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**Defining relationships between perceived leader authenticity, staff authenticity  
and instructional leadership in urban elementary schools**

by

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**A dissertation submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
DOCTOR OF PHILOSOPHY**

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## ACKNOWLEDGMENTS

*Nothing worthwhile in life is easy.  
 Not work, not love, not friends, not fun nor faith.  
 Everything that makes life worthwhile, even the appreciation of beauty,  
 must be fought for constantly.  
 And the human being does not exist who does not, at times, grow weary of the battle.*  
 —Unknown

Any *battle* that takes place does so at great expense to many players. When I decided more than five years ago to pursue a doctoral degree, I was unaware of the extent to which that decision would affect all of the players in my life. Perhaps the greatest lesson of this entire endeavor has been the profound realization that one never fights the important battles alone.

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## **CHAPTER 1. INTRODUCTION**

Curriculum and textbook adoptions and changes are an on-going process in any school district. An adoption is an extremely expensive undertaking, not only for the actual purchase of books, supplemental and/or technological materials and equipment, but also for the paid (and unpaid) hours invested by district committees, subject supervisors, pilot teachers and administrators. Any investment that uses a large portion of the district's limited financial resources needs to be nurtured and reviewed continually.

No matter how carefully each adoption is considered, results observed in the classroom most likely will not reflect those anticipated and desired if teachers are not encouraged, supported and listened to throughout the change process. Many factors are involved in helping to determine the acceptance and success of a change effort. Current research in three areas supports the pursuit of a study relating leader authenticity and changes in instructional curriculum: (a) mathematics educational reform, (b) restructuring education, and (c) educational leadership. All three areas approach questions of instructional leadership and instructional reform from different perspectives. It is only when the three perspectives come together and are examined in light of current practices that the need for studying possible interrelationships is best brought into focus. An overview of each area and the related terms that help shape this study follow.

## **Reform in Mathematics Education**

### **Political and societal support**

Educators have been exposed to the rhetoric of reform in mathematics education since the mid 1980s to early 1990s when national mathematics organizations began publishing landmark documents. During the same period, political leaders of the United States, including the President, turned their attention to education in response to cries of alarm from the general public. The National Commission on Excellence in Education report, A Nation at Risk, had been published in 1983 and had declared American public education to be in a deplorable state. The report stated that schools in the United States were being eroded by increasing mediocrity that threatened the future of the nation. Reaction to the report varied, but included more stringent high school graduation requirements in forty-three states, increased teacher certification requirements in thirty states and more attention to the assessment of student achievement in thirty-seven states (Gibbs, 1989). More than a decade later, responses were still being made to this declaration, with one of the most noted being the passage of “Goals 2000: the Educate America Act of 1994” by the federal government. The act highlights a list of educational goals for bringing the United States into the next century, including the statement that United States’ students should be first in the world in mathematics and science achievement by the year 2000.

Not only in mathematics but in every school subject, educators are faced with rising expectations for preparing the kind of work force the country will need in the future. Information-age technology will continue to grow in importance; pressed by rising international competition, industry will demand quality and increased productivity. The world of work in the twenty-first century will be less manual but more mental; less mechanical but more electronic; less routine but more verbal; and less static but more varied...Schools, therefore, will have to provide all students with a strong foundation for lifelong learning; colleges and universities will have to educate both young adults

and older workers; and industry will have to focus its continuing education on areas that extend rather than repeat what schools provide. (NRC, 1989, p. 11)

### **Support from the profession**

Because of the general societal consensus of the need to greatly improve mathematics and science education and achievements, much of the educational literature published since 1989 has focused on both mathematics and science education and teacher preparation reform.

Major documents published during this time include:

- Everybody Counts, National Research Council, 1989,
- Curriculum and Evaluation Standards for School Mathematics, National Council of Teachers of Mathematics, 1989,
- A Call for Change, Mathematical Association of America, 1991, and
- Professional Standards for Teaching Mathematics, National Council of Teachers of Mathematics, 1991.

Probably the most well-known of these documents is the Curriculum and Evaluation

Standards for School Mathematics, often referred to as the Standards.

The mathematical content outlined in the Standards is what we believe all students will need if they are to be productive citizens in the twenty-first century. If all students do not have the opportunity to learn this mathematics, we face the danger of creating an intellectual elitist and a polarized society. The image of a society in which a few have the mathematical knowledge needed for the control of economic and scientific development is not consistent either with the values of a just democratic system or with its economic needs. (NCTM, 1989, p. 9)

Since its publication, the Standards has proven to be a landmark document in diagnosing and prescribing changes needed in current mathematics education. Other documents published around the same time concur and support the suggested changes; other disciplines have

chosen to look to the Standards as the guide for renovating their own curriculum and practices. Science educators have worked hand-in-hand with proponents of the Standards, recognizing the necessary symbiotic relationship between science and mathematics if either is to achieve the goals previously cited. Counting on You, a statement published by the Mathematical Sciences Education Board and the National Research Council, states the following: “Virtually every professional mathematical science organization in the United States has joined with the National Council of Teachers of Mathematics in endorsing and promoting the vision of school mathematics described in the Curriculum and Evaluation Standards for School Mathematics.” A list of twenty-four professional organizations is then given who support the Standards. The list includes the American Association of School Administrators, the International Reading Association, the National Association of Elementary School Principals and of Secondary School Principals, and the National Society of Professional Engineers. The range of supporters would seem to indicate that the recommendations given in the Standards are right on target with what numerous professionals feel needs to be done.

## **Restructuring Education**

### **Change**

#### **Identifying the need**

If the need for any change is not perceived or accepted as legitimate by all affected groups, the change process will be extremely difficult and change may be implemented only superficially. “Teachers are most likely to accept change when it is espoused by someone they

trust, its content is linked to values they hold important, and its target is focused and practicable” (Evans, 1993, p. 3-4). The change itself must wear a human face and be perceived as sensitive to the people responsible for putting the change in place.

The implementation of change itself consists of four dimensions: a) substance or the content of the change itself; b) staff or personnel who are responsible for making the actual change(s) occur; c) setting or the health and resilience of the school as an organization; and d) leadership. Consideration must be given to each of the four dimensions when plans for change are considered, as well as to the relationships between the four dimensions. It is the dimension of leadership that is responsible for the primary task of change and that is motivational or the capacity to build commitment to the defined change among the individuals who are responsible for its implementation.

### **Concerns-based Adoption Model (C-bAM)**

In the late 1980s, Hord established a change structure called the Concerns-based Adoption Model or C-bAM. C-bAM provides a sequence and outline of concepts to be considered and observed when groups are experiencing change. The structure itself consists of seven stages: (a) Awareness, (b) Informational, (c) Personal, (d) Management, (e) Consequences, (f) Collaboration, and (g) Re-focusing. Individuals move through the model at different rates and routes, sometimes moving back and forth between stages. People must be given time and opportunities to work through their questions and concerns (Hord, 1987), allowing individual philosophical bases to incorporate the proposed changes. C-bAM provides structure to

specific questions and concerns that must be addressed if the change is to be more than superficial.

The goal of applying the C-bAM model is to facilitate the movement of as many stakeholder groups as possible through the levels until Collaboration and Re-Focusing, levels six and seven, are achieved. The route through the model is certainly not one way; a negative consequence may cause someone to return to a preceding level, e.g., level three Personal, and require colleagues to also return to provide support. Keeping communication lines open in all directions is critical to maintaining movement of the process throughout the complete cycle.

### **Effective schools and instructional leadership**

In 1970, Ron Edmonds caught the attention of the education profession by publishing the results of his recently conducted research. Sites for data collection were schools that had shown unusually positive results in measures of student achievement. These effective schools, as the resulting body of research came to be known, were found to share several correlates, one of which was the building principal being perceived as a strong instructional leader. Buffie (1989) defined instructional leadership to include these specific characteristics: (a) to help teachers and parents establish the priority of school goals, (b) to develop a solid database on the characteristics of the students and families served by the school, (c) to carefully monitor student progress on both affective and cognitive outcomes, (d) to establish high expectations and performance standards for both students and teachers, (e) to work with teachers and parents in developing curriculum, and (f) to provide professional development opportunities for teachers to improve student performance.

The accountability of the role of instructional leader and, hence, its critical importance, are clearly summarized when Buffie writes, “As instructional leader, the principal is *ultimately responsible for the quality* of the instructional program in the school [emphasis added]” (p. 12, 1989). Instructional leadership consists of knowledge, skills and beliefs. Each of these is important in defining how the principal accepts the responsibility for a school’s instructional program. Knowledge enables a principal to use available data, determine whether additional data are necessary and then interpret data as they relate to a given situation. Skills are required to use the available knowledge in ways that will best support and lead to the accomplishment of a building’s vision or goal statements. Buffie (1989) specifies seven skills required of an instructional leader: (a) visioning what *might* be; (b) communicating; (c) developing trust within and among individuals; (d) motivating others; (e) making decisions that are compatible with research, building goals and the school’s belief system; (f) planning with flexibility incorporated; and (g) promoting collegiality.

The governance of this knowledge and these skills—how the leader responds to a situation or individual, how priorities are established, and the level of congruency between a leader’s statements and actions—is determined by the leader’s belief system or values. All three pieces of leadership, knowledge, skills and a belief system, must be present and in balance with each other for that leadership to be effective.



## **Leadership**

### **Leader authenticity**

Halpin (1966) defined leader authenticity in early school organizational climate studies as the extent to which a school climate was open or closed. Based on a review of authenticity-related work by Halpin and others, Henderson (1983) further defined leader authenticity as “the extent to which organizational constituents viewed their leader as matching the leader’s words with the leader’s actions in three areas.” The first of these three areas is salience of self over role; decisions made by the building principal are made by a person, not someone cut from a position template who makes decisions based on rules and regulations alone. The authentic leader realizes that people are involved with problems or celebrations and, as such, different variables must be factored into individual equations. The second area pertains to the relationship of the leader and his/her followers. Constituents choose to follow the authentic leader out of respect for the individual and vice versa. Leadership does not consist of tasks being carried out only because an order has been given. The third area of authentic leadership is that of the willingness of the leader to take responsibility for the consequences of the leader’s actions and those of the organizational constituents. “Conversely, leader inauthenticity was defined as the extent to which the leader was observed by followers to engage in ‘passing the buck’ and blaming others and circumstances for errors, manipulating followers, and demonstrating a salience of role over self” (Henderson, 1996, p. 4).

Studies that have been completed in the area of leader authenticity and its effects in schools include: a) Ding (1991) who studied the relationship between principal authenticity and teacher job satisfaction; b) Meyer (1991) who examined the relationship between the

concepts of perceived authenticity and the perceived instructional leadership behaviors of middle school principals; and c) Lasserre (1990) who examined the relationship between teachers' perceptions of the context variables of teacher interactions, principal-teacher relations, and leader authenticity and the personal variable of teacher self-efficacy and teacher self-confidence. Little work has been done on the role of leader authenticity at the elementary level of schools, particularly in the area of the principal as the instructional leader of an effective building.

Hoffman (1993) carried the concept of leader authenticity to the development of its counterpart for staff, teacher authenticity, which he defined as the degree to which other teachers were viewed as accepting responsibility for their actions, as being non-manipulating and demonstrating a salience of self over role. In viewing the school structure as one entity, teacher authenticity must also be considered in any study of leader authenticity.

### **Leader effectiveness**

The National Center for Research in Vocational Education (NCRVE) defines leadership as both a process and a property. As a process, leadership is recognizing when change is needed and using noncoercive characteristics to move a group towards goal setting and achievement. Leadership as a property is given to an individual whom a group perceives to have the characteristics necessary to perform the leadership process (Jago, 1982, p. 315). Moss et al. (1994) however, point out that there is no consensus on "a specific definition of leadership, an explanatory model of leadership behaviors, or the most useful means for measuring the effectiveness of leaders." There is, however, general agreement that leadership is a construct

that can be recognized in practice, that certain aspects can be measured and shown to relate to effective performance and that these behaviors can be improved through interventions.

Kenneth Clark (1988) states:

We may not have given the world a comprehensive theory of leadership, complete with knowledge about how to increase the quality and number of leaders in future generations, but we have learned an enormous amount about the importance of certain qualities, about the effects of certain corporate or societal policies and about ways in which persons with selected talents can be identified. (p. 1)

Six broad tasks or aspects of leadership as defined by Moss, Finch and Johansen (1991) are: a) to inspire a shared vision and establish standards that help the organization; b) to foster unity, collaboration, and ownership, and recognize individual and team contributions; c) to exercise power effectively and empower others to act; d) to exert influence outside of the organization in order to set the right context for the organization; e) to establish an environment conducive to learning; and f) to satisfy the job-related needs of members of the organization as individuals.

A strong relationship exists between effective leadership as defined by Moss et al. (1994), the instructional leader correlate of the effective schools research, and the leadership model defined by school-based management through shared-decision making used in educational restructuring work. The definition of effective leadership written by John Gardner (1986) highlights the similarities:

Perhaps the most promising trend in our thinking about leadership is the growing conviction that the purposes of the group are best served when the leader helps followers to develop their own initiative, strengthens them in the use of their own judgment, [and] enables them to grow and to become better contributors. The problems we face simply cannot be dealt with unless there are highly motivated

workers who are accustomed to taking responsibility. To the extent that leaders enable followers to develop their own initiative, they are creating something that can survive their own departure. (p. 23)

### **Need for the Study**

The elementary mathematics adoption undertaken by the Des Moines Independent Community School District in 1995-96 represented a minimum investment of approximately \$700,000. District-wide initiatives were launched for staff development and in-service, teacher support and parent communication. These district efforts took place at a time when Des Moines Public Schools continued to grow in its incorporation of site-based management through shared decision-making. And so, it seemed appropriate that attention be given to this commonly spoken of, but often not understood, effective schools' correlate, that is the principal as the building instructional leader. It is important to study what the role of instructional leader looks like, how it is perceived by the staff, and whether or not the role fits with district instructional expectations and structure (Krug, 1993).

### **Statement of the Problem**

Because one role of the building principal is that of instructional leader, the principal is ultimately responsible for the implementation of changes in the building. District-imposed curricula changes, funded with the intent of improved instruction that will result in increased student learning, are the responsibility of the instructional leader. What is the classroom teacher's perception of the principal's role of instructional leader and how does that perception relate to the teacher's overall attitude towards a curriculum adoption?

### **Purpose of the Study**

The purpose of this study is to define the relationships between the principal's authenticity and effectiveness as an instructional leader as perceived by individual teachers and those teachers' overall attitude toward the implementation of a district curricular adoption calling for significant changes in instructional practices. This study focuses on two components of one major factor: the role of the principal as a building's instructional leader and the relationship of that role to the success of a district adoption, as defined by self-reported teacher attitude and change magnitude indicators.

### **Research Questions**

Several specific questions are raised in this project's statement of purpose.

1. How important is the role of instructional leader as played by the building principal?

This can be observed by analyzing the relationships between the staff's climate towards the adoption, the building's overall instructional climate and the staff's perception of the principal as an authentic leader.

2. What demographic factors enter in to a teacher's perception of the principal as an authentic and/or effective leader, as well as the teacher's attitude towards the 1995-96 elementary mathematics curriculum adoption?
3. What relationship exists for these Des Moines Public Schools between the staff's perception of the principal's leader effectiveness and the principal's leader authenticity?

4. What relationship exists for these Des Moines Public Schools between the building instructional staff's perception of the principal as an instructional leader and the staff's attitude towards the 1995-96 elementary mathematics curriculum adoption?
5. What relationship exists for these Des Moines Public Schools between the building's overall instructional climate and the staff's authenticity?

### **Hypotheses**

A positive correlation exists between a building's climate towards district-implemented changes in instructional practices and two variables: 1. Staff-perceived levels of the building principal as an instructional leader; and 2. Levels of the staff's self-authenticity.

Corollaries to the above hypothesis are also proposed:

1. A negative correlation exists between the length of time a teacher has worked with the current principal and that teacher's perception of the principal's leader authenticity.
2. Teachers who have more than five years of teaching experience have a more negative perception of the building principal's leader authenticity.
3. A positive correlation exists between a teacher's perception of the principal's effectiveness and his/her perception of the principal as an authentic leader.
4. Principals who are perceived to establish an environment conducive to professional development are also positively perceived as instructional leaders.

### Definition of Terms

<b>curriculum adoption</b>	The process by which learning outcomes are defined for students and instructional materials supportive of those outcomes are then selected and purchased.
<b>Information Age technology</b>	The use of telecommunications, computers and peripherals as tools to appropriately conduct the necessary activities of any business, including that of education.
<b>instructional leader</b>	The role used to provide vision, plans to attain that vision and motivation for any educational unit. Gibbs (1989) defines the instructional leader of effective schools as one who possesses the following characteristics: a) communicates and monitors reasonable expectations to the staff; b) conducts frequent and substantive classroom observations; and c) actively participates in the instructional program.
<b>leader authenticity</b>	As defined by Henderson (1983), leader authenticity is the extent to which organizational constituents view their leader as matching the leader's words with the leader's actions in three areas: a) a salience of self over role; b) non-manipulative; c) accepts corporate and personal responsibility for the leader's own actions and all the activities of the organization.
<b>mathematics education reform</b>	Philosophical and instructional changes in the approach to mathematics education as defined in <u>Curriculum and Evaluation Standards</u> (1989), published by the National Council of Teachers of Mathematics. The goal is to help students become mathematically literate, confident of their ability to use mathematics and see the value of mathematics in their everyday lives.
<b>restructuring education</b>	Education reform taken beyond merely rearranging the current pieces and players. Restructuring requires envisioning what is needed for the future and then redefining the allocation of resources to be prepared to meet those needs.
<b>site-based management through shared-decision making (SBM/SDM)</b>	As defined in the Des Moines Public Schools, SBM through SDM incorporates the use of decision-making at the level closest to the stakeholder most affected. Site efforts must support district goals and initiatives, yet be allowed to reflect the individual strengths and needs of the building community.

## **CHAPTER 2. LITERATURE REVIEW**

### **Reform in Mathematics Education**

Modern mathematics education and its reform in western cultures has been the subject of controversy since 1900. The debate has focused primarily on the correctness of “drill theory” versus “meaning theory,” with each side taking its turn at being the one heard most loudly and clearly. Times of a parallel existence between the two sides with each having equally strong and vocal supporters have also been present. A brief review of the key highlights and events of this debate and some general historical trends in mathematics education is helpful in placing today’s discussion in perspective.

#### **Historical overview**

##### **Modern mathematics education: The beginning**

In 1902, the English mathematician John Perry of the Royal College of Science promoted the use of a more concrete approach in mathematics education that allowed children to develop their own understanding of mathematics. This approach was in sharp contrast to the rote memorization associated with the then popular faculty learning theory, a cognitive base which promoted the exercise of individual faculties of the brain, such as the faculty for memorization, as the means by which learning took place. Societal response to Perry’s teachings was favorable, but ten years later only a handful of educators had actually adopted this approach for the classroom.



One American educator, Eliakim Hastings Moore, did pick up on Perry's emphasis of teaching for understanding. Moore was instrumental in establishing what would become a part of later grassroots efforts to establish the National Council of Teachers of Mathematics. As far as success in implementing this educational perspective, however, Moore was relatively unsuccessful in changing the emphasis of school mathematics from that of more than shopkeeper skills. The United States at that time was experiencing social problems that seemed unrelated to the study of mathematics and so the application of mathematics outside of the secondary and post-secondary classroom was not emphasized. Society, instead, had turned its attention to the tremendous influx of non-English speaking and central European immigrants, as well as to the new compulsory school attendance laws that were in place in all the states. Because of these societal needs, schools became tools of Americanization, with their focus often not on pure or advanced academic studies.

### **Learning and child development theorists**

Work by researchers in the areas of learning and child development theories has been central to influencing curriculum development throughout this century. Also at the beginning of the twentieth century, E. L. Thorndike became the first to apply the scientific approach to research in education, although not necessarily for specific classroom practices. Thorndike's research was instrumental in eventually denouncing the prevailing faculty learning theory, but did not succeed in promoting the work of Perry and others, work that might be considered early constructivism.

Around the 1930s, Jean Piaget began shifting the focus of the debate to the way in which children learn instead of the way in which teachers teach. A few practitioners, such as John Dewey in Chicago, put into practice what was considered to be real world learning which tied to the experiential work of Piaget, but the bulk of mathematics education remained that of drill and practice. Building on the foundation laid by Piaget, Brownell did a great deal of research and writing in the 1930s and 40s in developing his concept of meaningful learning. Noted for the use of a variety of data gathering and analyses techniques, Brownell went on to the University of California in 1950. In a sense, his work in meaningful learning and mathematics anticipated the modern mathematics movement that came to be known as the New Math.

### **The New Math**

On October 4, 1957, the Soviet Union launched Sputnik—as well as a new direction for mathematics education in the United States. The response of the American public to Sputnik was that of fear and panic. Public perception was that the American way of life was being threatened and, unless dramatic changes were made in the United States' educational system, the Soviet Union would soon take over the world. The United States needed citizens who were strong in mathematics and science; in response, the government began financially supporting research and curriculum development based on the work of mathematicians and college mathematics educators. With little regard for Piaget's *developmentally appropriate* work, or the means by which Bruner's *intellectually honest* concepts could be integrated with learning theory for the elementary and secondary classrooms, the New Math made its entrance

into schools all over the country. Descriptors of the program include *specificity of language* and *set theory*. While the total program really included a variety of approaches and topics, those two features seemed to be the ones that caught most everyone's attention. By 1960, Brownell was making public objections regarding the way in which the New Math curriculum was being introduced and, of greatest concern, the lack of additional training being provided for classroom teachers. The government began providing and paying for teacher training, but only at the secondary level. The number of elementary teachers made the logistics and support of their training impossible for all but a few. Unfortunately, what this resulted in was the teachers who traditionally had been the weakest in mathematics content and pedagogy (elementary classroom teachers) were now the ones who needed the most training in these same areas and were the ones not receiving it. As a result, few changes beyond those at surface level were truly implemented in elementary classrooms. Teachers who had been using rote methods for traditional mathematics instruction only a few years ago were now using rote methods for New Math instruction. Public support for New Math continued to fall and by the late 1960s the country had other issues with which to be concerned. Government funds were no longer as available to support continued mathematics and science efforts and the thrust for New Math diminished drastically. It is important to keep this series of events and philosophical stances in mind when reviewing the events subsequent to the publication of the Curriculum and Evaluation Standards by the National Council of Teachers of Mathematics in 1989. A major goal of the educators involved with the Standards was to avoid the pitfalls encountered during the era of the New Math.

### **A Nation at Risk**

In 1980, the NCTM published An Agenda for Action, a document which identified specific topics and areas in which reform was needed to improve and strengthen mathematics education. The primary target, mentioned repeatedly, was problem solving. Students could not do word problems on standardized tests. Something had to be done to increase problem solving scores; the something that was done was to tell teachers that something had to be done. Teachers were not, however, provided with the information, education or materials required to make significant changes in classroom instructional practices.

Concern grew beyond the boundaries of the mathematics education profession and in 1983, a report published by The National Commission on Excellence in Education and entitled A Nation at Risk became the catalyst of general public denouncement of the American education system. The country was experiencing severe economic difficulties, standardized test scores were falling—especially when compared to other countries—and the public perceived the country as losing any hope of maintaining its role as a world leader. This time, however, the mathematics education community assessed more carefully the needs of society and the system than it had during the New Math era.

Of the 25 million children who study mathematics in our nation's schools every weekday those at the younger end—some 15 million of them—will enter the adult world in the period 1995-2000. The 40 classroom minutes they spend on mathematics each day are largely devoted to mastery of the computational skills which would be needed by a shopkeeper in the year 1940, skills needed by virtually no one today. Almost no time is spent on estimation, probability, interest, histograms, spread sheets or real problem-solving, things which will be commonplace in most of these young people's later lives. While the 15 million of them sit there drilling away on those arithmetic or algebra exercises, their future options are bit-by-bit eroded. (Mathematical Sciences Education Board, 1987, p. 2-3)

Professional organizations for mathematicians and mathematics educators began developing plans for the movement which would ultimately result in the publication of the Curriculum and Evaluation Standards in 1989 and the Professional Standards for Teaching Mathematics in 1991, both by the National Council of Teachers of Mathematics. Other mathematics and science organizations also took an active role in shaping and promoting reform, such as the Mathematics Association of America in A Call for Change and the National Council for Research with Everybody Counts. The benchmark, however, has been the NCTM Curriculum and Evaluation Standards.

The Standards are built on a foundation of mathematical literacy, a concept which can be defined through the five goals for students that are identified in the document's Introduction (NCTM, 1989, p.5-6):

1. Learning to value mathematics and experiencing the interaction of mathematics with culture,
2. Becoming confident in one's own mathematical ability and seeing mathematics as a common human activity,
3. Becoming a mathematical problem solver,
4. Learning to communicate mathematically, having opportunities to read, write and discuss ideas using the language of mathematics, and
5. Learning to reason mathematically, making conjectures, gathering evidence and building an argument for a decision or response.

It is difficult to read any recently published textbook or journal article on the topic of mathematics education without encountering at least some mention of the Standards and the document's effect—perceived or otherwise—on mathematics instructional practices.

### Since the Standards

The debate between drill and understanding continues today. There are those teachers, and therefore textbook publishers, who have believed in the instructional practices which they have used for the past twenty years and see little need for change. They ask, "Is it really necessary to make learning addition and subtraction facts that complicated?" And there are teachers at the other end of the spectrum who have completely embraced a *learning for meaning* theory and have thrown out all textbooks and drill sheets in favor of manipulatives. And, finally, there is a large segment of elementary classroom teachers who fall somewhere between the extremes, but who are anxious to give students the best they have. Many know that not everything they have done has worked, but many are not convinced that a total manipulatives approach is the answer either (Clements & McMillen, 1996). Unless time and effort are spent to work with teachers at their philosophical base and encourage their own reflection and beliefs of their own pedagogical theory, meaningful change will not truly take hold. It is only when teachers truly believe in what they are doing that long-lasting changes will be seen in the classroom (Ball, 1993).

The Standards were published in 1989. Seven years later, statistics such as the following are still being cited in an attempt to describe the need for reform in mathematics education that continues to exist.

Begin with a sample of 100 students in 9th grade in the United States. National averages indicate that of these 100, 75 - 76% will graduate from high school four years later. Of these 75 students, 60% or 45 will enter a program in a four-year college. Of these 45 students, 40% will graduate from college four years later for a total of 18 graduates. Of these 18, 6 - 8% will have majored in mathematics or science while in college. This means that of the initial 100 students, only one will have pursued a degree in math or science within the 'ordinary' four-year time frame. (Merseth, 1993, p. 552)

### Political view

If mathematics is to be viewed as an integral piece of society and culture, as proposed in the Student Goals of the Standards, it is important to consider the influence of individual components within that society. The political perspective is crucial to the success and direction of a change the magnitude of such as proposed in mathematics education. "A change in beliefs about mathematics (and science) will require an unusual commitment from federal, state, and local governments as well as from the popular media...In addition to symbolic support, federal and state governments can offer financial support" (Merseth, 1993, p. 554).

