DATA DRIVEN DECISIONS IN K-12 EDUCATION

A comparative case study about data driven decisions in curriculum and instruction in

two rural K-12 school districts

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Susan Gail Wilderman

Dr. Karen Cockrell, Dissertation Supervisor

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The undersigned, appointed by the Dean of the Graduate Faculty,

have examined a dissertation entitled:

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A comparative case study about data driven decisions in curriculum and
instruction in two rural K-12 school districts

Presented by Susan Wilderman, a candidate for the degree of Doctor of

Education, and hereby certify that in their opinion it is worthy of acceptance.

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Dr. Karen Cockrell, Advisor
Educational Leadership & Policy Analysis

_____

Dr. Joe Donaldson
Educational Leadership & Policy Analysis

_____

Dr. Jay Scribner
Educational Leadership & Policy Analysis

_____

Dr. Jerry Valentine
Educational Leadership & Policy Analysis

_____

Dr. Dan Cockrell
Educational Leadership & Policy Analysis

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ABSTRACT

The purpose of this study is to examine how the use of data drives academic planning in rural Missouri schools by exploring and comparing the processes in two Missouri school districts. Previous research has identified the importance of this process in larger schools (Blink, 2005), as well as the need for examining, evaluating, and revising this process in all school districts that purport seeking to become true learning organizations (Jones, 2006; Learning Point, 2004; McIntire, 2002; Senge, et al., 2000).

The following research questions were developed to guide the research.

1) In what ways do districts use data to inform decisions around curriculum and instruction for student learning?

2) What factors impede developing and implementing curriculum and instruction for student learning?

3) What factors facilitate developing and implementing curriculum and instruction for student learning?

The comparative case study design was chosen so that information could be gathered in multiple research settings and compared for possible similarities, thus giving the researcher a better opportunity to identify significant characteristics and behaviors. The targeting of qualitative data being gathered allows for an increased flexibility of data acquisition leading to the identification of factors affecting the research questions

(Cresswell, 1994). Comparative descriptive studies are better suited to provide the structure of such inquiry and to achieve the research goals of understanding how participants perceive the use of data and apply their interpretation to decision-making (Lauer, 2006).

As all data were subjected to axial and open coding, five distinct themes became apparent. Although some interview responses and observations provided data that fell across more than one of these main themes, all data still fell in this framework. These themes were as follows: Resources, Curriculum Development, Assessment, External Requirements, and Leadership.

Lack of adequate training was identified as an impediment to decision making, along with the shortage of time and funding. Teacher turnover in District # 1 was identified as an obstacle to the development of curriculum and instruction. Another impediment indicated by the data was the applicability of the administrative and teacher leadership styles to the final results in the classroom.

Conclusions include 1) both districts actually exceed the federal and state mandates for the administration and analysis of standardized assessment instruments, 2) results of this data collection and analysis are communicated to the public and their representatives, 3) curriculum and instruction are revised per this process of analysis and communication, 4) three most prevalent impediments to developing and implementing curriculum and instruction for student learning all deal with resource allocation, and addressing these deficient allocations of resources has a positive effect on academic performance.

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CHAPTER I

INTRODUCTION TO THE STUDY

Background

On January 8, 2002, President George W. Bush signed into law the No Child Left

Behind Act (NCLB) of 2001 reauthorizing the Elementary and Secondary Education Act

(ESEA) (No Child Left Behind: A Desktop Reference, 2006). Following the consecutive

reauthorizations of ESEA, the legislative act further dictates parameters for the

administration of standardized testing (Standerfer, 2006). In all states, and for several

decades, various forms of standardized testing have become an annual part of the spring

schedule for public schools (Frost & Bailey, 1973). The state of Missouri now

administrates the Missouri Assessment Program (MAP) to comply with the NCLB

legislation. Previous standardized tests mandated by the state include the Basic

Essentials Skills Test (BEST) and the Missouri Mastery and Achievement Test (MMAT)

(Harris, 2000). Along with these state specific instruments, Missouri students have long

been exposed to such nationally normed instruments as the Stanford-Binnet, the

California Achievement Test, and the Stanford Reading Inventory (Blink, 2005).

Although these achievement tests were used to place students in different percentile

rankings that, in turn, dictated student eligibility for specific federal programs, little was

done with these scores until recent years (Goodman & Zimmerman, 2000).

Each reauthorization of the ESEA broadened the scope of the U.S. Department of

Education's role in public education. Previously, the focus had been on the dispensing of

funds within the parameters of regulations and procedures governing the receiving of

these specific monies. With the passage of NCLB, the Department of Education assumed

a much more intrusive role in the academic curriculum of all public school students in the United States and was now much more a policy maker (Shields, 2002).

The No Child Left Behind Act, hailed as a policy mechanism to reform public education by its proponents, has effected change in school operations. This law was intended to affect every student in every school in every state (Petersen & Young, 2004).

The act, which passed with overwhelming bipartisan support, embodies four key principles—stronger accountability for results; greater flexibility for states, school districts and schools in the use of federal funds; more choices for parents of children from disadvantaged backgrounds; and an emphasis on teaching methods that have been demonstrated to work (No Child Left Behind: A Desktop Reference, 2006).

To insure accountability, students across the nation are now tested in Reading and Math in grades 3 through 8, inclusive. These tests consist of challenging standards approved by the state in which the children live. The states design and administer these yearly tests with assistance from the federal government. The tests administered by the Department of Elementary and Secondary Education (DESE) are developed by private contractors under DESE's direct supervision and within the parameters established and mandated by NCLB. All states are required to gather data with tests that meet these federal specifications. The data are collected from these tests each year, disaggregated according to poverty levels, race, ethnicities, disabilities, and limited English proficiencies, and compared yearly across each state. Districts are able to track students from each class as these students move through the six grade levels, beginning at grade three and continuing through grade eight. Trends are documented and addressed as

instructionally necessary. These data are intended to achieve the following: 1) track high and low achieving classes as well as individuals, 2) track classroom instruction and individual support of lower achieving students to increase their chances of academic success and return their performance to the appropriate levels, 3) provide that access to this information is available to parents as well as all community members, and 4) in Missouri, use this information by the State Department of Elementary and Secondary Education (DESE) to make recommendations to districts and support them with assistance at program levels. Within these new parameters of academic accountability, the district must also ensure the school is safe and that students feel secure while attending. These steps will help make sure "no child is left behind" (Spellings, 2005).

Another major change resulting from the NCLB involves the shift of academic control from the federal government to the state and district, with the intent to put the control where the student's unique needs are better known. Although the testing is mandated by this federal legislation, the selection of specific learning objectives is determined at the more local levels of state and district organization. Assessment of these objectives at the local levels better identifies local needs (Rudalevige, 2006). Programs are then implemented to address those needs on an individual school basis. With this increased authority over the specificity of selected programs comes the ability for the individual district to allocate funds from the federal government to different approved programs according to individual district needs. According to Spellings increased authority better allows districts to accurately and individually meet their own needs (No Child Left Behind: A Desktop Reference, 2006; Spellings, 2005). Enhanced parental choice is a feature of the No Child Left Behind Act that allows parents to make

school choice decisions based on the outcomes of the state testing for the school their children attends. If a school district fails to meet the state requirements on the annual state achievement tests for at least two consecutive years, the parents of those students are given school attendance options. Parents may choose to transfer their children to a higher performing school within the district, with the district required to provide any necessary transportation. If the school fails to meet the state requirements on the annual state achievement test for three consecutive years, students from low-income families are then eligible to receive supplemental services that may include tutoring, after school services and summer school.   Included in this enhanced parental choice is the option for a student who attends a dangerous school or a school with some measure of violence to choose to attend a safe school within the district (Spellings, 2005).

Education decision making focused on programs and practices that support student academic achievement is an important feature of NCLB. Thus, programs based on scientific research and demonstrated to be effective are more likely to be supported and funded (Spellings, 2005). These programs must show evidence that the teaching methodologies directly improve student learning. NCLB proponents argue that by testing each grade from 3 to 8 in Reading and Math, results of these programs are easy to track and monitor, and that changes can be made to instructional methods and/or programs as the results from the yearly test are made available (Spellings, 2005).

In Missouri, the annually administered, standardized tests are scored by the State Department of Elementary and Secondary Education (DESE), and the results are disseminated into the required areas and released to the schools.   School districts then release the information to the parents and community. The results are reviewed and

evaluated district wide, including district administration, the school board of education, building level administration and departments, and classroom teachers. Results are broken down into grade level areas and compared with the curriculum previously taught to prepare students for the test. Decisions regarding curricular changes are made according to the results of the tests (Spellings). Once curricular changes are made, the data is set aside until the following year. Curriculum decision making may be based upon multi-year data used to chart trends over time or follow certain groups as they move through the school system. Analysis using data across multiple years is perceived to carry more weight and thus more accurately address long-term trends (Jones, 2006). Districts must decide if curricular changes are to be embedded in the written curriculum or if these changes are to be only temporarily implemented in the classroom. Because the changes are often made on paper and are not imbedded in instructional practice, such changes often result in continued low scores (Blink, 2005).

Conceptual Underpinnings

The human resource framework best establishes the parameters for the conceptual underpinnings of this study (Bolman & Deal, 1997). This framework "stresses the relationship between people and organizations" (Bolman & Deal, p.119). The human resource frame is based on the assumptions that organizations serve human needs, people and organizations need each other, and a good fit benefits both parties as a bad fit is to the detriment of both parties (Bolman & Deal).

