck, Larsen, & Marcoulides, 1990; Hudgins & Cone, 1992; Leithwood & Jantzi, 1999; Quinn, 2002).

The purpose of this study was to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

The study was guided by and attempted to answer the following questions:

- What is the perceived and actual pedagogical knowledge of principals about research-based instructional practices?
- To what extent are principals encouraging particular research-based practices?
- What are the prominent practices of principals when applying their pedagogical knowledge during their supervision of teachers?
Research Methodology

For this study, a questionnaire was created consisting of 10 demographic questions, 84 Likert-type scale items, and 11 open-ended questions (See Appendix I, Principal Survey and Appendix II, Teacher Survey.). Of the 84 possible Likert-type scale items in each questionnaire, 32 questions specifically related to the pedagogical knowledge base of principals and the instructional practices of principals, and seven questions specifically related to the resources used when making decisions regarding instruction.

In addition to the mailed questionnaire, a semi-structured telephone interview was constructed as a secondary means of collecting teachers' and principals' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement. An interview protocol was developed to probe more deeply into the answers of the participants (See Appendix V.). Telephone interviews were conducted after randomly selecting from a list of principal and teacher volunteers who indicated a willingness to participate in such an interview. Telephone interviews averaged 20 minutes in length. The data obtained from the mailed questionnaire and the semi-structured telephone interviews were used to triangulate the collected data, a practice that provides results that are more reliable (Creswell, 1994). The combined use of a questionnaire and telephone interview resulted in more robust findings and a clearer understanding of the pedagogical knowledge of principals.
Population

The population for this study was those principals who were the recipients of the “2004 Principal of the Year Award” bestowed upon them by either the National Association of Secondary School Principals (NASSP) or the National Association of Elementary School Principals (NAESP). The population consisted of one hundred principals, representing public elementary and secondary schools across the United States. These schools were located in rural, suburban, and urban areas throughout the country. A sample of three teachers from each of the 100 schools was chosen by the principal to participate in the teacher survey. A sample of three principals and four teachers who agreed to be interviewed after taking the survey was then selected to participate in a semi-structured telephone interview.

Questionnaire

A questionnaire packet was mailed to the 100 principals who were the recipients of the “2004 Principal of the Year Award”. Of these 100 principals, 50 were secondary school principals and 50 were elementary school principals to ensure accurate representation of both types of principals. Each of the 100 principals was mailed a questionnaire packet that included introduction letters; one principal questionnaire; three teacher questionnaires; and stamped, addressed return envelopes for each participant. Principals from each individual school were asked to complete a principal questionnaire and distribute the teacher questionnaires to any three teachers on their staff. The first mailing resulted in 53 school packets returned, for an initial return rate of 53%. A total of
47 administrators, 45 of whom were principals, responded, for an initial return rate of 47% (45% from principals); and 94 teachers responded for an initial return rate of 31.3%.

In order to improve the return rate, a reminder postcard was sent after the first mailing to those principals who had not responded to the first mailing or whose teachers had not responded. In addition, a second packet was sent to those principals. The packets once again contained a principal questionnaire; teacher questionnaires; stamped, addressed return envelopes for each participant; and a reminder letter for each participant to complete the enclosed questionnaire and send his/her responses to the researcher.

The second mailing resulted in responses from an additional 12 schools, for a total of 65 schools, with a total return rate of 65%. Nine more principals and 43 more teachers responded to the second mailing, improving the total return rate to 56 administrators (54 principals) and 137 teachers, providing a total return rate of 56% for administrators (54% for principals) and 45.6% for teachers. The questionnaire took approximately 10-15 minutes for each respondent to complete, according to the pilot responses. Item responses for each question item ranged from (1) Not at all to (5) To a great extent. The questionnaire instructed respondents to choose the number (1-5) that most accurately described their perceptions for each item.

Although there were a total of 56 administrators who responded to the questionnaire, results only reflect the responses of those 54 administrators who indicated they were principals. Two respondents identified themselves as an Assistant Principal and "other" administrator. Since this study is only concerned
with the pedagogical knowledge base of principals, and not that of any other type of administrator, the results from those two respondents were not included in the analysis of the data.

Teacher and Principal Interview

Teacher and principal interviews were conducted during a two-week period following the return of the second questionnaire packet. A total of 25.9% percent (14/54) of principals and 13% (18/137) of teachers indicated at the bottom of their completed questionnaire that they would volunteer for a telephone interview. Three principals and four teachers were randomly selected from those lists of volunteers.

On the questionnaire sent to each participant, the participants were asked to provide a number and a time most convenient for a telephone interview. A semi-structured interview was used consisting of six questions that revolved around the three research questions (See Appendix V.). Each interview lasted between 20-25 minutes and was taped recorded and transcribed with the knowledge and permission of each participant.

The following section presents the results of both the mailed questionnaire and the telephone interview data. Both sets of data were presented simultaneously to support the findings of the entire study.

Description of Teachers and Principals

Teacher respondents were asked a total of nine demographic questions, and principal respondents were asked a total of 10 demographic questions to
understand better the population under study. The respondents provided information about the following: (a) the title of their current position, (b) the number of years in their current position, (c) the number of years at their current school, (d) teaching experience, (e) gender, (f) range of age, (g) level of education, (g) type of school, (i) location, (j) school population, and (k) district population. Demographic information was collected as a qualitative component of the study to illustrate in more detail the examined population.

Of the 137 teachers who responded, 136 answered the question on gender. Of those, 81.6% were females (111/136) and 18.3% were males (25/136). Of the 54 principals who answered the question on gender, 55.5% (30/54) were females and 44.4% (24/54) were males.

Additionally, a total of 190 participants (136 teachers and 54 principals) answered the questions regarding years of teaching experience and highest degree earned. Of the 136 teachers who responded, 26.5% had 1-6 years of teaching experience, 30.9% had 7-15 years of teaching experience, and 42.3% had 16 or more years of teaching experience. Of the 54 principals who responded, 27.8% had 1-6 years of teaching experience, 37% had 7-15 years of teaching experience, and 35.2% had 16 or more years of teaching experience. Bachelors degrees were the highest degrees earned by 34.6% of all teachers who responded to the question. A total of 62.5% of all teachers and 51.8% of all principals indicated their highest degree earned was a Masters degree. Only 2.2% of all teachers indicated they held education specialist degrees, but 25.9% of all principals said they held the same degree. Finally, only .7% of all teachers held a Doctorate degree; however, 22.2% of all administrators indicated that was
the highest degree they held. Table 1 and Table 2 contain the data taken from
the survey responses.

Table 1

*Years of Experience: All Teachers and All Principals*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Teachers and Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Experience</td>
<td></td>
</tr>
<tr>
<td>1-6 years</td>
<td></td>
</tr>
<tr>
<td>7-15 years</td>
<td></td>
</tr>
<tr>
<td>16+ years</td>
<td></td>
</tr>
<tr>
<td>Percentage of Teachers</td>
<td></td>
</tr>
<tr>
<td>(N = 136*)</td>
<td></td>
</tr>
<tr>
<td>* missing data</td>
<td></td>
</tr>
<tr>
<td>26.5%</td>
<td>30.9%</td>
</tr>
<tr>
<td>42.3%</td>
<td></td>
</tr>
<tr>
<td>Percentage of Principals</td>
<td></td>
</tr>
<tr>
<td>(N = 54)</td>
<td></td>
</tr>
<tr>
<td>27.8%</td>
<td>37.0%</td>
</tr>
<tr>
<td>35.2%</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

*Degrees Earned: All Teachers and All Principals*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Teachers and Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees Earned</td>
<td></td>
</tr>
<tr>
<td>Bachelors</td>
<td></td>
</tr>
<tr>
<td>Masters</td>
<td></td>
</tr>
<tr>
<td>Doctorate</td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
<td></td>
</tr>
<tr>
<td>Percentage of Teachers</td>
<td></td>
</tr>
<tr>
<td>(N = 136*)</td>
<td></td>
</tr>
<tr>
<td>* missing data</td>
<td></td>
</tr>
<tr>
<td>34.6%</td>
<td>62.5%</td>
</tr>
<tr>
<td>0.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Percentage of Principals</td>
<td></td>
</tr>
<tr>
<td>(N = 54)</td>
<td></td>
</tr>
<tr>
<td>0.0%</td>
<td>51.8%</td>
</tr>
<tr>
<td>22.2%</td>
<td>25.9%</td>
</tr>
</tbody>
</table>
For the purpose of this study, the criteria for the two types of schools reported in the data were taken from the description of elementary and secondary schools as given by the National Association of Elementary School Principals (NAESP) and the National Association of Secondary School Principals (NASSP). An elementary school reported in this study was composed of any combination of grades 1-6, including elementary schools of K-5, K-6, or any other combination. A secondary school was composed of any combination of grades 6-12, including middle schools, junior high schools, and elementary schools of K-6 or K-8. While participants described their schools either as elementary or junior high/middle/senior high schools, one school was described as a 2-12 school by its principal and was considered as a secondary school based on the description of the NASSP and the response given by the school's principal in the demographic section of the survey.

Research Questions

Research Question One

Research question one sought to find the perceived and actual pedagogical knowledge of principals regarding research-based instructional practices. Two steps were used to determine that knowledge base. One was to look at the participant responses for those six items in the questionnaire which did not reflect the three research-based frameworks used in the conceptual framework of this study (NR-items 60, 64, 69, 72, 82, and 83). The second step was to look at the participant responses for those 26 items which did reflect the research of one or more of the three frameworks used in this study (R-items 23,
In analyzing the data, a low mean score evident in NR-items indicated principal practices tended to be based on research-based practices. Additionally, a high mean score evident in R-items also indicated principal practices tended to be based on research-based practices. Conversely, a high mean score in NR-items or a low mean score in R-items indicated principal practices tended to be based on non-research-based practices. Low mean scores were determined to be those scores that ranged from 0.00 to 2.50, and high mean scores were determined to be those that ranged from 2.51 to 5.50.

According to principals' responses to the questions pertaining to non-research-based practices, the practice of teaching the designated grade-level curriculum to all students (item 69) was encouraged by the highest percentage of principals. According to principals surveyed, a total of 79.3% of all principals (with a mean of 4.06) said they encouraged this practice. Also encouraged by a high percentage of principals was the practice of taking standardized tests (item 83). Of all the principals surveyed, 63% of them (with a mean of 3.35) said they encouraged this practice either to some or to a great extent.

In regards to the practice of grouping students into homogeneous groups (item 72), drilling to specific test objectives (item 82), and grouping students by ability (item 64), the percentages of principals who encouraged these behaviors were not as high, but still, at times, close to or a little more than 50%. A total of 51.9% of all principals (with a mean of 3.06) said they encouraged the practice of teaching using homogenous groupings (item 72). Nearly half the principals
surveyed, 47.1% (with a mean of 2.93), said they encouraged the practice of drilling to specific test objectives (item 82) either to some or to a great extent. A total of 42.6% of all principals (with a mean of 2.87) surveyed said they encouraged the grouping of students by ability (item 64) to some or to a great extent.

An analysis of the data further suggested there was one non-research-based instructional practice that principals did not encourage to a high degree. Results indicated that only 22.2% of all principals (with a mean score of 2.28) encouraged the focus on competition in the classroom (item 60) to some or to a great extent. Table 3 on the following page displays these results.
Table 3

Results Summary for Non-Research-Based Items (In Rank Order)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td>Mean Score</td>
</tr>
<tr>
<td>#69 teach the designated grade-level curriculum to all students?</td>
<td>4.06 3.80 15.10 1.90 30.20 49.10</td>
</tr>
<tr>
<td>#83 have students practice taking standardized tests?</td>
<td>3.35 11.10 18.50 7.40 50.00 13.00</td>
</tr>
<tr>
<td>#72 teach using homogeneous grouping?</td>
<td>3.06 15.40 26.90 5.80 40.40 11.50</td>
</tr>
<tr>
<td>#82 drill on specific test objectives?</td>
<td>2.98 9.40 37.70 5.70 39.60 7.50</td>
</tr>
<tr>
<td>#64 group students by ability?</td>
<td>2.87 14.80 35.20 7.40 33.30 9.30</td>
</tr>
<tr>
<td>#60 focus on competition in the classroom?</td>
<td>2.28 31.50 35.20 11.10 18.50 3.70</td>
</tr>
</tbody>
</table>

When principals were divided into two separate groups consisting of elementary and secondary principals, responses from the two groups regarding non-research based practices were sometimes quite similar. For each of the responses to the 39 items (items 11, 23, 39-44, and 54-84), a t-test was completed (p<.05) comparing elementary principal responses to secondary principal responses (See Appendix VIII.).
In every instant but one, secondary principals seemed to encourage non-research-based practices more often than elementary principals. Responses to three Non-R-items indicated significant differences in principal practices between elementary and secondary principals. Table 4, on the following pages, divides the results of elementary principal responses and secondary principal responses into separate groups.

For example, while the practice of focusing on competition (item 60) was not encouraged to some or to a great extent by large percentages of principals in either group, secondary principals far outnumbered the elementary principals who encouraged this practice. Only 8.7% of elementary principals (with a mean of 1.74) said they encouraged the practice of focusing on competition in the classroom, but nearly a third of secondary principals, 32.3% (with a mean of 2.68), said they encouraged the same practice. Similarly, while only 30.4% of elementary principals (with a mean of 2.43) said they encouraged the practice of drilling on specific test objectives (item 82), 60% of secondary principals (with a mean of 3.40) said they encouraged the same practice to some or to a great extent. Finally, slightly more than half the elementary principals, 52.2% (with a mean of 2.91), said they encouraged the practice of having students practice taking standardized tests (item 83). An even greater number of secondary principals, 71% (with a mean of 3.68), said they encouraged the same practice to some or to a great extent.
Table 4

Results Summary for Non-Research-Based Items

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Principals</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60* focus on competition in the classroom?</td>
<td>1.74</td>
<td>47.80</td>
</tr>
<tr>
<td>#64 group students by ability?</td>
<td>2.96</td>
<td>21.70</td>
</tr>
<tr>
<td>#69 teach the designated grade-level</td>
<td>3.78</td>
<td>4.30</td>
</tr>
<tr>
<td>curriculum to all students?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#72 teach using homogeneous grouping?</td>
<td>2.95</td>
<td>18.20</td>
</tr>
</tbody>
</table>
To what extent do you encourage teachers to...?  

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean Score</th>
<th>None %</th>
<th>Slight %</th>
<th>N/A %</th>
<th>Some %</th>
<th>Great %</th>
<th>Mean Score</th>
<th>None %</th>
<th>Slight %</th>
<th>N/A %</th>
<th>Some %</th>
<th>Great %</th>
</tr>
</thead>
<tbody>
<tr>
<td>#82* drill on specific test objectives?</td>
<td>2.43</td>
<td>21.70</td>
<td>43.50</td>
<td>4.30</td>
<td>30.40</td>
<td>0.00</td>
<td>3.40</td>
<td>0.00</td>
<td>33.30</td>
<td>6.70</td>
<td>46.70</td>
<td>13.30</td>
</tr>
<tr>
<td>#83* have students practice taking standardized tests?</td>
<td>2.91</td>
<td>17.40</td>
<td>26.10</td>
<td>4.30</td>
<td>52.20</td>
<td>0.00</td>
<td>3.68</td>
<td>6.50</td>
<td>12.90</td>
<td>9.70</td>
<td>48.40</td>
<td>22.60</td>
</tr>
</tbody>
</table>

*p < .05
For the purpose of outlining in a clear fashion the results of those questions pertaining to the 26 research-based practices, the responses to those items were organized into four areas pertaining to teaching and learning: planning instruction, delivery of instruction, students' thinking processes and skills, and student assessment. Tables 5, 6, 7, and 8 display the results for the items pertaining to the four aforementioned areas. R-items 23, 65, 66, 67, 71, 74, 76, 81, and 84 pertain to the area of planning instruction. R-items 61, 62, 63, 68, 73, 77, 78, and 79 pertain to the area of delivery of instruction. R-items 54, 55, 57, 58, 59, 75, and 80 pertain to the area of students' thinking processes and skills. R-items 56 and 70 pertain to the area of student assessment. When results for the aforementioned questions are given in this chapter, individual tables demonstrating results in these four areas will be given to assist the reader.

Responses indicated there were several research-based practices that principals encouraged in the area of instructional planning. Principals encouraged teachers to reflect on their teaching practices (item 84) in great numbers, with a total of 96.3% of principals (with a mean of 4.63) saying they encouraged teachers to reflect on their teaching practices. A great percentage of principals surveyed said they encouraged the practice of addressing multiple intelligences of students (item 81), with a total of 94.4% of principals (with a mean of 4.41) indicating they encouraged this practice to some or to a great extent. When asked the extent to which they encouraged the practice of being flexible in grouping strategies (item 71), 92.5% of all principals (with a mean of 4.49) said they encouraged it to some or to a great extent. Additionally, a total of 90.7% of all principals (with a mean of 4.26) said they encouraged the practices
of beginning instruction where students’ abilities indicate (item 66) and being flexible with instructional time (item 67). Finally, a total of 85.2% of all principals (with a mean of 4.13) said they expected to see a specific sequence of instructional activities when observing in the classroom (item 23) and 85.2% (with a mean of 4.02) said they encouraged teachers to teach using heterogeneous grouping (item 65).