Since 1969, the federal government has underwritten a report card for the nation's condition and progress of education. The National Assessment of Educational Progress (NAEP) is:

a congressionally mandated project of the National Center for Education Statistics, the United States Department of Education. The Commissioner of Education Statistics is responsible, by law, for carrying out the NAEP project through competitive awards to qualified organizations. NAEP reports directly to the Commissioner, who is also responsible for providing continuing reviews, including validation studies and solicitation of public comment, on NAEP's conduct and usefulness. (Mullis et al., 1993, p. 1)

NAEP is promoted as an integral piece of the nation's evaluation of education. But, it is not only education's assessment that is influenced by NAEP. The 1992 NAEP Executive

Summary explains:

In 1988, Congress created the National Assessment Governing Board (NAGB) to formulate policy guidelines for NAEP. The board is responsible *for selecting the subject areas* to be assessed, which may include adding to those specified by Congress; *identifying appropriate achievement goals* for each age and grade; developing assessment objectives; developing *test specifications*; designing the *assessment methodology*; developing *guidelines and standards* for data analysis and for reporting and *disseminating results*; developing standards and procedures for interstate, regional and national comparisons; improving the form and use of the National Assessment; and ensuring that all items selected for use are free from racial, cultural, gender or regional bias [emphasis added].

NAEP is frequently cited by politicians and educators alike because it provides a common denominator by which to gain a bird's eye view of what is happening with American students. Findings, such as the following that are contained within the Executive Summary of the 1992 NAEP report, often carry much weight in the political arena for future policymaking and funding allocation:

- Slightly more than 60% of students in grades 4, 8 and 12 were estimated to be at or above the Basic level in mathematics. The Basic level is defined as the level at which students should exhibit partial mastery of the knowledge and skills fundamental for proficient work.
- Across the three grades [4, 8 and 12], 25% or fewer were at the Proficient level or above. Students at this level exhibit evidence of solid academic performance.
- Only 2 - 4% of the students attained the Advanced level of superior performance.



Of particular importance to this study is the ranking of Iowa students in these levels of proficiency. Iowa students placed either first or second in the average mathematics proficiency for grades 4 and 8. (Similar data for grade 12 was not included in the Executive Summary report.) One interpretation that can be made is that Iowa teachers are among the leaders in mathematics education since Iowa students do so well in this standardized assessment. Considering that possibility, the significance of what happens within Iowa schools to support reform efforts becomes even more important. An alternative interpretation is that Iowa has done very well with traditional [computation-based] mathematics instruction, which in turn is what standardized tests do so well assessing. If efforts are then made to change the mode of instruction, the political and societal ramifications must be considered if the results include falling test scores.

### **Parental view**

Societal beliefs that support failure in mathematics in the United States have also shaped parental views (Merseeth, 1993). Parental views and opinions as to whether or not changes are needed in mathematics education are very important for two reasons. First, the influence parents exert on the formation of their child's opinions and beliefs. "Children's perceptions about mathematics and science are profoundly shaped by influential adults, many of whom harbor negative feelings toward those subjects" (Merseeth, 1993, p. 550). The second reason parents' opinions and views are important to mathematics education reform is because of the likelihood that those parental views are negative. Mathematics does not have a positive reputation with American society as a whole and parental views are no different. Personal

childhood experiences may have been negative and helped parents develop a fear or anxiety of mathematics. Removing the only means by which these adults may have achieved success in mathematics (i.e., rote memorization) further diminishes the potential of reform efforts being positively accepted. Edward Stitt, the principal of Public School 89 in New York City, reports that efforts to implement reform in the mathematics classes brought about numerous complaints from the students' parents, complaints based on the fact that students were using methods different from those they themselves employed (Grouws, 1992).

There can be a sense of mathematical helplessness by many parents as well. Recent studies offer conclusions that in the American culture, more so than any other modern civilization, it is assumed that differences in accomplishment in school mathematics are due to differences in ability rather than to differences in effort or opportunity to learn. Because the problem is now outside of their control or responsibility, parents are often willing to admit that they were "no good in math" either. Consequently, parents often accept and even expect their own children to fail in mathematics... "[The] result is a spiral of lowered expectations in which poor performance in mathematics has become socially acceptable..." (NRC, 1989, p.9). Dossey (1992) states that this acceptance and expectation of failure is, unfortunately, shared with another component of society—female elementary classroom teachers.

Children respond accordingly to these minimal expectations. "When parents think that ability supersedes effort, most students never learn the value of effort" (NRC, 1989, p.11). If students are not receiving support and encouragement at home and then are exposed to negative or even neutral feelings towards mathematics by their classroom teacher or

administrator, there is little reason for them to consider mathematics as an area in which success is possible or even desired.

[Motivation] can only come when the student feels the excitement of learning, experiences his/her efforts as appreciated, gets some clarity on goals, makes some connection between the work done in mathematics class and those goals, and feels the confidence and freedom to risk attaining them. (Reys et al., 1981, p.63)

### **Societal view**

Public attitudes about mathematics are shaped primarily by adults' childhood school experiences. Consequently, mathematics is seen not as something that people actually use, but as a best forgotten (and often painful) requirement of school. For most members of the public, their lasting memories of school mathematics are unpleasant—since so often the last mathematics course they took convinced them to take no more. (NRC, 1989, p. 10)

John Dossey (1992), mathematics education professor at Illinois State University, states that these negative perceptions of mathematics that society holds have a major influence on the development of curriculum, instruction and research. To better understand these perceptions and the resulting influence, it is helpful to look at them in more detail, beginning with the definition of mathematics. Steen (1988) defines the mathematician's view of mathematics as being a rapidly growing rain forest. In contrast, the public's view of mathematics is that of a tree of [constant] knowledge. Merseth (1993) outlines three specific societal beliefs that support this societal definition and have also shaped parental views towards the domain.

1. Mathematics is a largely rule-oriented body of knowledge acquired through the memorization of discrete number facts and algorithmic rules. Approximately 75% of secondary students who responded in a survey stated that there is always a rule to follow in solving a mathematics problem.

2. Mathematics is a static body of knowledge. The belief is held in spite of the fact that more mathematics has been discovered in the last thirty-five years than in all previous history.
3. Mathematics is a difficult subject that can be mastered by only a small percentage; an individual either has a math-mind or does not. It is this view that promotes social acceptance of failure in mathematics.

These societal beliefs influence the prevailing attitudes towards and achievement in mathematics, according to data gathered by Dossey et al. (1988). Children in grades 3, 7 and 11 were asked if they were good at doing mathematics. In grade 3, 65% of the students said they were good in mathematics. By grade 11, however, the percentage had dropped to 53. The percentage of students who said they enjoyed mathematics also declined from 60% in grade 3 to 50% in grade 11. Unfortunately, but not surprisingly, a positive correlation between attitude and achievement was found at all three grades (3, 7 and 11).

Educational reform is never simple if for no other reason than the integral part education and schools play in the American culture. Mathematics education reform is exponentially more complex because of societal attitudes and beliefs concerning the subject matter alone.

To change curriculum without changing teaching practice or to increase societal interest while teaching the same tired curriculum would be folly. Instead, a multifaceted and comprehensive effort is necessary—one that stretches the constraining web in many different directions, causing it to break. As Lauren Resnick, a noted cognitive psychologist, says of the necessary mathematical reform effort: “We’ll have to socialize [students] as much as to instruct them.” (Merseeth, 1993, p. 552)

### **Mathematics educators view**

Obviously, teachers and administrators in American schools are also members of the American society. As such, teachers and administrators have many of the same questions and concerns towards reform in mathematics as society at large. However, as professionals, these same teachers and administrators also have the responsibility of providing answers and guidelines to those questions and concerns.

### **Roadblocks**

Change has a reputation of sometimes being difficult to accept by many individuals.

Change for educators may be doubly difficult because of the nature of the profession and the nature of those who choose the profession.

We tend not to be radical agents of change. In fact, we are hired and paid by our boards of education to pass on the rich lore, traditions, and mores of our culture. And what more powerful elements of our mathematical culture exist than long division and the quadratic equation? For this reason, reducing emphasis on certain time-honored skills and shifting equally time-honored classroom practices take a degree of self-confidence and a willingness to take risks that our profession has not previously reinforced. (Leinwand, 1992, p. 467)

Teachers must make a conscious and informed decision about what mathematics is to be taught in their classroom everyday. Unfortunately, if a teacher's understanding of the content is limited, that teacher has nothing on which to base a decision about what is relevant and meaningful and how any selected topic can be expanded to make it even more so. Lanier (MSEB & NRC, 1991) observes, "You won't get higher level of learning for students without getting higher level of learning for teachers as well." And in further support, "Few elementary school teachers are prepared adequately in mathematics; typically, they take only one of the

four courses in mathematics recommended as appropriate preparation for teaching elementary school mathematics” (NRC, 1989, p. 28). This belief that elementary teachers are not adequately prepared for teaching mathematics at a level higher than rote memorization is repeated by various educators throughout the field of mathematics.

While many teachers do an excellent job, by some accounts nearly one out of every two math and science teachers does not possess adequate subject-matter training...Certification procedures offer little reassurance. Elementary teachers typically earn general teaching credentials for grades K-8 or K-6. Few elementary teachers take higher-level mathematics courses and most have only one or two courses in the teaching of mathematics. This lack of training translates directly into a lack of confidence. (Merseth, 1993, p. 551)

It is important to recognize that one of the factors that may be holding elementary teachers in making the shift from a traditional lecture or presentation style of classroom instruction to that of creating an interactive learning community is not stubbornness or lack of concern for children, but rather this lack of expertise and, therefore, confidence. Substantive changes in teaching math [as per the Standards] will be slow in coming and difficult to achieve because of the basic beliefs teachers hold about the nature of mathematics (Cooney, 1987).

This change in pedagogy requires teachers to have a strong enough background of mathematical content that they recognize and are able to guide exploration through ideas or concepts that may not have been a pre-planned part of a daily lesson. If a teacher has relied primarily on the textbook’s Teacher’s Edition for all the correct answers and necessary information, the option of students asking questions that may go beyond the scope of the book can be extremely threatening. Teachers who face this challenge once or twice may soon learn to avoid its repetition and revert to the more comfortable traditional planned approach (Hersh, 1986). This seeming lack of willingness to change what happens in the classroom is

based on the teacher's understanding of the nature of math, not on what he/she believes is the best way to teach (Grouws, 1992). The type of support and instructional leadership that is required to facilitate this change must, in part, be defined by this very need. And, with the majority of elementary administrators being taken from the elementary teaching pool, the possibility of this need being found in the very administrator being expected to provide the leadership certainly exists.

The most resounding statement of the importance of teacher's preparedness in selecting, presenting and exploring mathematics with children comes from Counting on You:

The teacher is the gatekeeper to mathematics for our students. What the teacher knows and believes about mathematics, about teaching mathematics, and about the teaching and learning environment determine what students learn and how they will play out their roles as citizens...To ensure that mathematics education in our schools is of the highest caliber, we must have well-prepared teachers who have the ability and authority to change within reasonable bounds the nature of their own roles and the nature of their classroom environments. (MSEB, 1991, p. 17)

The image of straight rows of desks, one person—the teacher—doing most of the talking, timed fact tests and a generous supply of worksheets is one that leaders in mathematics education reform would like to think is a thing of the past. And, in some rooms, it is. But in all too many, it is not. The instructional focus is often on one right approach and one correct answer; problems are given to students rather than developed from; manipulatives are offered only if a child has difficulty; and students are frequently cautioned to cover their paper and do their own work. "In the early grades, arithmetic becomes the stalking horse for this authoritarian model of learning, sowing seeds of expectation that dominate student attitudes all the way through college" (NRC, 1989, p.56).

Cohen and Ball ask, “How can teachers teach a mathematics they never learned, in ways they never experienced” (1990, p. 233)? This reluctance to change mathematical pedagogy in the elementary classroom is often viewed as the result of teachers being most comfortable teaching as they were taught. This does not mean, however, that change for these teachers is impossible.

As teachers began to change their pedagogy to reflect their changing beliefs, their classroom work was characterized by a series of attempts to “let go” of the planned goal or lesson in order to pursue important mathematical ideas...perhaps most difficult [to let go] of “getting through” all the subject matter they were expected “to cover.” (Russell & Corwin, 1993, p. 557)

The instructional leadership provided for these teachers to facilitate a change of this magnitude is critical in helping determine the degree of success achieved.

### **Support**

Many actions have been taken in an effort to change the appearance of what happens in mathematics class. An Addenda series published by the National Council of Teachers of Mathematics (NCTM, 1992) shortly after the Standards were released offers vignettes and implementation suggestions for lessons and activities that approach classroom instruction from a more participatory perspective. Textbooks and related materials are currently being published with great attention given to the Standards. Manipulatives are often included as part of a district’s textbook adoption. Educational conversations seldom take place now without the use of phrases such as *actively engaged students* and *hands-on activities*.



In Creating a Climate for Change...Math Leads the Way (MSEB, 1994) attention is given to more than the type of activities that take place in the classroom. The focus of many educators who have been successful in bringing about widespread change has been the need for the establishment of a *learning community* in each classroom. All members of the class, including the teacher, must view themselves as learners who are willing to take risks, ask questions and pursue answers if none are known. Larry Williams, a teacher in the Tuscaloosa, Alabama public schools who is featured in the MSEB videotape, explains, "As I began to change my role, I began to see a difference in the attitude of my students." This change in roles of both teacher and student is not easy, but can be promoted on a gradual, daily basis. Risk-taking, thoughtful guessing and perseverance from all students can be encouraged by providing honest positive reinforcement.

To continue building this community, teachers must help students "examine, represent, transform, solve, apply, prove, communicate" (Reys, 1981, p. 59). When students define the purpose of mathematics by the application or connection to the real world, participate in discussions with students and teachers and make presentations of hypotheses and findings, the role those students play in the classroom certainly changes from that of spectators to key players. Teachers must ask questions geared towards higher level thinking skills to stimulate and guide the discussions, or "questions that are an invitation to think, not just tests of memory" (Reys, 1981, p. 62).

## **Curriculum**

For most of the history of modern mathematics instruction, activity at the elementary level has been based on shopkeeping skills with drill and practice the mainstay of pedagogy. When content beyond computation is presented, it is likely to be done at an abstract level and, therefore, still unavailable to most elementary children. “[I]nstruction steeped in premature abstraction or [made to] view math as a string of procedures to be memorized, where right answers count more than right thinking. Either extreme yields mindless mathematics” (NRC, 1989, p. 11).

New content at each grade level has been minimal, with most textbooks devoting more than one-half of the content to review. Historically, grade 3 is the only grade between second and eighth where this proportion is not true. This repetition of content presentation, known as a spiral curriculum, is yet another concern of mathematics education reform. “As one teacher wryly noted, ‘If Johnny doesn’t get multiplication in third grade, he’ll have another chance in fourth, fifth, sixth, seventh, and eighth grades.’ This repetition deadens the mind and breeds low expectations” (Merseeth, p.550).

In determining guidelines for the mathematics content that must be included, any educator certainly must include problem solving. Specific topics may be mentioned, including geometry, measurement, data analysis and probability (MSEB, 1991, p. 10), but problem solving is the overall umbrella process to be used as a beginning perspective for all mathematical discoveries. Students need to gather data, look for patterns, go to mathematics to explain the pattern, and then communicate their thinking (MSEB, 1994). Elementary students must continually count, sort and chart data, whether the objects being counted are beans, M&M’s,

pencils or people. They must predict and evaluate the results of this data collection. Only by going beyond the computation that is offered in workbooks can mathematics fulfill one of its primary purposes for children and that is to provide a means of recording, predicting and explaining their world. And in discussing a child's findings with that child, the teacher must be able to "map a child's question as much as his answer, [because] neither alone will define the trajectory; and he must be prepared to anticipate something of what the child may encounter along the path" (Hawkins, 1972, p. 113).

## **Restructuring Education**

### **Change**

If the need for any change is not perceived or accepted as legitimate by all affected groups, the change process will be extremely difficult and changes may never be implemented other than superficially. "Recent research on the California Framework, a newly revised state-level curriculum, tells us that it is not sufficient to introduce new curriculum in a 'top-down' mode. Without substantial support, teachers simply teach new ideas in old, unproductive ways" (Merseeth, 1993, p. 553).

In studies based at Technical Education Research Centers, Russell and Corwin have closely examined factors that teachers themselves identified as being influential in their making changes successfully in instructional practices. The magnitude and rate of implementation were critical. "They [teachers] understood that, if they demanded fast and radical change of themselves, they would end up feeling discouraged...and that 'going slow' in the face of such complex change was the only way they could proceed" (Russell & Corwin, 1993, p. 556).

Teachers also confirmed that it was important to not disregard everything they had done up to the present. Rather than simply demand that old practice be thrown out, time had to be taken for all involved to work through the conflict between the old and the new in an attempt to develop the best solution for students. The general consensus among the teachers with whom Russell and Corwin worked was that teachers take very seriously the responsibility of helping their students learn and will scrutinize any efforts made to change what they have done in the past (1993).

When change is proposed in schools, it may be viewed as counterculture to the educational setting. The preservation and continuation of culture has been an identified function of schools; when change is proposed in education, it is often accepted in ways that will demand the least amount of actual modifications to current practices (Evans, 1993, p. 3). Roadblocks that are most likely to appear are:

a) Objections to the content itself. If a teacher is going to commit to taking risks and change what happens in the classroom on a daily basis, the change must be seen as plausible and coincide with his/her individual teaching philosophy. Who presents the change, does the content of the change support what the teacher believes important, and can the change be implemented in the specific environment in which the teacher currently is assigned all help determine the teacher's overall acceptance.

b) The flexibility and adaptability of the individuals involved. Change requires an enormous amount of emotional and physical energy and, therefore, requires individuals who are energetic, flexible and able to focus a great deal of attention on the change environment.

Contrary to these characteristics, the majority of the teaching force in the United States find themselves:

[M]idlife and midcareer, an era when the stresses of life and work commonly intensify the natural reluctance to change...these characteristics [loss of motivation and a leveling off of performance] have enormous, largely ignored implications for restructuring. They make teachers more vulnerable to stress and more sensitive to criticism and they reduce teachers' appetite for change at work. (Evans, 1993, p. 5)

As these individuals are asked to undergo change of the magnitude implied by restructuring, it is critical that the leadership be prepared to provide a structure and possible interventions to facilitate transitions as much as possible.

c) The organizational health of the school. The environment in which these changes are being suggested or proposed is certainly a factor in the degree of success implementation achieves. Resources in most educational settings are limited and often fall short of programs' needs. If a staff is encouraged and supported by leadership in making the changes necessary to move towards a common goal, the likelihood of the implementation being successful and the individuals feeling valued and therefore more likely to continue is increased. "If the culture also supports risk-taking, staff are more willing to innovate" (Evans, 1993, p.6).

## C-bAM

In 1987, Hord established a change structure called the Concerns-based Adoption Model or C-bAM (see Table 1). C-bAM provides a sequence of seven stages to be expected when change or innovation is presented to an individual or group. Each stage presents concerns that are likely to be expressed by individuals throughout the change process.

**Table 1. Concerns-based Adoption Model: C-bAM**

<b>6</b>	<b>Re-focusing</b>	The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.
<b>5</b>	<b>Collaboration</b>	The focus is on coordination and cooperation with others regarding the use of the innovation.
<b>4</b>	<b>Consequences</b>	Attention focuses on impact of the innovation on students in his/her immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.
<b>3</b>	<b>Management</b>	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.
<b>2</b>	<b>Personal</b>	Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision making and considerations of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.
<b>1</b>	<b>Informational</b>	A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.
<b>0</b>	<b>Awareness</b>	Little concern about or involvement with the innovation is indicated.

The C-bAM model provides a structure in which interventions in response to specific concerns can be organized and made available to leaders. Guarantees are not available, but Hord offers possible interventions to the concerns of each stage (1987, p. 44-46).

C-bAM is not intended to depict change as a linear process. Individuals may reach a stage, have a negative experience and return to a preceding stage, requiring additional information, resources or support. Russell and Corwin found the same phenomenon as they studied teachers implementing changes in their classrooms. Change was found to not be a sequential or linear process; as circumstances changed, teachers moved back and forth along a continuum.

## **Instructional leadership**

### **An effective schools correlate**

Ron Edmonds described effective schools as those schools that bring the children of the poor to the same achievement levels of children of the middle class (Edmonds & Fredericksen, 1978). The effective schools correlates most agreed upon number six and include: a) a positive climate; b) strong leadership, especially in the area of curriculum and instruction; c) an emphasis on academics; d) high expectations for all students; e) frequent assessment of student achievement; and f) positive relations between home and school. The correlate of strong instructional leadership continues to receive notice and be studied. In discussing the possibilities of creating effective leaders, Samuel Krug, president of MetriTech, Inc., writes of the importance of promoting an effective instructional climate:

When the atmosphere of the school is one that values learning and supports achievements, it is difficult not to learn. This is especially true in the critical first years of school, when

lifelong attitudes toward education are forming. The school leader plays a primary role in defining reinforcement systems, creating excitement, and communicating a message to students that learning has value outside the classroom. (Krug, 1993, p. 241)

Krug continues by defining instructional leadership as an approach to action rather than as a specific set of behaviors.

The business of schools is to provide instruction and an environment in which that instruction can facilitate learning. Instructional leadership needs to bring all the constituents together in a unified effort of making the business successful. More than just the leader's behavioral characteristics are important; the locus of the leadership, the effects of changing that locus and the fit between the leadership model and the reality of its implementation must also be considered.

### **Historical overview**

Placing current instructional leadership in its proper context requires a brief overview of the historical trends and developments that shaped and defined the leadership as it is known today. This historical is no easy task because of the lack of historical work that has been carried out in the field of supervision.

The field of supervision has been a practical one, concerned more with administrative and supervisory strategies for school operation than with analysis and introspection. Consequently, the field of supervision has produced few histories, since history is not considered a "practical" art. (Glanz, 1995, p. 101)

That, in itself is important to keep in mind when studying and evaluating any current findings pertaining to instructional leadership being practiced.



The manner in which schools are supervised is strongly influenced by the type of bureaucratic structure in which the schools must operate (Glanz, 1995). When schools became bureaucratic structures in the late 1800s, the position of superintendent was created at the top of the structure as the individual in charge. Throughout the last century, the extent of this position's influence has changed both as the position itself has changed and as individuals in the position have changed. The climate and style of the structure at the top strongly influence subordinate instructional decisions and events.

The early superintendent's responsibility, however, was largely instructional. It was he [sic] who presided over the development of the curriculum and was responsible for examinations and the yearly promotion or retention of students...In a very real sense, then, the superintendent was the instructional leader of the teachers and principals in the schools but still clearly subordinate to lay authorities. (Urban & Wagoner, Jr., 1996, p. 166-7)

By 1920, the organization of schools had changed to include a city-wide school board and the "notion of educational leadership was transformed into educational management" (Urban & Wagoner, Jr., p. 195, 1996). The role of the superintendent became more administrative and operational; the centralized bureaucratic structure, however, continued to hold the locus of instructional decision-making. A tradition of top-down instructional leadership became established during this time and maintained its central offices location until school reformation / transformation / restructuring efforts began in the 1970s and 1980s.

The efforts towards school improvement gained momentum throughout the 1980s and into the 1990s. "Teacher decision-making and democratic school governance are replacing bureaucratic mandates and administrative fiat" (Glanz, 1995, p. 108). As this happens, individuals from all stakeholder groups have begun to realize that for change to be effective, it must be embraced and nourished from the ground up. Effecting change is much more than

giving directives. As roles of different stakeholder groups, i.e., teachers, parents, and community have changed, the formally and informally defined responsibilities of the building principal have also changed in response. How these different responsibilities have been interpreted by each administrator has affected a building's growth and instructional improvement.

Buffie (1989) cites three major components that are used to define a building principal's role: a) chief administrator; b) operations manager; and c) instructional leader. Buffie found that the instructional leader component is the one that most often is short-changed in terms of the principal's time and attention.

The research clearly shows that principals spend most of their time on administrative or managerial tasks. Although most consider instructional leadership to be one of their most important responsibilities, they do not devote as much time and energy to this role as they would like. If our schools are to improve, we must redefine the principal's role and move instructional leadership to the forefront. (Buffie, 1989, p. 13)

In previous years, the Des Moines Public Schools administered a School Climate Survey with all items built around the effective correlates as defined by Ron Edmonds, including the correlate of instructional leadership. Within the complete survey, items eight through fifteen, inclusively, are a measure of instructional leadership. While inclusion of these specific items in the research instrument does not allow any statement of the measure of the overall climate found in a building or the district, it does allow a statement of representation of the perception of instructional leadership found in the building or district.

## **Leadership**

### **Leader authenticity**

James Henderson (1996, p. 3) defined leader authenticity as the extent to which the constituents perceive the leader's actions and words as being consistent or having integrity in the following three areas: a) the leader's actions are those of a real person, influenced and clearly defined by his/her belief system and values. Decisions are made in a consistent, thoughtful manner, not capriciously or haphazardly. Leadership does not appear to be that of a cookbook approach with little or no consideration given to the context or extenuating circumstances of a situation. Henderson describes this as exhibiting a salience of self over role; b) the leader is not perceived to manipulate individuals, whether that is using people for personal advancement or displacing a potential source of blame from the principal to another staff member. The leader treats all constituents with respect, focusing on helping each develop strengths for individual professional development as well as for the good of the organization; c) the authentic leader demonstrates a willingness to accept organizational and personal responsibility for his/her own actions as well as the actions of the organization. Henderson likens this to Harry Truman's philosophy of "The buck stops here." An alternative definition of authenticity is provided by Mitstifer (1995).

[Authenticity is] ...being true to one's personality, spirit, and character. It is avoiding self-deception and hidden agendas...to be authentic is to act, engage, be genuine and trustworthy, reflect, question, and correct how decisions are made; it helps to determine what is really going on and to expand possibilities. (1995, p. 4)

The following studies provide support to Henderson's work in leader authenticity (Henderson & Brookhart, 1996):

- Blumberg and Greenfield (1986) and Hoy and Koppersmith (1984) found a positive correlation between leader authenticity and trust among elementary staff.
- Hoy and Henderson (1983) determined that the level of leader authenticity of elementary principals was significantly related to the openness of the organizational climate and the attitude of humanism in disciplinary or pupil-control.
- Ding (1991) found a significantly positive relationship between the principal's authenticity and the amount of teacher job satisfaction.
- Lasserre (1989) found a strong relationship between the context measure for organizational climate and the personal variable of self-efficacy. Teacher interaction was significantly related to personal teaching efficacy and principal-teacher relations was significantly related to teaching efficacy.
- Meyer (1991) examined the relationship between the concepts of perceived leader authenticity and the perceived instructional leadership behaviors of middle-level principals.

In this study, Meyer found that the good instructional manager is accountable, highly visible and provides performance incentives to both teachers and learners without manipulation. Meyer also presented some specific findings regarding teachers' perceptions towards leader authenticity: a) teacher perceptions regarding authenticity and instructional management were different than those of supervisors and principals; b) male teachers have some perceptions different than female teachers; c) older teachers with more years of working with the current principal perceived the principal to be more manipulative than other groups

did; d) teachers in higher enrollment schools have higher perceptions of the frequency or quality of some principal behaviors than teachers from smaller enrollment schools.

Henderson (Henderson & Hoy, 1983) developed an instrument to measure authenticity that consisted of items derived from his review of the relative literature. The instrument, called the Leader Authenticity Scale, arose from informal conversations and discussions with educational administration professors from the Rutgers Graduate School of Education and consisted of seventy-five items.