The conceptual underpinnings are as follows: (a) organizational learning, (b) systems thinking, and (c) data driven decision-making. These underpinnings support the core assumptions of the human resource framework that "organizations exist to serve

human needs" and that "organizations need ideas, energy, and talent" (Bolman & Deal, p. 102). Organizations also need people. The people must "fit" within the organization in order for the organization to succeed (Bolman & Deal, p. 119). Needs, skills, and relationships are all important concepts in the human resource frame (Bolman & Deal, 1997).

Organizational Learning

Although individuals within a system can and do learn things that organizations cannot, the very competitiveness and perhaps even survival of all types of organizations depend upon the organization's ability to learn (Bolman & Deal, 1997). Learning in organizations has often failed because of the attempt to apply simplistic mental models to complicated systems. Long-term costs are overlooked or ignored in pursuit of short-term goals and solutions. Lack of strategic planning and the inability to evolve may cause management and workers to get caught up in cycles of blaming and self-defense (Bolman & Deal).

Research contrasting organizational structure with that of living organisms has led some to ask if it is "possible to design learning organizations with the capacity to be flexible, resilient, and inventive as a functioning brain?" (Morgan, 2006, p.72).   The concept that an organization could think for itself focused attention on new models of organization. Every aspect of organizational functioning is dependent on information processing of some form (Morgan, 2006). Learning organizations find "ways of controlling outputs (by setting goals and targets) rather than controlling behaviors (through rules and programs) and by relying on continuous feedback as a means of control" Morgan, p. 77).

These learning organizations had similar sets of tools that enabled them to adapt to their environments based on new data being processed (Morgan, 2006). The development and refinement of these learning tools began taking place in the public sector of educational institutions along with the progress continued in the private sector of the business world (Morgan). As some schools followed the lead of their counterparts in industry and business, these schools were, in essence, becoming true learning organizations (Senge, Cambron-McCabe, Lucas, Smith, Dutton, & Kleiner, 2000).

The use of concept maps and organizational performance reviews were based on the recognition of the importance of organizational learning. Managers realized that organizational learning was a powerful tool to improve performance in an organization (Schein, 1992). The two processes of organizational change most commonly associated with organizational learning are adaptive learning and proactive learning. The concept of adaptive learning suggests changes are made in reaction to changed environmental conditions while the concept of proactive learning assumes that changes are made on a more willful basis and go beyond simple reaction to environmental changes (Bolman & Deal, 1997). Sophisticated organizations realized that learning must occur on the job as well as in the classroom. In order for such learning to take place, three elements were required: 1) the existence of good mentors, 2) a management system that encourages new things, and 3) good exchanges with the environment (Bolman & Deal).

Cybernetics is an interdisciplinary science combining scientific knowledge with the skill and insight to create machines with computational capacity. Applied to organizational learning, cybernetics has led to the creation of a theory of communication stressing interaction with the environment and the ability to establish and operate within

parameters that guide the machine's behavior (Morgan, 2006). The study of cybernetics

suggests that learning organizations develop capacities to detect changes in their

environment and then react to them, evolving "designs that allow them to become skilled

in double-loop learning" (Morgan, 2006, p. 86).

Systems Thinking

To help address organizational learning, systems models became more complex

with earlier models building in delays to supplement the stages of short-term strategies,

short-term gains and long-term costs (Bolman & Deal, 1997). Morgan compares learning

organizations and living human brains in the following ways: both utilize information

processing, complex learning, and holo-graphic combinations of centralized and de-

centralized subsystems. Social systems such as organizations also demonstrate

characteristics, similar to the brain, including structure, function, differentiation, and

integration. Morgan suggest that, in developing systems thinking with consideration of

the human brain in mind, consideration should be given to the idea that the intelligence of

the human brain is not predetermined, pre-designed, or preplanned. It is a "decentralized

emergent phenomenon" (Morgan, 2006, p. 92). For systems thinking to be realized, the

behaviors of such organizational systems require a sense of vision, norms, values, and

limits to guide behavior (Morgan).

Getting things done in organizations involves working through complex networks

of individuals and groups (Bolman & Deal, 1997). Systems for organizations are

typically over-bounded or under-bounded.   In over-bounded organizations, power or

authority is highly concentrated and activities highly regulated. Under-bounded

organizations, on the other hand, have a wider diffusion of power and organizational activities are more loosely controlled (Bolman & Deal).

Data Driven Decision Making

As thinking individuals, data influences most decisions in our lives, with specific data being selected and acted upon in making choices or judgments. Data influence the vehicles we drive, the clothes we wear and the careers we choose. As information is received from newspapers, television, word of mouth and first hand experience, the information is assimilated into our existing knowledge base and, in turn, gives direction to our further actions.

Decision making power is dependent on constituents' levels of leverage and satisfaction (Bolman & Deal, 1997). Effective leaders help group members communicate and work together, with information, or data, as the medium (Bolman & Deal). High performing managers need multiple tools, the skills to use each of these tools, and the wisdom to match the appropriate tools to the situation (Morgan, 1986). In win-win negotiations, one of the key approaches is the insistence on objective criteria and accurate information (Bolman & Deal).

Information may not always be accurate and may not always be effectively utilized. Research of college presidents in the 1970's found strategic plans and long-range data were seldom used in the decision-making process (Bolman & Deal). Studies of mid-level management showed that "decisions emerged from a fluid, swirling vortex of conversations, meetings, and memos" (Bolman & Deal, p. 265).

Studies documenting the accurate exchange of data found people were empowered by the effective dissemination of data (MacKinnon, 2000). Information

could be internalized and result in more outcomes oriented decision making, particularly when information was first shared in a more social context (Reynolds, Murrill & Whitt, 2006).

Purpose of the Study

The quality of instruction students receive as a whole and as individuals is greatly impacted by decisions made by practitioners and policy makers at various levels of the education enterprise (Petersen & Young, 2004). By tying funding to documented performance through standardized testing, the implementation of NCLB has significantly impacted this decision making dynamic (Bracey, 2005). The data that results from increased testing are gathered, disseminated, and later used in the decision making process. The purpose of this study is to examine how the use of data drives academic planning in rural Missouri schools by exploring and comparing the processes in two rural Missouri school districts. Previous research has identified the importance of this process in larger schools (Blink, 2005), as well as the need for examining, evaluating, and revising this process in all school districts that purport seeking to become true learning organizations (Jones, 2006; Learning Point, 2004; McIntire, 2002; Senge, et al., 2000).

Research Questions

The following research questions were developed to guide the research.

1) In what ways do districts use data to inform decisions around curriculum and instruction for student learning?

2) What factors impede developing and implementing curriculum and instruction for student learning?

3) What factors facilitate developing and implementing curriculum and

instruction for student learning?

Limitations, Assumptions, and Design Controls

This study was limited in scope to two public rural school districts in the state of

Missouri and to the data pertinent to the decision-making processes of the 2006-2007

school year. Data were, in part, obtained from observations and were thus limited to 1)

the observation skills and abilities of a single observer and 2) by the possible impact of

the observer's presence on those being observed. Interviews were limited in that

respondents may have been predisposed to place their institutions, and specifically those

activities for which they themselves have responsibility, in the best light possible.

Assumptions were made that key personnel were both aware of decision-making

processes and reported these processes accurately.

Methods

Unlike the removed researcher's stance required by quantitative research norms,

in qualitative research studies, the researcher is the instrument of research (Merriam,

1998). In order to reduce the effect of researcher bias, the researcher must identify

his/her own potential biases and guard against his/her intrusion into the study. Latter

sections make this researcher's potential biases explicit (Guba & Lincoln, 1989).

Consistent with qualitative research norms, I will speak in first person. Interviews and

observations were conducted to collect data pertinent to the research questions.

Definition of Key Terms

This study contains educational terms whose meaning, though perhaps commonplace, were so integral to the study that specific understanding could not be assumed.

Axial coding. Axial coding begins with the identification of a core concept with its attributes being explored in both broad spectrum and in-depth detail. With the subsumption of the data into a core category, this core category becomes the "central phenomenon around which all the other categories are related" (Straus & Corbin, 1990,p.116).

Granularity. Granularity is the level of detail inherent in a single piece of data (McIntire, 2002).

Naturalistic inquiry. Naturalistic inquiry is grounded in real world issues and day-to-day concerns and is enriched by taking place in the environment of the researcher (Guba & Lincoln, 1989).

Open coding. Open coding is the process of breaking down data into separate units of meaning with the purpose of conceptualizing and labeling data (Moghaddam, 2006).

Reflective collaboration. Reflective collaboration is a process combining reflection of a group of people about previously taken action and the sharing of those reflective opinions among the members of the group (Learning Point, 2004).

Triangulation. Triangulation involves the careful reviewing of data collected through different methods in order to achieve a more accurate and reliable estimate of qualitative results for a particular construct (Oliver-Hoyo & Allen, 2006).

Summary

The No Child Left Behind act signed into law in 2002 increased attempts at governmentally imposed accountability in our public school systems (Standerfer, 2006) and created new levels of data collection about students both as individuals and as part of a larger student body (Jones, 2006). This increased body of data brought about the need for better collection and retrieval systems (McIntire, 2002) and improvements in the evaluation and decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been a part of organizational learning and improvement for some time (Scholtes, 1994; Senge, 1990), this increased attention brought about by NCLB highlighted the effectiveness of such evaluative review cycles (Rudalevige, 2003). Problems have been identified (Jones, 2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings, 2006).