While principals indicated they encouraged teachers to teach students according to their interests (item 74) and to consider product, content, and environment in lesson planning (item 76), the results indicated they did not encourage these two research-based practices to the same degree as the aforementioned ones. Only 74% of all principals (with a mean of 3.98) said they encouraged teachers to consider product, content, and environment in lesson planning (item 76) to some or to a great extent, and 72.2% of all principals (with a mean of 3.63) said they encouraged teachers to teach students according to their interests (item 74) to some or to a great extent. Results are displayed in Table 5 on the following page.
Table 5

*Results Summary for Research-Based Items: Area of Instructional Planning (In Rank Order)*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Mean Score</th>
<th>% None</th>
<th>% Slight</th>
<th>% N/A</th>
<th>% Some</th>
<th>% Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>#84 encourage teachers to reflect on their teaching practices?</td>
<td>4.63</td>
<td>1.90</td>
<td>1.90</td>
<td>0.00</td>
<td>24.10</td>
<td>72.20</td>
</tr>
<tr>
<td>#81 encourage teachers to address multiple intelligences of students?</td>
<td>4.41</td>
<td>0.00</td>
<td>3.70</td>
<td>1.90</td>
<td>44.40</td>
<td>50.00</td>
</tr>
<tr>
<td>#71 encourage teachers to be flexible in their grouping strategies?</td>
<td>4.49</td>
<td>1.90</td>
<td>1.90</td>
<td>3.80</td>
<td>30.20</td>
<td>62.30</td>
</tr>
<tr>
<td>#66 encourage teachers to begin instruction where students' abilities indicate?</td>
<td>4.26</td>
<td>1.90</td>
<td>7.40</td>
<td>0.00</td>
<td>44.40</td>
<td>46.30</td>
</tr>
<tr>
<td>#67 encourage teachers to be flexible with instructional time?</td>
<td>4.26</td>
<td>3.70</td>
<td>5.60</td>
<td>0.00</td>
<td>42.60</td>
<td>48.10</td>
</tr>
<tr>
<td>#23 expect to see a specific sequence of instructional activities when observing in the classroom?</td>
<td>4.13</td>
<td>0.00</td>
<td>11.10</td>
<td>3.70</td>
<td>46.30</td>
<td>38.90</td>
</tr>
<tr>
<td>#65 encourage teachers to teach using heterogeneous grouping?</td>
<td>4.02</td>
<td>1.90</td>
<td>9.30</td>
<td>3.70</td>
<td>55.60</td>
<td>29.60</td>
</tr>
<tr>
<td>#76 consider product, content, and environment in lesson planning?</td>
<td>3.98</td>
<td>0.00</td>
<td>13.00</td>
<td>13.00</td>
<td>37.00</td>
<td>37.00</td>
</tr>
<tr>
<td>#74 teach students according to their interests?</td>
<td>3.63</td>
<td>3.70</td>
<td>20.40</td>
<td>3.70</td>
<td>53.70</td>
<td>18.50</td>
</tr>
</tbody>
</table>
In the area of delivery of instruction, again, results indicated a high degree of encouragement of several research-based practices by those principals participating in the survey. Nearly all principals stated they encouraged the practices of using clear and consistent language when delivering instruction (item 77) and trying new approaches in the classroom (item 78), with a total of 98.1% of all principals (with means of 4.72 and 4.69 respectively) stating they encouraged these practices to some or to a great extent. Additionally, 96.3% of principals (with a mean of 4.70) said they encouraged teachers to link past knowledge to present learning (item 73) to some or to a great extent. A high percentage of principals also encouraged the practices of showing empathy to students' frustration by clarifying instruction (item 68) and pacing instruction based on students' needs (item 79). Of the principals surveyed, 94.4% (with a mean of 4.52) said they encouraged teachers to show empathy to students by clarifying instruction and 94.5% (with a mean of 4.43) said they encouraged teachers to pace instruction based on students' needs to some or to a great extent.

Although the practice of having students participate in peer teaching (item 63) was not encouraged by as large a percentage of principals as some other research-based practices in the area of delivery of instruction, results still indicated many principals did encourage this practice. A total of 81.1% of all principals (with a mean of 3.83) said they encouraged this practice to some or to a great extent. Much less support for the practices of linking student emotions to learning (item 61) and delivering instruction through lecture (item 62) was evident in the results given by the principals surveyed. While the practice of linking
student emotions to learning was supported by all three frameworks used in this study, only 59.2% of all principals (with a mean of 3.48) said they encouraged this practice to some or to a great extent. Also, while the delivery of instruction through lecture was not supported specifically by the frameworks, it was not denied its place in instruction. However, only 17% of principals (with a mean of 2.04) said they encouraged the delivery of instruction through lecture to some or to a great extent. Table 6 on the following page illustrates the results.
Table 6

Results Summary for Research-Based Items:
Area of Delivery of Instruction (In Rank Order)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean Score</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Slight</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Some</td>
</tr>
<tr>
<td></td>
<td>Great</td>
</tr>
<tr>
<td>#77 use clear and consistent language when delivering instruction?</td>
<td>4.72 0.00 1.90 0.00 22.60 75.50</td>
</tr>
<tr>
<td>#78 try new approaches in the classroom?</td>
<td>4.69 0.00 1.90 0.00 25.90 72.20</td>
</tr>
<tr>
<td>#79 pace instruction based on students' needs?</td>
<td>4.43 0.00 3.70 1.90 42.60 51.90</td>
</tr>
<tr>
<td>#73 link past knowledge to present learning?</td>
<td>4.70 0.00 1.90 1.90 20.40 75.90</td>
</tr>
<tr>
<td>#68 show empathy to students' frustration by clarifying instruction?</td>
<td>4.52 0.00 0.00 0.00 37.00 57.40</td>
</tr>
<tr>
<td>#63 have students participate in peer teaching?</td>
<td>3.83 1.90 17.00 0.00 58.50 22.60</td>
</tr>
<tr>
<td>#61 link student emotions to learning?</td>
<td>3.48 3.70 22.20 14.80 40.70 18.50</td>
</tr>
<tr>
<td>#62 deliver instruction through lecture?</td>
<td>2.04 37.70 39.60 5.70 15.10 1.90</td>
</tr>
</tbody>
</table>
All instructional practices pertaining to the area of students’ thinking process and skills indicated a high level of encouragement by principals. Nearly all principals, 98.1% (with a mean of 4.69), said they encouraged teachers to have students use a variety of problem-solving techniques (item 80) to some or to a great extent. The practice of teaching students to reflect on learning (item 54) was encouraged by 96.3% of all principals (with a mean of 4.56). Teaching students how to work on interdependence (item 58) and generalize information (item 57) were also encouraged by a great percentage of principals. A total of 96.3% of principals (with a mean of 4.50) and 94.4% of principals (with a mean of 4.46), respectively, indicated they encouraged these practices to some or to a great extent.

The practice of teaching practice to mastery (item 59), while not encouraged by as high a percentage, nonetheless was encouraged by many principals. Responses showed that 88.5% of all principals (with a mean of 4.40) said they encouraged this practice to some or to a great extent. Also, teaching students to look for patterns (item 55) was encouraged by 87% of principals (with a mean of 4.28), indicating similar support. Finally, a total of 79.6% of all principals (with a mean of 3.94) also encouraged teachers to have students generate their own questions (item 75). Table 7 organizes these results.
Table 7

_Results Summary for Research-Based Items:_
_Area of Students’ Thinking Processes and Skills (In Rank Order)_

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
</tr>
<tr>
<td>#80 have students use a variety of problem-solving techniques?</td>
<td>4.69</td>
</tr>
<tr>
<td>#54 teach students to reflect on learning?</td>
<td>4.56</td>
</tr>
<tr>
<td>#58 teach students to work on interdependence?</td>
<td>4.50</td>
</tr>
<tr>
<td>#57 teach students how to generalize information?</td>
<td>4.46</td>
</tr>
<tr>
<td>#59 teach practice to mastery?</td>
<td>4.40</td>
</tr>
<tr>
<td>#55 teach students to look for patterns?</td>
<td>4.28</td>
</tr>
<tr>
<td>#75 have students generate their own questions?</td>
<td>3.94</td>
</tr>
</tbody>
</table>

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According to the data in Table 8, principals encouraged both practices pertaining to the area of assessment to some or to a great extent. In fact, 100% of principals (with a mean of 4.87) said they encouraged the practice of allowing students to demonstrate knowledge in a variety of ways (item 56). Additionally, while not all principals indicated strong encouragement for the practice of diagnosing students' needs prior to developing a lesson plan (item 70), results indicated that 81.5% of principals (with a mean of 4.28) indicated they encouraged this practice to some or to a great extent.

Table 8

*Results Summary for Research-Based Items: Area of Student Assessment (In Rank Order)*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td>Mean Score</td>
</tr>
<tr>
<td>#56 allow students to demonstrate knowledge in a variety of ways?</td>
<td>4.87</td>
</tr>
<tr>
<td>#70 diagnose students' needs prior to developing a lesson plan?</td>
<td>4.28</td>
</tr>
</tbody>
</table>

When principals were divided into two separate groups consisting of elementary and secondary principals, responses from the two groups were often, but not always, similar regarding questions based on research-based practices. Agreement between the two groups of principals on the extent to which they
encouraged research-based practices covered in the questionnaire existed 80.7% of the time (21/26 questions). Still, while both elementary and secondary principals indicated they encouraged certain research-based practices to some or to a great extent, results pertaining to all four areas of teaching and learning (instructional planning, delivery of instruction, students' thinking processes and skills, and student assessment) were significantly different in certain cases, demonstrating there were some practices that one group encouraged to a greater extent than the other. Tables 9, 10, 11, and 12 display the results from the two separate groups of principals (elementary and secondary) pertaining to the four areas of teaching and learning.

While elementary and secondary principals differed in the extent to which they encouraged certain practices pertaining to instructional planning, statistically, only their response to item 84 indicated any significant difference, as shown in Table 9. All elementary principals (100% with a mean of 4.87) said they encouraged teachers to reflect on their teaching practices (item 84), but only 93.6% of secondary principals (with a mean of 4.45) said they encouraged the same practice to some or to a great extent.
Table 9

Results Summary for Research-Based Items: Area of Instructional Planning

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Principals</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent do you . . .</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#23 expect to see a specific sequence of instructional activities when observing in the classroom?</td>
<td>4.30</td>
<td>0.00</td>
</tr>
<tr>
<td>#65 encourage teachers to teach using heterogeneous grouping?</td>
<td>4.26</td>
<td>0.00</td>
</tr>
<tr>
<td>#66 encourage teachers to begin instruction where students' abilities indicate?</td>
<td>4.52</td>
<td>4.30</td>
</tr>
<tr>
<td>#67 encourage teachers to be flexible with instructional time?</td>
<td>4.30</td>
<td>0.00</td>
</tr>
</tbody>
</table>
To what extent do you...  

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean Score</th>
<th>None %</th>
<th>Slight %</th>
<th>N/A %</th>
<th>Some %</th>
<th>Great %</th>
<th>Mean Score</th>
<th>None %</th>
<th>Slight %</th>
<th>N/A %</th>
<th>Some %</th>
<th>Great %</th>
</tr>
</thead>
<tbody>
<tr>
<td>#71 encourage teachers to be flexible with their grouping strategies?</td>
<td>4.70</td>
<td>4.30</td>
<td>0.00</td>
<td>0.00</td>
<td>13.00</td>
<td>82.60</td>
<td>4.33</td>
<td>0.00</td>
<td>3.30</td>
<td>6.70</td>
<td>43.30</td>
<td>46.70</td>
</tr>
<tr>
<td>#74 encourage teachers to teach students according to their interests?</td>
<td>3.78</td>
<td>4.30</td>
<td>8.70</td>
<td>4.30</td>
<td>69.60</td>
<td>13.00</td>
<td>3.52</td>
<td>3.20</td>
<td>29.00</td>
<td>3.20</td>
<td>41.90</td>
<td>22.60</td>
</tr>
<tr>
<td>#76 encourage teachers to consider product, content, and environment in lesson planning?</td>
<td>3.74</td>
<td>0.00</td>
<td>17.40</td>
<td>17.40</td>
<td>39.10</td>
<td>26.10</td>
<td>4.16</td>
<td>0.00</td>
<td>9.70</td>
<td>9.70</td>
<td>35.50</td>
<td>45.20</td>
</tr>
<tr>
<td>#81 encourage teachers to address multiple intelligences of students?</td>
<td>4.35</td>
<td>0.00</td>
<td>4.30</td>
<td>4.30</td>
<td>43.50</td>
<td>47.80</td>
<td>4.45</td>
<td>0.00</td>
<td>3.20</td>
<td>0.00</td>
<td>45.20</td>
<td>51.60</td>
</tr>
<tr>
<td>#84* have teachers reflect on their teaching practices?</td>
<td>4.87</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>13.00</td>
<td>87.00</td>
<td>4.45</td>
<td>3.20</td>
<td>3.20</td>
<td>0.00</td>
<td>32.30</td>
<td>61.30</td>
</tr>
</tbody>
</table>

*p<.05
In the area of delivery of instruction, elementary and secondary principals agreed on the extent to which they encouraged all but one instructional practice. Only one item response proved to be significantly different. Regarding the delivery of instruction, elementary and secondary principals did not agree on the extent to which they encouraged the practices of delivering instruction through lecture (item 62). Only 4.3% of elementary principals (with a mean of 1.48) said they encouraged teachers to deliver instruction through lecture, while 26.6% of secondary principals (with a mean of 2.47) said they encouraged the same practice to some or to a great extent. The data are presented in Table 10.
Table 10

*Results Summary for Research-Based Items: Area of Delivery of Instruction*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Principals</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#61 link student emotions to learning?</td>
<td>3.26</td>
<td>4.30</td>
</tr>
<tr>
<td>#62* deliver instruction through lecture?</td>
<td>1.48</td>
<td>60.90</td>
</tr>
<tr>
<td>#63 have students participate in peer teaching?</td>
<td>3.95</td>
<td>0.00</td>
</tr>
<tr>
<td>#68 show empathy to students’ frustration by clarifying instruction?</td>
<td>4.57</td>
<td>0.00</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#73 link past knowledge to present learning?</td>
<td>4.74</td>
<td>0.00</td>
</tr>
<tr>
<td>#77 use clear and consistent language when delivering instruction?</td>
<td>4.83</td>
<td>0.00</td>
</tr>
<tr>
<td>#78 try new approaches in the classroom?</td>
<td>4.70</td>
<td>0.00</td>
</tr>
<tr>
<td>#79 pace instruction based on students' needs?</td>
<td>4.43</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*p<.05
Elementary and secondary principals agreed, to a great extent, on the level of encouragement they gave to teachers' instructional practices in the area of students' thinking processes and skills. Again, only one item proved to be significantly different. A significant difference between elementary principals and secondary principals was evident in their encouragement of teaching students to look for patterns (item 55), with 95.7% of elementary principals (with a mean of 4.57) and 80.7% of secondary principals (with a mean of 4.06) encouraging this practice to some or to a great extent. Table 11 illustrates the results to responses in the area of students' thinking processes and skills.
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Principals</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% None</td>
<td>% Slight</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#54 teach students to reflect on learning?</td>
<td>4.74</td>
<td>0.00</td>
</tr>
<tr>
<td>#55* teach students to look for patterns?</td>
<td>4.57</td>
<td>0.00</td>
</tr>
<tr>
<td>#57 teach students how to generalize information?</td>
<td>4.65</td>
<td>0.00</td>
</tr>
<tr>
<td>#58 teach students to work on interdependence?</td>
<td>4.39</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#59 teach practice to mastery?</td>
<td>4.45</td>
<td>0.00</td>
</tr>
<tr>
<td>#75 have students generate their own questions?</td>
<td>4.22</td>
<td>0.00</td>
</tr>
<tr>
<td>#80 have students use a variety of problem-solving techniques?</td>
<td>4.74</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*p < .05
Elementary principals and secondary principals responded very differently to one of the two items pertaining to the area of assessment. Table 12 illustrates the significant difference between elementary and secondary principal responses to that item. When elementary and secondary principals were asked the extent to which they encouraged teachers to diagnose students' needs prior to developing a lesson plan (item 70), 95.7% of elementary principals (with a mean of 4.74) said they encouraged teachers to follow this practice to some or to a great extent, but only 71% of secondary principals (with a mean of 3.94) said they encouraged teachers to the same extent.
Table 12

Results Summary for Research-Based Items: Area of Student Assessment

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Principals</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To what extent do you encourage teachers to...</strong></td>
<td>Mean Score % None % Slight % N/A % Some % Great</td>
<td>Mean Score % None % Slight % N/A % Some % Great</td>
</tr>
<tr>
<td>#56 allow students to demonstrate knowledge in a variety of ways?</td>
<td>4.91 0.00 0.00 0.00 8.70 91.30</td>
<td>4.84 0.00 0.00 0.00 16.10 83.90</td>
</tr>
<tr>
<td>#70* diagnose students' needs prior to developing a lesson plan?</td>
<td>4.74 0.00 0.00 4.30 17.40 78.30</td>
<td>3.94 0.00 22.60 6.50 25.80 45.20</td>
</tr>
<tr>
<td></td>
<td>*p&lt;.05</td>
<td></td>
</tr>
</tbody>
</table>
Research Question Two

Research question two sought to find the extent to which principals encouraged particular research-based instructional practices. Principals and teachers were asked 32 Likert-type questions related to instructional practices to determine the extent to which principals encouraged 26 research-based instructional practices (R-items 23 and 54-84) and six non-research-based instructional practices (NR-items 60, 64, 69, 72, 82, 83). Principals and teachers were also asked seven Likert-type questions related to the decision-making process regarding instruction, including the extent to which outside entities influenced their decision-making and the extent to which they used certain resources in their decision-making process (DB-items 11 and 39-44). Open-ended questions citing specific weaknesses and strengths in preparation programs were also asked of all respondents, and results are reported in terms of percentages and/or described in narrative form.

The responses to the 39 questionnaire items are displayed as frequencies and for each of the 39 questionnaire items pertaining to instructional practices and decision-making regarding instructional practices (Items 11, 23, 39-44, and 54-84), a t-test was completed (p<.05) comparing all principal responses to all teacher responses, elementary principal responses to elementary teacher responses, and secondary principal responses to secondary teacher responses. In addition, the Levene's Test for Equality of Variances was also performed to address the issue of unequal sample numbers for principal and teacher groups. Items that were significant were noted and t-test results are found in Appendix IX.
for the combined group of all teachers and principals, Appendix X for elementary teachers and principals, and Appendix XI for secondary teachers and principals.

Responses to the six NR-items (NR-items 60, 64, 69, 72, 83, and 83) are displayed in a table separate from the tables that outline the results of the twenty-six R-items regarding instruction (R-items 54-59, 61-63, 65-68, 70, 71, 73-81, and 84). Again, for the purpose of outlining results in a clear fashion, responses for R-items were organized into four areas pertaining to teaching and learning: planning instruction, delivery of instruction, students' thinking processes and skills, and student assessment. When results for the aforementioned areas pertaining to teaching and learning are given, individual tables demonstrating results in these four areas are displayed to assist the reader.

**Instructional Practices: All Teacher and Principal Responses**

By analyzing teachers' perceptions, the analysis sought to determine whether or not teachers agreed with principals' perceptions of their own practices. While there was some agreement between the two groups on the extent to which principals encouraged certain instructional practices, there were areas where there were many significant differences, as noted in the narrative and tables that follow.