Several findings by Hoffman (1993) are of particular interest to the implementation of this study.

1. Openness of school climate is positively related to authenticity.
2. Authentic teacher relations were characterized by collegial teacher-teacher relations; principal authenticity was characterized by supportive principal behaviors.
3. Principal authenticity and principal trust were positively related, as were principal authenticity and teacher authenticity.

Additional findings by Henderson (1995) also directly relate to this study.

1. The relationship between perceived leader authenticity and leader effectiveness was found to be strong.
2. Strong authenticity was found to be predictive of organizational climate and organizational health.

### **Teacher authenticity**

Because of the inextricable link between the actions of the leader or principal and those of the constituent or teacher, the concept of teacher authenticity was examined. The three variables of leader authenticity find direct corollaries in the definition as presented by Hoffman (1993). Hoffman defined teacher authenticity as the degree to which other teachers were viewed as a) demonstrating a salience of self over role; b) as being non-manipulating; and c) as accepting responsibility for their actions. Hoffman found that the relationship between the overall school climate and level of perceived authenticity is positive, i.e., the more open the climate, the higher the level of perceived authenticity of both the teacher and principal. The level of principal authenticity is also positively related to the amount of trust the staff has in the principal. Otherwise stated, if teachers believe that the principal is a total person in a role, does not manipulate the teachers and accepts responsibility for personal and organizational actions, those teachers have a high level of trust in the principal.

### **Current study in authenticity**

Henderson has continued his study of authenticity by expanding the work beyond the school organization, as well as examining the relationship between authenticity and other organizational variables. "Leader authenticity had been demonstrated to be significantly related to a number of organizational variables ranging from school climate to teacher efficacy and confidence to trust and to other variables..." (Henderson & Brookhart, 1996, p. 8). The following hypotheses and brief explanations are presented by Henderson (1996).

- Leader authenticity will be positively correlated with social constructivism. Social constructivism is defined as a world in which meaning is created jointly by the leader and constituents, as opposed to having meaning imposed from the leader to the constituents.
- Leader authenticity will be positively correlated with The Gallup Organization's [Principal Perceiver structured interview] leadership themes *Developer*, *Individualized Perception*, *Relator*, *Team* and *Command*.

The individual leadership themes of the Gallup interview are defined by the instrument itself. The *Developer* is the characteristic that provides satisfaction to the leader as he/she helps individual staff members grow professionally. *Individualized Perception* is the theme that celebrates the different strengths and needs of individual staff members. The *Relator* measures the administrator's interest in caring for and being concerned for staff members. *Team* focuses on how well the administrator enjoys getting people to work together to achieve goals, and *Command*, the interest in being in charge and making things happen (Henderson & Brookhart, 1996, p. 10).

Finally, a key area upon which Henderson has focused is that of the relationship between leader authenticity and leader effectiveness. Henderson hypothesized and found the data to support a positive correlation between leader authenticity and perceived leader effectiveness (Henderson & Brookhart, 1996, p. 8).

## **Leader effectiveness**

Leader effectiveness or efficacy can be defined as having the power to produce a desired result or effect. The Leadership Effectiveness Index, developed by the National Center for Research in Vocational Education at the University of California at Berkeley, measures the extent to which a leader is perceived to be effective in any given environment. Consensus has not been reached on a specific definition of leadership (Moss et al., 1994); the perspective that a group allows itself to be led by an individual whose behaviors match the group's idea of what a good leader should do seems valid. "Since leadership as a property lies in the eye of the beholder, only those who are so perceived are leaders" (p. 4). Because of this, the perceptions of those who would follow are very important when measuring the effectiveness of any leader. Regardless of how positively any leader perceives his/her behaviors as being effective, if subordinates do not share those perceptions, the leader lacks effectiveness. Leaders can be assigned subordinates; leaders can not be given followers; they must earn followers (p. 5). The analogy between this perspective and the characteristic of salience of self over role in the authentic leader can be made. Merely being placed in an administrative position does not automatically create a leader.

While a specific definition of an effective leader may not exist, it is possible to describe broad tasks for which an effective leader will assume responsibility. Gardner (1986) conceptualizes the role of a leader as one who facilitates the group process and empowers individual members through consultation, persuasion and inspiration.

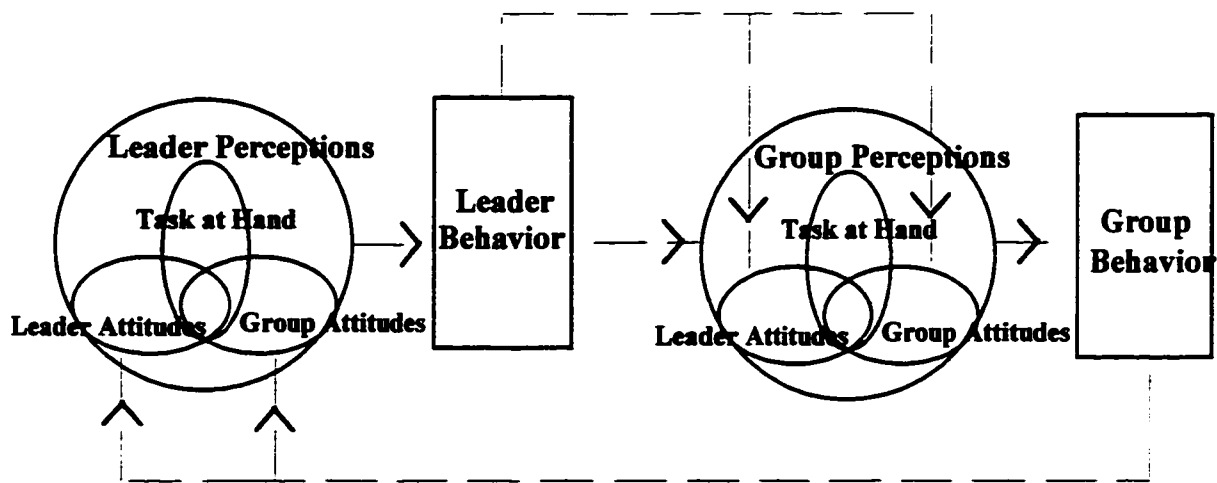
Perhaps the most promising trend in our thinking about leadership is the growing conviction that the purposes of the group are best served when the leader helps followers to develop their own initiative, strengthens them in the use of their own judgment, [and] enables them to grow and to become better contributors. The problems we face simply



cannot be dealt with unless there are highly motivated workers who are accustomed to taking responsibility. To the extent that leaders enable followers to develop their own initiative, they are creating something that can survive their own departure. (p. 23)

The National Center for Research in Vocational Education selected six leader tasks whose presence is critical to leader effectiveness. These six were developed from several sources of current research (Gardner, 1986; Bass, 1981; Moss, Finch & Johansen, 1991) and later served as criteria for the measurement of leader effectiveness: a) creates shared vision and establishes standards to help the organization grow; b) fosters a team approach through collaboration and ownership; c) empowers others to act and exercises power effectively; d) serves as an advocate for the organization; e) establishes an environment conducive to learning; and f) satisfies the job-related needs of members of the organization as individuals.

In each of these six tasks of leadership, a leader's behaviors are determined by his/her own personal characteristics in combination with his/her assessment of the group's characteristics, the context in which the task is taking place and the task itself. Again, as with Henderson's work in leader authenticity, a key factor is that the leader is seen as an individual who makes decisions in a role as opposed to an individual whose decisions are determined by a role. In response, group members view the behaviors of the leader through their own perceptions of the situation, the task and the leader's characteristics or attributes and then behave themselves within the boundaries of their own attributes. "The meaning systems of the leader and the group must, therefore, correspond or the intent of the leader's behavior will be misunderstood" (Moss et al., 1943, p. 7). The model of this relationship is shown in Figure 1.



**Figure 1. Relationships between the leader's and the group's behaviors**

The transferability of this work to other situations calling for similar leadership has been established in these studies:

- Lord, DeVader, and Alliger (1986) found that attributes, the factors that shape a leader's behaviors, remain constant in situations across a wide range of tasks, groups and contexts;
- Bass (1981) found, "Strong evidence...supporting the view that leadership is transferable from one situation to another. Although the nature of task demands may limit transferability, there is a tendency for the leader in one group to emerge in this capacity in other groups" (p. 596).

Lord et al. (1986) also did a meta-analysis to show that there are significant and consistent relationships between personality factors and intelligence and the emergence of leadership.

With the findings in both areas combined, transferability and relationships between personality factors and leadership, Bass then proceeded to review more than 300 studies to determine

which attributes showed consistently to be present with effective leadership. “Although no two studies were found to advance exactly the same set of attributes, there is a great deal of consistency among the kinds of attributes proposed” (Moss et al., 1994, p. 11). He compiled a list of thirty-seven attributes that are hypothesized to be present when leaders achieve the six broad tasks of leadership previously listed. The importance of this work lies in its implications for professional development. Research completed previously has shown that “some of the attributes common to successful leaders can be increased by a reasonable amount of planned educational experiences” (Moss et al., 1994, p. 11). Professional development for leaders may then address attributes that can be increased through the appropriate experiences. Attributes that do not respond to such interventions may be used as criteria for leader candidate selection.

The Leader Effectiveness Index (LEI) is important for two reasons in this study. Minimal work has been done to examine the relationship between leader authenticity and leader effectiveness, but the work that has been completed supports the hypothesis that the relationship between the two is strong. Most recently, Henderson and Brookhart (1996) reported,

There seemed to be intuitive overlaps with the leader authenticity aspects of accountability, salience of self over role, and non-manipulation of constituents, but they were also clearly not the same construct arrays. Future studies may meaningfully address the relationship of leader and staff authenticity and institutional effectiveness. (p. 15)

In reviewing the role the principal of a school plays in providing instructional leadership, particularly in an issue of the magnitude of a curriculum adoption, it is vital that all

components of that leadership role be studied individually and interrelationally. The use of the LEI in conjunction with the LAS and SAS provides that opportunity.

Continued work done by Henderson and Brookhart supports the need for additional study of both leader and staff authenticity, effectiveness, and the relationships between both constructs and other organizational and climate variables in schools and other public institutions (1996, p. 17).

## **CHAPTER 3. MATERIALS AND METHODS**

### **Instrumentation**

The research survey used to collect data for this project is a compilation of several instruments already established as reliable and valid by other researchers. Each of the contributing instruments is described in the following sections; a copy of each contributing instrument is provided in Appendix B. A copy of the complete survey as it was distributed to all subjects is included in Appendix C.

#### **Leader Authenticity Scale (LAS) and Staff Authenticity Scale (SAS)**

Henderson (1983) based his definition of leader authenticity on work initiated by Halpin in 1966. Halpin was somewhat nebulous in specifying characteristics of the authentic leader, describing authenticity as a concept that could not be operationalized. Halpin did identify two subtests of the Organizational Climate Descriptive Questionnaire (OCDQ) as indirect measurements of portions of leader authenticity: thrust and esprit. Halpin described thrust as an indication of the influence of a leader and esprit as the willingness of the group to follow that leader. Halpin did not develop a direct measure of leader authenticity.

In 1982, Henderson began to expand and further define the concept of authenticity as a measure of the consistency between a leader's actions and words. Three characteristics were used as the basis for further research and discussion of authenticity:

1. Salience of self, or the ability to see beyond the formal definition of a role to an individual's own values and beliefs for validation of decisions or actions.

2. **Non-manipulation of members of the organization.** Individuals are treated with respect and not merely as objects.
3. **Acceptance of the accountability and responsibility of organizational activities and challenges,** as well as acknowledgment of the role members played in organizational successes.

### **Development of the instrument**

A preliminary Leadership Authenticity Survey was administered to a sample of two hundred eight teachers; a factor analysis of the results identified two factors, both with eigenvalues greater than two, which explained 75.9% of the variance. Any item that had less than or equal to a .45 factor loading was eliminated (Henderson & Hoy, 1983). As a result of the factor analysis, the instrument was pared to forty-four items.

An expert panel that included a curriculum professor, a statistics professor, and two administration and supervision professors all from the Rutgers Graduate School of Education, (Henderson & Hoy, 1983, p. 70), then reviewed each of the remaining forty-four items and made a recommendation for each as to whether it should be included in the pilot instrument.

The panel based their decisions on three criteria:

1. **Clarity of statements,**
2. **The extent to which the items differentiated between authentic and inauthentic leaders,**
3. **The degree to which items were representative of the three aspects of leader authenticity (self-salience, non-manipulation, and accountability).**

Only items that met all three criteria were kept. Alpha coefficients for the scales were .94 and .95. The review panel also suggested thirteen new items as a result of its content validity discussions and the resulting instrument contained thirty-five items. This revised Leader Authenticity Scale (LAS) was further tested by hypothesizing relationships among the LAS measures of teachers' perceptions of principal's authenticity (based on the three characteristics identified by Henderson) with their perceptions of school climate and the principal's attitudes and beliefs relevant to his/her status concern and personality rigidity. Based on a second factor analysis, thirty-two items were kept for the resulting Leader Authenticity Scale.

In 1993, Hoffman scaled down Henderson's 1982 version of the LAS to a shortened form with sixteen items. The short version had an alpha coefficient of reliability of .92. Hoffman also developed and tested a Teacher Authenticity Scale (TAS) that was similar to the LAS. Teacher authenticity was defined as "the degree to which other teachers were viewed as accepting responsibility for their actions, as being non-manipulating, and demonstrating a salience of self over role" (Henderson & Brookhart, 1996, p. 6). The alpha coefficient of reliability for the TAS was .88. The shortened form of the LAS and the TAS (also sixteen items) together form the authenticity portion of the survey that was used for this study.

### **Reliability**

The consistency of results when the Leader Authenticity Scale and the newer Teacher Authenticity Scale have been administered indicate a high reliability.

- The initial study in 1982 by Henderson of forty-two New Jersey elementary schools resulted in an alpha coefficient of reliability of .96.

- Hoffman (1993) tested a short form (sixteen items) of the Leader Authenticity Scale and found an alpha coefficient of .92.
- Of the Teacher Authenticity Scale (TAS) that Hoffman developed, based on the Leader Authenticity Scale, an alpha coefficient of .88 was established.
- Hoffman did a factor analysis to determine the construct validity of both the shortened LAS and the TAS. The results for both were as predicted with each providing a measure of leader authenticity and teacher authenticity respectively.

### Validity

Content validity of the Leader Authenticity Scale and Teacher Authenticity was first established in Henderson's initial work in 1982. An expert panel was assembled to review each of forty-four items which had already satisfied an applied factor analysis. During the next stage of establishing content validity of the instrument, 291 teachers responded to an administration of the LAS while another group of 300 teachers responded to two subtests of the Organizational Climate Descriptive Questionnaire (OCDQ). These two subtests were the Esprit (defined as the faculty satisfaction emerging from task accomplishment and personal need gratification) and the Thrust (the teachers' perception of the principal's efforts to motivate through personal example) portions (Henderson & Hoy, 1983, p. 69). As a third component, principals completed the Status Concern Scale (SCS).

The results confirmed the validity of the LAS. A Pearson product-moment correlation coefficient was determined for each relationship and defined as statistically significant at the .05 level. Leader authenticity was positively correlated with Esprit ( $r = .52, p < .01$ ) and with



Thrust ( $r = .65, p < .01$ ) and negatively correlated with status concern ( $r = .30, p < .05$ ) (Henderson & Hoy, 1983, p. 73).

## **Leader Effectiveness Index**

### **Development of the instrument**

The Leader Effectiveness Index (LEI) is an assessment of the effectiveness of leadership performance in vocational education. The assessment on any one leader is completed by more than one rater and takes only a few minutes. There are seven items; the first six items correspond to the six broad leadership tasks identified by Jago (1982): a) to inspire a shared vision and establish standards that help the organization; b) to foster unity, collaboration, and ownership, and recognize individual and team contributions; c) to exercise power effectively and empower others to act; d) to exert influence outside of the organization in order to set the right context for the organization; e) to establish an environment conducive to learning; and f) to satisfy the job-related needs of members of the organization as individuals (Moss et al., 1994, p. 6).

In 1989, only four tasks were assessed with a five-point Likeart scale, ranging from *Extremely effective* to *Not effective*. The four items were included as a separate section of the Leader Attributes Inventory (LAI). Using a test-retest design, a reliability coefficient of the four items was established at .92.

During the next four years, extensive study was done to define outcomes most commonly accepted as determinants of effective leadership. A review of the literature by Yukl (1989) found three commonly accepted criteria: a) the extent to which the leader's group performs its

tasks successfully or reaches its goals; b) the personal impact of leaders on followers; and c) the leader's contribution to the quality of the group process, e.g., facilitative or empowering. Several studies followed (Finch, Gregson & Faulkner, 1991; Mentkowski et al., 1982; and Moss, Finch & Johansen, 1991) to confirm the specific tasks that would best assess leader effectiveness. The result was the 1993 form of the LEI that was included in the survey used in this study and included in Appendix B.

### **Reliability**

In a study with two classes, the LEI was administered one week apart to each of the two groups. The test-retest correlation coefficients of the average rating were  $r = .94$  and  $r = .93$ . The test-retest correlation coefficients of the overall assessment item were  $r = .95$  and  $r = .92$ .

Interrater reliability was also established by examining the ratings done by groups of three to five raters on the same ratee. The interrater reliability of the average rating of the six broad leader tasks was .86.

### **Validity**

Moss et al. (1991) accept the face validity of the LEI as evidenced by no respondents having ever reported that any of the tasks were irrelevant to their concept of leadership.

Two studies have been done to determine the LEI's construct validity. The first by Moss, Finch, and Johansen (1991) found that the LEI enabled respondents to express their own beliefs about effective leadership through the statements of the LEI. In the second study, the LEI was administered to two groups of graduate students ( $n = 37$ ,  $n = 38$ ). The correlation

coefficients between the average score of the six items concerning the six broad leadership tasks and an overall assessment seventh item of the two samples were  $r = .91$  and  $r = .92$ . The average difference between the mean score of the six broad tasks items and the overall assessment item was only .054, indicating that the six tasks measured by the LEI were assessing a total picture of leader effectiveness.

The use of the LEI is also justified because of the work that has been done to establish interrater reliability. The design of this study with multiple raters reporting individual perceptions of the principal as an instructional leader requires that there be some means to determine the extent to which behaviors or circumstances are being perceived similarly.

## **School Climate Survey**

### **Development of the instrument**

The School Climate Survey has been administered by the Des Moines Independent Community School District to all staff members and parents of students, as well as to secondary students themselves. The survey was developed by a committee of twenty individuals. Committee membership included teachers, administrators, community members, parents and high school students. The survey itself took approximately two years to develop and refine, evolving from a survey of two hundred items to the current thirty-two items.

### **Reliability and validity**

Statistical measures of the instrument's reliability and validity have not been taken, but based on the consistency found by district measurement and evaluation personnel between the

survey results and observable actions from individual schools, the district has used the results for school improvement plans and direction. When the survey was first administered in 1993, the response rate was 64.9%; in 1995, the response rate was 64.8%.

### **Sample Selection**

#### **Population**

The population of this study was elementary teachers who have a mathematics responsibility for students in grades one through five in urban school districts of fewer than 50,000 pupils.

#### **Sample**

The sample was 208 teachers who teach students in grades one through five mathematics at twenty elementary schools in the Des Moines Independent Community Schools, Des Moines, Iowa. A list of the forty-three elementary school names was alphabetized, with the names of the researcher's own building assignments for the past two years being omitted. From the list, every other building name was selected, beginning with the first as determined by a coin toss (heads called as first, tails as second). For each of the twenty selected buildings, names were determined based on entries in the district school directory which includes lists of all staff members assigned to an instructional site. Teachers were selected if the directory listing indicated that the individual was a grade one through five classroom teacher or assigned to a multi-age class. Teachers listed as having special education or non-classroom

(for example, Title I or English as a Second Language —ESL) assignments were not sent a survey. The resulting list included 208 teachers.

A copy of the survey was also sent to each of the twenty respective building principals in September, 1996 to determine the relationships between teacher and principal perceptions of the leadership and adoption process. A verbal follow-up request for the completion of the surveys was made by the researcher at the monthly October, 1996 elementary principals' meeting. Telephone calls to those principals who had not responded within four weeks after the mailing were made by the individual who had been responsible for subject coding.

It is believed by the researcher that several of the survey items could be perceived as somewhat threatening or intimidating by respondents if they felt concern regarding the confidentiality of the results. Because of this, the option of choosing to not answer any given item was made available and emphasized in the cover letter that accompanied the survey.

### **Procedures for Collecting Data**

In 1995-96, the Des Moines Public Schools implemented a mathematics adoption for grades one through eight. This adoption took place in all elementary and middle schools, however, this study focused on only grades one through five. The following process was used for data collection purposes:

1. A copy of the survey that was sent to the 208 teacher subjects is included in Appendix C. A modified version with no background demographic page included was sent to the respective 20 principals at a later date.

2. Each copy of the survey was assigned a 6-digit code with a common portion of the code used for all the surveys sent to personnel from the same building.
  - The general format for each code was *school[##]grade[##]subject[##]*. Selected school names were randomly drawn to assign the specific identifier. For example, the specific identifier or code that was assigned to the 4th grade teacher whose name was drawn third from the tenth selected school was 100403. A code was written at the top of each survey sheet.
  - The code did not indicate which school was being surveyed to insure anonymity. An individual not related to the project assigned a code to each individual subject without providing any identification information to the investigator.
3. Survey packets consisting of a four-page survey, cover letter, and a stamped return envelope were collated. The return envelope bore the researcher's address as both sending and return. No other subject identification was supplied by the researcher.
4. A master list of the code assignments was held for the major professor of the study; an electronic copy was held by the individual who assigned the codes; the investigator did not have a copy and deferred to either the professor or the other individual for the confirmation or validation of any results. Completed surveys were asked to be returned within two weeks of the mailing date.
5. Approximately three weeks after the initial mailing was completed, a follow-up postcard was sent to all subjects from the mailing list. The card expressed thanks to those who had returned the survey and requested that those who had not, still do so.

The collected data were used to explore questions in three primary areas: a) the demographic characteristics of the survey respondents; b) building leadership perceptions held by teachers who were responsible for implementation of the elementary mathematics adoption in the Des Moines Public Schools in 1995-96; and c) the relationships between those perceptions held by teachers and attitudes of those same teachers concerning the success of the adoption implementation. For each area, the data were examined at the district level for the total group of respondents, at the building level, and at each grade level.

### **Human Subjects**

A "Use of Human Subjects in Research" form was filed with and approved by the Human Subjects Review Committee at Iowa State University before any work was begun on this study. All participants were notified that they were being requested to voluntarily participate in a research study pertaining to instructional leadership and mathematics education; modified informed consent was obtained. A similar application filed with Dr. Thomas Deeter, Program Evaluator for Des Moines Public Schools, was approved and confirmed to be in support of district goals and school improvement plans. Copies of both application forms are included in Appendix A.

A full explanation of the study was made available to all subjects at the end of the study. Copies of the completed dissertation and all findings were filed with the Des Moines Independent Community School District central office as per the agreement made between the district and the researcher at the beginning of the study.

## CHAPTER 4. RESULTS AND DISCUSSION

### Description of the Sample

Of the 208 teachers of grades one through five who were sent a copy of the study survey, 105 or 50.1% responded; of the twenty principals who were sent a copy, fourteen or 70% responded.

The demographic picture of the average teacher respondent is that of a female who has been responsible for teaching children elementary mathematics for more than fifteen years at either her current or a different level. If she has been aware of the National Council of Teachers of Mathematics Curriculum and Evaluation Standards for School Mathematics (1989)—and that includes approximately 75% of the respondents—it has been for slightly more than four years. The teacher has been in her current building for more than nine years and has worked with the current principal for four years. On a total group basis, less than ten per cent of the respondents are members of the National Council of Teachers of Mathematics and less than six per cent are members of the state-level Iowa Council of Teachers of Mathematics. Each grade level had similar numbers of teachers responding, ranging from twenty-two first grade teachers to fifteen fifth grade teachers. The descriptive statistics for the sample demographics are provided in Table 2. Demographic data were not collected for the twenty principal subjects because of the resulting likelihood of identification.

Many respondents could not remember the highest level of mathematics they had completed either in high school or in college. Sixty-one did give some indication of what that



**Table 2 . Summary of respondent demographic data**

Descriptors of respondents	Measure
Taught elementary mathematics, at current or other level	$\bar{x}$ = 15.30 years (n = 96)
Have known of the National Council of Teachers of Mathematics (NCTM) <i>Curriculum and Evaluation Standards</i>	$\bar{x}$ = 4.44 years (n = 79)
Have been assigned to the current building	$\bar{x}$ = 9.28 years (n = 97)
Have worked with the current principal	$\bar{x}$ = 4.19 years (n = 97)
Member of NCTM	Yes = 9
Member of ICTM (Iowa)	Yes = 6
Gender	Women = 89 Men = 7
Number of respondents at each grade level	1st = 23 2nd = 20 3rd = 18 4th = 21 5th = 15

course was, with more than half having completed only the minimal requirements of an elementary methods course, a general mathematics for elementary education majors course, or a first year algebra course. Three of the seven males who returned the survey responded to this question: one had taken advanced algebra and trigonometry, one had taken finite mathematics and the third had taken calculus. A summary of the responses to this question is given in Table 3.

This demographic picture is certainly significant, given the findings reported earlier. Of particular interest is the level of formal mathematical instruction. Beginning with Lanier's statement (MSEB, 1994) relating the level of learning for students with that for teachers, "You won't get higher level of learning for students without getting higher level of learning

**Table 3. Last mathematics course taken by respondents in high school or college**

<b>Mathematics Course</b>	<b>Female</b>	<b>Male</b>
Mathematics methods	16	
Algebra	11	
Math for Elementary Education majors	9	
Statistics	9	
Advanced Algebra/Trig	8	1
Geometry	4	
Calculus	2	1
Finite math	1	1
BS in math sciences	1	

for teachers as well.” In Everybody Counts (NRC, 1989), a statement is given that certainly reflects the demographic findings of this sample: “Few elementary school teachers are prepared adequately in mathematics; typically, they take only one of the four courses in mathematics recommended as appropriate preparation for teaching elementary school mathematics.” The final statement by Merseth is a further indictment of this lack of content expertise:

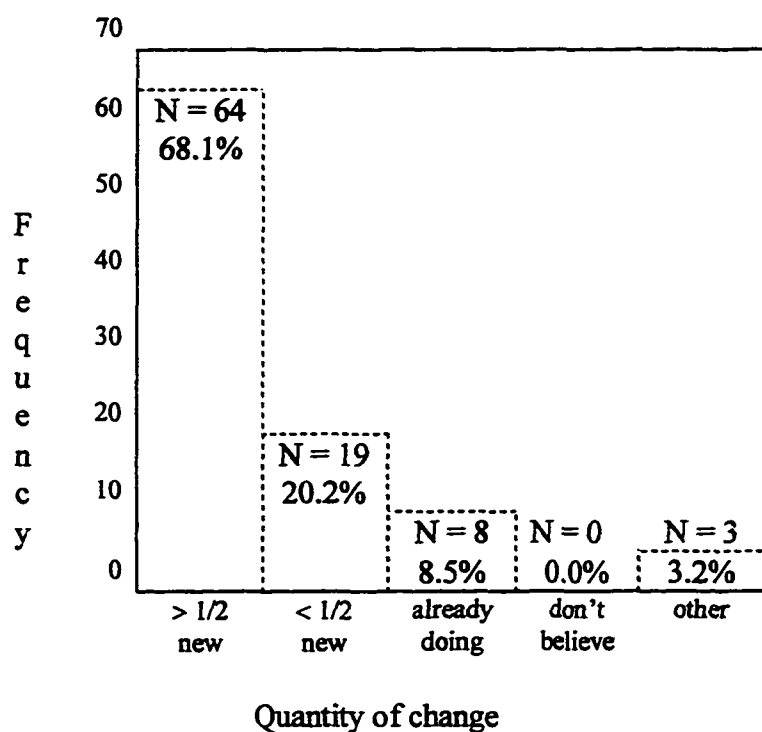
While many teachers do an excellent job, by some accounts nearly one out of every two math and science teachers does not possess adequate subject-matter training...Certification procedures offer little reassurance. Elementary teachers typically earn general teaching credentials for grades K-8 or K-6. Few elementary teachers take higher-level mathematics courses and most have only one or two courses in the teaching of mathematics. This lack of training translates directly into a lack of confidence. (Merseth, 1993, p. 551)

The significance of this particular facet of the demographic picture of the survey respondents is in the way it highlights the need for instructional leadership. The change in pedagogy required by the change in mathematics education as outlined in the Standards

requires an environment of supported risk-taking and professional growth. The responsibility the principal has in creating such an environment is central to the instructional leadership role.