The parameters for the conceptual underpinnings were established by the human resource framework (Bolman & Deal, 1997) and the study of learning organizations (Morgan, 2006). The purpose of the study was to examine how the use of data drives academic decision making in two Missouri schools. Three research questions were used to guide the interviews used to gather the data necessary to this study. Limitations included no trustworthy way to discern the quality of decision making of those interviewed and that the scope of the research was limited to two Missouri schools. Key terms intrinsic to the study were defined.

Chapter 2 contains a review of related literature that provides the basis for this investigation and a perspective for the use of data in rural mid-western schools. The main areas of research identified in the review of literature are: (a) the history of the

Elementary and Secondary Education Act of 1965, (b) organizational learning, and (c) data driven decision making. Subcategories include: (a) how organizations learn, (b) organizational culture's affects on organizational learning, (c) learning dissemination throughout organizations, and (d) institutionalization of organizational learning to bring about organizational change.

Chapter 3 presents the research design and methods of investigation and focuses on addressing the research questions concerning the gathering of and use of data in the decision-making process of schools and the roles of key district personnel in the decision-making process. Appendixes include the interview protocols and cover letters accompanying them.

Chapter 4 contains an analysis of the data collected. Themes that emerged from interviews and observations and documentation are noted with correlations and contradictions recorded.

Chapter 5 contains the summary of research findings and conclusions that may be drawn from the data and its analysis. Behaviors that are applicable and replicable are defined and explained. Implications for further study are also included in the final chapter.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The individual and group decisions of those in charge of our classrooms and K-12 public learning institutions greatly impact the quality of instruction students receive as a whole and as individuals. These decisions, ranging from selection of material through the determination and articulation of learning objectives, have long been made based on expediency and financial considerations (Jones, 2006). Implementation of such legislation as the No Child Left Behind Act on both the state and federal levels has increased the demand for academic accountability by the continued tying of funding to documented performance (Bracey, 2005). The data resulting from increased testing are gathered, analyzed, and disseminated and later used in the decision making process. The purpose of this study is to observe and evaluate this process in rural mid-western schools, and to identify behaviors that affect decision-making processes intended to improve academic performance.

In this chapter, relevant literature that supports the framework and conceptual underpinnings of this study is reviewed. This review explores research pertaining to the Elementary and Secondary Education Act, organizational learning, and leadership. Organizational learning is defined along with practices and examples that affect academic performance in educational institutions. The leadership research included in this review focuses on that pertaining to transformational, transactional, and participative leadership.

History of Elementary and Secondary Education Act

The No Child Left Behind Act of 2001 (NCLB), signed on January 8, 2002, follows more than forty years of Federal education acts passed to ensure that all students are given appropriate opportunities to learn. The Soviet Union's 1957 successful orbiting of the satellite Sputnik had increased public pressure to strengthen the math, science, and foreign language curriculums of college bound students and brought about the 1958 National Defense Act (Gordon, 2006). The increased Federal role during the Eisenhower administration and the concurrent emphasis on stronger academics originally seemed to raise all student performance, including graduation rates. Education became integral to many of the subsequent Presidential campaigns in recent decades with both political parties supporting increasingly intrusive educational platforms on the national level.

Johnson Era

The Elementary and Secondary Education Act (ESEA) of 1965 continued the role of the Federal government in public education (Riley, 1995). The educational plank of Lyndon B. Johnson's "War on Poverty", ESEA, appropriated nearly $2 billion dollars its first fiscal year to help states improve educational opportunities for the country's underprivileged (National Conference of State, n.d.).

> The federal government decided to continue its assistance to states and from 1965-1975 federal funds for elementary and secondary education increased by more than two hundred percent. The country, however, slipped into economic hardship for the following five years, and federal spending on education rose a mere two percent (National Conference of State, p.1).

By the mid-sixties disparities were being identified in several subgroups with specific note of minorities and those students in the poverty levels (Jennings, 1995). The purpose of the ESEA was to bridge the gaps becoming evident in our nation's classrooms by providing funds to those schools with special needs because of their socioeconomic status (Standerfer, 2006).

This increase in funding brought with it an increased call for accountability. The National Assessment of Educational Progress (NAEP) test was created to assess student learning. Reports of scores were made by region to assess how schools were doing in general. Originally, there was no stated intent to compare schools by states or individual districts (Standerfer, 2006). The 1970's were a decade of reform following the 1960's initiatives to address discrimination based on race, gender and socioeconomic status (Gordon, 2006). Evidence indicated ESEA had not closed the achievement gap (Rudalevige, 2003) and numerous blue-ribbon panels were formed for the purpose of diagnosing what ailed public education. The College Entrance Examination Board, the Twentieth Century Fund, the National Science Board and others issued reports on the status of public education. None of the reports, however, seemed to attract the public's attention (Gordon).

Reagan Era

Ronald Reagan, who took office in 1980, opposed the expanding role of the federal government in education. Reagan had campaigned to abolish the Cabinet level Department of Education recently created by his predecessor Jimmy Carter. Reagan's administration decreased federal funding by 21% during his first five years in office and campaigned to abolish the federal Department of Education. During his first term,

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Reagan and then Secretary of Education Terrell Bell assembled the National Commission on Excellence in Education (NCEE) that produced the report "A Nation at Risk" (National Conference of State, n.d., p.1). According to the report, U.S. public schools were producing substandard results and the educational system had "failed to provide all children with equal opportunities to learn" (Gordon, 2006, p. 2). Recommendations from the commission included "coherent curricula, rigorous content standards, accountability for student progress, and a commitment by policymakers and citizens to demand and pay for the same" (Gordon, p. 2). This report captured the attention of the public and brought about changes nationally, and perhaps more importantly, initiated change in several states (Jennings, 1995). President Reagan had left the work of establishing specific standards to the individual states and they had, especially in the South, accepted the challenge. Governors such as Clinton from Arkansas, Riley from South Carolina, and Alexander from Tennessee made school reform a priority (Gordon).

Reagan's later Secretary of Education, William Bennett, commissioned a study group to inquire into the uses of national testing. This study group, the Alexander-James Commission, explored opportunities and made suggestions as to how the NAEP testing could be expanded to facilitate comparison between states' results in the goal of increasing individual school accountability (Standerfer, 2006).

Bush, Sr. Era

In 1989, President George H.W. Bush met with the nation's governors in a National Education Summit. With then Governor Clinton playing a prominent role, six broad goals were established that came to be called America 2000 (Standerfer, 2006). This meeting launched what is now called "standards-based reform" and rallied

stakeholders from across the nation to its support (Gordon, 2006, p. 4). This bi-partisan and broad based support continued into the next decade (Gordon).

The broad objectives of America 2000 included the challenge that "all students would master challenging subject matter in the core academic subjects, that U.S. students would be first in the world in math and science achievement", and "that universal literacy among American adults would be achieved" (Gordon, 2006, p. 3). A high school graduation rate of 90% was also part of the goals (Gordon).

Clinton Era

As Bill Clinton became President, he adopted the National Education Summit goals which were labeled the "Goals 2000" and legislatively mandated by the "Goals 2000: Educate America Act" (Standerfer, 2006, p. 27). This legislative act created the National Education Standards and Improvement Council that allowed states to write standards to be submitted for approval by the federal government (Gordon, 2006). Republican control of the House quietly ended the latter initiative (Gordon, Standerfer).

President Clinton signed the Improving America's Schools Act (IASA) in 1994 allowing the federal government to be more active in accountability by withholding specific funding from districts not achieving at mandated performance levels. IASA was a revision and reauthorization of the original ESEA (Gordon, 2006; Standerfer, 2006). It provided several requirements that all states had to follow. At this time, the states were required to set standards and provide assessments, but in order to continue to receive federal funding, the states had to meet basic or general requirements of ISEA (Gordon).

Bush, Jr. Era

As Governor George W. Bush opposed Vice-President Al Gore for the office of President, education was placed very high on both campaign platforms (Gordon, 2006). With his election and taking of office, President Bush focused on the role of the federal government in education. The latest reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965, the No Child Left Behind Act (NCLB) was written and sent to Congress. After several months of revisions and with Bush's support from the right and Senator Ted Kennedy's support from the left, NCLB became law and the federal government reached a new level of intrusion into public schools (Gordon).

Public education being the first stated responsibility in many state constitutions (Bracey, 2006) and nationally the focus of many legislative acts (Standerfer, 2006), much attention remains focused on educational reform (Spellings, 2006). The No Child Left Behind legislation has driven the implementation of scientifically based research as a component of program revision and initiation in public schools (Petersen & Young, 2004). Nationally normed and state specific academic testing is a significant component of this legislation and data is being constantly collected through annual and other testing sequences. This increased data is collected and compared to national, state and local standards (Rudalevige, 2003).

Under this most recent reauthorization, states are required to have students demonstrate proficiency on state academic standards through performance on state assessment (Standerfer, 2006). With a goal of full attainment of all objectives by all students by the 2013-14 school year, states must have in place systems to monitor all students' progress towards this goal (Standerfer). This assessment is called Adequate

Yearly Progress (AYP) and is monitored by the review of each state's annual performance on its own state tests (Gordon, 2006; Standerfer). The requirements of NCLB for determining AYP for both states and individual school districts are "more prescriptive and complex than those in the 1994 bill" (Petersen & Young, 2004, p. 348). By 2007 schools must provide student-level reports, enable itemized score analyses and report assessment by proficiency level, rather than percentile score (Petersen & Young). Data is to be disaggregated into subgroups. These specific categories include economically disadvantaged students, major racial or ethnic groups, students with disabilities, and Migrant students. To meet AYP, all subgroups must meet their specified target (Petersen & Young).