Of the six non-research-based items found in the questionnaire regarding instructional practices, no significant difference was found between teacher and principals responses. Table 13 demonstrates the results.
Table 13

Results Summary for Teacher and Principal Groups: Non-Research-Based Instructional Practices

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#60 focus on competition in the classroom?</td>
<td>2.41</td>
<td>31.40</td>
</tr>
<tr>
<td>#64 group students by ability?</td>
<td>3.03</td>
<td>17.50</td>
</tr>
<tr>
<td>#69 teach the designated grade-level curriculum to all students?</td>
<td>3.84</td>
<td>6.00</td>
</tr>
<tr>
<td>#72 teach using homogeneous grouping?</td>
<td>2.88</td>
<td>19.00</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#82 drill on specific test objectives?</td>
<td>3.26</td>
<td>13.10</td>
</tr>
<tr>
<td>#83 have students practice taking standardized tests?</td>
<td>3.54</td>
<td>8.10</td>
</tr>
</tbody>
</table>

*p<.05
A significant difference did exist, however, for 15 of the 26 R-items on instructional practices. In the area of instructional planning, there was a significant difference between teacher and principal responses on the extent to which three instructional practices were encouraged. In each of the three instances, results indicated principals believed they encouraged these practices in higher numbers than the teachers who responded to the same questions. A total of 66.9% of all teachers (with a mean of 3.65) said principals encouraged them to teach using heterogeneous grouping (item 65); whereas, 85.2% of all principals (with a mean of 4.02) said they encouraged teachers to utilize this practice to some or to a great extent. Results indicated that 79.5% of all teachers (with a mean of 4.15) said principals encouraged them to be flexible in their grouping strategies (item 71), yet 92.5% of principals (with a mean of 4.49) said they encouraged the same practice. While 88.9% of all teachers (with a mean of 4.34) said principals encouraged them to reflect on their teaching practices (item 84), 96.3% of principals (with a mean of 4.63) said they encouraged the same practice to some or to a great extent. Results are displayed in Table 14 on the following pages.
### Table 14

**Results Summary for Teacher and Principal Groups: Area of Instructional Planning**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#23 use a specific sequence of instructional activities?</td>
<td>3.83</td>
<td>13.10</td>
</tr>
<tr>
<td>#65* use heterogeneous grouping?</td>
<td>3.65</td>
<td>8.10</td>
</tr>
<tr>
<td>#66 begin instruction where students' abilities indicate?</td>
<td>4.07</td>
<td>2.20</td>
</tr>
<tr>
<td>#67 be flexible with instructional time?</td>
<td>3.96</td>
<td>3.70</td>
</tr>
</tbody>
</table>
To what extent are teachers encouraged to...  

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean Score</th>
<th>None</th>
<th>Slight</th>
<th>N/A</th>
<th>Some</th>
<th>Great</th>
<th>Mean Score</th>
<th>None</th>
<th>Slight</th>
<th>N/A</th>
<th>Some</th>
<th>Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>#71* be flexible with their grouping strategies?</td>
<td>4.15</td>
<td>3.70</td>
<td>5.90</td>
<td>10.30</td>
<td>32.40</td>
<td>47.10</td>
<td>4.49</td>
<td>1.90</td>
<td>1.90</td>
<td>3.80</td>
<td>30.20</td>
<td>62.30</td>
</tr>
<tr>
<td>#74 teach students according to their interests?</td>
<td>3.45</td>
<td>6.60</td>
<td>20.40</td>
<td>13.10</td>
<td>41.60</td>
<td>18.20</td>
<td>3.63</td>
<td>3.70</td>
<td>20.40</td>
<td>3.70</td>
<td>53.70</td>
<td>18.50</td>
</tr>
<tr>
<td>#76 consider product, content, environment?</td>
<td>3.87</td>
<td>5.90</td>
<td>8.80</td>
<td>13.20</td>
<td>36.80</td>
<td>35.30</td>
<td>3.98</td>
<td>0.00</td>
<td>13.00</td>
<td>13.00</td>
<td>37.00</td>
<td>37.00</td>
</tr>
<tr>
<td>#81 address multiple intelligences?</td>
<td>4.23</td>
<td>2.20</td>
<td>7.40</td>
<td>8.10</td>
<td>30.10</td>
<td>52.20</td>
<td>4.41</td>
<td>0.00</td>
<td>3.70</td>
<td>1.90</td>
<td>44.40</td>
<td>50.00</td>
</tr>
<tr>
<td>#84* reflect on their teaching practices?</td>
<td>4.34</td>
<td>2.20</td>
<td>5.20</td>
<td>3.70</td>
<td>34.10</td>
<td>54.80</td>
<td>4.63</td>
<td>1.90</td>
<td>1.90</td>
<td>0.00</td>
<td>24.10</td>
<td>72.20</td>
</tr>
</tbody>
</table>

*p<.05
Teacher and principal perceptions were often significantly different in the area of delivery of instruction. Results for five of the eight items in this area indicated a significant difference between the two groups’ responses. While 81.6% of teachers (with a mean of 4.23) said principals encouraged them to show empathy to students’ frustration by clarifying instruction (item 68), 94.4% of principals said they encouraged teachers to follow this practice. According to 86.9% of teachers (with a mean of 4.34), principals encouraged the practice of linking past knowledge to present learning (item 73) to some or to a great extent, while 96.3% of principals (with a mean of 4.70) said they encouraged the same practice. Of the 137 teachers surveyed, 88.4% (with a mean of 4.37) said principals encouraged them to use clear and consistent language when delivering instruction (item 77), but almost all principals, 98.1% (with a mean of 4.72), said they encouraged teachers to follow this practice to some or to a great extent.

Although a high percentage of teachers, 87.6% (with a mean of 4.40), said they were encouraged to try new approaches in the classroom (item 78), almost all principals, 98.1% (with a mean of 4.69), said they encouraged teachers to follow this practice. Finally, a large percentage of teachers, 82.5% (with a mean of 4.16), said they were encouraged by their principals to pace instruction based on students’ needs (item 79), and an even greater percentage of principals, 94.5% (with a mean of 4.43), said they encouraged this practice to some or to a great extent. Table 15 displays the results.
Table 15

Results Summary for Teachers and Principal Groups: Area of Delivery of Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#61 link student emotions to learning?</td>
<td>3.26</td>
<td>8.80</td>
</tr>
<tr>
<td>#62 deliver instruction through lecture?</td>
<td>2.09</td>
<td>39.40</td>
</tr>
<tr>
<td>#63 have students participate in peer teaching?</td>
<td>3.62</td>
<td>3.60</td>
</tr>
<tr>
<td>#68* show empathy by clarifying instruction?</td>
<td>4.23</td>
<td>.70</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#73* link past knowledge to present learning?</td>
<td>4.34</td>
<td>2.20</td>
</tr>
<tr>
<td>#77* use clear and consistent language?</td>
<td>4.37</td>
<td>2.20</td>
</tr>
<tr>
<td>#78* try new approaches in the classroom?</td>
<td>4.40</td>
<td>1.50</td>
</tr>
<tr>
<td>#79 pace instruction based on students' needs?</td>
<td>4.16</td>
<td>1.50</td>
</tr>
</tbody>
</table>

*p < .05
Significant differences were found in six of the seven items in the area of students' thinking processes and skills, with principals, once again, scoring their own practices higher than did the teachers who scored principal practices. Whereas 85.3% of teachers surveyed (with a mean of 4.24) said principals encouraged them to teach students to reflect on learning (item 54) to some or to a great extent, 96.3% of principals (with a mean of 4.56) said they encouraged that practice. A total of 65.2% of teachers (with a mean of 3.70) said principals encouraged the practice of teaching students to look for patterns (item 55), but a total of 87% of principals (with a mean of 4.28) gave the same results.

Only 75.2% of all teachers (with a mean of 3.92) said they thought principals encouraged them to teach students to generalize information (item 57) to some or to a great extent, but a total of 94.4% of all principals (with a mean of 4.46) believed they encouraged teachers to do the same. Similarly, while 75% of teachers (with a mean of 4.02) said principals encouraged them to teach students to work on interdependence (item 58), 96.3% of principals (with a mean of 4.50) said they encouraged the same practice. Additionally, 74.3% of all teachers (with a mean of 3.96) said principals encouraged them to teach practice to mastery (item 59), yet 88.5% of all principals (with a mean of 4.40) said they encouraged teachers to follow this practice to some or to a great extent. Finally, while a higher percentage of teachers, 89.7% (with a mean of 4.38), said they were encouraged to have students use a variety of problem-solving techniques (item 80), almost all principals, 98.1% (with a mean of 4.69) said they encouraged teachers to follow this practice, as seen in Table 16, results from these response items are displayed.
Table 16

Results Summary for Teacher and Principal Groups: Area of Students' Thinking Processes and Skills

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#54* teach students to reflect on learning?</td>
<td>4.24</td>
<td>1.50</td>
</tr>
<tr>
<td>#55* teach students to look for patterns?</td>
<td>3.70</td>
<td>5.20</td>
</tr>
<tr>
<td>#57* teach students how to generalize information?</td>
<td>3.92</td>
<td>4.40</td>
</tr>
<tr>
<td>#58* teach students to work on interdependence?</td>
<td>4.02</td>
<td>3.70</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#59* teach practice to mastery?</td>
<td>3.96</td>
<td>5.10</td>
</tr>
<tr>
<td>#75 have students generate their own questions?</td>
<td>3.87</td>
<td>2.90</td>
</tr>
<tr>
<td>#80* have students use a variety of problem-solving techniques?</td>
<td>4.38</td>
<td>1.50</td>
</tr>
</tbody>
</table>

*p<.05
As seen in Table 17, of the two items pertaining to the area of student assessment, only one item indicated a significant difference between the two groups' responses. While a large number of teachers, 90.5% (with a mean of 4.48), said principals encouraged them to allow students to demonstrate knowledge in a variety of ways (item 56), an even higher percentage of principals, 100% (with a mean of 4.87), said they encouraged this practice to some or to a great extent.
Table 17

Results Summary for Teacher and Principal Groups: Area of Student Assessment

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>Mean Score</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to</td>
<td>% None</td>
<td>% None</td>
</tr>
<tr>
<td>allow students to demonstrate knowledge in</td>
<td>% Slight</td>
<td>% Slight</td>
</tr>
<tr>
<td>a variety of ways?</td>
<td>% N/A</td>
<td>% N/A</td>
</tr>
<tr>
<td>#56* allow students to demonstrate</td>
<td>% Some</td>
<td>% Some</td>
</tr>
<tr>
<td>knowledge in a variety of ways?</td>
<td>% Great</td>
<td>% Great</td>
</tr>
<tr>
<td></td>
<td>4.48</td>
<td>4.87</td>
</tr>
<tr>
<td></td>
<td>2.90</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>5.10</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>21.90</td>
<td>13.00</td>
</tr>
<tr>
<td></td>
<td>68.60</td>
<td>87.00</td>
</tr>
<tr>
<td></td>
<td>4.28</td>
<td>13.00</td>
</tr>
<tr>
<td></td>
<td>8.10</td>
<td>5.60</td>
</tr>
<tr>
<td></td>
<td>36.80</td>
<td>22.20</td>
</tr>
<tr>
<td></td>
<td>39.00</td>
<td>59.30</td>
</tr>
<tr>
<td></td>
<td>*p&lt;.05</td>
<td></td>
</tr>
</tbody>
</table>

*#56* *p<.05
In summary, teachers and principals from the combined group of elementary and secondary participants did not agree on the degree to which principals encouraged many of the research-based items found in the questionnaire, as indicated by 15 significantly different responses from the possible 26 items. Results demonstrated that, in particular, teachers and principals did not agree on the extent to which principals encouraged practices in the area of delivery of instruction, as responses to five of the eight items in this area proved to be significantly different.

**Instructional Practices: Elementary Teacher and Principal Responses**

When the combined group of elementary and secondary teachers and elementary and secondary principals was divided into two sub-groups of solely elementary teachers and principals and solely secondary teachers and principals, the significant difference between teacher responses and principal responses in these two groups was not always evident in the same item numbers. Appendix X notes the items that were significant for the group of 59 elementary teachers and 23 elementary principals and shows t-test results for elementary teachers and principals only.

The data cited in Table 18 reveals that, of the six NR-items, responses to the practice of drilling on specific test objectives (item 82) and having students practice taking standardized tests (item 83) indicated a significant difference between elementary teacher and elementary principal responses. Slightly over half the elementary teachers, 50.8% (with a mean of 3.20), said principals encouraged the practice of drilling on specific test objectives (item 82) to some or to a great extent, but only 30.4% of elementary principals (with a mean of 2.43)
agreed. Also, 71.2% of elementary teachers (with a mean of 3.73) said
principals encouraged them to drill on specific test objectives (item 83), but only
52.2% of elementary principals (with a mean of 2.91) said they encouraged this
practice to some extent.
Table 18

Results Summary for Elementary Teacher and Principal Groups: Non-Research-Based Instructional Practices

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Score</td>
<td>% None</td>
<td>% Slight</td>
</tr>
<tr>
<td>#60 focus on competition in the classroom?</td>
<td>2.14</td>
<td>39.00</td>
</tr>
<tr>
<td>#64 group students by ability?</td>
<td>3.32</td>
<td>16.90</td>
</tr>
<tr>
<td>#69 teach the designated grade-level curriculum to all students?</td>
<td>4.10</td>
<td>1.70</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#72 teach using homogeneous grouping?</td>
<td>3.14</td>
<td>15.30</td>
</tr>
<tr>
<td>#82* drill on specific test objectives?</td>
<td>3.20</td>
<td>13.60</td>
</tr>
<tr>
<td>#83* have students practice taking standardized tests?</td>
<td>3.73</td>
<td>6.80</td>
</tr>
</tbody>
</table>

*p<.05
In the area of instructional planning, there was a significant difference between elementary teacher and elementary principal responses to only one item. While 91.5% of elementary teachers (with a mean of 4.44) said their principals encouraged them to reflect on their teaching practices (item 84), 100% of elementary principals (with a mean of 4.87) said they encouraged this practice to some or to a great extent, as seen in Table 19.
Table 19

Results Summary for Elementary Teacher and Principal Groups: Area of Instructional Planning

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#23 use a specific sequence of instructional activities?</td>
<td>3.92</td>
<td>10.20</td>
</tr>
<tr>
<td>#65 use heterogeneous grouping?</td>
<td>3.90</td>
<td>8.50</td>
</tr>
<tr>
<td>#66 begin instruction where students' abilities indicate?</td>
<td>4.41</td>
<td>1.70</td>
</tr>
<tr>
<td>#67 be flexible with instructional time?</td>
<td>4.00</td>
<td>5.10</td>
</tr>
</tbody>
</table>
To what extent are teachers encouraged to...

<table>
<thead>
<tr>
<th>To what extent are teachers encouraged to...</th>
<th>Mean Score</th>
<th>% None</th>
<th>% Slight</th>
<th>% N/A</th>
<th>% Some</th>
<th>% Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>#71 be flexible with their grouping strategies?</td>
<td>4.58</td>
<td>0.00</td>
<td>5.10</td>
<td>0.00</td>
<td>28.80</td>
<td>64.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#74 teach students according to their interests?</td>
<td>3.68</td>
<td>3.40</td>
<td>18.60</td>
<td>8.50</td>
<td>45.80</td>
<td>23.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#76 consider product, content, environment?</td>
<td>4.00</td>
<td>3.40</td>
<td>11.90</td>
<td>6.80</td>
<td>37.30</td>
<td>40.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#81 address multiple intelligences?</td>
<td>4.25</td>
<td>1.70</td>
<td>11.90</td>
<td>3.40</td>
<td>25.40</td>
<td>57.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#84* reflect on their teaching practices?</td>
<td>4.44</td>
<td>1.70</td>
<td>6.80</td>
<td>0.00</td>
<td>28.80</td>
<td>62.70</td>
</tr>
</tbody>
</table>

*p<.05
As illustrated in Table 20, of the items pertaining to the area of delivery of instruction, there were no items that illustrated a significant difference between the responses from the 59 elementary teachers and the 23 elementary principals.
Table 20

Results Summary for Elementary Teachers and Principal Groups: Area of Delivery of Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#61 link student emotions to learning?</td>
<td>3.43</td>
<td>10.30</td>
</tr>
<tr>
<td>#62 deliver instruction through lecture?</td>
<td>1.73</td>
<td>50.80</td>
</tr>
<tr>
<td>#63 have students participate in peer teaching?</td>
<td>3.61</td>
<td>0.00</td>
</tr>
</tbody>
</table>
### To what extent are teachers encouraged to...

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean Score</th>
<th>% None</th>
<th>% Slight</th>
<th>% N/A</th>
<th>% Some</th>
<th>% Great</th>
<th>Mean Score</th>
<th>% None</th>
<th>% Slight</th>
<th>% N/A</th>
<th>% Some</th>
<th>% Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>#68 show empathy by clarifying instruction?</td>
<td>4.59</td>
<td>0.00</td>
<td>3.40</td>
<td>0.00</td>
<td>32.20</td>
<td>62.70</td>
<td>4.57</td>
<td>0.00</td>
<td>0.00</td>
<td>4.30</td>
<td>34.80</td>
<td>60.90</td>
</tr>
<tr>
<td>#73 link past knowledge to present learning?</td>
<td>4.56</td>
<td>0.00</td>
<td>1.70</td>
<td>5.10</td>
<td>30.50</td>
<td>61.00</td>
<td>4.74</td>
<td>0.00</td>
<td>0.00</td>
<td>4.30</td>
<td>17.40</td>
<td>78.30</td>
</tr>
<tr>
<td>#77 use clear and consistent language?</td>
<td>4.61</td>
<td>0.00</td>
<td>1.70</td>
<td>1.70</td>
<td>30.50</td>
<td>66.10</td>
<td>4.83</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>17.40</td>
<td>82.60</td>
</tr>
<tr>
<td>#78 try new approaches in the classroom?</td>
<td>4.49</td>
<td>1.70</td>
<td>1.70</td>
<td>3.40</td>
<td>32.20</td>
<td>61.00</td>
<td>4.70</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>30.40</td>
<td>69.60</td>
</tr>
<tr>
<td>#79 pace instruction based on students' needs?</td>
<td>4.37</td>
<td>1.70</td>
<td>6.80</td>
<td>1.70</td>
<td>32.20</td>
<td>57.60</td>
<td>4.43</td>
<td>0.00</td>
<td>8.70</td>
<td>0.00</td>
<td>30.40</td>
<td>60.90</td>
</tr>
</tbody>
</table>

*p<.05
Responses to three of the seven items pertaining to the area of students’ thinking processes and skills illustrated a significant difference between elementary teachers and elementary principals. When surveyed, 89.8% of elementary teachers (with a mean of 4.39) said their principals encouraged them to teach students to reflect on learning (item 54), however, 100% of elementary principals (with a mean of 4.74) said they encouraged this practice. Teachers’ and principals’ perceptions also differed significantly when asked the extent to which the practice of teaching students to look for patterns (item 55) was encouraged. While 74.1% of elementary teachers (with a mean of 3.97) said principals encouraged this practice, a much larger percentage of principals, 95.7% (with a mean of 4.57), said they encouraged it to some or to a great extent. Also, while a high percentage of elementary teachers, 94.8% (with a mean of 4.20), said principals encouraged them to teach students to generalize information (item 57), a full 100% of elementary principals (with a mean of 4.65) said they encouraged the same practice to some or to a great extent. Results are found in Table 21.
Table 21

Results Summary for Elementary Teacher and Principal Groups: Area of Students' Thinking Processes and Skills

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#54* teach students to reflect on learning?</td>
<td>4.39</td>
<td>0.00</td>
</tr>
<tr>
<td>#55* teach students to look for patterns?</td>
<td>3.97</td>
<td>1.70</td>
</tr>
<tr>
<td>#57* teach students how to generalize information?</td>
<td>4.20</td>
<td>0.00</td>
</tr>
<tr>
<td>#58 teach students to work on interdependence?</td>
<td>4.24</td>
<td>0.00</td>
</tr>
<tr>
<td>#59 teach practice to mastery?</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>4.17</td>
<td>3.40</td>
</tr>
<tr>
<td>#75 have students generate their own questions?</td>
<td>4.14</td>
<td>0.00</td>
</tr>
<tr>
<td>#80 have students use a variety of problem-solving techniques?</td>
<td>4.53</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*p < .05
Both items pertaining to the area of student assessment showed a significant difference between responses from elementary teachers and elementary principals. A total of 94.9% of elementary teachers (with a mean of 4.66) said principals encouraged them to allow students to demonstrate knowledge in a variety of ways (item 56), but a full 100% of elementary principals (with a mean of 4.91) said they encouraged this practice to some or to a great extent. In addition, while 83% of elementary teachers (with a mean of 4.34) said principals encouraged them to diagnose students' needs prior to developing a lesson plan (item 70), 95.7% of elementary principals (with a mean of 4.74) said they encouraged this practice to some or to a great extent, as illustrated in Table 22.
Table 22

Results Summary for Elementary Teacher and Principal Groups: Area of Student Assessment

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#56* allow students to demonstrate knowledge in a variety of ways?</td>
<td>4.66</td>
<td>1.70</td>
</tr>
<tr>
<td>#70* diagnose students' needs prior to developing a lesson plan?</td>
<td>4.34</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>*p&lt;.05</td>
<td></td>
</tr>
</tbody>
</table>
Results from the sub-group of elementary teachers and principals proved to be different from the results of the combined group of teachers and principals. Unlike the combined group of teachers and principals, elementary teachers and principals generally agreed on the level of encouragement given by the principal regarding most research-based practices. In fact, in the area of delivery of instruction, no significantly different responses were found, suggesting that, for the most part, elementary teachers and principals agreed principals encouraged these types of research-based practices to some or to a great extent.