### Description of Responses

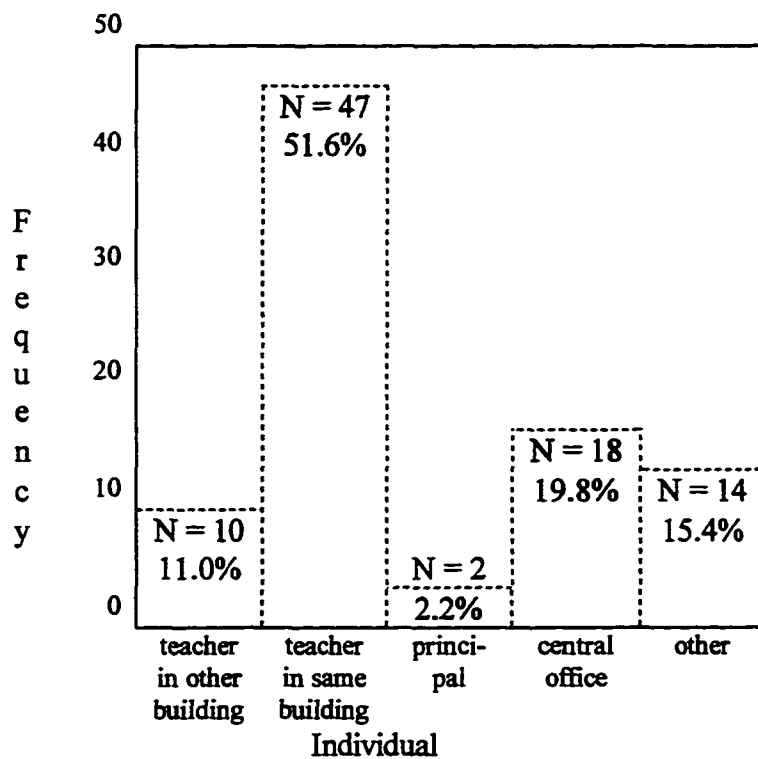
When asked to indicate the amount of change that had been made in the respondent's respective classroom, 68.1% of the respondents said more than half of the instructional practices that they themselves did was new. As shown in Figure 2, no respondent indicated that non-belief in the philosophy of the adoption was a cause of little or no change.



**Figure 2. Self-reported quantity of change in classroom instruction**

Respondents were also asked to identify who was most helpful to them in their own implementation of the new curriculum. They were asked to select only one of the five listed possibilities. For those who selected “other,” the addition of written responses included: a) myself; b) Math Lab teacher [Title 1]; c) no one; and d) our math curriculum director. The name of the district supervisor of mathematics was written in by three respondents as “other.” Figure 3 reflects the addition of these three to the Central Office category rather than as “other.”

Data gathered in response to the remaining survey items are presented in the following tables, first as individual building means and then as districtwide grade-level means. The



**Figure 3. Individual identified as most helpful with the adoption implementation**

survey itself can be divided into four primary sections: a) questions 1 through 16 are the Leader Authenticity Scale; b) questions 17 through 32 are the Staff Authenticity Scale; c) questions 33 through 39 are the Leader Effectiveness Index items; and d) questions 40 through 47 are taken from the Des Moines Public Schools School Climate Survey and relate to the level of instructional leadership in each building as perceived by staff members. For this study, most of the discussion will focus on the building-level summaries as opposed to those at the grade-level. However, for the purposes of reporting an accurate and complete representation of the survey results, the grade-level summaries will be reviewed briefly.

The mean of each of the four survey sections for each building surveyed is reported in Table 4. These means were calculated based on the teacher responses from each building, buildings one through twenty, and the principal responses. The table also includes a mean for each building of the teacher responses given for two questions that were included on the survey's first page of background information. These questions gave each subject the opportunity to indicate how well the mathematics curriculum adoption was implemented in the subject's building and then in the district as a whole, regardless of the subject's agreement or lack thereof with the adoption choice.

Each variable that is reported in Table 4 is identified by a seven- or eight-letter name, indicative of the portion of the survey it represents. These variable names will be referred to throughout the remainder of the reporting of the results.

**Table 4. Building means for survey subsections**

Building	Group	Measure	ATTIBMN Building Attitude	ATTIDMN District Attitude	LASMSMN Leader Authenticity	LEIMSMN Leader Effectiveness	SASMSMN Staff Authenticity	DMPSMSMN Instructional climate
1	Teachers	Mean	3.6667	3.5000	5.6875	5.7500	4.7552	3.8661
		N	3	4	4	4	4	4
		Std Dev	1.5275	1.2910	.2552	.5000	.4321	.1171
	Principal	Mean	NA	NA	2.8750	5.2857	3.875	3.8750
2	Teachers	Mean	3.8571	3.1429	5.5399	5.4694	4.7768	3.8036
		N	7	7	7	7	7	7
		Std Dev	.3780	.6901	.3331	.6635	.6564	.1591
	Principal	Mean	NA	NA	3.0000	6.0000	3.0000	4.0000
3	Teachers	Mean	3.5000	3.4000	3.9583	4.1667	4.1042	3.3363
		N	6	5	6	6	6	6
		Std Dev	.8367	.5477	1.3816	1.2918	.4916	.4065
	Principal	Mean	NO RESPONSE TO SURVEY					
4	Teachers	Mean	3.5000	3.3333	4.6082	3.7500	4.5833	3.1563
		N	4	3	4	4	4	4
		Std Dev	.5774	.5774	.2920	.9212	.5026	.2577
	Principal	Mean	NA	NA	3.7500	4.0000	2.8750	3.0000
5	Teachers	Mean	4.7500	4.2500	5.2156	5.9286	4.4531	3.7813
		N	4	4	4	4	4	4
		Std Dev	.5000	.9574	.3220	.1429	.6582	.3590
	Principal	Mean	NA	NA	3.3750	5.2857	3.3125	3.7500
6	Teachers	Mean	3.8333	3.0000	3.8875	4.2000	4.9750	3.5500
		N	6	6	5	5	5	5
		Std Dev	.7528	.0000	.7361	1.0671	.5687	.3377
	Principal	Mean	NA	NA	2.6250	5.0000	3.5625	4.0000
7	Teachers	Mean	3.5000	3.5000	4.7500	4.5000	4.2500	3.2500
		N	4	4	4	4	4	4
		Std Dev	.5774	.5774	.8524	1.6599	1.2645	.7569
	Principal	Mean	NA	NA	3.3125	5.8570	3.5000	3.6250

**Table 4. (continued)**

Building	Group	Measure	ATTIBMN Building Attitude	ATTIDMN District Attitude	LASMSMN Leader Authenticity	LEIMSMN Leader Effectiveness	SASMSMN Staff Authenticity	DMPSMSMN Instructional climate
8	Teachers	Mean	3.5000	3.7500	5.2656	5.4286	4.9063	3.6250
		N	4	4	4	4	4	4
		Std Dev	1.2910	1.2583	.9106	.9619	.7006	.4449
	Principal	Mean	NA	NA	3.5000	6.0000	4.0625	4.0000
9	Teachers	Mean	2.6000	2.6000	3.0725	2.857	3.6900	2.7250
		N	5	5	5	5	5	5
		Std Dev	1.1402	1.1402	1.9537	1.9769	.7052	.8768
	Principal	Mean	NA	NA	3.3333	4.8571	3.4667	4.0000
10	Teachers	Mean	3.4286	3.1429	5.2863	5.4490	5.0357	3.6071
		N	7	7	7	7	7	7
		Std Dev	.5345	.3780	.5925	.7668	.6836	.3915
	Principal	Mean	NA	NA	3.8750	2.8125	5.7143	3.8750
11	Teachers	Mean			5.6875	5.0000	3.6250	2.8750
		N			1	1	1	1
		Std Dev						
	Principal	Mean	NO RESPONSE TO SURVEY					
12	Teachers	Mean	2.3333	2.0000	2.1875	1.7143	5.3958	2.8333
		N	3	2	3	3	3	3
		Std Dev	1.5275	.0000	.4330	.6547	.2954	.6884
	Principal	Mean	NA	NA	4.3750	4.0625	4.2857	3.1250
13	Teachers	Mean	3.7143	3.7143	4.2137	4.0179	2.9592	2.6250
		N	7	7	7	7	7	7
		Std Dev	.4880	.4880	1.3420	.8399	1.3670	.6922
	Principal	Mean	NA	NA	3.1875	3.3750	4.5714	3.2500
14	Teachers	Mean	3.1250	3.2857	3.8203	4.2240	3.3958	3.2701
		N	8	7	8	8	8	8
		Std Dev	.8345	.7560	.8007	.6434	1.1508	.5992
	Principal	Mean	NO RESPONSE TO SURVEY					

**Table 4. (continued)**

Building	Group	Measure	ATTIBMN Building Attitude	ATTIDMN District Attitude	LASMSMN Leader Authenticity	LEIMSMN Leader Effectiveness	SASMSMN Staff Authenticity	DMPSMSMN Instructional climate
15	Teachers	Mean	3.3333	3.0000	2.4583	2.3597	1.6667	2.0000
		N	3	3	3	3	3	3
		Std Dev	.5774	.0000	.7914	.8343	1.0335	.5000
	Principal	Mean	NO RESPONSE TO SURVEY					
16	Teachers	Mean	3.6667	3.6667	4.5208	4.2917	4.8095	3.5000
		N	3	3	3	3	3	3
		Std Dev	1.1547	1.1547	.7815	.5637	1.9396	.6495
	Principal	Mean	NO RESPONSE TO SURVEY					
17	Teachers	Mean	3.2000	3.0000	3.5925	4.6125	3.3143	3.0000
		N	5	5	5	5	5	5
		Std Dev	.4472	.0000	2.1586	.6516	1.6945	.7756
	Principal	Mean	NA	NA	4.8125	4.5000	4.0000	3.7500
18	Teachers	Mean	3.5714	3.0000	2.2791	4.5357	2.1633	2.5306
		N	7	7	7	7	7	7
		Std Dev	.5345	1.0000	.7160	.2673	.7712	.3970
	Principal	Mean	NO RESPONSE TO SURVEY					
19	Teachers	Mean	4.2000	4.0000	2.8750	3.9750	1.7190	1.9500
		N	5	5	5	5	5	5
		Std Dev	.8367	.7071	.8028	.6504	.70241	.455865
	Principal	Mean	NA	NA	4.0625	3.1875	3.5714	2.8750
20	Teachers	Mean	3.2500	4.0000	4.3594	4.2969	4.4286	3.7500
		N	4	4	4	4	4	4
		Std Dev	.9574	.8165	1.8529	.3693	2.3123	.6455
	Principal	Mean	NA	NA	3.2500	3.5000	4.0000	3.3750
<b>Total</b> N=14	Teachers	Mean	3.5158	3.3370	4.1189	4.3957	3.8919	3.1652
		N	95	92	96	96	96	96
		Std Dev	.8613	.8157	1.4370	.8032	1.7274	.7299
	Principal	Mean	NA	NA	3.5238	3.5065	4.8878	3.6071



A summary of Table 4 produces the following information:

ATTIBMN (Building attitude)

- On a scale of 1 to 5, with 5 being the most positive, the overall mean of a building's attitude toward how the mathematics implementation had been carried out in the respondents' own building was 3.5158.
- The maximum mean was 4.7500 (building 5); the minimum, 2.3333 (building 12).
- Eight buildings were greater than 3.5000; nine buildings were greater than 3.0000 and less than or equal to 3.5000; two buildings were less than or equal to 3.0000. Building 11 was dropped from the overall summaries because only one teacher responded to the survey.

ATTIDMN (District Attitude)

- On a scale of 1 to 5, with 5 being the most positive, the overall mean of a building's attitude toward how the mathematics implementation had been carried out in the district overall was 3.3370.
- The maximum mean was 4.2500 (building 5); the minimum, 2.0000 (building 12).
- Six buildings were greater than 3.5000; seven buildings were greater than 3.0000 and less than or equal to 3.5000; six buildings were less than or equal to 3.0000. Building 11 was dropped from the overall summaries because only one teacher responded.

LASMSMN (Leader Authenticity)

- On a scale of 1 to 6, with 6 being the most positive and inauthentic items scored in reverse, the overall mean of a building's perception of the principal as an authentic leader was 4.1189.

- The maximum mean was 5.6875 (building 1); the minimum, 2.1875 (building 12).
- Nine buildings were greater than 4.5000; two buildings were greater than 4.0000 and less than or equal to 4.5000; four buildings were greater than 3.5000 and less than or equal to 4.0000; and five buildings were less than 3.5000.

#### LEIMSMN (Leader Effectiveness)

- On a scale of 1 to 6, with 6 being the most positive, the overall mean of a building's perception of the principal as an effective leader was 4.3957.
- The maximum mean was 5.9286 (building 5); the minimum, 1.7143 (building 12).
- Five buildings were greater than 5.0000; six buildings were greater than 4.0000 and less than or equal to 5.0000; three buildings were greater than 3.0000 and less than or equal to 4.0000; three buildings were greater than 2.0000 and less than or equal to 3.0000; and three buildings were less than or equal to 2.0000.

#### SASMSMN (Staff Authenticity)

- On a scale of 1 to 6, with 6 being the most positive and inauthentic items scored in reverse, the overall mean of a building's perception of the staff as an authentic body was 3.8919.
- The maximum mean was 5.3958 (building 12); the minimum, 1.6667 (building 15).
- Eight buildings were greater than 4.5000; four buildings were greater than 4.0000 and less than or equal to 4.5000; two buildings were greater than 3.5000 and less than or equal to 4.000; and six building was less than 3.5000.

### DMPSSSMN (Instructional Climate)

- On a scale of 1 to 4, with 4 being the most positive, the overall mean of a building's perception of the building instructional leadership climate was 3.1652.
- The maximum mean was 3.8661 (building 1); the minimum, 1.9500 (building 19).
- Seven buildings were greater than 3.5000; five buildings were greater than 3.0000 and less than or equal to 3.5000; six buildings were greater than 2.5000 and less than or equal to 3.0000; two buildings were less than or equal to 2.5000.

In Table 5, the same variables reported in Table 4 at a building-level are reported for each of the five grade levels included in the study. In general, the diversity in means between the grades is not as great as between buildings. There is a slight drop as the grade level increases, but it is not a constant and it is not even across the survey subsections.

### **Analysis of Responses**

In an effort to begin to understand some of the many facets of the principal's instructional leadership role, the measures from the schools whose principals had also responded to the survey were separated from and compared to the measures from the schools whose principals had not responded to the survey. Table 6 presents the building-level means and Table 7 presents the results of independent t-tests on the building-level measures (ATTIBMN, ATTIDMN, LASMSMN, LEIMSMN, SASMSMN and DMPSSSMN) based on this criterion.

**Table 5. Grade-level means for survey subsections**

<b>Grade</b>	<b>Measure</b>	<b>ATTIBMN</b> Building Attitude	<b>ATTIDMN</b> District Attitude	<b>LASMSMN</b> Leader Authenticity	<b>LEIMSMN</b> Leader Effectiveness	<b>SASMSMN</b> Staff Authenticity	<b>DMPSMSMN</b> Instructional climate
<b>1</b>	Mean	3.5652	3.2857	4.4536	4.3789	4.5987	3.3804
	N	23	21	23	23	23	23
	Std Dev	.9451	.7171	1.2394	1.4968	.70745	.6725
<b>2</b>	Mean	3.5000	3.3500	3.7063	3.5083	4.3927	3.0071
	N	20	20	20	20	20	20
	Std Dev	.9459	.8127	1.3672	1.6580	.7687	.7463
<b>3</b>	Mean	3.5625	3.5882	3.6426	3.2283	4.1885	2.8309
	N	16	17	17	17	17	17
	Std Dev	.8139	.7123	1.5831	2.0157	.9218	.7261
<b>4</b>	Mean	3.4762	3.5000	4.5948	4.1633	4.3135	3.2262
	N	21	20	21	21	21	21
	Std Dev	.9284	.9459	1.3533	1.7079	.7970	.7610
<b>5</b>	Mean	3.4667	2.8571	4.0294	4.0286	4.4383	3.3393
	N	15	14	15	15	15	15
	Std Dev	.6399	.7703	4.5908	1.7093	.8823	.6578
<b>Total</b>	Mean	3.5158	3.3370	4.1189	3.8919	4.3957	3.1652
	N	95	92	96	96	96	96
	Std Dev	.8613	.8157	1.4370	1.7274	.8032	.7299

**Table 6. Building-level means sorted by participation of principal in study**

<b>Variables</b>	<b>Partici- pation</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
<b>ATTIBMN</b>	yes	14	3.5238	.6004	.1605
	no	5	3.4392	.2138	.0956
<b>ATTIDMN</b>	yes	14	3.3524	.6018	.1608
	no	5	3.2705	.2830	.1265
<b>LASMSMN</b>	yes	14	4.3244	1.0805	.2888
	no	6	3.7874	1.2822	.5235
<b>LEIMSMN</b>	yes	14	4.1049	1.4345	.3834
	no	6	3.5337	1.3828	.5645
<b>SASMSMN</b>	yes	14	4.5517	.4702	.1257
	no	6	3.8567	.7926	.3236
<b>DMPSMSMN</b>	yes	14	3.2516	.5669	.1515
	no	6	2.9187	.5714	.2333

Using these building-level means, a Pearson product moment correlation was generated for each paired combination. These measures are provided in Table 8 and will be discussed later in this chapter.

In preparation for doing a factor analysis on the forty-seven item survey, the reliability of the items was determined through the application of Cronbach's Coefficient Alpha ( $\alpha$ ), a general form of the Kuder-Richardson formula 20 appropriate when items are not scored dichotomously. A covariance matrix method was used for the reliability analysis and was based on 86 cases. The  $\alpha$  was calculated to equal .7140, indicating sufficient internal consistency. Using a principal components method, the factor analysis was completed and six factors were extracted. Because of the low factor loading values achieved for the sixth factor, only factors one through five were used in any further analysis. Table 9 presents the resulting rotated factor matrix.

**Table 7. Independent samples test for building-level means by principal participation**

Variable	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% Confidence Interval of the Mean	
								Lower	Upper
<b>ATTIBM</b> Building Attitude	1.569	.227	.303	17	.765	.0845	.2788	-.5037	.6727
			.453	16.933	.657	.0845	.1868	-.3097	.4787
<b>ATTIDM</b> District Attitude	2.155	.160	.289	17	.776	.0819	.2834	-.5159	.6798
			.400	15.176	.695	.0819	.2047	-.3534	.5177
<b>LASMSM</b> Leader Authenticity	.053	.820	.965	18	.347	.5370	.5563	-.6318	1.7057
			.898	8.214	.395	.5370	.5978	-.8354	1.9093
<b>LEIMSM</b> Leader Effectiveness	.033	.857	.824	18	.421	.5711	.6930	-.8848	2.0272
			.837	9.868	.422	.5711	.6824	-.9521	2.0944
<b>SASMSM</b> Staff Authenticity	1.488	.238	2.464	18	.024	.6950	.2821	.1024	1.2876
			2.002	6.565	.088	.6950	.3471	-.1370	1.5269
<b>DMPSMSM</b> Instructional Climate	.005	.946	1.201	18	.245	.3329	.2772	-.2495	.9154
			1.197	9.461	.260	.3329	.2781	-.2916	.9575

**Table 8. Correlations between building-level means**

	ATTIDMN	LASMSMN	LEIMSMN	SASMSMN	DMPSMSMN	PRINLAS	PRINLEI	PRINSAS	PRINDMPS
<b>Pearson (r)</b>									
ATTIBMN	.766**	.456*	.433*	-.022	.199	-.352	-.385	.180	.035
ATTIDMN		.531**	.463*	-.143	.262	-.285	-.261	.028	-.122
LASMSMN			.939**	.252	.741**	-.506*	-.298	.693**	.491*
LEIMSMN				.359	.881**	-.508*	-.173	.747**	.665**
SASMSMN					.598**	.141	.226	.282	.192
DMPSMSMN						-.487*	-.024	.629**	.636**
PRINLAS							.330	-.488*	-.421
PRINLEI								-.122	.177
PRINSAS									.754**
<b>Sig.(1 tailed)</b>									
ATTIBMN	.000	.025	.032	.464	.207	.109	.087	.269	.453
ATTIDMN		.010	.023	.280	.139	.162	.184	.462	.339
LASMSMN			.000	.142	.000	.032	.150	.003	.037
LEIMSMN				.060	.000	.032	.277	.001	.005
SASMSMN					.003	.315	.219	.165	.255
DMPSMSMN						.039	.468	.008	.007
PRINLAS							.124	.038	.067
PRINLEI								.339	.272
PRINSAS									.001
<b>N</b>									
ATTIBMN	19	19	19	19	19	14	14	14	14
ATTIDMN		19	19	19	19	14	14	14	14
LASMSMN			20	20	20	14	14	14	14
LEIMSMN				20	20	14	14	14	14
SASMSMN					20	14	14	14	14
DMPSMSMN						14	14	14	14
PRINLAS							14	14	14
PRINLEI								14	14
PRINSAS									14

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

Table 9. Rotated factor matrix

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
LAS12N	.86326	.16087	.29876	-.00303	.21214	.05683
LAS10N	.84914	.20330	.26259	.03735	.11533	.12971
LAS13N	.77653	.27610	.23802	.00811	.24647	.07035
LAS01N	.76250	.26413	.15449	.10014	.29140	.17565
LAS07N	.75020	.18363	.42923	.00706	.22345	.13898
LAS04N	.73479	.20509	.45771	-.02094	.12004	.18242
LAS11N	.71970	.22353	.40413	.04042	.20310	.17128
LAS05N	.62223	.23933	.58649	.03452	.14070	.09044
SAS28N	.53066	-.10755	-.12616	.34201	.50534	.06148
DMPS44	.17437	.72680	.03236	.17364	.06068	.35480
DMPS40	.21264	.72370	.40839	.10585	-.00422	.32136
DMPS41	.14761	.71583	.30260	.05825	.16212	.27255
DMPS42	.27837	.70786	.34335	.07155	.05230	.23642
LEI36	.25570	.66398	.50094	.20623	.03336	.19889
LEI39	.35083	.64888	.58059	.09436	.00962	.26896
LEI37	.33042	.63338	.49704	.13790	-.01919	.30150
LEI35	.32095	.62578	.58399	.16851	-.01675	.23612
LEI33	.25530	.60467	.52305	.22560	.05256	.24206
DMPS43	.38464	.57136	.44307	.14789	-.13021	.32095
DMPS46	.23935	.45261	.36962	.38350	-.11509	.23282
DMPS47	-.05690	.41551	.11803	.16847	.04277	.16303
LAS15	.26593	.39447	.68524	.11464	-.02683	.36697
LAS09	.11627	.30234	.67905	.20031	.00300	.20860
LAS02	.25080	.38452	.62194	.06456	-.08952	.08496
LAS03N	.37149	.09465	.60105	.00583	.18304	-.00531
LAS06	.31633	.49140	.59281	.10784	-.06878	.11121
LEI34	.31800	.57500	.58958	.16617	-.05727	.22098
LEI38	.36942	.59306	.58348	.11190	-.03760	.25160
LAS14	.12969	.30575	.57591	.28372	.02227	.31234
LAS16	.32941	.49299	.55387	.17543	-.08528	.33398
SAS23	-.01996	.09120	.10198	.88874	.15193	.15188
SAS24	-.01423	.10520	.04980	.83430	.22351	.13781
SAS22	.07394	.10324	.14007	.81941	.15407	.20857
SAS21	-.06931	.08466	.21603	.79655	.31113	.08704
SAS19	.07285	-.01799	.25115	.72214	.01962	.34228
SAS17	.01451	.17099	.08049	.69662	.13565	.34126
DMPS45	.03227	.38378	-.12403	.66479	.09221	-.06070



**Table 9. (Continued)**

	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Factor 4</b>	<b>Factor 5</b>	<b>Factor 6</b>
<b>SAS25N</b>	-.20990	.04060	.22146	-.28162	.82426	.05500
<b>SAS26N</b>	.07612	.08548	-.06251	-.06198	.81398	-.01320
<b>SAS27N</b>	.04444	-.10673	.08056	.31647	.68718	-.00920
<b>SAS29N</b>	.43715	.00317	-.09310	.40482	.65162	.01110
<b>SAS31N</b>	.41921	.09640	-.16678	.45918	.64209	-.01146
<b>SAS30N</b>	.35927	.13347	-.18363	.48768	.61427	.05500
<b>SAS32N</b>	.55265	.02825	-.23007	.33533	.57026	-.09196
<b>SAS20N</b>	.13460	-.15770	.12644	.40602	.55950	.06225
<b>SAS18N</b>	-.06010	-.01455	.13792	-.16950	-.08322	-.87225
<b>LAS08N</b>	.18365	-.02386	.05517	-.02398	.07804	-.85625

Based on the survey items that were found to determine the identified factors, each factor was named and then used for further comparison of means and correlations between the responses of building principals and teachers. The list of survey items used for each factor and the factor name are included in Table 10. The position of the item on the survey is indicated by the code that precedes the statement itself. For example, the first item listed in Table 10, LAS12N, is question 12, which is in the Leader Authenticity Scale subsection. The “N” at the end of the code indicates that the item as stated on the survey is a negative statement; in performing any analyses, the score has been reversed to be compatible with scores from the positive statements of the survey.