Teacher quality standards were added to this legislation, as were reporting mandates to the general public (Standerfer, 2006). Instructional practices being utilized must be scientifically research based, with that being defined as research which "is rigorous, systematic, objective, empirical, peer-reviewed, and reliant on multiple measurements and observations, preferably through experiments or quasi-experiments" (Lauer, 2006, p. 14).

This current legislation also includes consequences for non-compliance and not achieving the required AYP. Consequences for schools not meeting standards include decreases in funding, the removal and/or replacement of relevant school staff, and parents being given the choice of sending their children to a different school (Gordon, 2006; Petersen & Young, 2004). The choice of a different school is not limited to the lack of academic achievement. NCLB also offers the parents the right to transfer their child to another school if either of two conditions are met, these being: "(a) the child attends a

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persistently dangerous elementary or secondary school, or (b) has been a victim of a violent criminal offense while in or on the grounds of the school they attend" (Petersen & Young, 2004, p. 353).

Criticisms of this most recent version of the ESEA include the costs of these requirements to small rural schools and large urban districts. A particular area of concern includes the requirement for "highly qualified teachers" when far too often these districts struggle to fill positions with individuals barely able to secure 60-hour substitute certificates (Petersen & Young, 2004, p. 355). Another significant concern is the potential costs of transportation of those students whose parents selected the option of choice (Bracey, 2005). In remote geographical regions, attending the next "successful school" could involve driving for hours and "in some parts of Hawaii or Alaska, it means getting on an airplane" (Bracey, p. 151). Other complaints include the flexibility and divergence of performance exemptions for ethnic and other subgroups (Bracey). Along with the significant costs of testing and "supplemental educational instruction" and the seemingly strong support for privately held "charter" schools, harsh observation has brought about the criticism "NCLB is about the care and feeding of markets, not the education of children" (Bracey, p. 147).

Perhaps a final concern addresses the core of the purpose of the legislation to increase educational opportunities and increase academic performance. The new legislation relied solely on the use of standardized test scores, despite research that indicates, to the contrary, the inability to assess most students with such limited instruments (Gardner, 1999). In the earlier years of the accountability movement, reformers had a more expansive view of performance that included elements this

legislation ignores. Such elements of assessment included, in addition to tests, teachers'
evaluations of their students, student portfolios of their work, student initiated projects,
and formal progressive exhibitions of student work across administrations (Elmore, 2004;
Rich, 2005).

From passage of the original ESEA, there has been progressive movement across
the successive administrations to further improve public school instructional opportunity
for an increasingly larger base of students (Rudalevige, 2003). These efforts for
improvement have been focused on both instructional planning and instructional delivery,
with their effectiveness assessed by increased levels of accountability based primarily on
the results of standardized testing (Spellings, 2005). In this environment of educational
progress, the scholarship of organizational change and the dynamics of environmental
evolution as they pertain to public education has been much advanced (Rudalevige).

Organizational Learning

The concept of organizational learning, published in Senge (1990), introduced
widely John Dewey's theories on experiential learning and knowledge through social
interaction. In 1991, Dr. Walter Shewhart developed a model for the business world that
examined the use of structured improvement, focusing on specific documentation of
planned events and self-assessment within an organization. This model provided a
foundation for the W. Edwards Deming corporate improvement cycle (Learning Point,
2004).   Deming's Principles of Management, involving ongoing series of Plan, Do,
Study, and Act, crossed from the business sector to the arena of public education and
provided structure for the training of educators to improve their organizations in the early
and middle 20th century (Scholtes, 1994). The use of these training principles in the field

of education returned the focus of such research applications to the arena originally

selected by Dewey (Senge).

Years later, the constructivist model proposed that just as an individual encounters

new learning internally and within a social context, organizations do likewise (Reynolds,

Murrill, and Whitt, 2006). The constructivist model allows for the development of a

culture, both socially and professionally, that is safe for change within a specific

organization, thus allowing a climate for organizational learning (Ray-Taylor,

Baskerville, Bruder, Bennett & Schulte, 2006). Organizational learning consists of two

kinds of activities: 1)obtaining knowledge to address specific problems based upon

existing premises, and 2)new paradigms to override the existing premises (Nonaka &

Takeuchi, 1995). These two kinds of learning have been classified as single-loop and

double-loop learning (Argyris & Schon, 1978). Other models were created for the

sustained use of single and double-loop learning where the questioning and rebuilding of

existing perspectives and interpretation frameworks are constantly monitored and

evaluated (Argyris & Schon, 1978).

Organizational Learning Defined

Although individuals within a system can and do learn things that organizations

cannot, the very competitiveness and perhaps even survival of all types of organizations

depend upon their ability to learn (Bolman & Deal, 1997). Learning organizations exist

when the elements of mentoring, a positive management system, and a good exchange

with the environment exists (Bolman & Deal). Senge (1990) defines learning

organizations as "organizations where people continually expand their capacity to create

results they truly desire, where new and expansive patterns of thinking are nurtured,

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where collective aspiration is set free, and where people are continually learning how to learn together" (p.3).

The concept of organizational learning assumes the world can be managed, this by virtue of its very structure (Schein, 1992). Embedded within all cultures are rules and norms that demand and support learning, if for no other reason than that of survival (Schein). Organizational learning takes place when an organization is "able to make its own perpetual diagnosis and self-manage whatever transformations are needed as the environment changes" (Schein, 1992, p. 363). Through learning, organizations recreate themselves (Senge, 1990). In order for organizations to learn, the organizations must master five disciplines that support the learning environment. These are systems thinking, personal mastery, mental models, building a shared vision, and team learning (Senge).

Research contrasting organizational structure with that of living organisms led to the following question is it "possible to design learning organizations with the capacity to be flexible, resilient, and inventive as a functioning brain?" (Morgan, 2006, p.72). The concept that an organization could function independently focused attention on new models of organization (Morgan). Every aspect of organizational functioning is dependent on information processing of some form (Morgan, 2006). Organizations find "ways of controlling outputs (by setting goals and targets) rather than controlling behaviors (through rules and programs) and by relying on continuous feedback as a means of control" (Morgan, p. 77).

Organizational learning has also been defined as changed organization capacity for doing something new (Watkins & Marsick, 1996). Organizations continually

accumulate experiences that reinforce current behavior or initiate new behaviors (Leithwood & Louis, 1998). Organizational learning is a shift from learning based on minimal competence to learning based on continual improvement (Preskill & Torres, 1999). Top management creates and sustains processes to nurture ideas and support changes initiated by people at lower levels in the organization (Yukl, 1998). Knowledge is diffused and people are encouraged to apply it to their work (Yukl).

As the capacity for an organization to change increases and the organization becomes more aware and responsive to the total environment in which the organization exists, the evolving institution is becoming a learning organization (Yukl, 1998). These learning organizations have similar sets of tools that enabled them to adapt to their environments based on new data being processed (Morgan, 2006). As some schools followed the lead of their counterparts in industry and business, these schools were, in essence, becoming true learning organizations (Senge, Cambron-McCabe, Lucas, Smith, Dutton, & Kleiner, 2000). By the latter part of the 20th century, the development and refinement of these learning tools began taking place in the public sector of educational institutions along with the progress continued in the business world of the private sector (Morgan).

How Organizations Learn

Organizational learning does not take place because of directives from above, or because of changes in the social or political environment surrounding it (Leithwood & Louis, 1998). Change and improvement take place when individuals and groups within the organization are enabled to acquire, analyze, comprehend, and plan around information that arises from their environment and from internal monitoring (Leithwood

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& Louis). Personal mastery is the discipline of "clarifying and deepening our personal vision" (Senge, 1990, p. 139). Personal mastery is a special kind of proficiency, going beyond dominance to a personal calling. People "with a high level of personal mastery live in a continual learning mode" (Senge, p. 142). Organizations, which learn, must be comprised of individuals that learn (Senge).Building on an organization's ability to learn is a key element in the institutionalization of organizational learning to affect change in an organization (Leithwood & Louis, 1998).

Through learning, individuals are able to recreate themselves and organizations are able to do likewise (Senge, 1990). All members of learning organizations possess mental models of what they believe is true. Mental models are "deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action" (Senge, 1990, p. 8). Organizational members must be able to bring their mental models to the forefront, discuss them in detail and become open enough to make changes to the models they mentally possess (Senge). The effective use of mental models requires individuals and organizations to foster openness and engage in conversations that balance inquiry and advocacy (Senge).

Building a shared vision is an important part of the learning organization. The organization must have shared vision, not just a vision statement (Senge, 1990). Members of this organization must see where the organization is heading and work to move it in that direction. Organizational members of an organization "excel and learn, not because they are told to, but because they want to" (Senge, 1990, p. 9). As members of the organization coalesce towards a shared vision, these individual members become a team (Senge).

Team learning helps the members of the team move the organization toward their goals. Team members must be encouraged and supported by an administrator or a leader who allows the team to achieve and fail together. The team begins to think together and for the team, and as individuals, team members begin to leave behind their assumptions that deal with the achievements of the team or learning organization (Senge, 1990).