**Instructional Practices: Secondary Teacher and Principal Responses**

A total of 78 secondary teachers and 31 secondary principals composed the sub-group of secondary educators. The t-test results for secondary teachers and principals are displayed in Appendix XI, and items that addressed instructional practices and were significantly different are also displayed.

Table 23 demonstrated that one NR-item resulted in a significant difference between secondary teacher and secondary principal responses. A total of 65.8% of secondary teachers (with a mean of 3.63) said principals encouraged the practice of teaching the designated grade-level curriculum (item 69) either to some or to a great extent. An even higher percentage of principals, 86.7% (with a mean of 4.27), said they encouraged teachers to follow this practice to the same extent.
Table 23

**Results Summary for Secondary Teacher and Principal Groups: Non-Research-Based Instructional Practices**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#60 focus on competition in the classroom?</td>
<td>2.62</td>
<td>25.60</td>
</tr>
<tr>
<td>#64 group students by ability?</td>
<td>2.81</td>
<td>17.90</td>
</tr>
<tr>
<td>#69* teach the designated grade-level curriculum to all students?</td>
<td>3.63</td>
<td>9.20</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#82 drill on specific test objectives?</td>
<td>3.29</td>
<td>12.80</td>
</tr>
<tr>
<td>#83 have students practice taking standardized tests?</td>
<td>3.39</td>
<td>9.10</td>
</tr>
</tbody>
</table>

*p<.05
In the area of instructional planning, responses indicated a significant difference for one item, as shown in Table 24. Only 68.9% of secondary teachers (with a mean of 3.83) said principals encouraged them to be flexible in their grouping strategies (item 71), but 90% of secondary principals (with a mean of 4.33) said they encouraged this practice to some or to a great extent.
Table 24

*Results Summary for Secondary Teacher and Principal Groups: Area of Instructional Planning*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#23 use a specific sequence of instructional activities?</td>
<td>3.77</td>
<td>15.40</td>
</tr>
<tr>
<td>#65 use heterogeneous grouping?</td>
<td>3.45</td>
<td>7.80</td>
</tr>
<tr>
<td>#66 begin instruction where students' abilities indicate?</td>
<td>3.81</td>
<td>2.60</td>
</tr>
<tr>
<td>#67 be flexible with instructional time?</td>
<td>3.92</td>
<td>2.60</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#71* be flexible with their grouping strategies?</td>
<td>3.83</td>
<td>6.50</td>
</tr>
<tr>
<td>#74 teach students according to their interests?</td>
<td>3.27</td>
<td>9.00</td>
</tr>
<tr>
<td>#76 consider product, content, environment?</td>
<td>3.77</td>
<td>7.80</td>
</tr>
<tr>
<td>#81 address multiple intelligences?</td>
<td>4.21</td>
<td>2.60</td>
</tr>
<tr>
<td>#84 reflect on their teaching practices?</td>
<td>4.26</td>
<td>2.60</td>
</tr>
</tbody>
</table>

* p < .05
Similar to the responses from the combined group of teachers and principals, a number of significantly different responses appeared between secondary teachers and principals in the area of delivery of instruction. Responses to six of the eight items in the area of delivery of instruction proved to be significantly different between these two groups. Only 43.6% of secondary teachers (with a mean of 3.14) said principals encouraged the practice of linking student emotions to learning (item 61), yet 64.6% of secondary principals (with a mean of 3.65) said they encouraged the same practice to some or to a great extent. While 71.5% of secondary teachers (with a mean of 3.95) said principals encouraged them to show empathy to students' frustration by clarifying instruction (item 68), an overwhelming majority of principals, 93.5% (with a mean of 4.48) said they encouraged this practice. While a higher percentage of secondary teachers, 83.3% (with a mean of 4.17), said principals encouraged them to link past knowledge to present learning (item 73), an even higher percentage of secondary principals, 96.8% (with a mean of 4.68), said they encouraged this practice to some or to a great extent.

A total of 82.1% of secondary teachers (with a mean of 4.19) said principals encouraged them to use clear and consistent language when delivering instruction (item 77) either to some or to a great extent, yet 96.7% of secondary principals (with a mean of 4.63) said they encouraged teachers to follow this practice to the same extent. Of the secondary teachers surveyed, 83.3% of them (with a mean of 4.33) said principals encouraged them to try new approaches in the classroom (item 78) to some or to a great extent, but 96.8% of secondary principals (with a mean of 4.68) said they encouraged this practice to
the same extent. Finally, a high percentage of secondary teachers, 77% (with a mean of 4.00), said principals encouraged them to pace instruction based on students' needs (item 79), but a much higher percentage of secondary principals, 96.8% (with a mean of 4.42), said they encouraged this practice either to some or to a great extent. Table 25 helps to illustrate these results.
Table 25

Results Summary for Secondary Teachers and Principal Groups: Area of Delivery of Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Score</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#61* link student emotions to learning?</td>
<td>3.14</td>
<td>7.70</td>
</tr>
<tr>
<td></td>
<td>24.40</td>
<td>24.40</td>
</tr>
<tr>
<td></td>
<td>33.30</td>
<td>10.30</td>
</tr>
<tr>
<td></td>
<td>3.65</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>12.90</td>
<td>19.40</td>
</tr>
<tr>
<td></td>
<td>45.20</td>
<td>19.40</td>
</tr>
<tr>
<td>#62 deliver instruction through lecture?</td>
<td>2.37</td>
<td>3.80</td>
</tr>
<tr>
<td></td>
<td>23.10</td>
<td>28.20</td>
</tr>
<tr>
<td></td>
<td>14.10</td>
<td>3.30</td>
</tr>
<tr>
<td></td>
<td>2.47</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>43.30</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>23.30</td>
<td>3.30</td>
</tr>
<tr>
<td>#63 have students participate in peer teaching?</td>
<td>3.63</td>
<td>6.40</td>
</tr>
<tr>
<td></td>
<td>10.30</td>
<td>17.90</td>
</tr>
<tr>
<td></td>
<td>44.90</td>
<td>20.50</td>
</tr>
<tr>
<td></td>
<td>3.74</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>22.60</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>45.20</td>
<td>29.00</td>
</tr>
<tr>
<td>#68* show empathy by clarifying instruction?</td>
<td>3.95</td>
<td>1.30</td>
</tr>
<tr>
<td></td>
<td>11.70</td>
<td>15.60</td>
</tr>
<tr>
<td></td>
<td>33.80</td>
<td>37.70</td>
</tr>
<tr>
<td></td>
<td>4.48</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>6.50</td>
</tr>
<tr>
<td></td>
<td>38.70</td>
<td>54.80</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#73* link past knowledge to present learning?</td>
<td>4.17</td>
<td>3.80</td>
</tr>
<tr>
<td>#77* use clear and consistent language?</td>
<td>4.19</td>
<td>3.80</td>
</tr>
<tr>
<td>#78* try new approaches in the classroom?</td>
<td>4.33</td>
<td>1.30</td>
</tr>
<tr>
<td>#79* pace instruction based on students' needs?</td>
<td>4.00</td>
<td>1.30</td>
</tr>
</tbody>
</table>

*p<.05
According to the data shown in Table 26, in the area of students’ thinking processes and skills, as in the area of delivery of instruction, secondary teachers and secondary principals once again differed significantly in their responses. Only 58.5% of secondary teachers (with a mean of 3.49) said principals encouraged them to teach students to look for patterns (item 55), but 80.7% of secondary principals (with a mean of 4.06) said they encouraged teachers to follow this practice. While only 68% of secondary teachers (with a mean of 3.71) said principals encouraged them to teach students how to generalize information (item 57), 90.4% of principals (with a mean of 4.32) said they encouraged teachers to do the same. According to 71.5% of secondary teachers (with a mean of 3.86), teaching students to work on interdependence (item 58) was said to be encouraged by principals to some or to a great extent, yet 100% of secondary principals (with a mean of 4.58) said they encouraged this practice to the same degree. A total of 70.5% of secondary teachers (with a mean of 3.81) said principals encouraged them to teach practice to mastery (item 59). When asked the extent to which they encouraged this practice, 90% of secondary principals (with a mean of 4.37) said they encouraged it to some or to a great extent. Finally, 84.7% of secondary teachers (with a mean of 4.27) said principals encouraged them to have students use a variety of problem-solving techniques (item 80), but an even greater percentage of secondary principals, 96.8% (with a mean of 4.65) said they encouraged the same.
Table 26

Results Summary for Secondary Teacher and Principal Groups: Area of Students’ Thinking Processes and Skills

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score % None</td>
<td>% Slight % N/A % Some % Great</td>
</tr>
<tr>
<td>#54 teach students to reflect on learning?</td>
<td>4.12 2.60 10.40 5.20 36.40 45.50</td>
<td>4.42 3.20 3.20 0.00 35.50 58.10</td>
</tr>
<tr>
<td>#55* teach students to look for patterns?</td>
<td>3.49 7.80 18.20 15.60 33.80 24.70</td>
<td>4.06 0.00 9.70 9.70 45.20 35.50</td>
</tr>
<tr>
<td>#57* teach students how to generalize information?</td>
<td>3.71 7.70 12.80 11.50 37.20 30.80</td>
<td>4.32 0.00 3.20 6.50 45.20 45.20</td>
</tr>
<tr>
<td>#58* teach students to work on interdependence?</td>
<td>3.86 6.50 9.10 13.00 35.10 36.40</td>
<td>4.58 0.00 0.00 0.00 41.90 58.10</td>
</tr>
<tr>
<td>To what extent are teachers encouraged to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#59* teach practice to mastery?</td>
<td>3.81</td>
<td>6.40</td>
</tr>
<tr>
<td>#75 have students generate their own questions?</td>
<td>3.67</td>
<td>5.10</td>
</tr>
<tr>
<td>#80* have students use a variety of problem-solving techniques?</td>
<td>4.27</td>
<td>2.60</td>
</tr>
</tbody>
</table>

*p<.05
In the area of student assessment, only item 56 resulted in a significantly different response. While 87.1% of secondary teachers (with a mean of 4.35) said principals encouraged them to allow students to demonstrate knowledge in a variety of ways (item 56), 100% of secondary principals (with a mean of 4.84) said they encouraged this practice to some or to a great extent, and Table 27 displays those results.
Table 27

Results Summary for Secondary Teacher and Principal Groups: Area of Student Assessment

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent do you encourage teachers to...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#56* allow students to demonstrate knowledge in a variety of ways?</td>
<td>4.35</td>
<td>3.80</td>
</tr>
<tr>
<td>#70 diagnose students' needs prior to developing a lesson plan?</td>
<td>3.70</td>
<td>6.50</td>
</tr>
</tbody>
</table>

*p<.05
Secondary teachers and principals agreed on fewer items than their elementary counterparts. Results suggested that, unlike the elementary teacher and principal sub-group, secondary teachers and principals were less likely to agree on the extent to which principals encouraged many instructional practices. Of the seven items regarding students' thinking skills and processes, secondary teacher and principal responses differed significantly on five of those items. Furthermore, there was little agreement between secondary teachers and principals on the extent to which principals encouraged practices pertaining to the area of delivery of instruction. Results indicated that six of the eight items in this area proved to be significantly different. In light of these findings, secondary teachers and principals tended to disagree more often than their elementary counterparts on the extent to which principals encouraged research-based practices.

**Decision-Making Practices: All Teacher and Principal Responses**

To better understand the extent to which outside entities influence decision-making practices of teachers and principals in regards to instruction, and to better understand the sources from which principals and teachers draw information when making decisions regarding instruction, DM-Items 11 and 39-44 on the questionnaire were composed. Item 11 asked respondents to indicate the extent to which each of them made decisions regarding instruction based on the influences of outside entities (such as No Child Left Behind Act, state mandates, district regulations, immediate supervisor directives). Items 39-44 asked them to indicate the extent to which each of them used the following resources when making decisions regarding instruction: reflection on past teaching practices.
(item 39), experiences from past teaching practice (item 40), information from undergraduate education (item 41), information from graduate education (item 42), information from professional organizations (item 43), information from current research on effective instruction (item 44).

Tables 28, 29, and 30, found in the pages that follow, display the percentages of teachers and principals that make decisions regarding instruction based on the influences of outside entities (item 11) at the combined elementary and secondary levels, at the elementary level, and at the secondary level. The tables also display the extent to which both teachers and principals from each of the three groups use certain resources when making decisions regarding instruction (DM-items 39-44). Any significant differences in responses between teacher and principal responses are noted in individual tables and discussed in the narrative that precedes each table.

Of the seven DM-items regarding decision-making practices (items 11 and 39-44), the highest level of agreement existed for item 11 when surveying the combined group of teachers and principals. A total of 89% of all teachers (with a mean of 4.32) said they were influenced by outside entities when making decisions regarding instruction, and 92.6% of all principals (with a mean of 4.39) indicated they were influenced by outside entities to some or to a great extent.

A significant difference between responses from teachers of the combined group of elementary and secondary teachers and their principals existed in four of the seven items. Responses to DM-items 39, 40, 43, and 44 indicated a significant difference among the 137 teachers and 54 principals surveyed.

Reflection on past teaching practice (item 39) and experience from past teaching
practice (item 40) were used to some or to a great extent by 94.9% of all teachers (with a mean of 4.66) and 95.6% of all teachers (with a mean of 4.70), respectively. A total of 90.7% of all principals (with a mean of 4.33), on the other hand, indicated they used reflection on their past teaching practice (item 39) to some or to a great extent, and 90.7% of all principals (with a mean of 4.28) used the experience of their past teaching practice (item 40) to the same extent.

DM-items 43 and 44 were also significantly different. Table 28 demonstrates only 65% of all teachers surveyed (with a mean of 3.66) said they used information from their professional organizations when making decisions regarding instruction (item 43) as compared to 98.2% of the principals surveyed (with a mean of 4.48) who said they used information from the same source in their decision-making practices to some or to a great extent. When asked the extent to which teachers used information from current research on effective instruction (item 44), 89% of all teachers (with a mean of 4.39) said they used it to some or to a great extent and 8% to a slight extent or not at all. However, 98.1% of all principals (with a mean of 4.78) indicated they used information from current research on effective instruction to some or to a great extent, with the other 1.9% of all principals indicating no opinion to item 44.
Table 28

Results Summary for Teacher and Principal Groups: Decision-Making Regarding Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>All Teachers</th>
<th>All Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>To what extent do you...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#11 make decisions based on the influences of outside entities?</td>
<td>4.32</td>
<td>2.20</td>
</tr>
<tr>
<td>#39* reflect on your past teaching practices?</td>
<td>4.66</td>
<td>0.00</td>
</tr>
<tr>
<td>#40* use experiences from your past teaching practice?</td>
<td>4.70</td>
<td>0.00</td>
</tr>
<tr>
<td>#41 use information from your undergrad education?</td>
<td>3.22</td>
<td>9.50</td>
</tr>
<tr>
<td>To what extent do you...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#42 use information from your graduate education?</td>
<td>3.85</td>
<td>4.40</td>
</tr>
<tr>
<td>#43* use information from your professional organization(s)?</td>
<td>3.66</td>
<td>5.80</td>
</tr>
<tr>
<td>#44* use information from current research on effective instruction?</td>
<td>4.39</td>
<td>.70</td>
</tr>
</tbody>
</table>

*p < .05
In addition to being asked the extent to which their undergraduate and graduate education programs were used when making decisions regarding instruction, teachers and principals were asked to cite strengths and weaknesses of their undergraduate and graduate education programs in open-ended questions. Of the teachers who responded, 15% indicated one weakness in their teacher preparation program had been not enough time in the classroom. Furthermore, while 15% of the teachers said a variety of instructional techniques and strategies were strengths in their teacher preparation program, 17% of the teachers who responded cited a lack of variety in instructional techniques and strategies taught in their programs.

When asked to cite the weaknesses and strengths of their administrative preparation programs in the open-ended questions on the questionnaire, 16% of all principals cited a lack of focus on instruction and instructional leadership, and 33% cited a lack of practical experience. As strengths in their administrative preparation programs, 13% of principals cited school law and finance and 13% cited leadership skills (including culture building and vision building).

Although teachers and principals did not always agree on the resources they used to make decisions regarding instruction, they did agree they were influenced to some or to a great extent by outside entities, suggesting their decisions were influenced by more than their past experiences or their current knowledge of research-based instruction.