**Table 10. Factor composition and names**

<b>Factor 1: Principal inauthentic behaviors</b>	
<b>LAS12N</b>	When dealing with a staff member, my principal behaves like a know-it-all.
<b>LAS10N</b>	If something is wrong in the school, my principal is sure to blame someone else on the staff.
<b>LAS13N</b>	My principal seems to talk at you and not with you.
<b>LAS01N</b>	My principal doesn't have much to do with staff members unless the staff member can help him/her in some way.
<b>LAS07N</b>	My principal likes to take credit for accomplishments but doesn't want to be blamed for any failures.
<b>LAS04N</b>	If my principal makes a mistake, a reason is made to cover-up for the error.
<b>LAS11N</b>	My principal manipulates staff members.
<b>LAS05N</b>	My principal is very defensive about any criticism.
<b>SAS28N</b>	If a staff member in my school makes a mistake, a reason is made to cover-up for the error.
<b>Factor 2: Empowerment</b>	
<b>DMPS44</b>	The building administrator conducts formal classroom evaluations.
<b>DMPS40</b>	Strong leadership is provided in this school.
<b>DMPS41</b>	The principal is visible at the school and related activities.
<b>DMPS42</b>	The principal is accessible to discuss school related matters.
<b>LEI36</b>	Exerts influence outside of the school in order to set the right context for the school. For example, serves as a symbol for the group, secures resources, builds coalitions, acts as an advocate.
<b>LEI39</b>	Overall, how effective is the leadership performance of this principal?
<b>LEI37</b>	Establishes an environment conducive to learning. For example, provides intellectual stimulation, creates a supportive climate for learners, facilitates the professional development of staff.
<b>LEI35</b>	Exercises power effectively and empowers others to act. For example, facilitates change, shares authority, nurtures the skills of group members.
<b>LEI33</b>	Inspires a shared vision and establishes standards that help the school achieve its next stage of development. For example, creates a sense of purpose, defines reality in the larger context, instills shared values , beliefs.
<b>DMPS43</b>	Staff members are treated with respect in this building.
<b>DMPS46</b>	This school deals promptly with identified problems.
<b>DMPS47</b>	Materials and supplies necessary for instruction are available in this school.

Table 10. (Continued)

<b>Factor 3: Principal authentic behaviors</b>	
<b>LAS15</b>	My principal accepts and learns from mistakes.
<b>LAS09</b>	My principal's beliefs and actions are consistent.
<b>LAS02</b>	My principal is willing to admit to mistakes when they are made.
<b>LASO3N</b>	My principal finds it difficult to accept failure.
<b>LAS06</b>	My principal is honest in face-to-face interactions.
<b>LEI34</b>	Fosters unity, collaboration and ownership and recognizes individual and team contributions. For example, creates a climate of community, builds morale, sets a positive tone, resolves disagreements.
<b>LEI38</b>	Satisfies the job-related needs of staff members as individuals. For example, respects, trusts, and has confidence in members; adapts leadership style to the situation; creates a satisfying work environment
<b>LAS14</b>	Whenever authority is delegated to a staff member, my principal stands behind that person
<b>LAS16</b>	My principal accepts responsibility for his/her own actions and for the progress of the school.
<b>Factor 4: Staff Collegiality</b>	
<b>SAS23</b>	Staff members here are willing to admit to mistakes when they are made.
<b>SAS24</b>	Staff members here accept responsibility for their own actions and for the progress of the school.
<b>SAS22</b>	Staff members in my school are honest in face-to-face interactions.
<b>SAS21</b>	Staff members here accept and learn from mistakes.
<b>SAS19</b>	Staff members' beliefs and actions are consistent.
<b>SAS17</b>	Whenever authority is delegated to a staff member, other staff members stand behind that person.
<b>DMPS45</b>	The school staff is helpful and courteous.
<b>Factor 5: Staff inauthentic behaviors</b>	
<b>SAS25N</b>	Staff members are very defensive about any criticism.
<b>SAS26N</b>	Staff members don't have much to do with other staff members unless the other staff member can help them in some way.
<b>SAS27N</b>	Other staff members in my school find it difficult to accept failure.
<b>SAS29N</b>	If something is wrong in my school, the staff members are sure to blame someone else on the staff.
<b>SAS31N</b>	When dealing with a staff member, other staff members behave like know-it-alls.
<b>SAS30N</b>	Staff members here manipulate other staff members.
<b>SAS32N</b>	Staff members here seem to talk at you and not with you.
<b>SAS20N</b>	Staff members here like to take credit for accomplishments, but don't want to be blamed for any failures.

**Table 11. Group statistics for comparison of factor means**

<b>Factors</b>	<b>Job</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
<b>1: Principal inauthentic behaviors</b>	prin	14	1.6805	.8855	.2367
	teach	96	3.1154	1.1783	.1203
<b>2: Empowerment</b>	prin	14	2.5656	.3191	.0850
	teach	96	2.1448	.7152	.0730
<b>3: Principal authentic behaviors</b>	prin	14	3.0922	.3153	.0840
	teach	96	2.4606	.8819	.0900
<b>4: Staff collegiality</b>	prin	14	3.4468	.5968	.1595
	teach	96	3.3756	.7466	.0760
<b>5: Staff inauthentic behaviors</b>	prin	14	1.8936	.6683	.1786
	teach	96	2.9289	.6233	.0640

A t-test was then run for each of the five factors to compare the means of the total group of teacher respondents and the total group of principal respondents. The resulting statistics are presented in Tables 11 and 12.

### **Testing of Hypotheses**

The original hypotheses of the study were stated as such:

1. A positive correlation exists between a building's attitude towards district-imposed changes in instructional practices and staff-perceived levels of the building principal's leader authenticity:  $H_A: \rho > 0$ ;  $H_O: \rho = 0$
2. A positive correlation exists between a building's attitude towards district-implemented changes in instructional practices and levels of the staff's self-authenticity:  $H_A: \rho > 0$ ;  $H_O: \rho = 0$

**Table 12. Independent samples test for factor means**

Factor		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% Confidence Interval of the Mean	
1: Principal inauthentic behaviors	Equal variances assumed	2.858	.094	-4.373	108	.000	-1.4349	.3281	-2.0854	-.7845
	Equal variances not assumed			-5.405	20.395	.000	-1.4349	.2655	-1.9880	-.8819
2: Em- powerment	Equal variances assumed	10.925	.001	2.163	108	.033	.4208	.1945	.0350	.8063
	Equal variances not assumed			3.748	36.345	.001	.4208	.1123	.1932	.6484
3: Principal authentic behaviors	Equal variances assumed	17.051	.000	2.646	108	.009	.6316	.2387	.1585	1.1048
	Equal variances not assumed			5.122	50.576	.000	.6316	.1233	.3840	.8792
4: Staff collegiality	Equal variances assumed	.459	.500	.341	108	.734	.07116	.2089	-.3429	.4852
	Equal variances not assumed			.403	19.472	.692	.07116	.1768	-.2982	.4405
5: Staff inauthentic behaviors	Equal variances assumed	.124	.725	-5.754	108	.000	-1.0353	.1799	-1.3919	-.6787
	Equal variances not assumed			-5.461	16.471	.000	-1.0353	.1896	-1.4363	-.6343

Corollaries to the above two hypotheses need also be considered in this discussion.

- A negative correlation exists between the length of time a teacher has worked with the current principal and that teacher's perception of the principal's leader authenticity.
- Teachers who have more than five years of teaching experience have a more negative perception of the building principal's leader authenticity.
- A positive correlation exists between a teacher's perception of the principal's effectiveness and the teacher's perception of the principal as an authentic leader.

The correlation between ATTIBMN (the district mean of each building's responses to question 8A, "Whether or not you agree with the adoption that was chosen, how well do you feel the math curriculum was implemented in your building this past year 1995-96?") and LASMSMN (the district mean of each building's perception of the principal as an authentic leader) provides the test for the first hypothesis. From Table 8, the Pearson product-moment correlation statistic given for these two variables is equal to .456\*, which is significant at the 0.05 level in a 1-tailed analysis. The correlation between LASMSMN and LEIMSMN (the district-wide mean of each building's perception of the principal as an effective leader) is .939\*\*, which is significant at the 0.01 level and supportive of Henderson and Brookhart's recent findings (1996). In turn, the correlation between LEIMSMN and ATTIBMN is .433\*\*, again significant at the 0.01 level. Both correlations support the hypothesis that a positive correlation exists between a building's attitude towards district-imposed curricular changes, in this case the elementary mathematics curriculum adoption, and that building's perception of the principal as an authentic leader and the third corollary that a positive correlation exists

between a teacher's perception of the principal's effectiveness and the teacher's perception of the principal as an authentic leader.

The second hypothesis looks at the ATTIBM<sub>N</sub> and a building's SASMSM<sub>N</sub>, or the teachers' perception of the building staff as an authentic body. The Pearson product-moment value provided in Table 8 for the correlation between these two variables is  $-.022$ , a value which does not support the hypothesis of a positive relationship.

The remaining two corollaries look at the possible effect specific factors of a teacher's demographic data may have on that teacher's perception of the principal as an authentic leader: a) A negative correlation exists between the length of time a teacher has worked with the current principal and that teacher's perception of the principal's leader authenticity; and b) Teachers who have more than five years of teaching experience have a more negative perception of the building principal's leader authenticity. Table 13 indicates that the correlation involving the length of a teacher's association with a principal is not significant to that teacher's perception of leader authenticity. Similarly, Table 14 indicates that the longer-tenured teacher in this study does not necessarily have a more negative perception of the building principal's authenticity. These findings do not support work that Meyer completed (1991) regarding teacher perceptions towards leader authenticity.

**Table 13. Correlation of the number of years assigned to a principal and teacher perception of the principal as an authentic leader**

<b>Descriptive Statistics</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>N</b>
<b>PRINC</b>	4.19	2.74	97
<b>LASMEAS</b>	4.1189	1.4370	96
<b>Correlations</b>	<b>YEARS</b>	<b>LASMEAS</b>	
<b>Pearson</b>	<b>YEARS</b>	1.000	-.004
<b>Correlation</b>	<b>LASMEAS</b>	-.004	1.000
<b>Sig.</b>	<b>YEARS</b>		.487
<b>(1-tailed)</b>	<b>LASMEAS</b>	.487	
<b>N</b>	<b>YEARS</b>	78	77
	<b>LASMEAS</b>	77	77

**Table 14. Correlation of more than five years teaching experience with teacher perception of principal as an authentic leader**

<b>Descriptive Statistics</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>N</b>
<b>YEARS</b>	18.06	9.00	78
<b>LASMEAS</b>	4.0990	1.4881	77
<b>Correlations</b>	<b>YEARS</b>	<b>LASMEAS</b>	
<b>Pearson</b>	<b>YEARS</b>	1.000	-.004
<b>Correlation</b>	<b>LASMEAS</b>	-.004	1.000
<b>Sig.</b>	<b>YEARS</b>		.487
<b>(1-tailed)</b>	<b>LASMEAS</b>	.487	
<b>N</b>	<b>YEARS</b>	78	77
	<b>LASMEAS</b>	77	77



### Discussion

What do the results of the data collection and analyses say when viewed through the findings of earlier researchers? Beginning with the demographic profile of the teacher respondent, a number of factors arise that may be cause for attention being paid to the type of change being asked for and the process used to make those changes. The vast majority (84.8%) of respondents who answered the gender question were female, had taught for more than fifteen years, were not members of the National Council of Teachers of Mathematics and, while probably aware of the Standards (NCTM, 1989), the level or degree of accuracy of that awareness is questionable due to the range of responses received (“0” to “20” years, while the Standards themselves were actually published seven years ago). The level of mathematical expertise of the respondents is difficult to ascertain due to the lack of specificity in the wording of the survey question: “What was the last math course you completed in high school or college?” The answers given could indicate either last *chronologically* or last in terms of *level of difficulty*. The number of respondents who indicated they either could not remember the last course or did not respond at all to the question, as well as the number who indicated an elementary methods or mathematics for elementary educators course could conceivably be interpreted as an indication of mathematics content expertise not being exceptionally advanced.

These demographic factors alone all have tremendous significance on mathematics change implementation in these classrooms. In reference to a statement by the National Research Council, “[The] result is a spiral of lowered expectations in which poor performance in mathematics has become socially acceptable...” (1989, p. 9), Dossey (1992) states that

acceptance and expectation of failure is, unfortunately, shared by *female* elementary classroom teachers. Merseeth specifically addressed the lack of mathematical expertise held by elementary teachers.

While many teachers do an excellent job, by some accounts nearly one out of every two math and science teachers does not possess adequate subject-matter training...Certification procedures offer little reassurance. Elementary teachers typically earn general teaching credentials for grades K-8 or K-6. Few elementary teachers take high-level mathematics courses and most have only one or two courses in the teaching of mathematics. This lack of training translates directly into a lack of confidence. (Merseeth, 1993, p. 551)

Hawkins (1972) cites specifically the need for a deeper understanding of mathematics by teachers if reflective dialoguing, one of the most important components to mathematics education reformation, is to take place. "...The teacher must be able to map a child's questions as much as his answer, [because] neither alone will define the trajectory; and he must be prepared to anticipate something of what the child may encounter along the path" (1972, p. 113). Cooney (1987) then goes on to note that substantive changes in teaching mathematics [as per the Standards] will be slow in coming and difficult to achieve because of the basic beliefs teachers hold about the nature of mathematics. And Clements and McMillen (1996) cite the acknowledgment by teachers that many know that not everything they have done in the past in the teaching of mathematics has worked, but are not certain what changes need to take place. Many are not convinced that a total manipulatives approach is the answer. Because of Ball's findings (1993), it was earlier stated in this study that unless time and effort are spent to work with teachers at their philosophical base and encourage their own reflections and beliefs of their own pedagogical theory, meaningful change will not truly take hold. It is only

when teachers truly believe in what they are doing that long-lasting changes will be seen in the classroom.

The number of years of teaching and, therefore, the assumed middle-aged grouping of most respondents, is certainly significant when the magnitude of change being asked of these professionals is considered. Evans offers a general conclusion about the needs of this group.

[M]idlife and midcareer, an era when the stresses of life and work commonly intensify the natural reluctance to change...these characteristics [loss of motivation and a leveling off of performance] have enormous, largely ignored implications for restructuring. They make teachers more vulnerable to stress and more sensitive to criticism and they reduce teachers' appetite for change at work. (1993, p.5)

In the study, 68.1% of the teacher respondents did identify themselves as having changed more than half of what happened instructionally in their mathematics classroom during the 1995-96 year. This would seem to indicate that there is a willingness to change, and to change in the direction of the philosophy of the Standards, especially in light of the fact that no teacher respondent indicated that they did not believe in the approach or philosophy of the adoption. One teacher did write in, however, that even though she had changed more than half of that she did was new, she "would loved to not have used the adoption." This same teacher also wrote "no one" as her response to who had been most helpful in her implementation of the new curriculum. It is interesting to note these responses in light of Leinwand's comments regarding change and teachers.

We tend not to be radical agents of change. In fact, we are hired and paid by our boards of education to pass on the rich lore, traditions, and mores of our culture. And what more powerful elements of our mathematical culture exist than long division and the quadratic equation? For this reason, reducing emphasis on certain time-honored skills and shifting

equally time-honored classroom practices take a degree of self-confidence and a willingness to take risks that our profession has not previously reinforced. (Leinwand, 1992, p. 467)

This willingness to change on the part of these respondents may reflect the work of Russell and Corwin (1993).

As teachers began to change their pedagogy to reflect their changing beliefs, their classroom work was characterized by a series of attempts to “let go” of the planned goal or lesson in order to pursue important mathematical ideas...perhaps most difficult [to let go] of “getting through” all the subject matter they were expected “to cover.” (p. 557)

It is this factor that brings to the forefront the missing piece in all of this district-imposed instructional change and that is attention to instructional leadership at the building level.

To change curriculum without changing teaching practice or to increase societal interest while teaching the same tired curriculum would be folly. Instead, a multifaceted and comprehensive effort is necessary—one that stretches the constraining web in many different directions, causing it to break. As Lauren Resnick, a noted cognitive psychologist, says of the necessary mathematical reform effort: “We’ll have to socialize [students] as much as to instruct them.” (Merseth, 1993, p. 552)

The degree of complexity involved in restructuring mathematics education requires a well-organized and orchestrated leadership structure. The source of support for this change in Des Moines Public Schools this past year, as indicated by the respondents’ answers to the survey question, “*Who* was most helpful in your implementation of the new curriculum?” was varied and definitely not centrally—at either the district or building level—based. 51.6% looked to a colleague in the building for help and support in making these changes; 11.0% looked to a colleague in another building for help; 19.8% cited the central office as being most helpful; only 2.2% cited the building principal. Reviewing comments from the end of the survey is

helpful in understanding some of the attitudes existing among this sample regarding viewing the building principal as even having anything to do with this type of instructional change.

- It's difficult for me to see the link between these survey questions and the idea of whether a principal is good at implementing a new curricular adoption.
- Outside of ordering materials and informing staff of math meetings, the principal was not a major player in the math curriculum.
- Not many questions about Math adoption?
- I feel this is more a principal evaluation than having anything to do with the math adoption.
- What do these questions have to do with math? The principal didn't understand the new adoption. It was all put on the staff shoulders. The principal didn't want to "rock the boat"!

Other comments do indicate that there is a recognition of the role the principal could play in curriculum issues such as this and seem to indicate a preference that that role could or would be played.

- The principal did not attend teacher meetings to help implementation. He was never in my room to observe nor did he inquire about the Math series. All he would do is criticize if scores went down. Wouldn't it be neat if he would have visited with each one of us and be objective to our concerns?
- Hats off to good administrators. Our district would be lost without them!

- The principal is in charge. He does handle discipline well but is not open to shared decision making or intellectual leadership.
- I think your statements hit many nails on the head! You're right on! One factor that was not addressed here was that as elementary teachers we were not only implementing a new math adoption. We also had a new science adoption. Two major adoptions in one year has stretched us thin!

This need for instructional leadership results from many factors of this type of instructional reformation, but possibly the greatest being teachers needing to view themselves as learners who are willing to take risks, ask questions and pursue answers if none are known (MSEB, 1994). "If the culture also supports risk-taking, staff are more willing to innovate" (Evans, 1993, p.6). This type of risk-taking and perseverance result in the establishment of a learning community in the building; whether it is of students or staff who are being asked to take the risks and persevere, a climate of acceptance and support is crucial. When a survey respondent perceives that the only thing the principal did to be involved in the adoption was criticize if scores went down, questions must be raised as to how much risk-taking those teachers are being encouraged to do.

Instructional leadership is necessary for any instructional reform to be successful. "Recent research on the California Framework, a newly revised state-level curriculum, tells us that it is not sufficient to introduce new curriculum in a 'top-down' mode. Without substantial support, teachers simply teach new ideas in old, unproductive ways" (Merseth, 1993, p. 553). As Russell and Corwin found among the teachers with whom they worked, teachers take very seriously the responsibility of helping their students learn and will scrutinize any efforts made

to change what they have done in the past (Russell & Corwin, 1993). The method of support needed for this scrutinization varies; what must not vary is that the support happens.

One of the roadblocks to changes in current practices as cited by Evans (1993) is that of the organizational health of the school. If a staff is encouraged and supported by leadership in making the changes necessary to move towards a common goal, the likelihood of the implementation being successful and the individuals feeling valued and therefore more likely to continue is increased. When asked to respond to the survey questions concerning the instructional leadership climate of a building, the district mean response was 3.1652 on a scale of 1 to 4, with 4 being the most positive. This would seem to indicate a positive perception of building climate in this area. However, when all of the survey questions were extracted into factors, the resulting "Empowerment" factor (which included seven of the eight climate questions and five questions of the Leader Effectiveness Index relating to establishing a supportive and empowering learning community) demonstrated a significantly lower mean from the teacher respondents than from the principal respondents. To interpret this finding as a difference in perception on the part of the two groups as to how effective the principal is being in terms of *instructional* leadership is to begin to come to terms with the instructional organizational structure as it appears on paper versus as it is played out in the buildings. The importance of this leadership is not the question. As quoted from Samuel Krug earlier in this study:

When the atmosphere of the school is one that values learning and supports achievements, it is difficult not to learn. This is especially true in the critical first years of school, when lifelong attitudes toward education are forming. *The school leader plays a primary role in defining reinforcement systems, creating excitement, and communicating a message to students that learning has value outside the classroom* [emphasis added]. (Krug, 1993, p. 241)

The question instead is who plays the leadership role and how is it played out. Buffie reported that of the three main components used to define the building principal's role, that of instructional leader is the one most frequently left out.

The research clearly shows that principals spend most of their time on administrative or managerial tasks. Although most consider instructional leadership to be one of their most important responsibilities, they do not devote as much time and energy to this role as they would like. (Buffie, 1989, p. 13)

The survey subsection means for each building as reported in Table 4 indicate a wide range of teacher perception as to how well this role is played by each principal. Using the two leadership variables, LASMSMN and LEIMSMN, which were found to be highly correlated ( $r = .939^{**}$ ), the range of building means went from 2.1875 to 5.6875 for the LASMSMN and from 1.7143 to 5.9286 for the LEIMSMN. The correlation of these two variables with the attitude of teachers towards the implementation of the mathematics adoption in their building (ATTIBMN) was significant for LASMSMN ( $r = .456^{*}$ ) and for LEIMSMN ( $r = .433^{*}$ ).

A brief listing in Table 15 of all the correlations found to be significant between the survey subsections helps bring into focus the interrelatedness of the factors being discussed. Twenty significant correlations were found between the survey subsections. Nine of those correlations paired the principals' perceptions with those of the teachers (numbers one through nine in Table 15); three of those pairings (numbers seven through nine) were negative, indicating a definite lack of consensus between the two groups. Six correlations (numbers ten through fifteen) paired the teachers' perception of the principal as a leader with an attitude towards the



**Table 15. Significant correlations found between survey subsections**

1. ** LASMSMN and PRINSAS (leader authenticity) (SAS as per principals)	11. * ATTIBMN and LEIMSMN (building attitude) (leader effectiveness)
2. * LASMSMN and PRINDMPS (leader authenticity) (climate as per principals)	12. * ATTIDMN and LASMSMN (district attitude) (leader authenticity)
3. ** LEIMSMN and PRINSAS (leader effectiveness) (SAS as per principals)	13. * ATTIDMN and LEIMSMN (district attitude) (leader effectiveness)
4. ** LEIMSMN and PRINDMPS (leader effectiveness) (climate as per principals)	14. ** LASMSMN and DMPSMSMN (leader authenticity) (instructional climate)
5. ** DMPSMSMN and PRINSAS (instructional climate) (SAS as per principals)	15. ** LEIMSMN and DMPSMSMN (leader effectiveness) (instructional climate)
6. ** DMPSMSMN and PRINDMPS (instructional climate) (climate as per principals)	16. ** ATTIBMN and ATTIDMN (building attitude) (district attitude)
7. * LEIMSMN and PRINLAS ( <i>negative</i> ) (leader effectiveness) (LAS as per principals)	17. ** SASMSMN and DMPSMSMN (staff authenticity) (instructional climate)
8. * DMPSMSMN and PRINLAS ( <i>negative</i> ) (instructional climate) (LAS as per principals)	18. ** LASMSMN and LEIMSMN (leader authenticity) (leader effectiveness)
9. * LASMSMN and PRINLAS ( <i>negative</i> ) (leader authenticity) (LAS as per principals)	19. ** PRINLAS and PRINSAS ( <i>negative</i> ) (LAS as per principals) (SAS as per principals)
10. * ATTIBMN and LASMSMN (building attitude) (leader authenticity)	20. ** PRINSAS and PRINDMPS (SAS as per principals) (climate as per principals)
** Correlation is significant at the 0.01 level (1-tailed)	
* Correlation is significant at the 0.05 level (1-tailed)	

adoption or the instructional climate of the building in general. The impact that a principal has on instructional and curricular decisions is definitely significant, even if that impact is not clearly delineated or defined in the minds of the respective teachers.

What can make this impact doubly challenging is the degree to which the two groups of respondents in this survey (teachers and principals) seem to not agree on how well the role of instructional leader is being played out. Reviewing the correlations between the responses of these groups to the survey subsections makes it clear just how widespread this difference in perception is. The findings reported in Table 8 speak for themselves. None of the subsection means—the LAS, SAS, LEI or DMPS—show correlating response means for the same subsection between the teachers and principals except for the LAS and LEI with the

PRINLAS and those are negative. Significant correlations are shown between the LAS and LEI with the PRINSAS and PRINDMPS, but the sensibility and value of those relationships are questionable. Referring to Mitstifer's definition of authenticity, "to act, engage, be genuine and trustworthy, reflect, question and correct how decisions are made" (1995, p.4) quickly confirms how critical it is in the accomplishment of the goal of building a community of learners that the leader be perceived as effective and authentic.

Similar findings in perceptual differences existing between teachers and principals were made in examining the factors extracted during the factor analysis. Of the five factors, a) Principal inauthentic behaviors, b) Empowerment, c) Principal authentic behaviors, d) Staff collegiality, and e) Staff inauthentic behaviors, only the fourth—Staff collegiality—produced similar perceptions between the two groups as reported in Table 12.

## CHAPTER 5. CONCLUSIONS

### Summary

#### **Locus of instructional leadership**

In the Des Moines Public Schools, instructional leadership is currently founded in the position of building principal (Brubaker, 1996). This is a change from twenty years ago when Dwight Davis served as superintendent and most decisions and funds were controlled from the central offices. Brubaker explained that changes made in the direction of moving control out to the building-level were based on the belief that the best decisions for students are made by those who work closest to the students. He made no value judgment other than that. Two other Des Moines elementary administrators made similar statements about the effectiveness of the flattening and decreasing of central office support for instructional leadership in the district. One, in referring to the loss of subject area supervisors and consultants, stated that he was unsure of the value of any of the change. The second was slightly more positive, although still not overwhelmingly so, and said that the flattening of the structure and resulting fewer administrators was acceptable to him.

Throughout these shifts in the locus of leadership or redefining of structure, no mention has been made of the effect on student learning. Brubaker stated that the belief underlying all of the changes was that those closest to the subject of the decision(s), that is, the students, are those who are best suited to make the decision(s). Yet in no conversation or review did this researcher find the focus on what happens to students when the locus of instructional leadership changes. Rather, the focus was on what effects were noticed on the logistics of

delivering and evaluating the delivery system or the administration of the instruction. While that cannot be interpreted as those making the decisions are not concerned with the effects on the students, it can be taken as an indication that the role of building principal is often played out as administrator, first and instructional leader, second.

### **Formal versus informal structures**

With the shifting of funds and decision-making capacity to the individual buildings, as defined by central offices, the potential exists for the principal to serve as a strong building instructional leader. The researcher's concern is that this potential exists primarily on paper because of what accompanies these shifts. Along with increased funds and defined authority for making decisions goes increased duties and responsibilities. If management at the site is to be through authentic *shared* decision-making, the required time and energy is extensive. It appears from both formal and informal comments made by current administrators that the area of responsibility that often is cheated is that of instructional leadership. As one principal commented privately, "If I ever do get around to instructional leadership, it's after 8:00 p.m. when the piles of paperwork are finished." During a meeting when this question was raised, the general consensus of the eight principals in attendance was that the daily routine tasks and the attention paid to ensuring a safe and orderly climate often overshadowed the business of providing instructional leadership.

As seen from the review of the history of instructional leadership both locally and nationally, what happens at the top [superintendency] reflects down on what happens at subordinate administrative levels. In Des Moines Public Schools, the tradition for the past

twenty-plus years has been of a strong superintendent with the majority of instructional decisions being made at the central office level. With Wegenke's entrance into that office, an attempt to change this locus of power has been made.