Systems Thinking. Systems thinking is the cornerstone of the learning organization. When looking at making change in a learning organization, consideration of and focus on the long-range goal is essential. In the systems thinking discipline, the organization must be seen as an interdependent whole, which utilizes feedback mechanisms and embraces complexity, thus leading to better decisions (Senge, 1990).

Senge introduced the "fifth discipline" of systems thinking, a framework for viewing interrelationships as a whole as opposed to seeing "things," seeing patterns of change rather than static "snapshots" (1990, p.8). According to Senge, systems thinking is one important aspect of the traits of a learning organization, which inclusively are: (a) systems thinking; (b) personal mastery; (c) mental models; (d) building a shared vision and (e) team learning (Senge, 1990). Educational organizations make use of systems thinking when individuals within the organizations continue to look towards the whole (Senge, Kleiner, Roberts, Ross, Roth, and Smith, 1999).

Systems thinking and systems dynamics provide students with more effective tools to interpret the complexities of the world around them (Senge, Cambron-McCabe, Lucas, Smith, Dutton & Kleiner; 2000). System dynamics modeling has been applied to the instruction of mathematics, science, history, biology and literature. Research findings suggest the earlier students are exposed to systems thinking, the more readily they can

apply it as a useful and effective tool in new situations (Senge, Cambron-McCabe, Lucas, Smith, Dutton & Kleiner; 2000).

Systems thinking recognizes the 1) inherent make-up of the natural environment, 2) the tension and cohesion present among the various aspects of the natural world, and 3) the numerous dichotomies that co-exist within academic epistemological traditions. Institutions and organizations involved in systems thinking have theses same qualities and attributes as exist in nature (Nonaka & Takeuchi, 1995). A rainfall shares its complexity with human endeavors, with both having origins and endings and almost limitless interactions with their surrounding environment (Senge, 1990). Systems thinking affords the opportunity for both students and educators to assimilate, grow, change and share their knowledge with others (Reynolds, Murrill, & Whitt; 2006).

Another discipline integral to organizational learning is personal mastery. "Organizations learn only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs"(Senge, 1990, p. 139).

Knowledge Creation. More recent research led to the perspective of learning organizations becoming the creators of knowledge. Internal environments are created where knowledge conversion takes place when tacit and explicit knowledge interact with each other, utilizing the four modes of socialization, externalization, combination and internalization (Nonaka & Takeuchi, 1995). Nonaka and Takeuchi define tacit knowledge as "personal, context-specific, and therefore hard to formalize and communicate" (p. 59). "Explicit or codified knowledge…refers to knowledge that is transmittable in formal, systematic language" (Nonaka & Takeuchi, 1995, p. 59). Tacit

knowledge has been identified as a "knowledge of experience" and "practice" while explicit knowledge is "knowledge of rationality" and of "theory" (Nonaka & Takeuchi, p. 61).

Organizational Culture's Affects on Organizational Learning

Organizational learning was identified is dependent on the leadership and culture of an organization (Schein, 1992). Cultural analysis enables the subcultural dynamics within organizations to be more closely viewed and examined (Schein). Problems previously identified as failures in communication are now being re-examined in the context of clashes between different cultures (Schein). To improve the "integration of varying interests" within organizations so that learning may take place, better understanding of subcultures must exist (Schein, p. xii). Such organizational change is heavily dependent upon the organization's leadership (Schein). The two processes of organizational change most commonly associated with organizational learning are adaptive learning and proactive learning. Both processes are typically brought about by or influenced in part by the leadership (Bolman & Deal).

Organizational learning is heavily impacted by organizational values. Values such as innovation, experimentation, flexibility, and initiative are imbedded in an organization's culture and greatly affect the organization's ability to learn (Yukl, 1998). Organizations that learn must develop cultures that "support change and risk taking" (Morgan, 2006, p. 91) and recognize problems and errors are inevitable. The organization's culture must promote an openness that encourages dialogue and conflicting points of view (Morgan). People at all levels within a learning organization are empowered to address problems within this framework (Yukl).

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Senge (1990) recognized dialogue as an important aspect of this culture of openness necessary for organizational learning to take place. In order for dialogue to occur, three conditions must exist: (a) participants must suspend assumptions, (b) participants must regard one another as colleagues, and (c) a facilitator must "hold the context" of dialogue (Senge, p. 243). Team members who enter into such dialogue on a regular basis develop a deep trust and richer understandings of each other's points of view. Part of the vision of dialogue is an assumption of a "larger pool of meaning" accessible only to a group (Senge, 1990, p. 248). The application of dialogue in this manner fosters a culture supportive of organizational learning (Senge).

Learning Dissemination Throughout the Organization

School districts have been required to collect and disseminate data for several years, yet rarely are these data utilized by the district (Spelling, 2005). Even though every school has collected data, often the data is set aside and not utilized. "Nearly every school in every state throughout the nation is attempting to reform, restructure, reengineer, or rethink the business of 'school.' What separates successful schools from those that will not be successful in their reform efforts is the use of one, often neglected, essential element – *data*" (Bernhardt, 1998, p. 1). According to Bernhardt, schools must use data to bring about systematic change. If data are used to bring about these changes, or drive decisions, the school will have data to measure the effectiveness of the changes or decisions. If no data are used, the effectiveness can only be assumed, not measured (Bernhardt).

Learning is disseminated throughout organizations on several levels and through several processes (Rashford & Coghlan, 1993). Task content refers to what the

organization is intending to do, its "mission, the task to be done" (Rashford & Coghlan, 1993, p. 33). Task process refers to how the "organization engage(s) in defining mission" (Rashford & Coghlan, 1993, p. 34). Task structure refers to the basic assumptions which have formed around tasks (Rashford & Coghlan) and these sets of assumptions constitute the culture of the organization (Schein, 1992). Culture passes implicit knowledge onto new members of an organization (Rashford & Coghlan).

In reviewing knowledge dissemination from a more holistic viewpoint, and relative to organizations being comparable in major aspects to a living brain, learning is stored in many parts simultaneously. Thus the pattern and order of organizational learning emerge from a process and is not arbitrarily imposed (Morgan, 2006). Recent organizational observation has led to the theory that intuitive managers learn to recognize clusters of information and act accordingly (Morgan). Reviewing the fluid aspects of modern organizations it has been noted, "solutions frequently seek out problems" (Morgan, 2006, p. 78). Still, much information is transferred and disseminated through explicit format. An example of the technological impact on such dissemination of knowledge in explicit format is the use of barcodes and laser beams to read them (Morgan, 2006).

Institutionalization of Organizational Learning to Bring About Change

Organizational learning is closely related to the experiences encountered by the organization. Building on an organization's ability to learn is a key element in the institutionalization of organizational learning to affect change in an organization (Leithwood & Louis, 1998). Rashford and Coghlan found that "relational content" and "relational structure" influenced the degree to which organizational learning becomes

embedded in an organization's culture and subsequently influences change in the organization (p. 36-37).

Leaders in modern organizations recognize the importance of organizational culture (Yukl, 1998) which has led to the attempt to "institutionalize and stabilize learning and innovation" within their organizations (Schein, 1992, p. 363). The development of learning organizations that are able to self-manage transformation as necessary are dependent on such institutionalization (Schein). The challenge to such development is the creation of a culture with embedded assumptions functioning as a culture yet still allowing for the encouragement of perpetual learning and change (Schein).

The creation of a learning organization facilitates the transition from the initiation of change to its embodiment within an organization (Senge, 1990; Watkins & Marsick, 1996). Transition such as this requires an organization to inquire as to what specific processes the organization is utilizing and then evaluate their effectiveness (Watkins & Marsick). Evaluative inquiry facilitates team learning and the subsequent application of this learning to the evolution of the organization as it changes (Preskill & Torres, 1999). The personal and professional growth of individuals within an organization help to embed the disposition for future inquiry and subsequent change within their organization (Preskill & Torres).

Various vehicles exist to provide for the institutionalization of learning to bring about change (Schein, 1992). The institutionalization of specific knowledge leads to core assumptions that enable change (Schein). Knowledge, unlike information, is "about beliefs and commitment" (Nonaka & Takeuchi, 1995, p. 58). Knowledge "unlike

information, is about action" and "like information, is about meaning" (Nonaka &

Takeuchi, p. 58). Information and the meaning of information is essential to the spiral of

organizational learning (Nonaka & Takeuchi, 1995). Information has become the

medium for the dialogue among members of organizations that learn (Senge, 1990;

Morgan, 2006). Information is fast becoming the currency of decision-making in both

private and public institutions (Jones, 2006).

Data Driven Decision- Making

As thinking individuals we use data to drive most decisions in our lives (Craig,

2006). Specific data is selected and acted upon in choosing a restaurant and then the

entrée itself. Data influence the vehicles we drive, the clothes we wear and the careers

we choose. As information is received from newspapers, television, word of mouth and

first hand experience, it is assimilated into our existing knowledge and in turn gives

direction to our further actions.

Public schools, likewise, gather data from many divergent sources. Board

members and administrators are provided informal feedback from parents and community

members. Classroom teachers gain input from actual observation and the scoring of

assigned academic tasks. Standardized testing has been utilized in many diverse forms

and is an annual part of the curriculum (Blink, 2005).

Too often all of this empirical data are either ignored, or at best used to categorize

students into different formal and informal groups (Abilock, 2004). Education still

struggles to find appropriate ways to utilize the data that are being gathered (Jones,

2006). Such information used is not always accurate and even then is not always

effectively utilized. Research of college presidents in the 1970's found strategic plans

and long-range data were seldom used in the decision-making process (Bolman & Deal). Studies of mid-level management showed that "decisions emerged from a fluid, swirling vortex of conversations, meetings, and memos" (Bolman & Deal, p. 265).