**Decision-Making Practices: Elementary Teacher and Principal Responses**

When divided into the sub-group of elementary teachers and elementary principals, the responses that were significantly different between elementary
teachers and elementary principals were those responses to DM-items 40, 41, 43, and 44, differing slightly from those that were significantly different between the combined group of teachers and principals and the sub-group of secondary teachers and principals. According to the data in Table 29, experiences from past teaching practice were said to be used as resources when making decisions regarding instruction (item 40) by 94.8% of elementary teachers (with a mean of 4.72), and 91.3% of elementary principals (with a mean of 4.39). Information from undergraduate education programs (item 41) was used to some or to a great extent by 52.5% of elementary teachers (with a mean of 3.19), while only 21.7% of elementary principals (with a mean of 2.43) used their undergraduate education programs as a resource when making decisions regarding instruction. Information from professional organizations (item 43) was used to some or to a great extent by only 54.2% of elementary teachers (with a mean of 3.36) compared to 100% of elementary principals (with a mean of 4.52) who said they used such information as a resource. While the percentage of elementary teachers who used information from current research in their decision-making (item 44) increased to 91.5% (with a mean of 4.41), a total 100% of the elementary principals (with a mean of 4.87) said they used the same resource to some or to a great extent.
Table 29

Results Summary for Elementary Teacher and Principal Groups: Decision-Making Regarding Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Elementary Teachers</th>
<th>Elementary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>#11 make decisions based on the influences of outside entities?</td>
<td>4.17</td>
<td>1.70</td>
</tr>
<tr>
<td>#39 reflect on your past teaching practices?</td>
<td>4.71</td>
<td>0.00</td>
</tr>
<tr>
<td>#40* use experiences from your past teaching practice?</td>
<td>4.72</td>
<td>0.00</td>
</tr>
<tr>
<td>#41* use information from your undergrad education?</td>
<td>3.19</td>
<td>8.50</td>
</tr>
<tr>
<td>To what extent do you...</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#42 use information from your graduate education?</td>
<td>3.91</td>
<td>3.40</td>
</tr>
<tr>
<td>#43* use information from your professional organization(s)?</td>
<td>3.36</td>
<td>8.50</td>
</tr>
<tr>
<td>#44* use information from current research on effective instruction?</td>
<td>4.41</td>
<td>1.70</td>
</tr>
</tbody>
</table>

*p < .05
Responses from the sub-group of elementary teachers and principals suggested both teachers and principals alike are influenced to some or to a great extent by outside entities in their decision-making practices. This sub-group, like the combined group of teachers and principals, demonstrated they relied heavily on their current knowledge of research-based practices or past teaching experience when making decisions regarding instruction.

**Decision-Making Practices: Secondary Teacher and Principal Responses**

Responses to decision-making items gathered from the sub-group of secondary teacher and principals were very similar to those gathered from the collective group of teachers and principals. An analysis of the results proved that responses to items that were significantly different between teacher and principal responses in the combined group of educators were also significantly different between teacher and principal responses in the sub-group of secondary educators. Table 30 illustrates the results.

DM-items 39, 40, 43, and 44 indicated a significant difference in responses given by secondary teachers and secondary principals. When asked the extent to which reflection on past teaching practices was used as a resource for making decisions regarding instruction (item 39), 94.8% of secondary teachers (with a mean of 4.62) and 87.1% of secondary principals (with a mean of 4.19) said it was used to some or to a great extent. Experience from past teaching practice (item 40) was also used by a great percentage of secondary teachers, with 96.2% of them (with a mean of 4.68) indicating they used their past teaching practice to some or to a great extent compared to 90.3% of secondary principals (with a mean of 4.19) who said they did the same.
When asked the extent to which information from professional organizations (item 43) and information from current research on effective instruction (item 44) were used as resources when making decisions regarding instruction, the difference between secondary teacher responses and secondary principal responses was even greater. Only 73.1% of secondary teachers (with a mean of 3.88) said they used information from professional organizations to make decisions regarding instruction (item 43), whereas 96.8% of secondary principals (with a mean of 4.45) said they used information from their professional organizations in the same manner. While only 87.2% of secondary teachers (with a mean of 4.38) said they used information from current research on effective instruction when making decisions regarding instruction (item 44), 96.8% of secondary principals (with a mean of 4.71) said they used such information as a resource for decision-making to some or to a great extent.
Table 30

Results Summary for Secondary Teacher and Principal Groups: Decision-Making Regarding Instruction

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Secondary Teachers</th>
<th>Secondary Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score % None % Slight % N/A % Some % Great</td>
<td>Mean Score % None % Slight % N/A % Some % Great</td>
</tr>
<tr>
<td>To what extent do you...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#11 make decisions based on the influences of outside entities?</td>
<td>4.44</td>
<td>2.60 0.00 3.90 37.70 55.80</td>
</tr>
<tr>
<td>#39* reflect on your past teaching practices?</td>
<td>4.62</td>
<td>0.00 2.60 2.60 25.60 69.20</td>
</tr>
<tr>
<td>#40* use experiences from your past teaching practice?</td>
<td>4.68</td>
<td>0.00 2.60 1.30 21.80 74.40</td>
</tr>
<tr>
<td>#41 use information from your undergrad education?</td>
<td>3.24</td>
<td>10.30 29.50 6.40 33.30 20.50 3.06 19.40 19.40 6.50 45.20 9.70</td>
</tr>
<tr>
<td>To what extent do you . . .</td>
<td>Mean Score</td>
<td>% None</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>#42 use information from your graduate education?</td>
<td>3.81</td>
<td>5.20</td>
</tr>
<tr>
<td>#43* use information from your professional organization(s)?</td>
<td>3.88</td>
<td>3.80</td>
</tr>
<tr>
<td>#44* use information from current research on effective instruction?</td>
<td>4.38</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*p<.05
Secondary teachers and principals differed significantly in the extent to which they used their past teaching practices and current information on research-based practices. However, both secondary teachers and secondary principals, like their elementary counterparts, indicated they were influenced either to some or to a great extent by outside entities. This, once again, suggested the instructional practices of teachers and principals were not solely determined by their knowledge of research-based practices but also by the influences of outside entities.

**Research Question Three**

Research question three sought to find the prominent practices of principals when applying their pedagogical knowledge during their supervision of teachers. To answer this question, qualitative measures were employed. Participants were interviewed and data were collected and recorded from responses during those follow-up interviews to create a clearer picture of the practices of principals during their supervision of teachers.

A semi-structured interview was developed to probe more deeply into the practices of principals when applying their pedagogical knowledge during their supervision of teachers. One elementary teacher, three secondary teachers, two elementary principals, and one secondary principal were selected from the list of volunteers to participate in the interview process. The results from these interviews are described below.

Teachers were asked to describe their principals' philosophy of classroom instruction. Responses did not vary greatly from teacher to teacher. Most responses indicated a philosophy that focused on an interactive, student-
centered approach to learning. The first teacher's response (T1) exemplified the consensus of all four teachers when she said the principal made a "real emphasis on student-centered learning". According to T1, the principal's focus was on "active participation, students as leaders, teaching kids how to work in groups", and this focus was very similar to the ones expressed by two other teachers asked to describe their principals' philosophy of classroom instruction. Most teachers also described an emphasis on providing opportunities across the curriculum and on working towards common assessments school wide.

Only one response described the principal's focus as meeting standards and objectives through testing. Teacher 2 (T2) said the principal wanted his teachers to "teach to the standards" and wanted teachers to "find out what students are to be tested on, then create a good test and test to it." This was the only response to a principal's philosophy that did not exemplify the same student-centered approach to instruction.

Principals asked to describe their philosophy of classroom instruction were also in agreement. Furthermore, principals were able to articulate their philosophy of instruction by often citing specific names of authors and their frameworks to support their philosophy of instruction. Although each of the three principals named specific and differing authors and frameworks to describe their philosophy of classroom instruction, the overall approach of all three principals was one of openness. All three principals remained open to allowing teachers to try the approaches that best suited them. The first principal (P1), exemplified the approaches of all the other principals when she said she took an "eclectic approach", saying teachers and students learn and teach differently. "How they
(teachers) teach is up to them," she said. She also stated that "if you just teach one way, you're going to lose some of your kids."

This philosophy seemed to permeate the practices of other principals as they all agreed they did not dictate a particular instructional theory but were open to any theory of instruction. According to P2, as long as it "fits their (the teachers') teaching style, or subject area, or their students that they've got in the classroom and it's being used appropriately", she felt it best to remain open to many theoretical frameworks as she had a staff between "23-60 years old" that was trained in "Dimensions of Learning, Madeline Hunter, Piaget, basically all over the map" in terms of theoretical frameworks. All principals agreed that the goal was to teach "deep and not wide", as noted by P3, and the approaches, as long as they followed a logical sequence, could not be dictated by the principal.

When asked what their supervisor looked for when observing in a classroom, the four teachers did not always agree and offered several different factors. For example, T1 said, "There is a whole check list she (the principal) goes over." A few examples were given, such as student engagement, teacher engagement, class participation, enthusiasm, safe environment, and student work on the walls. Still, T2 said his principal observed "behavior and behavior modification" but offered no details about other factors during the observation of his teaching. Another teacher, T3, stated the evidence of learning the principal points to when discussing the lesson of the observation is the "actual student outcome as in their finished artwork", and this serves as a "concrete, visual example of objectives met or not met." T4 offered a different response, saying the principal used a district guideline and a student guideline whose elements
would be “related to our common assessments that we have and also our ESLR’s (Expected Schoolwide Learning Results).” No overriding theme was present in the answers given by the four teachers during the interview.

Principals, however, were able to elaborate on what they specifically looked for when observing in a classroom, and all spoke to logical sequence in instruction and active participation of students. P1 said she looked for “E.E.I. (Essential Elements of Instruction).” She wanted to see “student interaction” where there were a lot of opportunities for students to be “active in that lesson” so “teachers aren’t doing all the work.” She also liked to see “chunking” done where there are several places in the lesson where the teacher “checks for understanding” to make sure students are not lost during the lesson. P2 was also able to articulate in detail the elements she looked for when observing in a classroom. She said she looked for “the components of effective instruction.” She wanted teachers to “get constant feedback from students during the entire lesson so instruction is adjusted accordingly, so they know when and how to proceed, so they are getting accurate feedback that students are with them in the learning activity.” P3 said she looked for student engagement, active student engagement, differentiated instruction, whether there is “an alignment with instruction and assessment... lesson sequence... whether or not the lesson presented reflects the (State) curriculum standards... small grouping... teacher-directed or student-involved.”

When asked to describe the principals’ role in the improvement of student achievement, teachers interviewed did not see their principals’ role as a direct one, but rather noted the areas where their principals seemed to make some
difference. Three of the four teachers interviewed noted their principals' role in the improvement of student achievement came through providing staff with professional development. Two of the four teachers also noted their principals were good at delegating and that through delegation the principal's role in the improvement of student achievement was evident. T3 said his principal demonstrated the "power to delegate" when forming committees to look at addressing student issues, and T4 said her principal was good at "delegating" and getting "strong leaders" from the staff to make improvements.

In contrast to teacher responses, all three principals interviewed felt their role in the improvement of student achievement was an active one. P1 noted her role in looking at student grades to determine which students needed counselor intervention and which teachers needed assistance. She also organized teachers to volunteer two nights per quarter to tutor those in need. P2 saw herself as the "point person" who organized staff development, data analysis, the School Improvement Team, integrated studies, organization of "houses", and other activities to improve instruction. P3 stressed the importance of "being visible in the classroom" and "taking an active role in the instructional process", giving the examples of asking the students questions about their assignments and what they were working on, and looking at student assessments and sample work. She further stated, "If I expect it, I need to inspect for it, too."

Teachers were divided on the effect principals had on student achievement. T1 said, "Teachers have a huge effect", although he thought, to the extent the principal offered support in professional development and materials, she played an important part, also. T2 believed his principal had a
"large effect" noting his principal was "very involved, teaching us how to make a
difference, helping us to analyze data." T3, however, said he was "not certain
he (the principal) has that much direct influence." Although he saw his principal
as visible and supportive of staff, he questioned if the principal could "instill
intrinsic motivation" needed for achievement. And T4 said she did not know if the
principal had a "main effect", only that it was definitely a "school joint effort"
among all groups.

However, when principals were asked the extent to which they had an
effect on student achievement, all principals replied similarly and enthusiastically.
P1 replied, "100%", and noted the expectations she set, the materials and
training she provided teachers, the support for new programs and ideas as key to
having an effect on student achievement. P2 believed she had "a huge effect on
student achievement" because she controlled "who's hired, when they teach,
what those classes are, what resources those classes are given, what training
those teachers have, the discipline or lack of interruption (in the classroom)." P3
said the "teacher is key, but without a supportive administration and the
expectations being set, I don't think you can separate the two." She added, "I
don't think you can say that the principal is more important than the teacher, but I
certainly think the two have to work together. You can have the best teacher in
the world and if you don't have that administrative support, it's difficult."

For the most part, teachers felt their principals were very prepared to
affect student achievement. Three of the four teachers interviewed said their
principals were very prepared to affect student achievement, describing their
principals as "incredibly knowledgeable" (T1), "very prepared, very prepared,
100% prepared" (T2), and "highly prepared" (T3). Only T4 said she was not aware of the preparation her principal had undergone to do his job.

When asked the same question regarding preparedness to affect student achievement, all three principals felt they were extremely prepared for the job and noted their involvement in outside organizations and other training as factors to their preparedness and success. All three principals cited the importance of interacting with other principals and attending conferences. In addition, they cited their graduate programs as having excellent field people as professors and credited their professional organizations (such as the Association for Supervision, Curriculum, and Development) as being excellent resources to help them with data analysis, current research, and other professional duties.

Teachers did not always agree on the specific role of the principal. All four teachers cited a variety of roles they thought were the primary responsibility of the principal, yet none of the four teachers interviewed cited instruction as the primary responsibility of the principal. While some, like T1, thought the role of the principal was to "make sure the school runs efficiently and effectively", others, like T2, stated principals had a great deal of responsibility concerning the financial needs of the school and the organizational needs of the office. Regarding instruction, the principal's responsibility, according to T2, was to provide faculty opportunities to become better at teaching, especially during a time when a teacher can lose a job based on scores. Furthermore, T3 described his principal's primary responsibility as a "managerial one", naming what the other three teachers had in essence described. Furthermore, the principal was seen as a delegator and one responsible for encouraging "the right atmosphere
and culture, involving all stakeholders" (T4), but not once was the principal credited as having student achievement as his/her primary responsibility.

In contrast to the teacher responses, when asked what their primary responsibility was, principals fully agreed that student achievement was an important responsibility they assumed. P1 said "safety is my number one" and "number two is to make sure all students are achieving." P2 succinctly replied, "To create a culture that enables, encourages, fosters, and supports growth for everyone (emphasized)." Finally, P3 added her primary responsibility was to "raise student achievement" and "make sure no child is left behind." The consensus among principals was that the principal carried a large burden of the responsibility for student achievement and that the responsibility for student achievement was an integral part of the job.

While the four teachers interviewed demonstrated respect for their principals, they did not always see the principal as an integral part of the instructional process. In fact, the evidence from the interviews demonstrated that teachers saw their principals as knowledgeable people with certain necessary managerial skills necessary to create an efficient working environment and a positive learning environment, but that, nonetheless, these principals were not the catalysts for improving student achievement, nor were they the responsible ones for improving student achievement. Rather, these teachers believed it was the classroom teacher that made the necessary decisions in the classroom that led to the improvement of student achievement.

Principals, on the other hand, saw themselves as knowledgeable in the field of instruction and capable of observing teachers and helping them improve
in their instructional techniques. They also saw themselves as instructional leaders, with a primary responsibility to the improvement of student achievement, and a secondary responsibility to the working environment of their schools. Throughout the interviews of both groups, there existed evidence of two opposing views of the roles and responsibilities of principals.

Summary

In general, principals seemed to be knowledgeable regarding research-based instructional practices. Responses demonstrated principals identified many research-based instructional practices and often encouraged these practices to some or to a great extent. There were, however, certain responses that suggested principals sometimes encouraged conflicting practices, which questioned principals' ability to identify and implement research-based practices.

An analysis of teacher and principal responses suggested differences in the perceptions of teachers and principals regarding the instructional practices of principals and the role of the principal in the improvement of student achievement. While teachers generally agreed principals were knowledgeable in the area of instructional practices, they did not always agree on the extent to which principals encouraged certain research-based instructional practices. In particular, secondary teachers and principals seemed to disagree on the extent to which principal encouraged many of the instructional practices in the area delivery of instruction. Elementary teachers, on the other hand, were more apt to agree with principals' perceptions of the extent to which they encouraged teachers to follow research-based practices.
Responses from teachers and principals also suggested differences in the perception teachers and principals had regarding the role of the principal and the effect of the principal on the improvement of student achievement. While teachers suggested the role of the principal was to support and manage staff and facilities, principals saw themselves as active participants in the improvement of student achievement. They also indicated their primary responsibility to be the improvement of student achievement.

Teachers and principals did agree, however, that outside entities influenced their decisions regarding instruction to some or to a great extent. This agreement suggested that decisions regarding instruction were not always based on research.
CHAPTER 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Introduction

The purpose of this study was to determine principals' pedagogical knowledge of research-based instructional strategies that improve student achievement. In addition, the study examined principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

This study looked at the practices of principals by examining three related areas. First, the work outlined which research-based instructional practices have shown to be most successful. Second, it sought to determine the depth of principal knowledge regarding research-based instructional practices. Third, the study sought to determine the degree of principals' pedagogical knowledge in their supervisory practices.

Furthermore, this study used three research questions upon which to center its investigation of principal practices. The answers to these research questions were used to determine the perceived and actual pedagogical knowledge base of principals, the extent to which principals encouraged particular research-based practices, and the prominent practices of principals when applying their pedagogical knowledge during their supervision of teachers.
The No Child Left Behind Act of 2001 [NCLB], strives to "close the achievement gap with accountability, flexibility, and choice, so that no child is left behind" (NCLB, 2001). The principal of today is seen as the instructional leader of the school site, which is today viewed by much of the research as the unit responsible for the initiation of change, and not just the implementation of changes conceived by others, as was the predominant view during the 1970's and 1980's (Hallinger, 1992; Hill, 2001; Southworth, 2002). It will become increasingly more important, then, for the principal to be well-versed in and to encourage the most effective research-based instructional practices if schools of tomorrow are going to meet the expectations of federal law and public opinion. It is for this reason that a deeper investigation of the pedagogical knowledge base and instructional practices of principals was important to complete and report.