As with all attempts to change, questions have been raised, including how well the position of principal can accept these additional responsibilities if the support formerly provided by central office is no longer available. Will change truly be made or will change be superficial and present itself merely through coping or survival skills assumed until a new superintendency takes place? Perhaps the bottom line in this discussion is that *the locus of instructional leadership is not as important as the support shown to that instructional leadership*, its implementation and evaluation.

### **Leadership by example**

The analysis of data that was based on separating the building means using the criterion of whether the respective principal had responded to the survey brought a slightly different perspective to this discussion. The buildings whose principal did not respond did not differ significantly from those buildings whose principal did respond in the two attitudinal variables, ATTIBM and ATTIDM. However, the differences between the two groups were significant in the four survey subsection variables, LASMSM, LEIMSM, SASMSM and DMPSMSM. As Russell and Corwin (1993) noted, teachers take very seriously their responsibility of helping students learn and will closely examine efforts made to change what they have done in the past. Teachers will go about making their best efforts to get the job done, whether or not instructional leadership is provided by the building principal. If the

leadership is not provided by the principal, it will be sought elsewhere and, according to the results of this study, most likely will be found within a teaching colleague. However, if teachers are forced to look elsewhere for that leadership, the effects do not go unnoticed. All four subsection variables were significantly lower from the buildings whose principal did not respond to the survey. In addition to those findings, the question of providing consistency throughout the district in the implementation of district-chosen and Board-approved curricula must be considered. The perceptions of those who would follow are very important when reviewing the effectiveness of any leader. As reported earlier, Moss stated that "Since leadership as a property lies in the eye of the beholder, only those who are so perceived are leaders" (Moss et al., 1994, p. 4). Regardless of how positively any leader perceives his/her behaviors as being effective, if the subordinates do not share those perceptions, the leader is not effective. Leaders can be assigned subordinates; leaders can not be given followers; they must earn followers (1994, p. 5). The importance of a leader as being perceived to be authentic and have salience over self can not be emphasized too heavily. The discrepancy in the survey findings between how a principal perceives him/herself and how the teachers perceive the principal can only make the professional educator more cognizant of the importance of being open and listening to others. This is especially critical in a system that is structured to function as site-based through shared-decision making. It does not matter how many times an administrator tells teachers that something must be done or believed. If the perceptions of those teachers tell them that the building leadership does not lie with the individual in the principal's role, then for those teachers their reality will differ from that of the principal.

The teacher responses and written comments gave somewhat of an indication that individuals had been set down in the middle of this change process, for example at the Personal or Management stage of the Concerns-based Adoption Model. Without the appropriate leadership to help them go back and work through the concerns of the preceding levels, it is unlikely that instructional changes that are made will be long-lasting, beyond the life of the current curricular adoption. Gardner's comments may never be more telling than when viewed through these findings of teacher expectation—conscious or not—of instructional leadership.

Perhaps the most promising trend in our thinking about leadership is the growing conviction that the purposes of the group are best served when the leader helps followers to develop their own initiative, strengthens them in the use of their own judgment, [and] enables them to grow and to become better contributors. The problems we face simply cannot be dealt with unless there are highly motivated workers who are accustomed to taking responsibility. To the extent that leaders enable followers to develop their own initiative, they are creating something that can survive their own departure. (Gardner, 1986, p. 23)

The motivation for making the changes called for in a Standards-based curriculum must come from the sense of expectation fostered by an instructional leader. Viewing the comment by Reys et al. (1981), as pertaining to teachers as learners, confirms the role the principal must play in creating the necessary learning environment.

[Motivation] can only come when the student [teacher] feels the excitement of learning, experiences his/her efforts as appreciated, gets some clarity on goals, makes some connection between the work done in mathematics class and those goals, and feels the confidence and freedom to risk attaining them. (p. 63)

**Study limitations**

One limitation of this study is that of the narrow focus of the sample and the lower than desired return rate of responses to the survey. The results should not be generalized beyond the Des Moines Public Schools, but likely conform to what would be found in districts as large or larger than Des Moines. The results can serve as a starting point for additional research in instructional leadership at the elementary level. The extensive publication of the need for reform in mathematics education and the accessibility to literature published to begin to address that need made the use of mathematics a well-founded choice of content areas. The complexity added by demographic factors, such as gender and age, as well as societal prejudices towards the discipline, serve to even better highlight the need for strong instructional leadership on the part of the principal if philosophically-based change is to take place within the teaching ranks.

**Recommendations**

Des Moines purports a strong site-based management through shared-decision making structure for education reform. In the area of elementary mathematics, there is no question that reform is required and that much work and effort have been spent trying to make that reform a reality. The successful implementation of any new curriculum adoption does not depend on the adoption alone.

To change curriculum without changing teaching practice or to increase societal interest while teaching the same tired curriculum would be folly. Instead, a multifaceted and comprehensive effort is necessary—one that stretches the constraining web in many different directions, causing it to break. (Merseth, 1993, p. 552)



The key to encouraging and monitoring this stretching is that the building principal have the resources and support necessary to establish a climate of educational expectations and excellence. The task for the principal is to then effectively communicate that support to the classroom teacher. These recommendations follow the findings of this study and the previous studies upon which the research was based.

1. Des Moines Public Schools must re-examine the role of building principal as it is defined in theory and in reality. To help prevent the discrepancy in perceptions between the various groups, such as reported in this study between the principal and teachers, a combination of self-reporting and external observations must be used. As Buffie reported, "If our schools are to improve, we must redefine the principal's role and move instructional leadership to the forefront" (1989, p. 13). Care must be taken to not place any subordinate in a mandated position of open supervisory evaluation. The number of unanswered demographic questions on the study's survey could be interpreted as concern on the part of the teachers with unapproved disclosure.
2. If it is determined that the locus of instructional leadership should change to another position, either at the building or in central administration, individuals from all groups must be involved in the decision itself and its implementation. This type of change will not take place without a common philosophical base on the part of administrators, teachers, community and families. The structure itself is already in place to make such a decision—the Site-Based Council.
3. Work by Moss has shown that "some of the attributes common to successful leaders can be increased by a reasonable amount of planned educational experiences" (1994,

- p. 11). Wherever the locus of instructional leadership is placed, on-going professional development must be planned for all groups. Individuals involved in all aspects of change of this magnitude must have the opportunity to see where it fits within the *big picture* of instruction within Des Moines and nationally. Implications of change must be reviewed by leadership at all levels to try to prevent occurrences of such events as two major adoptions for elementary teachers within one year.
4. Helping those who have viewed their profession from a specific perspective for a number of years to see possibilities in a new light must take place through an organized structure such as the Concerns-based Adoption Model. This is another tool with which many in the Des Moines Public Schools are familiar and could be made available to others within existing professional development options.

### **Future Research**

Little work has been completed in the area of instructional leadership at the elementary level. Most has taken place at secondary or post-secondary; enough studies have been completed on the demographics of each of these professional groups to make it clear that the make-up of those who choose to enter a specific level are different enough to not always warrant generalizing from one to another. The findings in the area of teacher perceptions of leader authenticity and the importance of the role of instructional leader from this study indicate that there are similarities between the groups, but not total matches. Additional such study needs to be carried out repeatedly at the elementary level to determine if the differences found here are unique to this sample or can be generalized to the total population.

The different relationships teachers find themselves in throughout their professional role would produce valuable information in terms of the potential of the principal as instructional leader. The issue of how much reflection and academic conversation can take place between a subordinate and supervisor must be addressed: Can the tasks of instructional support and performance evaluation be carried out by the same individual? The seeming hesitancy on the part of both teachers and principals to answer some of the survey questions could indicate the difficulty in trying to ask one person to create an environment supportive of risk-taking and possible failure and then evaluate those risk-takers using criteria of classroom success. Would the teacher feel more willing to take risks and make changes if the instructional leader were a building colleague or central administration individual with no evaluative authority?

Further work in the area of job satisfaction on the part of both teachers and principals will be important to complete. Ding (1991) found a significantly positive relationship between the principal's authenticity and the amount of teacher job satisfaction. Does this relate to instructional or administrative leadership?

### Closing

As de-centralization or *site-based management through shared-decision making* makes its place in Des Moines Public Schools, just as it has nationwide in districts of comparable size, leaders at all levels must constantly evaluate and examine the balance of gains and losses. Change often has implications far beyond those originally defined or even imagined. The shift in resource management, public relations, community involvement—just to name a few areas—to place the responsibility for monitoring and implementation at the building level

rather than at central administration has most often resulted in an increased sense of ownership for those involved at the building level. The loss that balances that gain may be that the locus of instructional leadership has been pushed to the back because of the necessity to carry out the daily tasks of doing business and maintaining a safe and orderly environment. The question is not whether instructional leadership is needed; the teachers clearly identified that need and demonstrated that if neither the expectation nor the performance is placed with the principal, the leadership will be sought elsewhere. This leadership is mandatory to providing any type of districtwide consistency and monitoring of instructional programs. The questions now to be considered are:

- Where should the locus of instructional leadership be placed to best serve the Des Moines community?
- Who will make that decision?
- Who will support that decision and the individuals in the leadership roles?

**APPENDIX A. PERMISSION TO CONDUCT RESEARCH**

## APPLICATION FOR PERMISSION TO CONDUCT RESEARCH IN THE DES MOINES PUBLIC SCHOOLS

### 1. General Information

Applicant's Name Deborah J. Gettys Phone 255-7534; 276-6267  
 Address 4409 40th St., Des Moines Zip Code 50310  
 Resident of Des Moines? X Yes Resident of Iowa X Yes  
 Des Moines Contract Teacher? X Yes  
 Sponsoring Institution/Agency Iowa State University

### 2. Proposed Research Project

Title of Study: Defining the relationships between perceived leader authenticity, staff authenticity and instructional leadership in an urban elementary school

Purpose for pursuing research: To provide data for the basis of a dissertation, to be completed as partial requirement for Ph.D. in the area of curriculum with an emphasis in administration and elementary mathematics education.

Description of problem: The purpose of the study is to identify leadership characteristics and perceived behaviors that support a positive climate for the implementation of a district curricular adoption calling for significant changes in instructional practices. The project's hypothesis is that positive correlations exist between both the staff-perceived levels of leader authenticity of the principal and the staff's own self-authenticity with the climate of that staff towards district-implemented changes in instructional practices.

Specific data required: The Leader Authenticity/Staff Authenticity Survey, the Leader Effectiveness Index and a Des Moines Public Schools Staff Climate Survey (slightly modified to reflect a focus on the district elementary mathematics adoption) are the instruments that will be used to measure the characteristics and behaviors.

Schools to be surveyed: Approximately one-half of the Des Moines Public Schools will be selected for surveying. A list of these buildings and the process used to select them is included in the addendum to this application.

Number of pupils to be surveyed: 0

Number of teachers and other staff members to be surveyed: Approximately 200 teachers who are responsible for grades one through five mathematics instruction in the selected twenty buildings will receive the letter and written surveys named above and included in the addendum to this application.

Dates research will be conducted: The initial mailing of the surveys will be done close to June 17 with their return asked for by June 26. Any necessary follow-up communication will be made before July 4. Obviously, these dates fall outside of the October 1 through April 1 window defined in the school districts application instructions. This schedule is proposed for three reasons:

1. Teachers need time to close the school year and then reflect on its events. The information asked for in these surveys best lends itself to a broad perspective, something which is sometimes not possible during the school year;
2. Teachers are inundated with paper and forms, especially at the beginning or ending of a school year. This timeline presents the request to these individuals at a time when their professional schedules are a little freer, thus, hopefully, increasing the return percentage.
3. The researcher's schedule can accommodate data gathering and analyses during a time at which classes are not in session.

Procedures for distribution, administration and collection: Each survey packet will be , with a common portion of the code used for all the surveys sent to personnel from the same building. The code will not indicate which school is being surveyed to insure anonymity. Selected school names will be randomly drawn to assign a 2-digit numeric identifier. The general format for each code will be school[##] grade[##]subject[##]. For example, the specific identifier or code that would be assigned to the 4th grade teacher whose name is drawn second from the tenth selected school would be 10-04-02. These identifiers will be written on the top of each survey sheet the subject completes. A stamped return envelope will be included in the mailing with the researcher's address being used as both the sending and return addresses. No other subject identification will be supplied by the researcher. A master list of identifiers and schools will be maintained, but will not be made available to any one other than the researcher and her committee for verification purposes.

**Rationale for the Proposed Research Project:**

Curriculum and textbook adoptions and changes are an on-going process in any school district. An adoption is an extremely expensive undertaking, not only for the actual purchase of books, supplemental and/or technological materials and equipment, but also for the paid (and unpaid) hours invested by district committees, subject supervisors, pilot teachers and administrators. Any investment that uses a large portion of the districts limited financial resources needs to be nurtured and reviewed continually. No matter how carefully the choice, i.e., the adoption, was studied and made, if teachers are not encouraged, supported and listened to throughout the change process, results observed in the classroom most likely will not reflect those anticipated. Many factors are involved in helping to determine the acceptance and success of a change effort. This proposed project focuses on one of those factors: the role of the principal as the building's instructional leader.

The elementary mathematics adoption undertaken by the district to begin this past school year, 1995-96, represents a minimum investment of approximately \$700,000. District-wide initiatives have been launched for staff development and in-service, teacher support and parent communication. These district efforts take place at a time when Des Moines Public Schools continues to grow in its incorporation of site-based management through shared decision-making. And so, it seems appropriate that attention be given to this commonly spoken but often not understood effective schools correlate. It is important to study what the role of instructional leader may look like, how it may be perceived by both the principal her/himself and the staff, and how the role fits or does not fit with district initiatives such as Des Moines has just experienced.



# APPLICATION FOR PERMISSION TO CONDUCT RESEARCH IN THE DES MOINES PUBLIC SCHOOLS

Date \_\_\_\_\_

Type or print this form in duplicate and return to the Program Evaluator for Testing and Research,  
Department of Information Management, Des Moines Public Schools, 1800 Grand Avenue, Des  
Moines, Iowa 50309-3399.

1. General Information

Applicant's Name \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_ Zip Code \_\_\_\_\_

Resident of Des Moines? \_\_\_\_ Yes \_\_\_\_ No      Resident of Iowa? \_\_\_\_ Yes \_\_\_\_ No

Des Moines Contract Teacher? \_\_\_\_ Yes \_\_\_\_ No      Student Teacher? \_\_\_\_ Yes \_\_\_\_ No

Sponsoring Institution/Agency \_\_\_\_\_

## 2. Your proposed research project must include the following details:

- . Title of Study
- . Purpose for pursuing research (thesis, advance degree work, personal information, etc.)
- . Description of problem, including hypotheses and statistical treatment
- . Specific data required
- . Schools to be surveyed (if known)
- . Number of pupils to be surveyed
- . Number of teachers and other staff members to be surveyed
- . Dates research will be conducted (if known)
- . Estimated amount of staff and student time required
- . An outline of procedures you will follow in distribution, administration, and collection of instruments requiring staff or student response

## PLEASE NOTE:

1. Do not contact individual buildings until so directed by the district.
2. This application must be accompanied by one copy of all instruments, letters, consent forms or other forms used in the research.
3. Allow three weeks for review and evaluation of your request. Please understand that the Des Moines Public Schools have a responsibility for the education of approximately 30,000 students. With several colleges and universities in the region, it may not always be possible to honor all requests because of the many applications.
4. To avoid conflicts in opening and closing school activities, research must be scheduled between October 1 and April 1. Specific rationales must be provided for exceptions.
5. An interview with the applicant may be necessary.

I understand that the granting of permission to pursue this research project in the Des Moines Public Schools obligates me to provide three copies of an abstract of findings to the Associate Superintendent for Teaching and Learning or designated representative, and one copy to each principal of the building where the project was carried out. I agree to provide the chair of the Research Review Board with one complete copy of all findings directly resulting from the study. I further agree to comply with all conditions described in "Instructions for Requesting Approval to Conduct Research in the Des Moines Public Schools."

Signature of Applicant [Signature] Date 1/3/96Signature of Sponsoring Professor [Signature] Date 6.3.86

*Des Moines Independent Community School District  
Department of School Improvement & Employee Relations  
1800 Grand Avenue  
Des Moines, IA 50309-3399*

*Thomas E. Deeter, Ph.D.  
Program Evaluator, Testing & Research*

*515-262-7639/7836  
Fax: 515-262-7710*

June 12, 1996

Deborah J. Gettys  
4409 40th Street  
Des Moines, IA 50310

Dear Ms. Gettys:

I have had an opportunity to review your request for research. Based on current practice, individuals who conduct their research outside of normal school time, and do not use the district to conduct their projects are essentially exempt from review. Since your project does not include students, and your contact with teachers will occur outside of their contract time (during the summer), and since you will not be using district resources to contact them, your project can proceed without formal review.

However, I did take the opportunity to review your project to satisfy my comfort level with your project as it relates to district staff members. As per our conversation, the following points were mentioned:

- To further protect the confidentiality of the respondents, and to ensure the non-identifiability of staff, as well as administrators, I would recommend that you refine your procedure so that you are blind to the building and respondent coding system. Certainly, to avoid any potentially awkward situations in the future, you should have a neutral person randomly assign codes to schools, as well as the subjects, so that you can ensure your respondents (in writing, in the contact letter) that you have no idea of the origin of the responses.
- Revise your contact letter to indicate how you are ensuring the confidentiality of respondents. Also, include in your contact letter clauses, e.g., "Please understand that participation in this study is strictly voluntary, and you have the right to withdraw at any time without repercussions." Since this is a survey study, you might say something like "...you are free to not answer any question that makes you feel uneasy..." or some derivative thereof.

I have verified that you have already discussed this project with Cheryl Arévalo, Mathematics Supervisor, who is interested in the results of your study. I also understand that you will be in touch with Ms. Judith Cunningham, Executive Director, Elementary & Early Childhood Programs. I would like to request that when your study has been completed, we would like to receive a report of your results. You may send it to me at the above address. If you have any questions, please contact me at 242-7639.

Sincerely,



Dr. Thomas E. Deeter  
Chair, District Research Committee

copy: Dr. Raymond Armstrong  
Associate Superintendent for Teaching and Learning

# Information for Review of Research Involving Human Subjects

Iowa State University

(Please type and use the attached instructions for completing this form)

1. Title of Project Defining the relationships between perceived leader authenticity, staff authenticity, and instructional leadership in an urban elementary school
2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree to request renewal of approval for any project continuing more than one year.

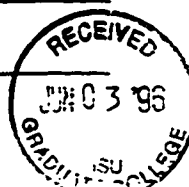
Deborah J. Gettys  
Typed Name of Principal Investigator

6/3/96  
Date

*Deborah J. Gettys*  
Signature of Principal Investigator

Curriculum and Instructional Tech. Lacomarcino Hall  
Department Campus Address

515 276 6267  
Phone Number to Report Results



3. Signatures of other investigators Date Relationship to Principal Investigator  
*Greg E. Downs* 6/3/96 Major Professor

4. Principal Investigator(s) (check all that apply)  
☐ Faculty ☐ Staff ☒ Graduate Student ☐ Undergraduate Student

5. Project (check all that apply)  
☐ Research ☒ Thesis or dissertation ☐ Class project ☐ Independent Study (490, 590, Honors project)

6. Number of subjects (complete all that apply)  
200 # Adults, non-students \_\_\_ # ISU student \_\_\_ # minors under 14 \_\_\_ other (explain)  
\_\_\_ # minors 14 - 17

7. Brief description of proposed research involving human subjects: (See instructions, Item 7. Use an additional page if needed.)

A. The purpose of the study is to identify leadership characteristics and perceived behaviors that support a positive climate for the implementation of a district curricular adoption calling for significant changes in instructional practices. The project's hypothesis is that positive correlations exist between both the staff-perceived levels of leader authenticity of the principal and the staff's own self-authenticity with the climate of that staff towards the district-implemented changes in instructional practices. The Leader Authenticity/Staff Authenticity Survey, the Leader Effectiveness Index and a Des Moines Public Schools Staff Climate Survey are the instruments that will be used to measure the characteristics and behaviors.

B. Subjects will be selected based on their assignments to one of forty-three elementary schools in the Des Moines Independent Community School District. School names will be alphabetized and alternate names will be selected, beginning with the first or second name on the list (to be determined by a coin toss). Teachers who are responsible for grades one through five mathematics instruction and the principal from the selected twenty plus buildings will receive the letter and written surveys include in the

(Please do not send research, thesis, or dissertation proposals.)

8. Informed Consent: ☐ Signed informed consent will be obtained. (Attach a copy of your form.)  
☒ Modified informed consent will be obtained. (See instructions, item 8.)  
☐ Not applicable to this project.

9. Confidentiality of Data: Describe below the methods to be used to ensure the confidentiality of data obtained. (See instructions, item 9.)

Each survey packet will be coded with a common portion of the code used for all the surveys sent to personnel from the same building. The code will not indicate which school is being surveyed to insure anonymity. Selected school names will be randomly drawn to assign a 2-digit numeric identifier. The general format for each code will be school[##]grade[##]subject[##]. For example, the specific identifier or code that would be assigned to the 4th grade teacher whose name is drawn second from the tenth selected school would be 10-04-02. These identifiers will be written on the top of each survey sheet the subject completes. A stamped

10. What risks or discomfort will be part of the study? Will subjects in the research be placed at risk or incur discomfort? Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 10.)  
None of the planned procedures involve risk or discomfort.

11. CHECK ALL of the following that apply to your research:

- ☐ A. Medical clearance necessary before subjects can participate
- ☐ B. Administration of substances (foods, drugs, etc.) to subjects
- ☐ C. Physical exercise or conditioning for subjects
- ☐ D. Samples (Blood, tissue, etc.) from subjects
- ☐ E. Administration of infectious agents or recombinant DNA
- ☐ F. Deception of subjects
- ☐ G. Subjects under 14 years of age and/or ☐ Subjects 14 - 17 years of age
- ☐ H. Subjects in institutions (nursing homes, prisons, etc.)
- ☒ I. Research must be approved by another institution or agency (Attach letters of approval)

If you checked any of the items in 11, please complete the following in the space below (include any attachments):

Items A-E Describe the procedures and note the proposed safety precautions being taken.

Items D-E The principal investigator should send a copy of this form to Environmental Health and Safety, 118 Agronomy Lab for review.

Item F Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the timing and information to be presented to subjects.

Item G For subjects under the age of 14, indicate how informed consent from parents or legally authorized representatives as well as from subjects will be obtained.

Items H-I Specify the agency or institution that must approve the project. If subjects in any outside agency or institution are involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.

I. This research needs to be approved by the Des Moines Independent Community School District. That process is in place currently.

Completion of responses to questions on the application form

7. addendum to this document. Completed surveys will be asked to be returned within two weeks to begin data analyses.

9. return envelope will be included in the initial mailing with the researcher's address being used as both the sending and return addresses. No other subject identification will be supplied by the researcher. A master list of identifiers and schools will be maintained, but will not be made available to any one other than the research and her committee for verification purposes.

Last Name of Principal Investigator GETTYS**Checklist for Attachments and Time Schedule**

The following are attached (please check):

12. ☒ Letter or written statement to subjects indicating clearly:
- a) purpose of the research ☒
  - b) the use of any identifier codes (names, #'s), how they will be used, and when they will be removed (see Item 17) ☒
  - c) an estimate of time needed for participation in the research and the place ☒
  - d) if applicable, location of the research activity ☒
  - e) how you will ensure confidentiality ☒
  - f) in a longitudinal study, note when and how you will contact subjects later
  - g) participation is voluntary; nonparticipation will not affect evaluations of the subject
13. ☐ Consent form (if applicable)
14. ☒ Letter of approval for research from cooperating organizations or institutions (if applicable).  
 A copy of the application for this approval from Des Moines Public Schools is attached. A copy of the approval will be filed as soon as it is received.
15. ☒ Data-gathering instruments

## 16. Anticipated dates for contact with subjects:

First Contact

Last Contact

June 17, 1996

Month / Day / Year

June 26; follow-up before July 4

Month / Day / Year

## 17. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

Month / Day / Year

## 18. Signature of Departmental Executive Officer

Date

Department or Administrative Unit

Ann Thompson 6-3-96 Curriculum + Inst.

## 19. Decision of the University Human Subjects Review Committee:

☒ Project Approved    ☐ Project Not Approved    ☐ No Action Required

Patricia M. Keith  
Name of Committee Chairperson

Date

Signature of Committee Chairperson

6-13-96 PM Keith

## **APPENDIX B. SOURCE INSTRUMENTS**

## EDUCATIONAL AND PSYCHOLOGICAL RESEARCH

TABLE 1

**Leader Authenticity Scales**

- \*1. The principal is obsessed with rules.
- 2. The principal is willing to admit to mistakes when they are made.
- \*3. When dealing with a teacher, the principal behaves like a know-it-all.
- 4. The principal is not afraid to admit when he (or she) doesn't know something.
- \*5. The principal is very defensive about any criticism.
- 6. The principal is honest in face-to-face interactions.
- \*7. Many times the principal will say one thing to teachers and something quite different to students or parents.
- 8. The principal is authentic.
- \*9. It's not uncommon to see the principal pit one teacher against another.
- 10. The principal's beliefs and actions are consistent.
- \*11. The principal finds it difficult to accept failure.
- \*12. It's an unwritten rule around here that you don't criticize the principal.
- \*13. If the principal makes a mistake, a reason is made to cover-up for the error.
- 14. The principal accepts and learns from mistakes.
- \*15. The principal usually has teachers do things to make the principal look good.
- 16. After meeting together in situations like evaluation conferences, I feel that I know the principal better as a person.
- \*17. The principal doesn't have much to do with teachers unless a teacher can help the principal in some way.
- \*18. The principal is an opportunist in dealing with teachers.
- 19. The principal encourages "give-and-take" discussion with individual teachers.
- \*20. If something goes wrong in the school, the principal is sure to blame someone else on the staff.
- \*21. The principal is easily swayed by parent pressure.
- 22. The principal appears to have "rehearsed" answers for teachers during conferences.
- 23. The principal is a person first, and an administrator second.
- \*24. The principal manipulates the teachers.



## LEADER AUTHENTICITY

- \*25. The principal is a phony
- \*26. Discussing serious issues, the principal likes to "play games."
- 27. The principal accepts responsibility for the principal's own actions and for the progress of the school.
- \*28. Teachers are afraid if they confide in the principal that the information will be used against them.
- \*29. The principal seems to talk at you and not with you.
- 30. Whenever authority is delegated to a staff member, the principal stands behind that person
- 31. The principal would not hesitate to put a board member or parent in his/her place if necessary.
- \*32. The principal likes to take credit for teachers' accomplishments, but doesn't want to be blamed for any failures.

---

\* Inauthentic item—score reversed

### Response Categories:

Agree Strongly	Agree Somewhat	Agree Slightly	Disagree Slightly	Disagree Somewhat	Disagree Strongly
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(1970) construct validity requirements of speculating as to the construct which accounts for measured performance, deriving hypotheses from the theory involving that construct, and testing those hypotheses empirically.