New pushes for accountability, both those legislated and those initiated by individual parents, have focused on specific systems to provide evolving frameworks for such change. Data driven instructional system frameworks involve (a) data acquisition, (b) data reflection, (c) program alignment and integration, (d) program design, (e) formative feedback, and (f) test preparation (Halverson, Grigg, Prichett, and Thomas; In Press).

Problems Associated with Data

The State Department of Elementary and Secondary Education (DESE) requires that all public schools gather and organize data and then disseminate this information to various public and governmental organizations. Regrettably the data are frequently used to report on what has happened but not further utilized to determine what will happen (Harris, 2000).

Another problem with the use of data is unauthorized usage of data that have been collected and placed on a host Internet site to increase accessibility by staff and students, but is accessed inappropriately due to the lack of proper security (White & Winter, 2005). Although software programs have been created to address this problem, increased awareness of all staff of security concerns as well as security software is needed to address the problem. When the use of data is abused, it makes the focus on the increased use of data more difficult (White & Winter).

Problems associated with data driven strategies include the "clean" collection of data (Mercurius, 2005) and the relevancy and completeness of the data collected (Jones, 2006). Demming suggests that, in reality, 97 % of problems are not objectively measurable and thus cannot be assigned figures (Jones). Therefore, care must be taken not to fall prey to any of the following myths: (a) the numbers are accurate; (b) we are looking for the right data; (c) numbers can accurately describe the social phenomena; (d) test scores should always go up; (e) even if the numbers were wrong, we would do the right thing; and (f) programs teach (Jones). It must be remembered that information for making academic and curricular decisions should be from many sources (Ediger, 2003). To support and complement the results of standardized testing, additional resources available include daily work, oral reports and written work, discussion, attitudes indicated by pupils volunteering to do extra work, and being exceptionally good listeners (Ediger).

Dissemination of data is an important aspect of the learning culture of a data-driven school. Yet, "mindlessness rather than mindfulness" seems to prevail among many educators due to the isolated nature of their work (Hansen, Gentry, & Dalley, 2003, p. 39). For systematic change to take place and be sustained, three critical processes must be in place: (a) convergence of resources, providing a starting point for the change; (b) mutual benefits to those who are affected by the changes; and (c) continuous, extensive, free flow of resources and expertise throughout the educational system to fuel the sustainability of the change (Sherry & Gibson, 2005). As data are made increasingly available to more staff, the very culture of a school environment changes (White & Winter, 2005). The effective use of data and standardization of its management within a school system require attention to use and management guidelines (McIntire, 2002). This

increased ownership allows for the potential for increased cooperation among all members of the school community (White & Winter). A problem central to this change in culture is that new accountability systems are "not imposed on blank slates" (Halverson, Grigg, Prichett, and Thomas; In Press, p. 6). Existing school cultures have their own practices and artifacts pertaining to the use of data, and it must be remembered that schools are not beginning to become accountable, they are in the process of reshaping their processes of accountability (Halverson, Grigg, Prichett, and Thomas; In Press). Formative feedback is essential in this evolution, but unfortunately recent studies have found such feedback is rarely demonstrated (Halverson, Grigg, Prichett, and Thomas; In Press).

Use of Data

Essential to the use of data are the following steps: (a) develop a leadership plan; (b) collect various types of data; (c) analyze data patterns; (d) generate hypotheses; (e) develop goal-setting guidelines; (f) design specific strategies; (g) define evaluation criteria; and (h) make the commitment (Learning Point, 2004). Types of data gathered include, but are not limited to, the following: demographics, perceptions, student learning, and school projects (Learning Point). Management of data is important, with data-driven decision making only as good as the data sources available (McIntire, 2002). To be compatible, data must have same level of granularity, the level of detail inherent in a single piece of datum (McIntire).

Those who have mastered the use of data to inform decisions hold a more comprehensive view of data and its relationship to academic performance in the classroom (Pulliam, 2005). Such mastery comes after extended use and training. Pulliam

found that "administrators and teachers need solid professional development support and guided practice to become better users and consumers of academic data" (p. 36, 2005). Superintendents committed to school improvement develop the measures necessary to effectively evaluate the success or failure of their efforts (Gee, 2006). To combat the criticism indigenous to these efforts, superintendents need to provide data to back their decisions (Gee).

With the current acceptance that state and federally mandated standards are absolutes and not subject to local school board interpretation, decisions such as grade promotion are based upon those standards and held to be appropriate (Ediger, 2003). This is necessary for new levels of accountability to be applied to public education. The high-stakes state assessments and adequate yearly progress reports that result from accountability demands continue to represent driving forces in school improvement (Stiggins & Chappuis, 2006). While reports citing flaws in standardized testing too often have validity, accountability advocates argue the answer is not to minimize the emphasis of standardized tests, but to address their weaknesses (Ediger). Some solutions may include improvement of the testing instruments and the addition of portfolios for assessment (Ediger). Another area in need of review is the readability level of content area examinations, as repeated analysis of standardized tests in all fields show a close association between reading proficiency and subject matter knowledge (Noyce, Perda & Traver, 2000).

Leadership and Data Use

Decision making power is dependent on constituents' levels of satisfaction (Bolman & Deal, 1997). Leaders fully utilizing their decision making power strive for

the satisfaction of their constituents (Short & Greer, 1997). Effective leaders help group members communicate and work together, with information, or data, as the medium (Bolman & Deal). High performing managers need multiple tools, the skills to use each of them, and the wisdom to match the appropriate tools to the situation (Morgan, 1986). In win-win negotiations, one key approach was the insistence on objective criteria and accurate information (Bolman & Deal). These tools allow educators to assess and correlate student outcomes, instructional methodology, and mandated standards (Gold, 2005).

As data are used to drive decisions, the appropriate use of data, along with the types and accuracy of the data being collected, comes into question (McIntire, 2002). Organizations have utilized data acquisition and feedback to redesign existing practices (Argyris, 1990) and to adapt to changing circumstances (Senge, 1990). Professional communities are developed through focusing on and engaging in such tasks of data acquisition and reflection (Halverson, Grigg, Prichett, and Thomas; In Press). As research is accumulated, fallacies in data collection and interpretation are being identified and addressed (Jones, 2006). Most research is currently focused on larger, urban districts where resources, both fiscal and personnel, are being committed to address the revision of current decision-making processes (McIntire). In larger districts, data-driven efforts typically reside within institutional research and development units. In small districts, "data–driven efforts usually begin with the work of one person who has a quantitative bent, enough curiosity to look for patterns, and, most importantly, a willingness to share results with colleagues and to solicit their views" (Noyce, Perda, & Traver; p.54, 2000).

Limited research exists that examines the decision-making processes and uses of data used to inform thinking about instructional programs in rural schools (Rudalevige, 2003).

Leadership

Controversy exists as to whether leadership should be viewed as a specialized role or as a shared influence process. There are almost as many definitions of leadership as number of researchers who have attempted to define it (Yukl, 1998). Such varying definitions can be placed into "structural, human resource, political, and symbolic frames" (Bolman & Deal, 1997, p. 15). Levels of "leader participation include: (a) autocratic, (b) paternalistic, (c) consultative or democratic, (d) participative and power sharing, (e) delegative, and (f) abdicative" (Schein, 1992); organizational leadership approaches include: (a) trait, (b) behavior, (c) power influence, (d) situational, (e) integrative; and leadership processes include: (a) intra individual, (b) dyadic, (c) group, and (d) organizational (Yukl). This paper explores the three leadership theories or concepts of leadership most often associated with learning organizations: (a) transformational, (b) transactional, and (c) participative (Yukl). The research does not treat data driven decision making as a separate type of leadership, but views the development of data driven teaching and learning systems as a further push towards accountability within these existing definitions (Halverson, Grigg, Prichett, and Thomas, In Press).

Transformational. Transformational leadership is considered integral to an organization's ability to learn (Yukl, 1998). The theories of transformational leadership emphasize the importance of emotional processes being equal to those of rational processes, and that "symbolic actions are as important as instrumental behavior" (Yukl,

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p. 340). This type of leadership makes organizations more effective and raises employee

satisfaction through allowing for their input while also increasing the quality of a

decision and the support of those affected by it (Bruffee, 1993; Reavis & Griffith, 1992;

Short & Greer, 1997; Yukl, 1998). Transformational leadership raises the consciousness

of followers by "appealing to ideals and moral values such as liberty, justice, equality,

peace, and humanitariasm" (Yukl, 1998, p. 324).

Transformational leadership is defined in terms of a leader's affect on their

followers. The followers feel a sense of trust, admiration, loyalty and respect toward

their leader that motivates them to do more than was originally expected from them. The

leader motivates and "transforms followers by: (a) making them more aware of the

importance of task outcomes, (b) inducing them to transcend their own self-interest for

the sake of the organization or team, and (c) activating their higher-order needs" (Yukl,

1998, p. 325). At the highest level, transformational leadership involves shaping,

expressing, and mediating conflict among groups of people in addition to motivating

individual members of those groups (Yukl).

Transformational leadership includes the following guidelines: (a) articulate a

clear vision; (b) explain how the vision can be attained; (c) act confident and optimistic;

(d) express confidence in followers; (e) provide opportunities for early success; (f)

celebrate successes; (g) use dramatic, symbolic actions to emphasize key values; (h) lead

by example; and (e) empower people to achieve the vision (Yukl, 1998, p. 342).