Research Methodology

The Instructional Leadership Inventory was developed in collaboration with two other doctoral students in order to gather data on teachers' and principals' perceptions regarding the instructional practices of principals from across the country. The questionnaire consisted of 10 demographic questions, 84 Likert-type scale items, and 11 open-ended questions (See Appendix I, Principal Survey and Appendix II, Teacher Survey). Of the 84 possible Likert-type scale items in each questionnaire, 32 items specifically related to the pedagogical knowledge base of principals and the instructional practices of principals, and seven items specifically related to the resources used by principals when making decisions regarding instruction. Responses to these items were recorded for the purposes of this study as they were the ones that

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specifically focused on instruction and items related to instruction. One questionnaire was administered to each of the 100 principals used in the study and to three teachers from each of the principals' schools.

Semi-structured telephone interviews were conducted as a secondary means of collecting teachers' and principals' perceptions as suggested by research (Merriam, 1998). An interview protocol was developed and followed to investigate further the research question of this study (See Appendix V.). A total of three principals and four teachers (two elementary principals, one secondary principal, one elementary teacher, and three secondary teachers) were randomly selected from a list of 32 volunteers. At the beginning of each interview, all participants were asked for their permission to be recorded, and all individuals granted the researcher permission to proceed. In addition, the confidentiality of each participant was cautiously guarded at all times, and participants were assured privacy during data collection and reporting.

Data collected from the questionnaire and the telephone interviews served to triangulate the data, thus strengthening the study (Creswell, 1994). Triangulation was used based on the presumption that existing biases may distort the researcher's picture of the particular piece of reality he/she seeks to study (Creswell, 1994; Gall, Borg, & Gall, 1996). The dominant-less dominant design, using the Instructional Leadership Inventory as the dominant instrument and the seven telephone interviews as the less-dominant method, provided the researcher the advantage of using one design to provide a consistent representation of the study while simultaneously gathering further detail by using another design (Creswell, 1994).
Prior to the official distribution of the questionnaire, a pilot study was conducted in the Clark County School District using a principal participant and three teacher participants from an elementary school, middle school, and high school campus. Each principal received a packet that included an introductory letter with instructions; three teacher questionnaires; a principal questionnaire; a blank sheet used for comments and suggestions; and a stamped, addressed return envelope for each participant. The principal was responsible for the distribution of these materials and the researcher was responsible for the collection of each completed questionnaire. The pilot resulted in a 100% return rate. No major changes were recommended by the participants. Only a typographical error was corrected.

An interview protocol was created, and the researcher conducted a pilot test of the telephone interview prior to beginning actual data collection. Two individuals from the elementary pilot group were called upon to answer interview questions. Confidentiality was again assured by the researcher. No major changes of the interview protocol were recommended by the participants at the end of the pilot interview.

After the pilot of the questionnaire and telephone interview, a three-stage process was used for mailing the questionnaire, as recommended by Creswell (1994) and Gall, Borg, and Gall (1996). A packet was sent to each of the principals on the NAESP and NASSP Principal of the Year List, 2004. The packet contained introductory letters with instructions on completing and returning the questionnaire; one principal questionnaire; three teacher
questionnaires; and stamped, self-addressed envelopes for each participant to use upon completion.

Discussion of Findings

The principal's role in public education has undergone many significant changes in perception and in scope over the last one hundred years. Unlike the predominant views between the 1920's and 1970's which saw the principal as an administrative manager (Hallinger, 1992; Tyack, 1990), the principal of today is expected both by the general public and by federal legislation to be much more than that (Brookover & Lezotte, 1979; Hallinger & Wimpelberg, 1992; King, 2002; NCLB, 2001). Today, the role of principal has expanded to include a larger focus than simply managing the status quo (King, 2002). The principal must concern him/herself with curriculum and instruction, professional development, data-driven decision making, and accountability (King, 2002; Wiles & Bondi, 1996). Along with these responsibilities, the principal must also promote a positive culture, encourage collaboration, problem-solve with staff, and create a vision for the future (Bennis, 1984; Deal & Peterson, 1992; Sashkin, 1993; Sergiovanni, 1984, 1993); and, as he/she does so, that person must ultimately answer to the standards set forth by the recent federal legislation, Public Law 107-110 (NCLB, 2001).

Although the debate continues on the direct effects of the role of the principal on student achievement, there is little disagreement among researchers that principals do have an impact on the lives of teachers and students (Hallinger & Heck, 1996). In fact, researchers have determined that principals do have a
significant effect on student outcomes, even if in an indirect manner (Hallinger & Heck, 1996; Heck, Larson & Marcoulides, 1990).

If any real, significant changes are going to take place in today's classrooms, the principal of today must be ready to guide, facilitate and entrust staff to take the appropriate and effective risks (Blasé & Blasé, 1994, 1999). This study showed that principals, although seemingly well-versed in current research on instructional practices, still, sometimes, expressed conflicting views when asked specifically which research-based practices they encouraged teachers to follow.

Research Question One

Research question one sought to find the perceived and actual pedagogical knowledge base of today's principals. By and large, results indicated that principals encouraged many of the proven research-based instructional practices as outlined in the frameworks of the three authors used in this study. However, some of their answers contradicted the answers they gave regarding their encouragement of some of the non-research-based instructional practices included in the questionnaire. Furthermore, when interviewed, principals were able to identify research-based practices and name authors of frameworks that have proven to be well-known by educators and effective in the classroom, but, when surveyed, principals did not always demonstrate great support for certain research-based practices encouraged by the very authors they named in their interviews. It is the combination of these aforementioned findings that suggest discrepancies between the perceived and actual
pedagogical knowledge of principals about research-based instructional practices.

Some of today's most successful frameworks or teaching models have paid particular attention to the importance of a balanced approach to teaching, taking into consideration the whole child and the entire learning process, rather than simply the content or product (Costa & Kallick, 2000; Hunter, 1984, 1995; Marzano et al., 1988; Marzano, Pickering, & Pollock, 2001). Research has shown that such an approach has lasting results on the learner.

Principals in this study demonstrated they encouraged such a balanced approach. For example, results indicated 94.4% of all principals encouraged teachers to consider the multiple intelligences of their students, and 98.1% of them said they encouraged teachers to allow students to use a variety of problem-solving techniques. In fact, 100% of them said they encouraged teachers to allow students to demonstrate knowledge in a variety of ways.

Maker (1982) warned that no one model of teaching can be expected to be a comprehensive approach. In their quest to orchestrate the type of instruction that best fit students' needs, 98.1% of principals said they encouraged teachers to try new approaches. Principals' responses reflected the research that declared the most effective curriculum, using any of the research-based models available, is one in which attention is paid to four factors: content, process, product, and learning environment (Gallagher, 1975; Maker, 1982a, 1982b; Renzulli, 1977). As much as 74% of all principals said they encouraged teachers to consider those four factors to some or to a great extent. Also, a large
percentage of principals, 96.3%, encouraged teachers to reflect on their teaching practices, opening the door for more creative and effective teaching practices.

One area where principals demonstrated a lack of consistency was in their responses to the types of grouping strategies they encouraged. Research has proven that the most effective methods of teaching include an active learner (Costa & Kallick, 2000; Johnson & Johnson, 1999; Marzano, 1992; Tomlinson & Allen, 2000). To that end, cooperative learning and peer teaching strengthen a student's understanding and allow the student to participate in his/her learning more actively (Costa & Liebmann, 1997; Johnson & Johnson, 1999; Marzano, 1992). Principals encouraged heterogeneous groupings in large numbers, indicating their knowledge about and support for the current research on this instructional practice. In fact, 85.2% of all principals said they encouraged heterogeneous grouping to some or to a great extent. Elementary principals, in particular, encouraged this practice in even higher numbers, with 91.3% of them stating they encouraged their teachers to place students in heterogeneous groups during instruction. In addition, 96.3% of all principals said they encouraged teachers to teach students to work on interdependence, and 81.1% of all principals said they encouraged teachers to have students participate in peer teaching, as supported by the research (Johnson & Johnson, 1999; Marzano, Pickering, & Pollock, 2001).

In contrast to these results, however, 51.9% of the same principals surveyed said they encouraged homogeneous grouping, which directly contradicts the aforementioned results. In addition, almost half of all principals, 42.6%, said they encouraged teachers to group students by ability,
and slightly more than half of elementary principals, 52.2%, stated they encouraged teachers to follow this practice. If the practice of heterogeneous grouping and peer teaching is supported so enthusiastically by such an overwhelming majority of the principals surveyed, how can the practice of homogeneous grouping also be encouraged by more than half of the same principals? The disparate results demonstrate either a lack of commitment to the practice of heterogeneous grouping or a lack of understanding of the instructional practice of heterogeneous grouping.

Researchers have found that the most effective teacher is one who is prepared to identify the needs of his/her students and then use that information to formulate a balanced, multi-faceted approach as dictated by those needs (Engelmann & Carnine, 1982; Johnson & Johnson, 1999; Svinicki, 1998; Tomlinson, 1999; Wang, Haertel, & Walberg, 1993/1994). When asked the extent to which they encouraged teachers to begin instruction where students' abilities indicate, 90.7% of all principals said they encouraged this research-based instructional practice. An even higher percentage of elementary principals, 95.6%, said they encouraged this practice to some or to a great extent.

Although the vast majority of principals indicated they encouraged teachers to begin instruction where students' abilities indicate, secondary principals' results also indicated that 22.6% of them only slightly encouraged teachers to diagnose students' needs prior to developing a lesson plan. So, while 87.1% of secondary principals did encourage teachers to begin instruction where students' abilities indicate to some or to a great extent, only a little
more than one-fifth of them encouraged teachers to diagnose the needs of those students, a practice which would help predict students' ability levels. Either secondary principals do not understand the appropriate steps that need to be taken by teachers to begin instruction where students' abilities indicate, or they fail to understand the importance of diagnosing students' needs prior to beginning instruction.

A large number of principals also encouraged teachers to teach the designated grade-level curriculum to all students, a practice which is not specifically supported by research, and which is in contrast to the results that indicated the vast majority of principals encouraged teachers to begin instruction where students' abilities indicated. Of the combined group of elementary and secondary principals who participated in the survey, 79.3% of them said they encouraged teachers to teach the designated grade-level curriculum to all students, and secondary principals responded even more favorably to this practice, with 86.7% of them stating they encouraged teachers to follow this practice to some or to a great extent. Understandably, principals feel the need to have teachers maintain a certain pace with district and state curricula, but to encourage teachers to teach the designated grade-level curriculum to all students pre-supposes all students are ready for that curriculum, and that presupposition is in direct contrast to the research that supports differentiated instruction and consideration of the whole child and the entire learning process, rather than simply the content or product (Cost & Kallick, 2000; Hunter, 1984; Marzano et al., 1988; Marzano, Pickering & Pollock, 2001; Tomlinson, 1999; Tomlinson & Allen, 2000).
Two other important factors in effective research-based instruction are the practices of linking learning to emotions and linking learning to students' interests. The three frameworks used in this study, although at times very different in approach and focus, nonetheless are very similar in their support of linking student emotions to learning and to teaching students according to their interests. Each of the authors represented in this study outlined the importance of emotions and of student interests to the learning process, even when their approach to instruction seemed at first glance to be quite different from one another (Costa & Kallick, 2000; Costa & Garmston, 1997; Hunter, 1982, 1984; Marzano, 1992; Marzano, Pickering, & Brandt, 1990; Marzano, Pickering, & Pollock, 2001)

Principals' responses, however, did not reflect the importance given by the authors of these frameworks to these two instructional practices. Only 59.2% of all principals surveyed stated they encouraged teachers to link student emotions to learning to some or to a great extent, and 22.2% of all principals said they only encouraged this practice to a slight extent. A closer look at elementary principals revealed that elementary principals were even less likely to encourage the practice of linking student emotions to learning to some or to a great extent, as only 52.2% of them stated they encouraged their teachers to this extent, and 34.8% of them encouraged this practice only to a slight extent. Secondary principal responses did not indicate strong support either when their group was studied separately from their elementary counterparts. Although a slightly higher percentage of their members, 64.6%, stated they encouraged this practice to
some or to a great extent, 19.4% of their members had no opinion when asked to state their level of encouragement for this practice.

Principals from elementary and secondary schools alike did not demonstrate overwhelming encouragement for the practice of teaching students according to their interests, either. Only 72.2% of all principals said they encouraged teachers to teach students according to their interests to some or to a great extent. Again, principals were not as readily supportive of a practice that focuses primarily on the affective domain.

The lack of support by principals for these two instructional practices suggests principals' inability to identify these two research-based instructional practices as important pieces of effective instruction. Support by principals for the affective influences in learning is not as strong as support for adherence to mandated, grade-level curriculum. As such, principals cannot be said to be knowledgeable about all the components of effective, research-based instructional practices if they were not able to identify and encourage these two instructional practices that are widely supported in current literature.

Although during every interview principals identified and quoted the research-based work of specific authors used in this study and used the authors' findings to support the work they were performing at their schools, principals were not always able to identify particular elements of effective research-based instruction as outlined in the same authors' work they were quoting. Principals perceived themselves as knowledgeable in the research-based instructional strategies that improve student achievement. They were able to quote authors they admired and identify certain strategies they encouraged their teachers to
follow in the classroom. However, after studying the results from both the interviews and the surveys completed by principals, the conclusion from this study is that principals are more knowledgeable in the theory of research-based instruction than in the actual practice of research-based instruction, and, as such, are able to speak to the elements of instruction which are important in the improvement of student achievement but do not always encourage the elements of effective instruction in their everyday practices as principals.

Principals still seemed to be very much tied to the traditional mandates of instruction that call for teaching the grade-level curriculum to all students, grouping students by ability, and focusing on the cognitive and not the affective elements of the learning process even when they are simultaneously encouraging their teachers to try a variety of approaches, teach using heterogeneous groupings, and address the multiple learning styles of their students.

**Research Question Two**

Research question two sought to find the extent to which principals encouraged particular research-based practices. By surveying teachers and principals separately on the same questions, it was possible to compare principals' self-proclaimed level of encouragement of certain instructional practices to teachers' perceptions of that encouragement. Research-based items on the survey were organized into four areas of teaching and learning and non-research-based items were placed in a separate category for the purpose of reporting findings in a clear fashion.

Of the six non-research-based items on the survey, only two items proved
to be significantly different between teacher and principal responses, and the differences in responses were expressed only by elementary teachers and principals. When asked the extent to which they encouraged teachers to drill on specific test objectives, 30.4% of elementary principals said they encouraged this practice to some extent, and 65.2% of elementary principals said they either did not encourage it at all or encouraged it only to a slight extent. The same question asked of elementary teachers, however, produced a startling different response. A little more than half of the elementary teachers, 50.8%, said principals encouraged them to drill to specific test objectives to some or to a great extent. Clearly, elementary teachers are feeling the pressure from their administration to include time for drilling on specific test objectives during their instructional time, despite the claims from elementary principals that they either slightly encourage the practice or do not encourage it at all.

Elementary teachers expressed in large numbers that they felt principals encouraged them to have students practice taking standardized tests. The results showed that 71.2% of elementary teachers said principals encouraged this practice to some or to a great extent. Only 52.2% of elementary principals, however, agreed.

In the area of instructional planning, there were very few significant differences between teachers' perceptions of principals' encouragement and principals' self-perception. Principals' self-proclaimed encouragement of research-based practices in the area of instructional planning seemed to hold true when compared to teachers' responses. Teacher responses only differed from principal responses in the extent to which principals encouraged the use of
heterogeneous grouping, the flexibility of grouping strategies, and the practice of reflection on teaching practices. In each of these three cases, teachers did not believe principals encouraged them to follow these practices to the same high degree that principals claimed they did, although results did not prove that principals were not encouraging these research-based practices.

The other three areas covered in the survey did produce significantly different results. In the areas of delivery of instruction, students' thinking skills and processes, and student assessment, teachers and principals rarely held the same views regarding the extent to which principals encouraged teachers to follow certain instructional practices. Responses regarding the encouragement of instructional practices in the area of delivery of instruction prominently illustrated the significant differences that existed between secondary teachers and secondary principals. Furthermore, results indicated that when the data were separated by elementary and secondary school responses, elementary school teachers were in agreement with their principals far more times than were their secondary counterparts. Finally, with regards to research-based instructional practices, principals believed they encouraged such practices to a larger extent than did the teachers who answered the same questions.

Responses to six of the seven items in the area of student thinking skills and processes proved to be significantly different between all teachers and principals. In each of these cases, principals perceived their level of encouragement of these practices to be higher than the level of encouragement perceived by teachers. A closer look at those responses, by examining the responses of elementary educators and secondary educators as two separate
groups, showed that the secondary educator group was the one driving the results. That is, elementary teachers and elementary principals disagreed on three of those seven items, but secondary teachers and secondary principals disagreed on five of those seven items.

Elementary teachers and principals disagreed on the extent to which teachers were encouraged to teach students to reflect on learning, look for patterns, and generalize information. Secondary teachers and principals also disagreed on the extent to which teachers were encouraged to teach students to look for patterns and generalize information, but additionally, a significant difference in responses appeared in the extent to which teachers were encouraged to teach students to work on interdependence, to teach practice to mastery, and to have students use a variety of problem-solving techniques. In each of these three aforementioned cases, only secondary teachers and principals disagreed on the extent to which principals encouraged these practices.

In the area of delivery of instruction, again, it was evident that secondary teachers and principals disagreed on principals’ encouragement of most of the research-based instructional practices. Secondary teachers and principals disagreed on the extent to which principals encouraged six of the eight instructional practices listed in this area, while elementary teachers and principals agreed on the extent to which principals encouraged all eight instructional practices.

Results proved that secondary principals see themselves in a very different light, demonstrating a very different degree of encouragement from the
one perceived by their teachers. In response to the eight items in the area of
delivery of instruction, almost 100% of secondary principals said they
encouraged teachers to follow the instructional practices included in this area
either to some or to a great extent. Only 71.5% - 83.5% of secondary teachers,
however, agreed with their responses. Almost every secondary principal
believed they were demonstrating knowledge and encouragement of research-
based instructional practices in the area of delivery of instruction, but only a little
more than three-quarters of their teachers agreed.

Teacher and principal practices regarding both research-based and non-
research-based instructional practices are steeped in background experience
and based on knowledge gathered from a number of resources. In an attempt to
learn more about the decision-making strategies of principals and teachers and
the informational resources these groups use to base their decisions, this study
probed into the decision-making strategies and informational resources of
teachers and principals on both elementary and secondary levels. Results from
that investigation could possibly answer the question as to why there was such a
significant difference between responses from teachers and principals, and in
particular between the responses from secondary teachers and secondary
principals.