### Some Hypotheses

Three hypotheses were developed to test the relationships of perceived leader authenticity with other theoretically relevant variables. Halpin and Croft (1966, p. 205) argued that *esprit*, the faculty satisfaction emerging from task accomplishment and personal need gratification, was an index of the authenticity of the principal-teacher relationship; and that thrust, the teachers' perception of the principal's efforts to motivate through personal example, was an indication of the principal's authenticity. Thus, it was hypothesized that:

- H<sub>1</sub> *Esprit* is positively correlated with perceived leader authenticity.

# LEADER EFFECTIVENESS INDEX

Jerome Moss, Jr.

ID NUMBER									
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

## Marking Directions

- Use pencil or black or blue pen.
- Darken the circle completely.
- Erase cleanly any marks you wish to change or X out mark if in pen.
- Do not make any stray marks on this form.

### Correct Marks



### Incorrect Marks



## SECTION A

We are seeking your opinion about how effectively an individual is performing as a leader. You will return this form directly to the National Center for Research in Vocational Education so the person you are rating will not be able to identify your responses. Therefore, we urge you to reflect carefully about each statement and select the rating that best describes the person.

For each of the statements which follow, fill in the circle that best describes the person you are rating.

## SECTION B

1. Inspires a shared vision and establishes standards that help the organization achieve its next stage of development. For example, creates a sense of purpose, defines reality in the larger context, instills shared values and beliefs. ....
2. Fosters unity, collaboration, and ownership, and recognizes individual and team contributions. For example, creates a climate of community, builds morale, sets a positive tone, resolves disagreements. ....
3. Exercises power effectively and empowers others to act. For example, facilitates change, shares authority, nurtures the skills of group members. ....
4. Exerts influence outside of the organization in order to set the right context for the organization. For example, serves as a symbol for the group, secures resources, builds coalitions, acts as an advocate. ....
5. Establishes an environment conducive to learning. For example, provides intellectual stimulation, creates a supportive climate for learners, facilitates the professional development of staff. ....
6. Satisfies the job-related needs of members of the organization as individuals. For example, respects, trusts, and has confidence in members; adapts leadership style to the situation; creates a satisfying work environment. ....
7. Overall, how effective is the leadership performance of the person you are rating? .....

Not Applicable	Not Effective	Slightly Effective	Somewhat Effective	Effective	Very Effective	Extremely Effective
0	1	2	3	4	5	6
0	1	2	3	4	5	6
0	1	2	3	4	5	6
0	1	2	3	4	5	6
0	1	2	3	4	5	6
0	1	2	3	4	5	6
0	1	2	3	4	5	6

Thank you for completing this survey!

Please return the completed survey directly to  
 National Center for Research in Vocational Education  
 460 VoTech Building, 1954 Buford Avenue  
 University of Minnesota  
 St. Paul, MN 55108

## STAFF SURVEY

**DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT**  
**School Climate Survey**  
**Fall 1995**

The Des Moines school district is interested in finding out your opinions related to operation of the school(s). The areas covered in this survey are those that relate to effective schooling. Responses to the questions by staff, students and parents will provide a measure of "school climate." Results become a part of each building's database to be used in future planning. If you have students who are assigned to more than one building, please complete the survey for each building as we are interested in your opinions about each school. Individual respondents will not be identified.

Please decide whether you agree or disagree with the following statements as they apply to the school(s) to which you are assigned. Circle the number associated with your response. Circle the "0" response for "don't know" if you feel you do not have enough information to respond to a particular item.

Building Number: \_\_\_\_\_

	Don't Know	Strongly Agree	Agree	Disagree	Strongly Disagree
1. This school is a safe place. ....	0	4	3	2	1
2. Students demonstrate good behavior in this school.....	0	4	3	2	1
3. The classroom atmosphere in this school promotes learning for students. ....	0	4	3	2	1
4. This school building is clean. ....	0	4	3	2	1
5. In this school, the primary emphasis is on teaching and learning.....	0	4	3	2	1
6. Teachers in this school believe that all students can learn.....	0	4	3	2	1
7. Teachers in this school communicate frequently with parents. ....	0	4	3	2	1
8. Strong leadership is provided in this school.....	0	4	3	2	1
9. The principal is visible at the school and related activities. ....	0	4	3	2	1
10. Building administrator(s) are accessible to discuss school related matters. ....	0	4	3	2	1
11. Staff members are treated with respect in this building.....	0	4	3	2	1
12. The building administrator(s) conducts formal classroom evaluations.....	0	4	3	2	1
13. The school staff is helpful and courteous.....	0	4	3	2	1
14. This school deals promptly with identified problems. ....	0	4	3	2	1
15. Materials and supplies necessary for instruction are available in this school. ....	0	4	3	2	1
16. Teachers in this school hold high expectations for all students.....	0	4	3	2	1
17. This school's staff helps all students succeed.....	0	4	3	2	1
18. This school's staff expects all students to learn and will not be satisfied with less.....	0	4	3	2	1
OVER	OVER	OVER	OVER	OVER	OVER

4=Strongly Agree 3=Agree 2=Disagree 1=Strongly Disagree 0=Don't Know

19.	There are few interruptions during class time in this school.....	0	4	3	2	1
20.	Students' individual learning needs are met in this school.....	0	4	3	2	1
21.	Students in this school are expected to attend school.....	0	4	3	2	1
22.	This school uses a variety of ways to regularly measure student progress. ....	0	4	3	2	1
23.	Student progress in this school is successfully communicated to parents.....	0	4	3	2	1
24.	Students in this school are given timely comments and suggestions for improvement on assignments. ....	0	4	3	2	1
25.	Teachers check for understanding and reteach when necessary.. ....	0	4	3	2	1
26.	Students receive awards or recognition for successes in this school.....	0	4	3	2	1
27.	Students are aware of their progress in this school.....	0	4	3	2	1
28.	Parents feel welcome at this school.....	0	4	3	2	1
29.	Parents understand and support the policies of this school. ....	0	4	3	2	1
30.	Parent input is valued in the decision making of this school.....	0	4	3	2	1
31.	This school provides opportunities for parents to support their student's learning.....	0	4	3	2	1
32.	I give our school a grade of: .....	A	B	C	D	F
	(Please circle the letter grade.)					

Please indicate your employee category by checking ONE response below.

\_\_\_\_Certificated employee (teacher, building administrator)  
(1)

\_\_\_\_Certificated instructional support employee (counselor, psychologist, social  
(2) worker, consultant, coordinator, librarian, nurse)

\_\_\_\_Non-certificated employee (secretary, associate, operations,  
(3) food service)

What is good about our school? \_\_\_\_\_

\_\_\_\_\_

What needs improvement in our school? \_\_\_\_\_

\_\_\_\_\_

PLEASE RETURN TO DEPARTMENT OF SCHOOL IMPROVEMENT BY  
FRIDAY, OCTOBER 20, 1995.

TOTAL P.03

**APPENDIX C. SURVEY INSTRUMENT AND LETTER**

June 20, 1996

Dear Des Moines Elementary Educator,

My name is Deb Gettys and I am currently assigned in Des Moines as the Administrative Intern at Monroe-Rice. This past year, you and your students participated in a districtwide adoption of a new mathematics curriculum. As with any undertaking in a district the size of ours, the work and effort involved by all stakeholders in a project this large is *immense*. And, as with any project that involves the lives of children, it is important that we learn as much as we can about what can make that project successful.

As one of the final requirements for my doctoral degree from Iowa State University, I have begun work on my dissertation. The question I am studying is, *"What makes a principal a good instructional leader when it comes to implementing a district curricular adoption that requires significant classroom instructional changes?"* Instructional leadership is only one of many factors that help determine how well change is accepted and implemented in any school. I am interested in looking at the above question from the perspective of the classroom teacher, and then relating that perspective to a building's overall climate toward instruction and the adoption.

To accomplish this, I need your help. The enclosed survey is being sent to teachers of approximately twenty Des Moines elementary schools, including the school to which you were assigned this last year. I hope you are willing to take approximately 15 minutes to answer the survey questions as they relate to your experiences this past year with the math adoption. Please use the enclosed stamped envelope to return the completed survey to me by Saturday, June 29.

Each survey has been randomly coded by another individual not involved with this research. I do not have knowledge as to who received which code, nor will anyone else in the Des Moines district. This procedure allows me to group responses in a variety of ways without knowing the identity of individuals or the building. I will analyze the data at both a building (unidentified) and district level and then attempt to define relationships and significant behaviors or characteristics. The results from this study will be made available to the Des Moines district, as well as to my doctoral committee at ISU. My goal is to have this happen sometime this fall.

Please understand that participation in this study is strictly voluntary; you have the right to withdraw at any time, as well as omit answering any item with which you are not comfortable. If you have questions, please feel free to call me at home (276-6267). Thank you for your help and have an enjoyable summer.

Sincerely,



Deb Gettys

enclosures

years

	M	F
1. <i>Age</i>		
2. <i>Sex</i>		
3. <i>Marital status</i>		
4. <i>Education</i>		
5. <i>Occupation</i>		
6. <i>Income</i>		
7. <i>Health</i>		
8. <i>Religion</i>		
9. <i>Political affiliation</i>		
10. <i>Attitudes toward social issues</i>		
11. <i>Values</i>		
12. <i>Life satisfaction</i>		
13. <i>Self-esteem</i>		
14. <i>Resilience</i>		
15. <i>Stress management</i>		
16. <i>Emotional stability</i>		
17. <i>Interpersonal skills</i>		
18. <i>Communication skills</i>		
19. <i>Problem-solving skills</i>		
20. <i>Decision-making skills</i>		
21. <i>Time management</i>		
22. <i>Organization skills</i>		
23. <i>Goal setting</i>		
24. <i>Self-motivation</i>		
25. <i>Perseverance</i>		
26. <i>Adaptability</i>		
27. <i>Flexibility</i>		
28. <i>Openness to change</i>		
29. <i>Curiosity</i>		
30. <i>Learning style</i>		
31. <i>Memory</i>		
32. <i>Attention span</i>		
33. <i>Concentration</i>		
34. <i>Focus</i>		
35. <i>Productivity</i>		
36. <i>Efficiency</i>		
37. <i>Time management</i>		
38. <i>Organization skills</i>		
39. <i>Goal setting</i>		
40. <i>Self-motivation</i>		
41. <i>Perseverance</i>		
42. <i>Adaptability</i>		
43. <i>Flexibility</i>		
44. <i>Openness to change</i>		
45. <i>Curiosity</i>		
46. <i>Learning style</i>		
47. <i>Memory</i>		
48. <i>Attention span</i>		
49. <i>Concentration</i>		
50. <i>Focus</i>		
51. <i>Productivity</i>		
52. <i>Efficiency</i>		
53. <i>Time management</i>		
54. <i>Organization skills</i>		
55. <i>Goal setting</i>		
56. <i>Self-motivation</i>		
57. <i>Perseverance</i>		
58. <i>Adaptability</i>		
59. <i>Flexibility</i>		
60. <i>Openness to change</i>		
61. <i>Curiosity</i>		
62. <i>Learning style</i>		
63. <i>Memory</i>		
64. <i>Attention span</i>		
65. <i>Concentration</i>		
66. <i>Focus</i>		
67. <i>Productivity</i>		
68. <i>Efficiency</i>		
69. <i>Time management</i>		
70. <i>Organization skills</i>		
71. <i>Goal setting</i>		
72. <i>Self-motivation</i>		
73. <i>Perseverance</i>		
74. <i>Adaptability</i>		
75. <i>Flexibility</i>		
76. <i>Openness to change</i>		
77. <i>Curiosity</i>		
78. <i>Learning style</i>		
79. <i>Memory</i>		
80. <i>Attention span</i>		
81. <i>Concentration</i>		
82. <i>Focus</i>		
83. <i>Productivity</i>		
84. <i>Efficiency</i>		
85. <i>Time management</i>		
86. <i>Organization skills</i>		
87. <i>Goal setting</i>		
88. <i>Self-motivation</i>		
89. <i>Perseverance</i>		
90. <i>Adaptability</i>		
91. <i>Flexibility</i>		
92. <i>Openness to change</i>		
93. <i>Curiosity</i>		
94. <i>Learning style</i>		
95. <i>Memory</i>		
96. <i>Attention span</i>		
97. <i>Concentration</i>		
98. <i>Focus</i>		
99. <i>Productivity</i>		
100. <i>Efficiency</i>		

---

	Y	N
	<hr/>	

	Y	N
1. The company has a clear vision and mission statement.		
2. The company has a strong leadership team.		
3. The company has a solid financial foundation.		
4. The company has a diverse and talented workforce.		
5. The company has a strong commitment to social responsibility.		
6. The company has a strong customer base.		
7. The company has a strong brand identity.		
8. The company has a strong competitive advantage.		
9. The company has a strong track record of innovation.		
10. The company has a strong commitment to sustainability.		

\_\_\_\_\_ years

           years

\_\_\_\_\_ years

5      4      3      2      1

5      4      3      2      1

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\_\_\_\_\_

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### Instructional Leadership and Curriculum Adoption

**General Instructions:** Please decide whether you agree or disagree with the following statements as they apply to the school to which you were assigned in 1995-96. Circle the number associated with your response. The numbers and their meanings are indicated below; however, they change throughout different sections of the survey, so please check carefully. If you find that the numbers to be used do not adequately indicate your opinion, use the number closest to the way you feel.

#### Leader and Staff Authenticity Scale

6 Strongly Agree

5 Moderately Agree

4 Agree slightly more than disagree

3 Disagree slightly more than agree

2 Moderately Disagree

1 Strongly Disagree

	SA	MA	A	D	MD	SD
1. My principal doesn't have much to do with staff members unless the staff member can help him/her in some way.	6	5	4	3	2	1
2. My principal is willing to admit to mistakes when they are made.	6	5	4	3	2	1
3. My principal finds it difficult to accept failure.	6	5	4	3	2	1
4. If my principal makes a mistake, a reason is made to cover-up for the error.	6	5	4	3	2	1
5. My principal is very defensive about any criticism.	6	5	4	3	2	1
6. My principal is honest in face-to-face interactions.	6	5	4	3	2	1
7. My principal likes to take credit for accomplishments but doesn't want to be blamed for any failures.	6	5	4	3	2	1
8. My principal runs the organization "by the book."	6	5	4	3	2	1
9. My principal's beliefs and actions are consistent.	6	5	4	3	2	1
10. If something is wrong in the school, my principal is sure to blame someone else on the staff.	6	5	4	3	2	1
11. My principal manipulates staff members.	6	5	4	3	2	1
12. When dealing with a staff member, my principal behaves like a know-it-all.	6	5	4	3	2	1
13. My principal seems to talk at you and not with you.	6	5	4	3	2	1
14. Whenever authority is delegated to a staff member, my principal stands behind that person	6	5	4	3	2	1
15. My principal accepts and learns from mistakes.	6	5	4	3	2	1
16. My principal accepts responsibility for his/her own actions and for the progress of the school.	6	5	4	3	2	1
17. Whenever authority is delegated to a staff member, other staff members stand behind that person.	6	5	4	3	2	1
18. Staff members in my school operate "by the book."	6	5	4	3	2	1
19. Staff members' beliefs and actions are consistent.	6	5	4	3	2	1



6 Strongly Agree

5 Moderately Agree

4 Agree slightly more than disagree

3 Disagree slightly more than agree

2 Moderately Disagree

1 Strongly Disagree

	SA	MA	A	D	MD	SD
20. Staff members here like to take credit for accomplishments, but don't want to be blamed for any failures.	6	5	4	3	2	1
21. Staff members here accept and learn from mistakes.	6	5	4	3	2	1
22. Staff members in my school are honest in face-to-face interactions.	6	5	4	3	2	1
23. Staff members here are willing to admit to mistakes when they are made.	6	5	4	3	2	1
24. Staff members here accept responsibility for their own actions and for the progress of the school.	6	5	4	3	2	1
25. Staff members are very defensive about any criticism.	6	5	4	3	2	1
26. Staff members don't have much to do with other staff members unless the other staff member can help them in some way.	6	5	4	3	2	1
27. Other staff members in my school find it difficult to accept failure.	6	5	4	3	2	1
28. If a staff member in my school makes a mistake, a reason is made to cover-up for the error.	6	5	4	3	2	1
29. If something is wrong in my school, the staff members are sure to blame someone else on the staff.	6	5	4	3	2	1
30. Staff members here manipulate other staff members.	6	5	4	3	2	1
31. When dealing with a staff member, other staff members behave like know-it-alls.	6	5	4	3	2	1
32. Staff members here seem to talk at you and not with you.	6	5	4	3	2	1

Please note that the rating scale changes for the following section

### Climate Survey

Circle the number associated with your response to each question. Circle the "0" response for "Don't Know" if you feel you do not have enough information to respond to a particular item.

4 Strongly Agree

3 Agree

2 Disagree

1 Strongly Disagree

0=Don't know

	DK	SA	A	D	SD
40. Strong leadership is provided in this school.	0	4	3	2	1
41. The principal is visible at the school and related activities.	0	4	3	2	1
42. The principal is accessible to discuss school related matters.	0	4	3	2	1
43. Staff members are treated with respect in this building.	0	4	3	2	1
44. The building administrator conducts formal classroom evaluations.	0	4	3	2	1
45. The school staff is helpful and courteous.	0	4	3	2	1
46. This school deals promptly with identified problems.	0	4	3	2	1
47. Materials and supplies necessary for instruction are available in this school.	0	4	3	2	1

Please note that the rating scale changes for the following section

**Leader Effectiveness Index**

For each of the statements which follow, circle the number that best describes your principal.

**0** Not Applicable

**6** Extremely Effective

**5** Very Effective

**4** Effective

**3** Somewhat Effective

**2** Slightly Effective

**1** Not Effective

	NA	EE	VE	E	SE	SIE	NE
33. Inspires a shared vision and establishes standards that help the school achieve its next stage of development. For example, creates a sense of purpose, defines reality in the larger context, instills shared values, beliefs.	0	6	5	4	3	2	1
34. Fosters unity, collaboration and ownership and recognizes individual and team contributions. For example, creates a climate of community, builds morale, sets a positive tone, resolves disagreements.	0	6	5	4	3	2	1
35. Exercises power effectively and empowers others to act. For example, facilitates change, shares authority, nurtures the skills of group members.	0	6	5	4	3	2	1
36. Exerts influence outside of the school in order to set the right context for the school. For example, serves as a symbol for the group, secures resources, builds coalitions, acts as an advocate.	0	6	5	4	3	2	1
37. Establishes an environment conducive to learning. For example, provides intellectual stimulation, creates a supportive climate for learners, facilitates the professional development of staff.	0	6	5	4	3	2	1
38. Satisfies the job-related needs of staff members as individuals. For example, respects, trusts, and has confidence in members; adapts leadership style to the situation; creates a satisfying work environment	0	6	5	4	3	2	1
39. Overall, how effective is the leadership performance of this principal?	0	6	5	4	3	2	1

Comments concerning any part of the survey:

Thank you for taking time from your summer to answer these questions. Please use the enclosed stamped addressed envelope to return the survey to me by **Friday, June 28, 1996**.

## APPENDIX D. LIST OF RESPONDENT COMMENTS

ID Number	Comment
030101	Will this be shared with building principals? They may be interested in the anonymous feelings of their staff members.
040102	It's difficult for me to see the link between these survey questions and the idea of whether a principal is good at implementing a new curricular adoption. Had I been given this survey a year ago, my answers would be basically the same, having nothing to do with the adoption we have experienced. It would seem that questions more specific to the issue would be helpful, such as how often did your principal discuss the math curriculum with you? Was your principal helpful in obtaining needed resources: Did your principal support your attempts to adapt the curriculum to your students' needs? This is just my opinion, of course.
040201	Outside of ordering materials and informing staff of math meetings the principal was not a major player in the math curriculum. Most help came from peers and Cheryl Arevalo.
060302	Not many questions about Math adoption?
090402	The principal did not attend teacher meetings to help implementation. He was never in my room to observe nor did he inquire about the Math series. All he would do is criticize if scores went down. He was very ineffective to this process. All he did was hand out materials. Wouldn't it be neat if he would have visited with each one of us and be objective to our concerns.
090501	I feel it is important to help a colleague with a survey used for a dissertation. I however feel this is more a principal evaluation than having anything to do with the math adoption. The first part of your survey is very negative. I'm sure this will be a time for some people to have a "hey-day" evaluating their principals. I'm not sure your results will truly have anything to do with your intent.

100203	As far as the new Math adoption, it was much easier for primary age teachers who have had DAP training to adjust to the new series.
100401	“By the book” is confusing. If you are asking about being rigid the answer is no. If you are asking if expectations of the district are met, the answer is yes.
120201	I’m sorry my responses seem to be so negative. I happen to have had some bad experiences the past two years which make my answers less than glowing for our building administrator. Hats off to good administrators. Our district would be lost without them!
120502	Item #43: The principal treats some staff members with respect and is disrespectful to others. Teachers generally respect each other.  Leadership Effectiveness: There’s been a lot of discontent and uneasiness in our building because of the way the principal has been treating some staff members. It has created a stressful climate.
140203	I think it is important for elementary principals to remember teachers are adults and not children. Too many I have worked with are power hungry and treat staff members <u>significantly</u> different. Are you sorry you asked?
140403	The principal is in charge. He does handle discipline well but is not open to shared decision making or intellectual leadership
160201	Our leadership is <u>excellent</u> . It was difficult for me to rate the staff because it’s a diverse group. The leadership has had an excellent impact on the staff—a very positive impact. My hesitation to rate higher in those areas (staff) reflects staff conduct before the new administrator. Our leadership really <u>is</u> commendable. Hope these comments make sense.
170201	This is an excellent evaluation. I believe all principals should be evaluated by their staff through the downtown office anonymously yearly.
170202	This was great!
190102	Great survey—I just wish someone could do something about my principal—he has been worthless; doesn’t follow through with evaluations; mean-spirited person.

190401	What do these questions have to do with math? The principal didn't understand the new adoption. It was all put on the staff shoulders. The principal didn't want to "rock the boat"!
200201	I think your statements hit many nails on the head! You're right on! I would be interested in your results at both the building level and the district level. I think one factor that was not addressed here was that as elementary teachers we were not only implementing a new math adoption. We also had a new science adoption. Two major adoptions in one year has stretched us thin! Especially with "hands-on" materials to manipulate. Have an interesting time compiling your results and best of luck, Deb.

## **APPENDIX E. DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT**

### **Demographic Picture**

Since its beginning in 1846, the Des Moines Independent Community School District (hereafter referred to as Des Moines Public Schools), has grown to become the largest public school system in Iowa. The student population as of September 15, 1995 was 32,717. These students were housed at 42 elementary sites, 10 middle school sites and 5 comprehensive high school sites, as well as alternative schools and programs. The 1995-96 budget of \$179,500,000 included the salaries and wages for the following 4,297 staff members:

- 2,426 professional, non-administrative staff
- 153 administrators
- 73 specialists and tutors
- 482 associates
- 225 secretaries and clerical staff
- 365 food service employees
- 573 plant, transportation, operations and warehouse staff

Racially, the student population is diverse with the following demographic analysis.

1. Caucasian	77.10%
2. African American	13.35%
3. Asian	5.22%
4. Hispanic	3.69%
5. American Indian	0.64%

“Minority enrollment in the Des Moines Public Schools continues to increase. The districtwide minority enrollment has risen from 18% during the 1989-90 school year to 22.9% for the 1994-95 school year. Currently, there are six schools above the guidelines established in the desegregation plan. Several programs have been implemented to address segregation, including the Voluntary Transfer Program, modification to the school calendar, cross-cultural awareness training, and magnet schools” (District Database, March 1996).

All of these factors are influences on the development and implementation of instructional programs in Des Moines as the need for more diverse curriculum and delivery systems has made itself known. Who determines the instructional content and availability of the delivery systems to which portion, if not all, of the student population has given rise to questions that ask for a clear delineation of who is the instructional leader in Des Moines Public Schools.

### **Instructional Leadership**

Since Edmonds’ effective schools research, much attention has been given by the education profession to determine how other schools might move forward to establish and develop these same correlates. In the late 1980’s, under the leadership of Superintendent Dr. Gary Wegenke, The Des Moines Public Schools adopted the Framework for Effective Schools and the Framework for Effective Administrators. These frameworks have been the structures upon which all individual building improvement plans and staff development opportunities must be built.

Don Brubaker, former Director of Early Childhood and Elementary Programs for Des Moines Public Schools, identifies the principal as being responsible for the monitoring,

evaluation and decision making for the education process that is in place at a school (Brubaker, 1996); the principal is the instructional leader of the school. He then proceeds to expand this definition by outlining a skeleton framework of such leadership as it currently exists in the Des Moines Public Schools. He explains that the district determines what will be taught; teachers determine the how and when of what will be taught; and principals monitor the district-defined curriculum as it is presented in the classroom. Brubaker states that central office individuals develop the curriculum and the in-servicing of teachers in the presentation of that curriculum and then hand over the responsibility of monitoring that curriculum and presentation to the building principal.

The nature of a school district's bureaucratic structure heavily influences the nature of the delivery of instructional leadership to schools within that district (Urban, 1996, p. 166-7). Likewise, the nature of the district's superintendent heavily influences the nature of the district's bureaucratic structure. Des Moines Public Schools has been under the guidance and leadership of three superintendents since the mid-1960's. As the individual occupying the superintendency has changed, so has the instructional support organization and focus.

At the top of the organization is the Administrative Cabinet. Led by the superintendent, this body is responsible for overseeing the direction and decisions of the district as a whole. Needless to say, the Administrative Cabinet holds a great deal of formal and informal decision-making power. During the time Dwight Davis was superintendent, 1965-1980, the size of the Administrative Cabinet was small with just a few individuals making those districtwide decisions. Davis' administration is described by Brubaker as having been very centralized and top-heavy, a structure certainly in keeping with the national trend in



educational administration at that time. When William Anderson was hired for the position of superintendent in 1980, the cabinet was expanded to include a few more individuals. At this time, district funds were also beginning to be de-centralized with more responsibility for monetary decisions being made in buildings. Since Gary Wegenke's superintendency, the size of the Administrative Cabinet has grown to twenty-six people and many of the funds have been de-centralized to the defined control of buildings. Authority for making instructional and operational decisions has shifted to Site-Based Councils (SBC's) and principals accordingly. The loosening of central office control has taken place to the extent that buildings may apply for a waiver if their School Improvement Plans call for anything that varies from the district plan or calendar. The seeming paradox of requiring principals and SBC's to obtain a waiver in order to truly operate their school from a site-based perspective serves the purpose of maintaining the schools as one district with more than sixty options for delivery, as opposed to more than sixty buildings operating as separate districts.

Instructional leadership is supported by the Teaching and Learning Division of the school district (Site-Based Management, 1995). The personnel involved at the central offices include primarily the subject area supervisors, who are responsible for planning and, in some cases, presenting elementary and secondary curriculum, subject-area in-services and secondary evaluations. Subject area consultants, who provide direct support to teachers and administrators, have been in and out of the organizational structure, depending on the superintendency. While the size of the Administrative Cabinet has grown since the arrival of Wegenke, the height of the central office organizational structure has been reduced. It has been an overt objective of this superintendency to eliminate levels of administration. As

retirements and/or resignations have taken place, positions have not been filled (Brubaker, 1996).