Transformational leaders seek to elevate and empower their organization's members

(Yukl). Such leaders have become more prevalent throughout their organizations and

have increased public access to the visions and goals of more public institutions

(Johnson, 1996). Transformational leadership has been linked with "dynamic schools" that empower their staff and communities (Short & Greer, 1997, p. 184).

Transactional. Transactional leadership has been defined as approaching followers with an eye to trading one thing for another: jobs for votes, subsidies for campaign contributions" (Bolman & Deal, 1997, p. 314). Transactional leadership motivates followers by appeals to their self-interest. "Political leaders exchange jobs, subsidies, and lucrative government contracts for votes and campaign contributions. Corporate leaders exchange pay and status for work effort" (Yukl, 1998, p. 325). Transactional leadership involves only values relevant to the exchange process. These include fairness, honesty, responsibility, and reciprocity (Yukl).

Transactional behaviors have been identified as the following: (a) contingent reward, (b) active management by exception, (c) passive management by exception, and (d) laissez-faire leadership (Yukl, 1998, p. 326). Contingent reward behavior includes clarification of the work assigned to obtain rewards. Active management by exception includes supervision of workers and corrective action to ensure that work is carried out effectively. Passive management by exception includes use of contingent punishments and other corrective actions in reaction to deviations from performance standards. Laissez-faire leadership is behavior that exhibits passive indifference to subordinates and their prescribed tasks (Yukl, 1998).

Transactional leadership behaviors have correlated less positively with leadership effectiveness (Yukl, 1998) than other leadership behaviors. In recent studies, passive management by exception has yet to be identified as an effective behavior. Contingent reward behavior has been positively correlated with leadership effectiveness and has been

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identified as a practiced behavior of what otherwise are transformational leadership styles (Yukl).

Participative. Organizations with participative leadership are more likely to generate creative solutions because they tap into a wider range of resources (Schein, 1992). This is "based on a categorization of organizations into: (a) authoritarian, (b) paternalistic or collegial, and (c) participative" (Schein, p. 368). Participative leadership is concerned with power sharing and empowerment of the membership of an organization and has been positively correlated with leadership effectiveness traits of subordinate satisfaction, effort, and performance (Schein). Participative leadership makes use of group supervision instead of supervising individual subordinates. Utilization of group meetings facilitates subordinate participation in decision-making, improves organizational communication, promotes cooperation, and facilitates conflict resolution (Yukl, 1998). The role of the leader in these meetings is to guide the discussion and keep it constructive, supportive, and steered toward the finding of solutions. Participative leadership does not allow for the abdication of responsibilities and the leader remains responsible for all decisions (Yukl).

Participative leadership includes aspects of power such as power sharing, empowerment, and reciprocal influence processes, while also including aspects of leadership as the specific procedures to consult with people and the specific behaviors to delegate authority (Yukl, 1998). In the four levels of decision-making: (a) autocratic, (b) consultation, (c) joint, and (d) delegation; participative leadership has a dynamic quality that allows it to range along the latter three (Yukl).

Participative leadership offers multiple benefits, foremost of which may be the likelihood that the quality of decisions is increased when participants have information and knowledge the leader may lack. Another benefit is that subordinates having the opportunity to have some influence over a decision often increases their commitment to its execution (Yukl, 1998). Downward consultation increases the quality of a decision by drawing upon the knowledge and problem-solving abilities of subordinates. Lateral consultation draws upon the knowledge of peers and again increases the chance of other managers' acceptance. Upward consultation draws on the expertise of the top executive or owner. Consulting with outsiders enables one to learn more about these outsiders' needs and preferences while strengthening external networks and improving coordination among all parties (Yukl).

Guidelines have been defined to assist in the decision on the feasibility of participative leadership. They are as follows: "(a) evaluate how important the decision is, (b) identify people with relevant knowledge or expertise, (c) evaluate likely cooperation by participants, (d) evaluate likely acceptance without participation, and (e) evaluate whether it is feasible to hold a meeting." The steps to encourage participation are:

(a) encourage people to express their concerns, (b) describe a proposal as tentative, (c) record ideas and suggestions, (d) look for ways to build on ideas and suggestions, (e) be tactful in expressing concerns and suggestions, (f) listen to dissenting views without getting defensive, (g) try to utilize suggestions and deal with concerns, and (h) show appreciation for suggestions (Yukl, 1998, p. 133).

Such guidelines may assist leaders in their challenge to be able "to listen, to emotionally involve the group in achieving its own insights into cultural dilemmas, and to be

genuinely participative in his or her approach to learning and change" (Schein, 1992, p. 389), which may enable them to increase their efficacy of decision making in their role as leader.

Summary

The No Child Left Behind act signed into law in 2002 increased the attempts at governmentally imposed accountability in our public school systems (Standerfer, 2006) and created new levels of data collection about students as individuals and as part of a larger student body (Jones, 2006). This increased body of data brought about the need for better collection and retrieval systems (McIntire, 2002) and improvements in the evaluation and decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been a part of organizational learning and improvement for some time (Scholtes, 1994; Senge, 1990), this increased attention focused attention on the effectiveness of such evaluative review cycles (Rudalevige, 2003). Problems have been identified (Jones, 2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings, 2006).

Chapter two contains a review of related literature that provides the basis for this investigation and a perspective for the use of data in rural mid-western schools. The main areas of research identified in the review of literature are: (a) the history of the Elementary and Secondary Education Act of 1965, (b) organizational learning, and (c) data driven decision making. Subcategories include: (a) how organizations learn, (b) organizational culture's affects on organizational learning, (c) learning dissemination throughout organizations, and (d) institutionalization of organizational learning to bring about organizational change.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

This study was designed using comparative case study method to investigate data use by two rural Missouri school districts. With the impact of No Child Left Behind (NCLB), schools are challenged to make changes in curriculum and instructional practices to improve test scores. As Petersen and Young (2004) remind us, NCLB provides for the collection and dissemination of data that impact the future of schools. Schools must look at their test scores, evaluate the data, and make decisions concerning curriculum and instruction in an effort to make Adequately Yearly Progress (AYP) (Spellings, 2005).

Research has shown that as the demand for data collection has increased, so has the need for established parameters and guidelines for such collection (Abilock, 2004). Too often data are not stored and classified in a retrievable manner (McIntire, 2002), or the data are incomplete as to its practical application (Jones, 2006). The dissemination of data is impeded if data management and transmittal systems are incompatible or the directional flow of information has yet to be determined (Craig, 2006; Rudalevige, 2003).

Schools become learning organizations when certain empowering conditions are present (Senge, 1990; Short & Greer, 1997) and leadership styles and culture are of a collaborative nature (Schein, 1992; Yukl, 1998). Productive collaboration relies upon effective use of data to drive academic decisions (McIntire, 2002).

Problem and Purposes Overview

Limited research exists that examines the decision-making processes and applications of data used to inform thinking about instructional programs in rural schools (Blink, 2005). Although utilization of data collected is an important part of school reform under the No Child Left Behind (NCLB) legislation, schools are still struggling to find appropriate ways to utilize the data being gathered (Jones, 2006). Parameters are yet to be defined clearly that will lead to a more effective process (McIntire, 2002).

Jorgenson (2006) suggests that effective practices need to be identified in the decision-making processes that are applicable to rural schools and that, once identified, may be transferable to other settings. The purpose of this study is to examine how the use of data informs thinking and drives academic planning in Missouri schools by exploring and comparing the processes in two rural Missouri school districts. This study serves as a step towards the identification of such transferable practices.

Research Questions

The following research questions were developed to guide the research:

1) In what ways do districts use data to inform decisions around curriculum and instruction for student learning?

2) What factors impede developing and implementing curriculum and instruction for student learning?

3) What factors facilitate developing and implementing curriculum and instruction for student learning?

These research questions are designed to elicit data that demonstrate and contribute to understanding: 1) how the participating districts use data and the types of

data they apply in their curricular and instructional decision making processes, and 2) factors perceived by the districts to facilitate or diminish implementation of curricular and instructional change decisions.

Design of the Study

The comparative case study design was chosen so that information could be gathered in multiple research settings and compared for possible similarities, thus giving the researcher a better opportunity to identify significant characteristics and behaviors. The targeting of qualitative data being gathered allows for an increased flexibility of data acquisition leading to the identification of factors affecting the research questions (Cresswell, 1994). The parameters of qualitative research expand the quantity and diversity of the data collected, increasing the depth of information to be reviewed (Cresswell). As information is collected to address the "how's" and "what's" of educational research, comparative descriptive studies are better suited to provide the structure of such inquiry and to achieve the research goals of understanding how participants perceive the use of data and apply their interpretation to decision-making (Lauer, 2006).

For the purpose of effective comparison, District 1 and District 2 were selected based on similar demographics. The size of student body, staff and district monetary resources were approximately equal in number. The geographic locations were also similar, in that both districts were located near significant sized cities and at the same time served many students from, what otherwise, would be considered a rural environment.

The protocols for the interviews were first tested on retired staff and school board members of a third Missouri district to solicit their input. The interview questions were then revised based on the suggestions and critique of these former educators and public servants. The actual number of people selected to be interviewed was also revised, in fact raised, based on the arguments put forth by this pilot group.