All principals, by and large, used membership in professional
organization(s) and current research on effective instruction as resources for
their decision-making. In fact, 100% of elementary principals and 96.8% of
secondary principals said they used information from their professional
organization(s) and information from current research on effective instruction as
resources when making decisions regarding instruction. In contrast, only slightly more than one-half of elementary teachers and slightly less than three-quarters of secondary teachers said they used information from professional organization(s) when making decisions regarding instruction. Although the numbers of elementary teachers and secondary teachers were higher when asked the extent to which they used information from current research, with 91.5% of elementary teachers and 87.2% of secondary teachers saying they used research as a resource, they were not as high as principals from the same two groups.

There was also a significant difference among elementary educators as to the extent to which they used information from their undergraduate education when making decisions regarding instruction. While more than half the elementary teachers, 52.5%, said they used their undergraduate education as a resource of information, only 21.7% of elementary principals said they did the same.

The differences in resources used by teachers and principals suggest the possibility that teachers and principals are not being exposed to the same types of information regarding effective instructional practices. Elementary and secondary principals alike are gathering information on instruction from their involvement in professional organizations to a greater extent than they are from their own teaching experience. Meanwhile, a good number of secondary teachers and an even greater number of elementary teachers are not as involved in their professional organizations, relying much more heavily on their past teaching experience to guide them in making instructional decisions.
Principals are not always able to rely on such past experiences because they often do not have the years of experience in the classroom that many teachers have had, which also could account for the many significant differences between teacher and principal perceptions of principal practices. Teachers and principals tackle the improvement of student achievement with a very different level of practical teaching experience on their resume. A great number of secondary principals have fewer years of teaching experience than their teachers. A vast 41.9% of secondary principals claimed they had only one to six years of teaching experience, compared to the 23% of secondary teachers who claimed the same number of years in the classroom. Additionally, only 22.5% of secondary principals said they had more than sixteen years of teaching experience, yet 43.5% of secondary teachers said they had more than sixteen years of teaching experience.

Secondary principals’ lack of practical classroom experience might also speak to their ability to understand theory in practice. In other words, secondary principals might be able to converse in theory about what is necessary to provide effective instruction but lack the practical experience to apply that theory. They might understand the foundation of the theory or framework but cannot always identify the specific elements of that same theory or framework at work in a classroom. Evidence of this dichotomy appeared in the analysis of questionnaire responses and interview responses.

Secondary teachers’ experiences, on the other hand, might make them more aware of the pitfalls and successes of the many theoretical frameworks available, and their experience might dictate which frameworks, or which
elements of those frameworks, truly improve student achievement and which do not. Therefore, when secondary teachers disagreed with principals on the extent to which principals encouraged certain research-based practices, perhaps their opinions reflected their lack of confidence in the principals’ teaching abilities and limited experience in the classroom. Perhaps, on a practical level, secondary principals are not as prepared to make specific instructional decisions as they apply to the practical application of theory because they lack the experience of having seen the long-term implementation of such theories in their own classrooms.

Elementary principals, on the other hand, seemed to have much more teaching experience than their secondary counterparts, and also had comparable teaching experience to their elementary teachers. Only 8.7% of elementary principals stated they had between one and six years of teaching experience, but 39.1% of them said they had 7-15 years of experience, and 52.1% of them said they had more than sixteen years of classroom experience. This percentage favors a more experienced, more veteran instructor who sits in the principal’s chair and makes decisions regarding instruction.

Elementary teachers seemed to agree with principals on most items regarding research-based items, and elementary principals’ practical teaching experience might be the reason why. This type of practical experience can give elementary principals two advantages. One is the support of teachers who see them as experienced classroom teachers able to apply theory to practice and be aware of the demands under which teachers must execute that theory. The other advantage is a clearer perspective on what it takes to improve student
achievement. The teaching experience of elementary principals certainly makes a strong case for their ability to both understand and encourage instructional theory in the classroom setting better than their secondary counterparts.

Although, when interviewed, every principal mentioned the authors and frameworks that were used in this study’s conceptual framework, and every principal could elaborate on the reasons why they held these frameworks in high regard, when they had to identify on the questionnaire certain strategies from these frameworks and state the extent to which they encouraged their teachers to utilize these strategies, not all principals proved to encourage certain instructional practices to a high degree. And, if they did claim to encourage certain strategies, teachers did not have the same perception. Certainly, practical experience could be considered an important factor to study when trying to determine the pedagogical knowledge of principals. As Wiles and Bondi (1996) noted, “If the supervisors are ignorant of this knowledge base (instruction), their role in improving instruction is severely limited to their own experience” (p. 93). This limited practical experience in the classroom, especially where secondary principals were concerned, can, in part, help to explain some of the discrepancies between teacher and principal perceptions of principal practices, and the discrepancies between principals’ philosophy of instructional practices and their practical application of these practices.

One factor used by teachers and principals to make decisions regarding instruction was the influences of outside entities such as the No Child Left Behind Act, state mandates, district regulations, or immediate supervisor directives. Despite the differences of opinions between teacher and principal groups with
regard to the application of pedagogical knowledge, the vast majority of elementary and secondary educators agreed this factor influenced their decision-making process to some or to a great extent. Specifically, 89% of all teachers and 92.6% of all principals said these factors influenced their decisions regarding instruction.

This practice could explain why principals did not always demonstrate they encouraged certain research-based practices to the extent which research has proven they should, and it could explain why teachers could not always agree with principals that principals encouraged certain research-based practices to some or to a great extent. By making decisions based on outside influences and not on the pedagogically sound and research-based practices proven to be effective in improving student achievement, principals might not be acting based on their expertise or on their educational preparation, but rather on their need to follow the directives and mandates of people far removed from the classroom setting. Principals could not be described as completely free to implement practices they knew to be effective in improving student achievement if outside entities had such a large influence on their decision-making process.

Research Question Three

Research question three sought to find the prominent practices of principals when applying their pedagogical knowledge during their supervision of teachers. Results from both the questionnaire and the telephone interviews demonstrated that teachers and principals often have a very different opinion of the role and effect of the principal on the improvement of student achievement,
even when teachers held principals in high regard for the responsibilities they held and the skills they demonstrated.

Principals were able to identify, specifically, the elements of effective instruction they looked for during classroom observations. All three principals admitted they took an eclectic approach to their observations, allowing teachers the freedom to use a variety of strategies to reach their students, but all three principals cited the importance of and their encouragement of differentiated instruction, a balance in curriculum, and student-centered learning.

An analysis of the teacher interviews concluded that teachers had respect for the skills and knowledge base of the principal. Teachers also cited the principals' focus on the aforementioned elements of effective instruction and three of the four teachers described their principals as "incredibly knowledgeable", "very prepared", and "highly prepared". The fourth teacher admitted she was not aware of the preparation her principal had undergone but assumed he had been well prepared during his formal education and while on the job. In addition, teachers stated that principals emphasized "student-centered" learning and emphasized an "interactive" approach to learning when they observed in the classroom.

The differences between teacher and principal response came when the two groups identified the primary responsibility of the principal, the role of the principal in the improvement of student achievement, and the effect of the principal on student achievement. All principals saw their primary responsibility to be the improvement of student achievement. Teachers, however, disagreed with that perception and offered a number of other primary responsibilities held
by their principals. T4, for example, saw her principal's primary responsibility as one of delegator and mentor. She stated her principal's primary responsibility was to "encourage the right atmosphere and culture" and to gather input from all stakeholders and then make the necessary decisions. Other teachers cited managerial responsibilities such as ensuring the school runs smoothly, taking care of the financial needs of the school, maintaining the building, and conducting meetings as the primary responsibilities of the principal.

Another difference between teacher and principal opinions was seen when both groups were asked to identify the role of the principal in the improvement of student achievement. According to teachers, the principal's main role in the improvement of student achievement was an indirect one. Teachers looked to their principals to provide professional development opportunities. That was the extent to which they felt principals were involved in this particular aspect of school.

Principals, however, saw themselves as much more active in the process of improving student achievement. While they did state they provided professional development opportunities for teachers, they also stated they were actively involved in the improvement of student achievement. Principals said they took an active role by analyzing data, being in classrooms and taking part in the instructional process, structuring time for teachers to review their practices and goals for the upcoming year, and mentoring new teachers. Principals did not see themselves as passive observers of the instructional process, but rather as active participants, a distinctly different perception from the ones described by teachers.
The views of these principals supported the research that concluded that principal leadership that makes a difference is aimed toward influencing internal school processes that are directly linked to student learning (Edmonds, 1979; Heck, Larsen, & Marcoulides, 1990; Hudgins & Cone, 1992; Leithwood & Jantzi, 1999; Quinn, 2002). Hallinger and Heck (1998) suggested that schools that make a difference in students' learning are led by principals who make a significant and measurable contribution to the effectiveness of staff and in the learning of their students, and these principals demonstrated through their description of their role in the improvement of student achievement that they are embodying this practice.

Still, teachers and principals did not agree on the role of the principal. This difference in opinion helped to explain the fundamental difference between the effect teachers believed principals had on the improvement of student achievement and the effect principals believed they had on that process. This difference in opinions could also explain why principals and teachers did not always agree on the practices of principals. While teachers did believe principals to be prepared and knowledgeable in the area of student achievement, as evidenced by the responses recorded earlier in this section, they still did not believe, by and large, principals had any direct effect on student achievement. Only one teacher, T2, said the principal had a "large effect" on student achievement. That same teacher, however, cited the principal's knowledge of data analysis and not the principal's contributions to instruction as a reason for that effect. The other three teachers said their principal did not have any direct effect. In fact, T1 said, "Teachers have a huge effect" when describing the
principal's effect, but the principal's effect was measured by the support she gave in professional development and materials. Again, the principal's pedagogical knowledge was not cited as a reason for that effect. T3 and T4 stated they did not know if the principal had any "direct effect" or "main effect" on student achievement, only that their principals supported staff.

All principals, however, were emphatic that they had a large effect on student achievement. P1, for example, said she had "100% effect on student achievement" and described her abilities to hire good people and set high expectations as two reasons why she felt she had that effect. P2 acknowledged that teachers were "key" in the improvement of student achievement, but administrative support and the setting of high expectations by the principal must be considered important components to affecting student achievement. P3 also stated her effect on student achievement was "huge" because she was in control of hiring teachers and determining "when they teach and what they teach". She also believed her ability to educate herself through her involvement in professional organizations and her visits to nationally recognized schools helped her have a big effect on student achievement because she was better prepared to share new information with her teachers.

Despite the evolution of the principal's role in education (Carlson, 1996; Chance, 1992; Hallinger, 1992; Hoy, 1994), there still exists a traditional view of the principal as administrator and manager in the eyes of the people he/she is leading as he/she strives to improve student achievement, even when the principal is well-respected and acknowledged to be knowledgeable in instructional practices. This view could pigeon-hole the principal, regardless of
his/her extensive experience and knowledge base, into a role that is only of marginal influence in the improvement of student achievement, and could, consequentially, prevent him/her from making any significant changes in the instructional practices of the teaching staff.

Significance of the Study

In the snapshot of what supervising principals know and what they do not know about the state of the art in instructional practices and supervision that was provided by this study, there is some information that could be of great use in designing preparatory programs for pre-service administrators and professional development programs for existing administrators. Administrative programs charged with the mission of preparing administrators for tomorrow's schools should look to expand their curriculum to focus on the instructional duties of the principal as much as they do on the administrative duties of school principals.

It is not enough to prepare administrators, particularly principals, solely to manage facilities, interpret school law, and balance budgets. Instructional leaders, as recommended by the effective schools research of the 1980's and the more recent research of the past decade (Andrews & Soder, 1987; Bossert, Dwyer, Rowan, & Lee, 1982; Brookover & Lezotte, 1979; Hallinger & Wimpelberg, 1992; Leithwood, Jantzi, & Stenbach, 1999), will be expected to focus their efforts on student achievement as student achievement continues to be the primary concern and goal of education, legislation, and public opinion (NCLB, 2001).

This study demonstrated that principals, especially secondary principals,
often lack the practical experience gained from many years of teaching, but a
great number of them rely on their past teaching practice as a resource of
information when making decisions regarding instruction. Without much
experience implementing instructional theories in the classroom, principals might
find it difficult to truly know what is effective and what is not effective in the
classroom.

Since it is during their administrative preparation that principals have the
last formal opportunity to deepen their knowledge base of instructional practices,
and since this study supports the notion that principals rely on their graduate
programs as a resource of information, just as they rely on their limited past
teaching practice, it becomes even more important for graduate programs to
spend quality time on instructional leadership and current research on instruction.
This might be the last forum in which principals receive any in-depth training on
how to implement instructional theory into effective instructional practices.

Given that principals also rely on professional organizations as a resource
when making decisions regarding instruction, these organizations should also
consider themselves as professional development providers to principals and
should take a close look at what they are providing their members in terms of
deepening principals' pedagogical knowledge base and providing principals with
information on current research findings.

Research has concluded that without a knowledgeable principal leading
the school's effort to improve instruction for all students, any type of positive
change will be quite limited and difficult to sustain (Andrews & Soder, 1987;
Cheng, 1994; Quinn, 2002; Tomlinson & Allen, 2000). Public Law 107-110 and
the public's continuing dissatisfaction with public education have already determined that failure to improve student achievement is not an option. If principals are to be successful in the charge given to them by federal legislation and by public opinion it should not be assumed that by accepting the role of principal that individual has been adequately prepared to make instructional decisions.

Even when a principal is knowledgeable about research-based instructional practices that improve student achievement that individual is not ultimately free to make instructional decisions without the influences of outside entities. Mandates and other outside influences also dictate what practices the principal can actually implement and which practices he must consider to be valid solely on a theoretical basis.

Conclusions

This study supported the conclusion that, in general, principals do have a sound pedagogical knowledge of research-based instructional strategies and that they do encourage many of the proven research-based instructional practices as outlined in the frameworks of the three authors used in this study. However, as some of their answers indicated, they also encourage some instructional practices that were not supported by current research. Furthermore, when interviewed, principals were able to identify research-based practices and name authors of frameworks that have proven to be well-known by educators and effective in the classroom, but when surveyed, principals did not always demonstrate great support for certain research-based practices encouraged by
the very authors they named in their interviews. The findings of this study suggested some discrepancies between principals' perceived knowledge about research-based instructional practices and their actual pedagogical knowledge.

Furthermore, this study suggested that secondary principals and teachers do not agree as often as elementary principals and teachers do on the degree to which certain instructional practices are encouraged by principals. This study also suggested a lack of experience in the classroom on the part of secondary principals. They had far less practical teaching experience than the teachers they led. This difference in practical experience could explain why teachers, particularly secondary teachers, often did not agree on the extent to which principals encouraged certain instructional practices. Perhaps it could also be said that this difference suggested a lack of trust in the principals' abilities to make decisions regarding the implementation of instructional practices.

In addition, this study suggested that, for the most part, principals were seen by their teachers to be knowledgeable regarding instruction, but their role was not seen as a significant or primary role in the improvement of student achievement. As a result, although thought to be knowledgeable, perhaps this feeling on the part of teachers that principals hold a secondary role in the school's efforts to improve student achievement could impede principals from leading teachers to make any significant changes in the classroom in the future.

Further Research Recommendations

As NCLB continues to mandate adequate yearly progress and to usurp control over failing schools, principals will be under tremendous pressure to
produce results in the area of student achievement. It becomes even more important, then, that principals demonstrate they are knowledgeable in the area of instruction in order to be seen as capable of effectively leading their staffs in this age of accountability.

Further research that measures the pedagogical knowledge of principals in the area of instruction is recommended. This study added to, but did not complete, the body of work needed to gain a deeper understanding of the preparedness of principals to make any significant changes in the instructional practices of their teachers.

In addition, a closer look at the differences between the preparedness level of elementary and secondary principals is recommended. By studying these two groups of educators as separate entities, perhaps researchers will be able to confirm if one of the two types of principals is better prepared, and/or more trusted, to lead staff in the necessary instructional changes schools need to make to improve student achievement.

Furthermore, a closer investigation as to the reasons why principals sometimes fail to implement the instructional practices they know to be supported by research would also help to determine the impeding factors that prevent even the most knowledgeable of principals from making any sweeping changes at his/her school site.

Finally, this study recommends additional qualitative research to accompany any quantitative research in an effort to document the activities of principals as they implement instructional practices.
Summary

This study investigated the pedagogical knowledge of research-based instructional practices of principals across the country. It also studied both principals' and teachers' perceptions of principal practices related to the supervision of classroom instruction and the improvement of student achievement.

The findings of this study suggested that, while principals are knowledgeable regarding research-based instructional practices, they do not always encourage such practices to a great extent. Furthermore, principals sometimes encourage conflicting practices, indicating that other influences might determine the decisions they make as they attempt to improve student achievement.

While federal legislation and public opinion demand more of today's principals, principals do not always assume their duties with the level of practical teaching experience and the depth of knowledge regarding instruction necessary to meet those demands. If public education is to meet the expectations of federal law and public opinion, principals must be well-versed, well-prepared, and experienced in the area of instructional leadership and the implementation of research-based instructional practices.
APPENDIX I

INSTRUCTIONAL LEADERSHIP INVENTORY

Principals

Please complete the following survey.