In 1980, under Superintendent William Anderson, Susan Donielson was hired as the Director of Curriculum. She reported to the Assistant to the Superintendent James Bowman, who was the head of Teaching and Learning division at that time. Supervisors and consultants for each subject area reported to Donielson and were responsible for providing personal and in-depth support to individual buildings. Donielson and Anderson both left the district in the late 1980's and the Director of Curriculum position was eliminated due to budget constraints and Wegenke's efforts to begin restricting some of the power and authority of the central office. The Director of Elementary Education and the Director of Secondary Education both assumed more of the instructional leadership responsibilities formerly contained in the Director of Curriculum position. Some of these instructional responsibilities were also shared with the respective Assistant Directors of Education. However, in January, 1996, Brubaker retired and the former Assistant Director of Elementary Education was promoted to an Assistant Superintendent position. Once again, the available administrative support to buildings has been reduced; filling the Assistant Director of Elementary Education position has been postponed indefinitely. At none of the times of change in organizational structure have responsibilities or tasks been eliminated. Instead, the unclaimed responsibilities have been reassigned to positions already defined as full-time.

Similarly, shortly after Donielson resigned, a longtime Reading supervisor from central office retired. During the first year following this retirement, four elementary principals with strong Reading expertise shared the responsibilities of the former Reading supervisor. The

goal of this transitional plan was for every building principal to eventually learn more about Reading instruction and be able to support teachers in his/her building. The plan was eventually abandoned because of logistical roadblocks and time constraints on the already full schedules of building administrators.

The district then shifted to using lead teacher positions with a teacher having half-time teaching responsibilities and half-time district teacher support responsibilities; this was done instead of hiring subject area consultants. The response to this on the part of many teachers and principals has been fairly negative. One principal remarked, "The shift has been effective in some ways, but information and support is not transferring to every teacher the way it used to" [when subject area consultants were available] (1996). This same principal proposed that the changes in instructional support and leadership correlate with the overall flattening of the district's administrative structure; central office positions are not filled because the overall goal is to have fewer and fewer administrators. Brubaker (1996) noted that de-centralization is good and worth pursuing, but it is important to remember that if everyone is de-centralized to the buildings, no one will be at central office to provide building support when it is needed. This is in line with a statement from several national professional supervisory and leadership organizations: "When school boards and their superintendents consider implementing school-based management, they—like their peers in the business sector—might also consider the possibility of 'downsizing' the administrative staff. 'With more decisions being made at the school level, and with broader involvement by staff, won't we need fewer administrators?' While the role of some administrators might change, every effort should be made to assure

that the process of reducing administrative personnel does not jeopardize the effectiveness of school-based management.” (National Association of Elementary Principals, 1988)

When the current philosophy of *site-based management through shared decision-making* (SBM/SDM) was first introduced to the district by Wegenke, there was confusion on the part of many administrators and teachers alike as to the real purpose and operation of site-based management. Many viewed site-based management as a sanction from central office for each building to pursue its own independent and separate course. It has taken considerable communication and staff development efforts to help district employees understand that Des Moines’ interpretation of site-based management is based on the need for all site efforts to support district goals and initiatives. This also translates to individual principals needing to oversee that building improvement plans and growth initiatives support district plans.

## **APPENDIX F. FRAMEWORK FOR EFFECTIVE SCHOOLS**

In 1993, the Des Moines Public Schools accepted the challenge of districtwide improvement through the use of Phase III money and a Comprehensive School Transformation plan. The purpose of the plan and all School Improvement Plans that would be written in support of the district plan was to result in students experiencing increased success in school. This student success was defined by research, theory and expert opinion in documents previously prepared for district staff development efforts and entitled, Frameworks for Effective Schools: Teaching, Support Services and Administrative Services. Individual schools since that time have been expected to write and monitor activities through a School Improvement Plan. Each includes specific sections:

- District and school mission statements;
- School resources;
- Shared vision for the school;
- Belief statements;
- School demographics;
- Effective school information;
- Recent school improvement information;
- Implementing the vision;
- Appendix (which currently includes supporting goals and activities for Title I or VI resources available to the building).

A handbook that was distributed to all schools when this initiative was started states, "It is expected that each school improvement plan will be complete and be strongly supported by the principal, staff, School-Based Council, and the community. The plan will be implemented in 1994 through 1997. The plan will be revised as needed on an annual basis. Discussion continues concerning the establishment of a formal cycle or plan revision and development." A review cycle is now in place. The expectations that the plan will be developed and implemented to increase student achievement and that the principal will strongly support the plan are clear indications that the Des Moines district identifies the principal as the formal instructional leader of any building. The handbook goes on to identify support that will be provided to each school, including school database information (e.g., demographic, assessment results for the district and an individual building, and climate feedback) and in-service opportunities offered by the district Department of Staff Development to help prepare individuals as they accept more responsibility and ownership for a building's improvement.

## BUILDING DATA BASES A FIRST STEP TOWARD DISTRICT IMPROVEMENT

If the Des Moines Schools improve, it will be a result of school improvements in each of the classrooms and schools in our district. When individual classrooms and schools improve, it is due, in part, to people and their access to *useful information*. A well-constructed building data base can provide useful information for principals, teachers, parents, and other building stakeholders who, in turn, can interpret and apply the information to make a good school even better.

As an illustration, teachers in our schools know the significance of grades, test scores, and individual comments written beside each student's name in the grade book. Generally, the teacher can describe for interested parties the typical behaviors of students they see each day. Responses to questions as to how a student is doing in the classroom this year when compared to last year is not uncommon information shared between teachers, parents, and the principal. The overall school perspective on how well *all students are achieving* or how well *all students are learning* what is taught in school may be more difficult to determine.

Please note the critical distinction between data and results. Data is numerical information used as a basis for discussion, reasoning, determining status or further calculation. Results are the consequences of plans and actions. Data can help describe an improvement activity taking place at individual schools. Result indicators, such as trend information, require data to substantiate progress.

Annually, school improvement is judged by monitoring results in the form of student growth in academic programs and social relationships. The building's data base can be used to describe areas in which students are making progress as well as areas in which little or no progress is being made. This information, which must be timely, can be applied by building stakeholders in the development of the school's annual improvement plan. The plan addresses district targets, building goals, an agenda for action, and expected results. In turn, building resources (e.g., staff and student time) can be reallocated to focus on priority areas in need of improvement.

Improvement at the classroom and school level is a first step toward district improvement. On July 11, 1995, the Des Moines Board of Education approved the **DISTRICT IMPROVEMENT PLAN FOR 1995-96**. The eight (8) major components of the plan include:

### *The District:*

- *focus is on teaching and learning processes and outcomes.*
- *assesses curriculum and instruction through program evaluation.*
- *continues to improve human resources through staff development.*
- *encourages leadership and management development through strategic planning.*
- *distributes resources effectively, efficiently, and equitably.*
- *supports a positive school environment at each learning center.*
- *encourages initiatives and planned change through the involvement of stakeholders.*
- *strengthens public and staff awareness and support of district programs.*

A copy of the complete **DISTRICT IMPROVEMENT PLAN FOR 1995-96** is appended.

In order for the district plan to become a reality, each building and district office staff member must view the building improvement plan, determined in part from the school's data base, and the district improvement plan as being compatible. As each school improves, the district as a school system improves. The District Improvement Plan provides a "big picture" view of the collective efforts of all district stakeholders working together to continue a district heritage that says —

**THE DES MOINES SCHOOLS—A TRADITION OF EXCELLENCE**

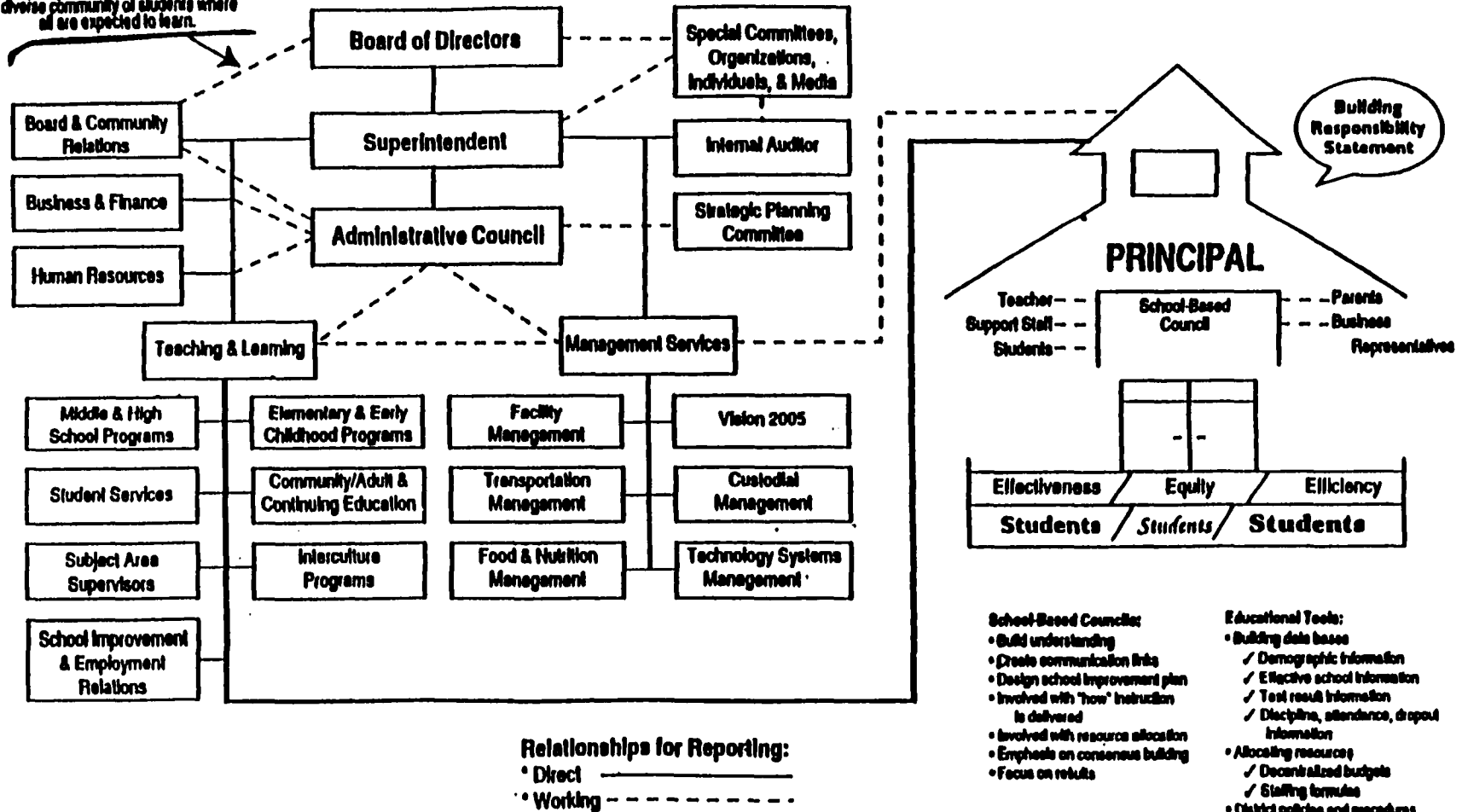
GLW:jd  
1/31/96

  
Superintendent

# Des Moines Public Schools

## School-Based Management Through Shared Decision-Making Process

**District Mission Statement**  
The Des Moines Independent Community School District will provide a quality educational program to a diverse community of students where all are expected to learn.



### Relationships for Reporting:

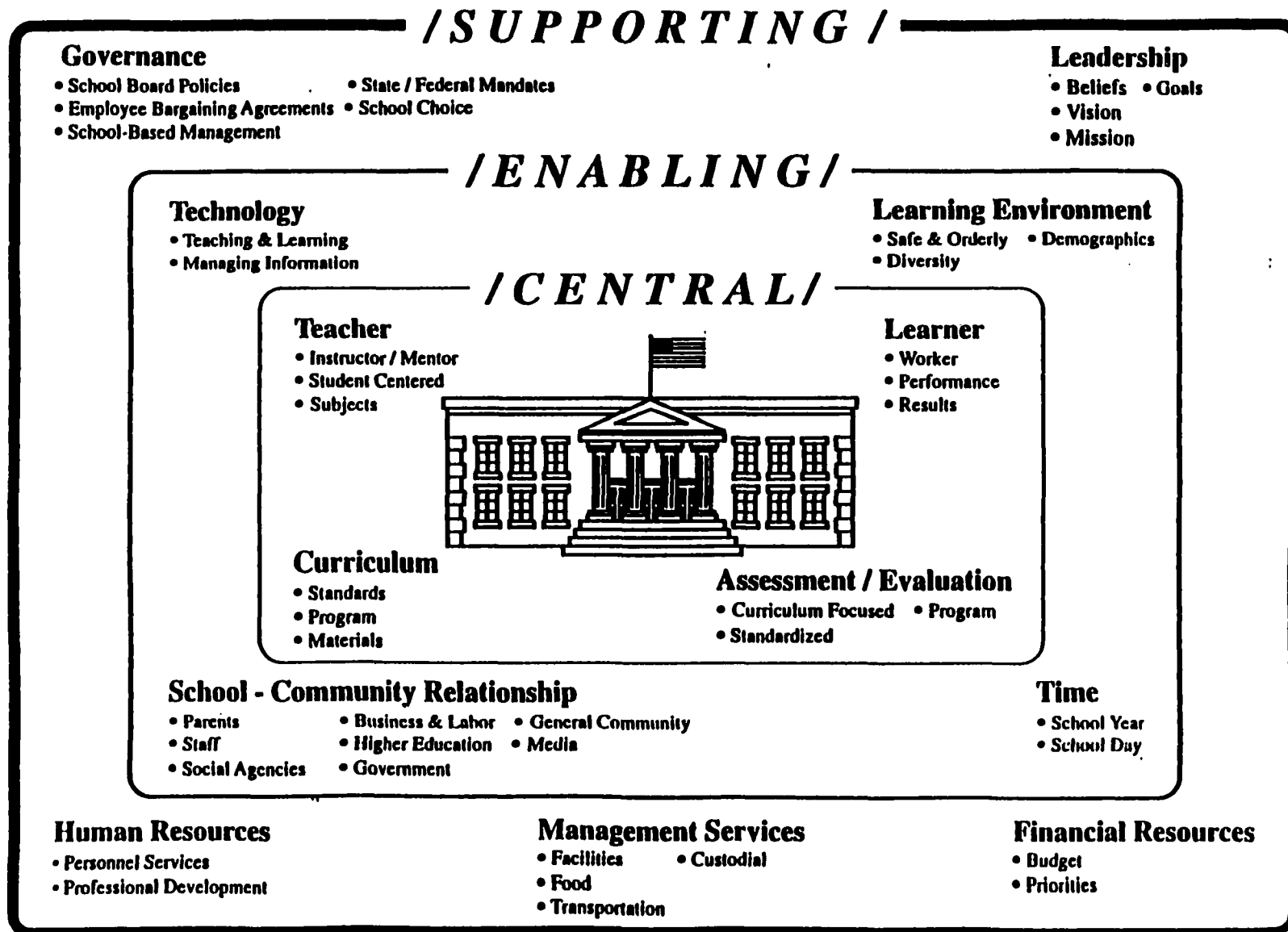
- Direct —————
- Working - - - - -

School Based Management Through Shared Decision-Making  
Board Policy 330  
Adopted 1990

Chart Revised GLW: 7/5/95



**Des Moines Public Schools**  
**Factors: School System Improvement**



# Mission Statement

**Des Moines Independent Community School District  
Des Moines, Iowa**

**"The Des Moines Independent Community School District will provide a quality educational program to a diverse community of students where all are expected to learn."**

## DEFINITIONS

### Terms:

**Quality Educational Program**

Teaching and learning activities will result in all students developing a high level of basic skills while maturing intellectually, artistically, physically, and emotionally; accepting social responsibility; and acquiring a delight for learning.

**Diverse Community of Students**

Students in this urban community experience a rich variety of racial ethnic origins, values, attitudes, heritages, abilities, ages, and personal challenges within an inclusive environment.

**Expected to Learn**

All students will demonstrate an understanding of the unique characteristics, worth, and contributions of individuals different from themselves. Students of all backgrounds will experience growth through participation in curricular and co-curricular programs.

All students will demonstrate a high level of mastery of critical objectives at each grade level appropriate to their needs and abilities.

## **DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT BELIEFS WITH SUPPORTING STATEMENTS**

**Public education is imperative to support and sustain a diverse democratic society. To this end, we believe:**

**All students can and must learn.**

1. The schools' curriculum, instruction and assessment must result in students becoming successful adults.
2. High expectations are held for all students.
3. Students succeed best when learning is personalized.
4. All students should demonstrate proficiency in a core curriculum.
5. Learning should be measured using a variety of assessment tools and techniques.
6. Schools must provide an organizational structure that allows re-teaching whenever necessary.

**Schools must meet the unique learning needs of each of their students.**

1. Students learn at different rates and with different styles.
2. Staff must recognize the uniqueness of each student and develop strategies and services to meet their needs.
3. Appropriate learning assessments and interventions must reflect differences in learning styles.
4. Early childhood learning lays the foundation for future success.
5. Students' learning needs are supported by early interventions at every level.
6. Gender, racial, socio-economic and other multi-cultural characteristics must not be barriers to participation and achievement.

**The home, school, and community must serve and support one another.**

1. Our community must value education and be a strong advocate for children
2. The school and community must enable families to send children to school ready to learn successfully.
3. Students need positive role models at home, at school, and in the community.
4. The entire community is a resource for learning
5. Students must experience the arts and culture of the community.
6. Schools belong to the community.

**Teaching and learning require a healthy, safe, and orderly environment.**

1. Self-discipline, respect, and responsibility are essential.
2. Strong administrative and staff leadership are necessary.
3. Parental and community support are needed.
4. Students must be taught appropriate ways to manage conflict.
5. Students must learn to be responsible for their actions; schools must communicate clear expectations and consequences.

**Resources and services are essential for effective instruction.**

1. Competing demands for limited resources require strategic planning.
2. Technology should support teaching and learning.
3. Curriculum materials and support services should be provided to meet the needs of a diverse community of students.
4. Time is a valuable resource.
5. Facilities must complement and promote teaching and learning.
6. Schools reflect the degree of financial support the community provides.

7. Decisions regarding the use of resources should be made collaboratively by staff and community.
8. The design and size of each instructional group should be appropriate for the learning task.

**All staff must continue to learn, and all schools must continue to improve.**

1. Staff must have time together to learn and reflect for planning, organizing, and sharing
2. Learning gained from staff development programs should be appropriate, implemented, and assessed.
3. School improvement requires a systemic approach.
4. School improvement requires provision for staff development.
5. School-based management through shared decision making is a vehicle for school improvement.
6. Responsible risk-taking supports change and needs to be encouraged.
7. Collaborative training programs with other agencies are encouraged.

## REFERENCES

- Ball, D. L. (1993). With an eye on the mathematical horizon: Dilemmas of teaching elementary school mathematics. The Elementary School Journal, 93, 373-397.
- Bass, B. M. (1981). Stogdill's handbook of leadership: A survey of theory and research (rev. ed.). New York, NY: Free Press.
- Blumberg, A., & Greenfield, W. (1986). The effective principal: Perspectives on school leadership. Boston: Allyn and Bacon.
- Brubaker, D. (1996, April 19). [Interview with D. Gettys]. Administrative Offices, Des Moines Public Schools, 1800 Grand Avenue, Des Moines, IA 50309.
- Buffie, E.G. (1989). Elementary principal series no. 1: The principal and leadership. Bloomington, IN: Phi Delta Kappa Educational Foundation.
- Clark, K. E. (1988, October). Leadership. Paper submitted to the Conference on Psychological Measures and Leadership, San Antonio, TX.
- Clements, D. H. & McMillen, S. (1996). Rethinking "concrete" manipulatives. Teaching Children Mathematics, 2(5), 270-279.
- Cohen, D., & Loewenberg-Ball, D. (1990). Policy and practice: An overview. Educational Evaluation and Policy Analysis, 12, 233.
- Cooney, T. (1987). The issue of reform: What have we learned from yesteryear? In Mathematical Sciences Education Board (Ed.), The teacher of mathematics: Issues for today and tomorrow, pp. 17-35. Washington, DC: National Academy Press.
- Ding, W. (1993). Relationships among principals' leadership behavior, principals' authenticity, and teacher job satisfaction in selected junior high schools (Doctoral dissertation, University of Northern Colorado, 1992). Dissertation Abstracts International, 53, 2617A.
- Dossey, J. A. (1992). The nature of mathematics: Its role and its influence. In D. A. Grouws (Ed.), Handbook of research on mathematics teaching and learning (pp. 39-48). New York, NY: Macmillian Publishing Company.
- Dossey, J. A., Mullis, I. V. S., Lindquist, M. M., & Chambers, D. L. (1988). The mathematics report card: Are we measuring up? (Report No. 17-M-01). Princeton, NJ: Educational Testing Service.

- Edmonds, R. & Fredericksen, J. (1978). Identification of instructionally effective and ineffective schools. Cambridge, MA: Harvard University Press.
- Evans, R. L. (1993). The human face of reform: Meeting the challenge of change through authentic leadership. Wellesley, MA: The Human Relations Service, Inc.
- Finch, C. R., Gregson, J. A., & Faulkner, S. L. (1991). Leadership behaviors of successful vocational education administrators. Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.
- Gardner, J. W. (1986, June). The heart of the matter: Leaders-constituent interaction. Leadership Papers/3. Washington, DC: Independent Sector.
- Gibbs, G. K. (1989). Effective schools research: The principal as instruction leader. Unpublished manuscript.
- Glanz, J. (1995). Exploring Supervision History: An Invitation and Agenda. Journal of Curriculum and Supervision, 10(2), 95-113.
- Grouws, D. A. (Ed.). (1992). Handbook of Research on Mathematics Teaching and Learning. New York: Macmillan.
- Halpin, A., & Croft, D. (1966). Organizational climate of schools. In A. Halpin (Ed.), Theory and research in administration. New York, NY: Macmillan.
- Hawkins, D. (1972). Nature, man, and mathematics. In D. Hawkins (Ed.), The informed vision (pp. 109-131). New York: Agathon.
- Henderson, J. E., & Brookhart, S. M. (1996, April). Leader authenticity: Key to organizational climate, health and perceived leader effectiveness. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.
- Henderson, J. E., & Hoy, W. K. (1983). Leader authenticity: The development and test of an operational measure. Educational and Psychological Research, 3(2), 63-75.
- Hersh, R. (1986). Some proposals for revising the philosophy of mathematics. In T. Tymoczko (Ed.), New directions in the philosophy of mathematics (pp. 9-28). Boston: Birkhauser.
- Hoffman, J. D. (1993). The organizational climate of middle schools and dimensions of authenticity and trust. Unpublished doctoral dissertation, Rutgers University, New Brunswick, NJ.

- Hord, S. M., Rutherford, W., Huling-Austin, L., & Hall, G. E. (1987). Taking charge of change. Alexandria, VA: American Society of Curriculum Developers.
- Hoy, W. K., & Kупersmith, W. (1984). Principal authenticity and faculty trust: Key elements in organizational behavior. Planning and Changing, 15, 80-88.
- Jago, A. G. (1982). Leadership: Perspectives in theory and research. Management Science, 28, 315-336.
- Kelly, W. P. & Tomhave, W. K. (1985). A study of math anxiety/math avoidance in pre-service elementary teachers. Arithmetic Teacher, 32(5), 51-53.
- Kilpatrick, J. (1992). A history of research in mathematics education. In D. A. Grouws (Ed.), Handbook of research on mathematics teaching and learning (pp. 3-38). New York, NY: Macmillian Publishing Company.
- Krug, S. E. (1993). Leadership craft and the crafting of school leaders. Kappan, 75(3), 240-244.
- Lasserre, C. M. (1990). Relationships between selected school context variables and teacher self-efficacy and self-confidence (Doctoral dissertation, University of New Orleans, 1989). Dissertation Abstracts International, 51, 364A.
- Leinwand, S. J. (1992). Sharing, supporting, risk taking: First steps to instructional reform. Mathematics Teacher, 85(6), 466-470.
- Lord, R. G., DeVader, C. L., & Alliger, G. M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. Journal of Applied Psychology, 71(3), 402-410.
- Mathematical Association of America. (1991). A call for change: Recommendations for the mathematical preparation of teachers of mathematics. Washington, DC: Author.
- Mathematical Sciences Education Board (1987). The teacher of mathematics: Issues for today and tomorrow. Washington, DC: National Academy Press.
- Mathematical Sciences Education Board and National Research Council (1991). Counting on you: Actions supporting mathematics teaching standards. Washington, DC: Author.
- Mentkowski, M., O'Brien, K., McEachern, W., & Fowler, D. (1982). Developing a professional competence model for management education. Milwaukee, WI: Alverno College Productions.

- Merseth, K. K. (1993). How old is the shepherd? An essay about mathematics education. Kappan, 74(7), 548-554.
- Meyer, T. M. (1991). Perceived leader authenticity as an effective indicator of perceived instructional leadership behavior in middle school principals (Doctoral dissertation, Andrews University, 1990). Dissertation Abstracts International, 53, 2617A.
- Mitstifer, D. I. (1995, July). Leadership. Dialogue, 5(3), p. 4.
- Moss Jr., J, Lambrecht, J.J., Jensrud, Q., & Finch, C.R. (1994). Leader effectiveness index manual. Berkeley, CA: National Center for Research in Vocational Education.
- Moss, J., Jr., Finch, C. R., & Johansen, B.-C. (1991). What makes a vocational administrator an effective leader? Journal of Industrial Teacher Education, 29(1), 1-15.
- Mullis, Ina V. S. (1993). NAEP 1992 mathematics report card for the nation and the states. Executive Summary, Washington, DC: United States Department of Education, Office of Educational Research and Improvement.
- National Association of Elementary Principals. (1988). School-based management: A strategy for better learning. Reston, VA: Author.
- National Council of Teachers of Mathematics. (1989). Curriculum and evaluation standards for school mathematics. Reston, VA: Author.
- National Council of Teachers of Mathematics. (1991). Professional standards for teaching mathematics. Reston, VA: Author.
- National Research Council. (1989). Everybody counts. Washington, DC: Author.
- NSB Commission on Precollege Education in Mathematics, Science and Technology. (1983). A Revised and intensified science and technology curriculum grades K-12 urgently needed for our future. (ERIC Document Reproductive Service No. ED 239847).
- Reys, R. E., Suydam, M. N., & Wilson, J. W. (1981). Motivation in mathematics. In M. J. Driscoll (Ed.), Research within reach (pp. 61-64). Reston, VA: National Council of Teachers of Mathematics.
- Russell, S. J., & Corwin, R. B. (1993). Talking mathematics: 'Going slow' and 'Letting go.' Kappan, 74(7), 555-558.



- Schmidt, W. H. & Kennedy, M. M. (1990). Teachers' and teacher candidates' beliefs about subject matter and about teaching responsibilities. East Lansing: Michigan State University, National Center for Research on Teacher Education.
- Steen, L. (1988). The science of patterns. Science, 240, 611-616.
- Thomson, S., Hill, T. S., & Conny, B. (Eds.). (1993). Principals for our changing schools: Knowledge and skill base. Fairfax, VA: National Policy Board for Educational Administration.
- Urban, W. J. & Wagoner, Jr., J. L. (1996). American education: A history. New York, NY: McGraw-Hill.
- Yukl, G. A. (1989). Leadership in organizations (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.