Demographic Information

Please indicate your current position:

Principal  Assistant Principal  Other Administration  Teacher  Other

Please indicate how many years you have held your current position:

Please indicate how many years you taught:

1-3  4-6  7-10  10-15  16-25  26-30  30+

Please circle one:

Male  Female

Please circle the range that best describes your age:

20-30  31-40  41-50  50+

Indicate the highest degree you have earned:

Bachelors  Masters  Doctorate

Please circle the one that best describes your school:

Elementary School  Middle School  High School

Please describe the location of your school:

Urban Area  Suburban Area  Rural Area

Indicate, approximately, how many students attend your school:

Indicate, approximately, the student population of your school's district:

Less than 1,000  1,000-2,500  2,500-5,000
5,000-10,000

10,000-25,000  25,000-50,000  50,000 and over

217
Choose the appropriate number and circle it for each of the below questions. Thank you in advance for your time.

<table>
<thead>
<tr>
<th>Extent</th>
<th>1-Not at All</th>
<th>2-Slight Extent</th>
<th>3-No Opinion</th>
<th>4-Some Extent</th>
<th>5-Great Extent</th>
</tr>
</thead>
</table>

**TO WHAT EXTENT...**

1. do you make decisions regarding supervision based on the influences of outside entities (i.e. "No Child Left Behind" Act, state mandates, district regulations, immediate supervisor directives, etc.)?  
2. do you collaborate with university faculty for professional development activities?  
3. do you provide feedback from your professional development planning committee to other faculty members?  
4. is mentoring used in your school?  
5. do your teachers set their own instructional goals?  
6. do professional development activities include input from all disciplines and/or grade levels?  
7. do you discuss individual professional development when conferencing with teachers?  
8. are teachers in your school a part of planning new things that affect teaching and learning in your school?  
9. do you coach and assist teachers who are struggling?  
10. do you participate with the professional development planning team?  
11. do you make decisions regarding instruction based on the influences of outside entities (i.e. "No Child Left Behind" Act, state mandates, district regulations, immediate supervisor directives, etc.)?  
12. is your school's professional development supported financially?  
13. do your teachers grow professionally when they engage in dialogue with other teachers?  
14. are your school's objectives and practices aligned with district objectives and practices?  
15. do you mandate the use of specific practices in the classroom?  
16. does your school use peer coaching?  
17. do standards drive instruction?  
18. do your teachers meet to discuss instructional practices in their classrooms?  
19. do you encourage parents and community members participate in your professional development activities?  
20. do your teachers meet to discuss research articles in order to improve instructional practices in their classrooms?  
21. does your school use written objectives for professional development?  
22. do teachers in your school feel safe to try new approaches in their classrooms?  
23. are you responsible for improving instruction?  
24. do you use outside agencies in evaluations of professional development?  
25. do you plan leadership development for teachers?  
26. are professional development activities related to your school goals?  
27. do you utilize data (such as standardized test scores, portfolios, and teacher made tests) to plan your professional development activities?  
28. are teachers in your school a part of the implementation of new things that affect teaching and learning in your school?  
29. do your teachers at your school take responsibility for improving instruction?
30. do you make decisions regarding professional development based on the influences of outside entities (i.e. "No Child Left Behind" Act, state mandates, district regulations, immediate supervisor directives, etc.)? 1 2 3 4 5
31. is professional development emphasized in your teacher evaluation instrument? 1 2 3 4 5
32. are new teachers mentored each year? 1 2 3 4 5
33. do teachers in your school observe other teachers and provide feedback? 1 2 3 4 5
34. do professional development activities address your school's particular climate and culture? 1 2 3 4 5
35. do your teachers set their own professional development goals and activities? 1 2 3 4 5
36. do your teachers' professional skills in the classroom improve when they read and use current professional articles and practices? 1 2 3 4 5

**TO WHAT EXTENT...**

37. are teachers in your school involved in curriculum design? 1 2 3 4 5
38. do you archive your school's major decisions and plans so there is continuity in your professional development? 1 2 3 4 5
do you use the following resources when making decisions regarding instruction?

| 39. Reflect on your past teaching practices | 1 2 3 4 5 |
| 40. Experience from your past teaching practice | 1 2 3 4 5 |
| 41. Information from your undergraduate education | 1 2 3 4 5 |
| 42. Information from your graduate education | 1 2 3 4 5 |
| 43. Information from your professional organization(s) | 1 2 3 4 5 |
| 44. Information from current research on effective instruction | 1 2 3 4 5 |

**TO WHAT EXTENT DO YOU USE THE FOLLOWING TO JUDGE TEACHER EFFECTIVENESS...**

| 45. Student performance on standardized tests | 1 2 3 4 5 |
| 46. Teacher participation in professional development activities | 1 2 3 4 5 |
| 47. Discussions with teachers about classroom activities | 1 2 3 4 5 |
| 48. Diagnostic or standardized tools that assess teaching methods | 1 2 3 4 5 |
| 49. Adherence by the teacher to a specific lesson design | 1 2 3 4 5 |
| 50. Number of grades in a teacher's grade book | 1 2 3 4 5 |
| 51. Teachers' analysis of other teachers' effectiveness | 1 2 3 4 5 |
| 52. Students meeting predetermined proficiencies in core subject areas | 1 2 3 4 5 |
| 53. Teachers meeting predetermined goals (either self-imposed or directed by an administrator) | 1 2 3 4 5 |

**TO WHAT EXTENT DO YOU ENCOURAGE YOUR TEACHERS TO...**

| 54. teach students to reflect on learning? | 1 2 3 4 5 |
| 55. teach students to look for patterns? | 1 2 3 4 5 |
| 56. allow students to demonstrate knowledge in a variety of ways? | 1 2 3 4 5 |
| 57. teach students how to generalize information? | 1 2 3 4 5 |
| 58. teach students to work on interdependence? | 1 2 3 4 5 |
| 59. teach practice to mastery? | 1 2 3 4 5 |
| 60. focus on competition in the classroom? | 1 2 3 4 5 |
| 61. link student emotions to learning? | 1 2 3 4 5 |
| 62. deliver instruction through lecture? | 1 2 3 4 5 |
| 63. have students participate in peer teaching? | 1 2 3 4 5 |
| 64. group students by ability? | 1 2 3 4 5 |
| 65. teach using heterogeneous grouping? | 1 2 3 4 5 |
| 66. begin instruction where students' abilities indicate? | 1 2 3 4 5 |
| 67. be flexible with instructional time? | 1 2 3 4 5 |
| 68. clarify as a way of showing empathy to students' frustration? | 1 2 3 4 5 |
| 69. teach the designated grade-level curriculum to all students? | 1 2 3 4 5 |
Please provide a short answer to the following questions.

**OPEN ENDED QUESTIONS...**

85. How many times do you and teachers evaluate together data from observations each year?

86. How many pre-observation conferences do you hold with each teacher during a school year?

87. How much time is allotted for professional development activities in a school year (i.e. hours per week, hours per month, number of times in a year, etc...)?

88. How many formal observations in the classroom do you do for each teacher every year?

89. What weaknesses would you identify in your own teacher preparation program?

90. Do you differentiate supervision for different teachers?  
   Yes  No

91. If yes, how?

92. What strengths would you identify in your own teacher preparation program?

93. Does a prescribed evaluation tool determine your supervision method?  
   Yes  No

94. If yes, how?
95. What, if anything, would you like to see changed in teacher preparation programs?

96. How is professional development rewarded in your school?

97. How many post-observation conferences do you hold with each teacher every year?

98. What weaknesses would you identify in your own administrative preparation program?

99. What, if anything, would you like to see changed in the administrative preparation programs?

100. What strengths would you identify in your own administrative preparation program?

Thank you for your time and participation in our research.
APPENDIX II

INSTRUCTIONAL LEADERSHIP INVENTORY
Teachers

Please complete the following survey.

Demographic Information
Please indicate how many years you taught:

1-3 4-6 7-10 10-15 16-25 26-30 30+

Please circle one:

Male    Female

Please circle the range that best describes your age:

20-30 31-40 41-50 50+

Indicate the highest degree you have earned:

Bachelors    Masters    Doctorate

Please circle the one that best describes your school:

Elementary School    Middle School    High School

Please describe the location of your school:

Urban Area    Suburban Area    Rural Area

Indicate, approximately, how many students attend your school:

Indicate, approximately, the student population of your school’s district:

Less than 1,000    1,000-2,500    2,500-5,000    5,000-10,000

10,000-25,000    25,000-50,000    50,000 and over
Choose the appropriate number and circle it for each of the below questions. Thank you in advance for your time.

1-Not at All 2-Slight Extent 3-No Opinion 4-Some Extent 5-Great Extent

TO WHAT EXTENT...

1. does your principal make decisions regarding supervision based on the influences of outside entities (i.e. “No Child Left Behind” Act, state mandates, district regulations, immediate supervisor directives, etc.)? 
1 2 3 4 5

2. do you collaborate with university faculty for professional development activities? 
1 2 3 4 5

3. does your professional development planning committee provide feedback to other faculty members? 
1 2 3 4 5

4. is mentoring used in your school? 
1 2 3 4 5

5. do teachers in your school set their own instructional goals? 
1 2 3 4 5

6. do professional development activities include input from all disciplines and/or grade levels? 
1 2 3 4 5

7. does your principal discuss individual professional development when conferencing with you? 
1 2 3 4 5

8. are teachers in your school a part of planning new things that affect teaching and learning in your school? 
1 2 3 4 5

9. does your principal coach and assist teachers who are struggling? 
1 2 3 4 5

10. does your principal participate with the professional development planning team? 
1 2 3 4 5

11. do you make decisions regarding instruction based on the influences of outside entities (i.e. “No Child Left Behind” Act, state mandates, district regulations, immediate supervisor directives, etc.)? 
1 2 3 4 5

12. is your school’s professional development supported financially? 
1 2 3 4 5

13. do you grow professionally when you engage in dialogue with other teachers? 
1 2 3 4 5

14. are your school’s objectives and practices aligned with district objectives and practices? 
1 2 3 4 5

15. do administrators mandate the use of specific practices in the classroom? 
1 2 3 4 5

16. does your school use peer coaching? 
1 2 3 4 5

17. do standards drive instruction? 
1 2 3 4 5

18. do teachers in your school meet to discuss instructional practices in their classrooms? 
1 2 3 4 5

19. do parents and community members participate in your professional development activities? 
1 2 3 4 5

20. do you meet to discuss research articles in order to improve instructional practices in your classrooms? 
1 2 3 4 5

21. does your school use written objectives for professional development? 
1 2 3 4 5

22. do you feel safe to try new approaches in your classrooms? 
1 2 3 4 5

23. does your principal assume responsibility for improving instruction? 
1 2 3 4 5

24. does your school use outside agencies in evaluations of professional development? 
1 2 3 4 5

25. does your principal plan leadership development for teachers? 
1 2 3 4 5

26. are professional development activities related to your school goals? 
1 2 3 4 5

27. does your school utilize data (such as standardized test scores, portfolios, and teacher made tests) to plan your professional development activities?
28. Are teachers in your school a part of the implementation of new things that affect teaching and learning in your school? 

29. Do teachers at your school take responsibility for improving instruction? 

30. Do you make decisions regarding your own professional development based on the influences of outside entities (i.e. "No Child Left Behind" Act, state mandates, district regulations, immediate supervisor directives, etc.)? 

31. Is professional development emphasized in your teacher evaluation instrument? 

32. Are new teachers mentored each year? 

33. Do teachers in your school observe other teachers and provide feedback? 

34. Do professional development activities address your school's particular climate and culture? 

35. Do teachers set their own professional development goals and activities? 

**TO WHAT EXTENT...**

36. Do your professional skills in the classroom improve when you read and use current professional articles and practices? 

37. Are teachers in your school involved in curriculum design? 

38. Does your principal archive your school's major decisions and plans so there is continuity in your professional development? 

39. Reflect on your past teaching practices 

40. Experience from your past teaching practice 

41. Information from your undergraduate education 

42. Information from your graduate education 

43. Information from your professional organization(s) 

44. Information from current research on effective instruction 

**TO WHAT EXTENT DOES YOUR SUPERVISOR USE THE FOLLOWING TO JUDGE TEACHER EFFECTIVENESS...**

45. Student performance on standardized tests 

46. Teacher participation in professional development activities 

47. Discussions with teachers about classroom activities 

48. Diagnostic or standardized tools that assess teaching methods 

49. Adherence by the teacher to a specific lesson design 

50. Number of grades in a teacher's grade book 

51. Teachers' analysis of other teachers' effectiveness 

52. Students meeting predetermined proficiencies in core subject areas 

53. Teachers meeting predetermined goals (either self-imposed or directed by an administrator) 

**TO WHAT EXTENT DOES YOUR PRINCIPAL ENCOURAGE YOU TO...**

54. Teach students to reflect on learning? 

55. Teach students to look for patterns? 

56. Allow students to demonstrate knowledge in a variety of ways? 

57. Teach students how to generalize information? 

58. Teach students to work on interdependence? 

59. Teach practice to mastery? 

60. Focus on competition in the classroom? 

61. Link student emotions to learning?
62. deliver instruction through lecture?
63. have students participate in peer teaching?
64. group students by ability?
65. teach using heterogeneous grouping?
66. begin instruction where students' abilities indicate?
67. be flexible with instructional time?
68. clarify as a way of showing empathy to students' frustration?
69. teach the designated grade-level curriculum to all students?
70. diagnose students' needs prior to developing a lesson plan?
71. be flexible in their grouping strategies?
72. teach using homogeneous grouping?
73. link past knowledge to present learning?
74. teach students according to their interests?
75. have students generate their own questions?
76. consider product, content, and environment in lesson planning?
77. use clear and consistent language when delivering instruction?
78. to try new approaches in the classroom?
79. pace instruction based on students' needs?
80. have students use a variety of problem-solving techniques?
81. address multiple intelligences of students?
82. drill on specific test objectives?
83. have students practice taking standardized tests?
84. have teachers reflect on their teaching practices?

Please provide a short answer to the following questions.

**OPEN ENDED QUESTIONS...**

85. How many times do you and your supervisor evaluate together data from observations each year?

87. How many pre-observation conferences does your supervisor hold with you during a school year?

88. How much time is allotted for professional development activities in a school year (i.e. hours per week, hours per month, number of times in a year, etc...)?

89. How many times are you formally observed by your supervisor each school year?

90. What weaknesses would you identify in your own teacher preparation program?

91. Is supervision different for different teachers in your school?
   Yes   No

92. If yes, how?
93. What strengths would you identify in your own teacher preparation program?

94. Does your supervisor use a prescribed evaluation tool?
   Yes    No

95. If yes, how?

96. What, if anything, would you like to see changed in teacher preparation programs?

97. How is professional development rewarded in your school?

98. How many post-observation conferences does your supervisor hold with you every year?

Thank you for your time and participation in our research.
## APPENDIX III

### MATRIX OF FRAMEWORKS

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## APPENDIX IV

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APPENDIX V

INTERVIEW PROTOCOLS

Instructional Leadership Inventory
Interview Questions: Principal

1. Describe what you look for when observing in a classroom.
   Probes:
   A. How do you know you have found evidence of learning?
   B. What do you do to address a problem with the instruction given by a teacher?

2. What is your philosophy of classroom instruction?
   Probes:
   A. How should teachers be teaching?
   B. Are there specific frameworks (or guides) you use to guide classroom instruction and your supervision of teachers? If so, what?

3. Are there any particular models or training that your districts have initiated regarding instructional supervision?
   Probes:
   A. What philosophy of classroom instruction is your district following?
   B. How do you implement that model in your classrooms?

4. What is your role in the improvement of student achievement?
   Probes:
   A. What steps do you take to improve student achievement?
   B. How do you help support teachers?

5. To what extent do you believe you have an effect on student achievement?
   Probes:
   A. In what ways are you able to affect student achievement?
   B. How have you been prepared to affect student achievement?

6. What do you believe is your primary responsibility as principal?
   Probes:
   A. What are your major goals for the job?
   B. What steps do you take to meet those goals?
Instructional Leadership Inventory
Interview Questions: Teacher

1. Describe what your supervisor looks for when observing in a classroom.
   Probes:
   A. What evidence of learning does he/she point to when discussing his/her observation with you?
   B. What does he/she do to address a problem with the instruction given by a teacher?

2. What is your principal's philosophy of classroom instruction?
   Probes:
   A. How should teachers be teaching?
   B. Are there specific frameworks (or guides) he/she uses to guide classroom instruction and their supervision of teachers? If so, what?

3. Are there any particular models or training that your district has initiated regarding instructional supervision?
   Probes:
   A. What philosophy of classroom instruction is your district following?
   B. How does your principal help to implement that particular model?

4. What is your principal's role in the improvement of student achievement?
   Probes:
   A. What steps does he/she take to improve student achievement?
   B. How does he/she help support teachers?

5. To what extent do you believe your principal has an effect on student achievement?
   Probes:
   A. In what ways is he/she able to affect student achievement?
   B. How well do you believe he/she has been prepared to affect student achievement?

6. What do you believe is the primary responsibility of the principal?
   Probes:
   A. What are his/her major goals for the job?
   B. What steps does he/she take to meet those goals?
APPENDIX VI

SURVEY COVER LETTER: PRINCIPAL

November 29, 2004

Dear Principal,

We are doctoral students in the Educational Leadership Department of the University of Nevada, Las Vegas, conducting a survey of the 2004 NAESP and the NASSP Principals of the Year. We are seeking the responses of this year’s award recipients to answer questions on a comprehensive survey that will research three areas of principal leadership: instructional leadership practices, supervisory practices, and professional development practices. As a dedicated educator, your responses will assist us in our research of effective instructional, supervisory, and professional development practices, and will help us to make recommendations that might improve the training of principals in these three aforementioned areas.

We will greatly appreciate it if you will complete the questionnaire. We also ask that you select three teachers from your staff and have them complete the teacher questionnaires that are included in this packet. Then, please return your questionnaire in the enclosed, stamped, pre-addressed envelope by December 20th. If you have any questions while taking this survey, you may contact Carmen Benedict at 702-837-9612.

We realize your schedule is a busy one and that your time is valuable, but we are sure that you want to improve the quality of principal leadership as much as we do. Your responses will be kept confidential; we ask for no identifying information on the questionnaire form. The study has been approved by the University’s Research and Human Subjects Review Committee. The completion and return of this questionnaire will indicate your willingness to participate in the study, and completing it will be the extent of your participation in this study. Should you wish to participate in a telephone interview as a follow-up to this survey, you may indicate so at the end of the questionnaire.

We thank you in advance for your cooperation and your assistance.

Carmen Benedict     Rebecca Minnear-Peplinski     Barbara Presler

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APPENDIX VII
SURVEY COVER LETTER: TEACHERS

November 29, 2004

Dear Teacher,

We are doctoral students in the Educational Leadership Department of the University of Nevada, Las Vegas, conducting a survey of the 2004 NAESP and the NASSP Principals of the Year and three teachers from each of their staffs. We are seeking the responses of this year's award recipients and teachers from their schools to answer questions on a comprehensive survey that will research three areas of principal leadership: instructional leadership practices, supervisory practices, and professional development practices. As a dedicated educator, your responses will assist us in our research of effective instructional, supervisory, and professional development practices, and will help us to make recommendations that might improve the training of principals in these three aforementioned areas.

We will greatly appreciate it if you will complete the questionnaire. We then ask that you return the completed questionnaire in the attached stamped self-addressed envelope by December 20th. If you have any questions while taking the survey, you may contact Carmen Benedict at 702-837-9612.

We realize your schedule is a busy one and that your time is valuable, but we are sure that you want to improve the quality of principal leadership as much as we do. Your responses will be kept confidential; we ask for no identifying information on the questionnaire form. The study has been approved by the University's Research and Human Subjects Review Committee. The completion and return of this questionnaire will indicate your willingness to participate in the study, and completing it will be the extent of your participation in this study. Should you wish to participate in a telephone interview as a follow-up to this survey, you may indicate so at the end of the questionnaire.

We thank you in advance for your cooperation and your assistance.

Carmen Benedict  Rebecca Minnear-Peplinski  Barbara Presler
### APPENDIX VIII

**T-TESTS: ELEMENTARY PRINCIPALS AND SECONDARY PRINCIPALS**

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# APPENDIX IX

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## APPENDIX X

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REFERENCES


Mortimore (Eds.), *Improving school effectiveness* (pp. 74-101). Buckingham: Open University Press.


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