For the sake of an equitable base for comparison, identical groups of participants were interviewed in both District 1 and in District 2. Participants included the district superintendent, as well as one building level administrator from the elementary school and another from the secondary, or high school. The school board president from each district was interviewed. A second school board member from each district was also selected for interview. This second board member was chosen based on his longevity of tenure as well as his assignment to committee, with preference given to assignment on committees dealing with academic performance.

Certified instructional staff (ie. classroom teachers) representing both elementary and secondary assignments were chosen from each district. Two staff members were selected from each instructional grouping, for a total of four teachers being interviewed from each district. Again, staff members were chosen based on longevity of tenure and assignment to academic committee; but conscientious effort was made to include both staff with several years experience and those newer to the profession.

In total, nine participants were interviewed from each district. The eighteen participants were selected for an adequate cross section of the districts' personnel for this examination of data driven decision making in Missouri schools. Observations aided in the support and supplementation of knowledge gained from these interviews.

Methods

Unlike the removed researcher's stance required by quantitative research norms, in qualitative research studies, the researcher is the instrument of research (Merriam, 1998). In order to reduce the effect of researcher bias, the researcher must identify his/her own potential biases and guard against his/her intrusion into the study. The following section makes this researcher's potential biases explicit (Guba & Lincoln, 1989). Consistent with qualitative research norms, I will speak in first person.

Researcher

I am a doctoral student currently employed by and serving as A+ Coordinator in a Missouri school. I have been employed in this position for a number of years, after previously serving as Administrative Assistant in the same school district for a former superintendent. My duties in both of these positions demanded the reading and summarization of educational research studies instrumental to developing instructional programs designed to meet the Goals 2000 initiatives, and more recently, in developing research based academic interventions to meet the formal demands of No Child Left Behind. As an instrument of research, and the primary collector and analyst of the collected data, the flexibility and adaptability gained from these experiences is crucial to my efficacy in this role (Lincoln & Guba, 1989). The qualities of tolerance for ambiguity, sensitivity, and being a good communicator are important as a researcher (Merriam, 1998) and in the professional positions I have held. A concern of the role of the researcher as chief instrument of research is the potential for bias (Denzin & Lincoln, 1994), with the researcher needing to be aware of any personal views and perspectives they are bringing to the study.

Biases

I currently work in the District 1 (pseudonym) system. Although this experience gives me significant access and insight to the questions being studied, my professional position does allow for the potential to place District 1 in a better light. Stating this potential explicitly and asking all participants to assure their objectivity helped address this possibility for bias. Preserving the accuracy of all data collected with its original integrity also helped to prevent the insertion of any bias into the findings of this research.

Research Setting

The two school districts selected were chosen for three primary reasons: 1) their similarity in demographics, 2) significant differences on performance criteria pertinent to the study, specifically Adequate Yearly Progress (AYP) as derived from their State Assessment Program, and 3) their geographic accessibility to the researcher. The school districts in the study are referred to as District 1 and District 2. All reported data came from the district's annual reports to the Department of Elementary and Secondary Education. Both districts selected met the definition of rural schools as defined by the American Association of School Administrators (AASA). In personal communication from AASA executive C.J. Reid explained that their national organization categorizes rural schools as "Class D have student populations of 0-299 and Class C have populations of 300-2999. Both these classes are considered rural educational environments, even though they may be urban areas and have some urban characteristics" (Mansfield, 2004, p. 57).

Both communities are experiencing moderate economic growth, mostly from new industry. Both communities also serve as bedroom communities for larger urban areas

nearby, with many residents traveling to these urban centers for their respective occupations. In terms of size of population and geographic area, as well as financial assets, both District 1 and District 2 are extremely similar.

District 1

In the 2005-06 academic year, District 1's enrollment was 731 K-12, and it employed 62 certified staff. It has only one elementary principal, one high school principal, and one district superintendent with the entire campus at one location. The K-6 academic program is housed in one building, supervised by the elementary principal. The 7-12 secondary program is housed in a separate facility and supervised by the secondary principal. Both facilities share some resources, as in the use of staff and equipment. District 1 met only 50% of the benchmarks set by the State Department and is considered by the No child Left Behind regulations as a low performing district.

District 1 has an attendance rate of 94.4 % and a graduation rate of 81.4%. The district has a free and reduced lunch count of 34.40%. The school is located approximately fifteen minutes driving time from a small city where most of the parents of the students work. As of 2006, total certified staff at District 1 including administrators, teachers, and principals had, on average, eleven years of experience. The average teachers' salary is $31,409.

The school utilizes Crystal Reports to help analyze data and evaluate tests scores. Crystal Reports are provided by the Department of Elementary and Secondary Education (DESE) and allow school districts to electronically review and track test performance. District 1 has purchased EASE-e Data Analyzer TM as a data warehouse to help analyze

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data within the district. These software programs enable school district staff to have increased access to academic data, along with the analysis of the data.

District 2

In the 2005-06 academic year, District 2's K-12 enrollment included approximately 751 students and employed 68 certified staff including only one elementary principal, one high school principal, and one superintendent. Although housed in one facility, the elementary and secondary academic programs operate independently and are under the direct supervision of different principals. The K-6 is under the supervision of the elementary principal and the 7-12 program is under the administration of the secondary principal. As with District 1, some resources of staff and equipment are shared between the two programs. District 2 met 100% of the benchmarks of No Child Left Behind' Adequate Yearly Progress (AYP) and is considered a high performing school.

District 2 has an attendance rate of 94.5% and a graduation rate of 90.5%. The district has a free and reduced lunch count of 34.60%. District 2 is also located just minutes from a small city that employs the majority of the District 2 parents. As of 2006, total certified staff at District 2 including administrators, teachers, and principals had on average fourteen years of experience with the average pay of $33,851.

District 2 utilizes Crystal Reports to help analyze their data and evaluate their test scores. As of this research, District 2 had not purchased a data-warehousing program.

Data Collection Procedures

Data were collected through multiple investigative formats that include interviews, observations, and document collection.

Interviews

In-depth interviews were conducted as part of the data collection process. These interviews were designed to elicit both close and open-ended responses and became the foundation of category and topic organization. The thrust of the interviews was to inquire about the processes of each district on the use of data to inform thinking and make decisions about curricular changes and instructional methods. Interviews with the superintendent and other key people within the District 1 and District 2 school districts were conducted to obtain information on how their district uses data to inform thinking and make decisions about curriculum and instructional practices. Steps were taken to assure accuracy, objectivity and confidentiality to ensure the trustworthiness of the study (Cresswell, 1994). Key personnel were chosen in both districts and include building principals, superintendents, and board members along with other identified staff leaders. The superintendents were chosen because they are district leaders and possess the overall knowledge of all district academic operations. Staff leadership included Community Teacher Association (CTA) leaders as well as department heads, dependent upon the roles they play and indices from observations and other interviews. Locations for interviews were selected based on interviewee convenience. Interviews were conducted face-to-face. The comfort level and assurance of confidentiality for the interviewee were paramount to insure depth and accuracy of responses (Cresswell, 1994).

If interviewers agreed, audiotapes of the interviews were made to assure completeness and accuracy of all responses. The majority of questions were open-ended to assure lack of limitations and restrictions to the information being gathered (Cresswell, 1994) and to encourage the respondent to not be inhibited in their forthrightness of both

fact and opinion (Brassard, 1996). An interview protocol included possible time

schedules and guides explaining the parameters of the questions. These protocols were

sufficiently flexible to "note and collect data on unexpected dimensions of the topic"

(Bogdan & Biklen, 1998, p. 71). Most questions were substantive rather than formal,

focusing the responses specific to school district rather than to schools in general

(Bogdan & Biklen).

The process of interviewing included requiring all those interviewed to sign a

consent form. Interviewees were assured confidentiality and were informed that they

could end their participation at any time. All tapes of interviews were later transcribed

for further review. Follow-up interviews were conducted as necessary, in particular to

further examine or define an uncovered trend or concept (Bogdan & Biklen, 1998) or

more accurately record a comparative anomaly or significant finding (Cresswell, 1994).

Follow up interviews were conducted on over one-half the respondents. Respondents

were selected for follow-up interviews based on the depth of their responses and their

willingness to offer detailed descriptions of their actions and experiences. Follow-up

interviews in District 1 were conducted mostly in person, with the exception of one

teacher. All follow-up interviews in District 2 were conducted via telephone. During the

follow-up interviews, more open-ended questions were used and respondents were

encouraged to more freely expound upon their responses.

Observations

Observations were made to supplement and support the data gathered from

interviews and also to provide direction for follow-up interviews (Bogdan & Biklen,

1998). Such observations were limited in length so as to be less intrusive, and those

phenomena observed were selected and observed only after previous contact had been made and an observation date had been established. This process was followed to lessen "observer effect" (Bogdan & Biklen, p. 35). Phenomena selected for observation included school board meetings, departmental academic meetings, or instructional committee meetings. Observation criteria for the meetings and portions of the agenda selected for observation were dependent on decision-making processes planned. Along with dialogue, specific aspects targeted for observation included the physical setting, dress of the participants, their non-verbal communication and physical gestures in order to give a more complete description of the decision-making process (Bogdan & Biklen). With participant agreement, audiotapes were made. Transcription was done by the researcher.

Documents

Of the three most common types of documents to consider in qualitative research (Personal, Official, and Popular Culture) the documents focused on in this study were official documents (Bogdan & Biklen, 1998). Official documents were those items that have been produced by organizational employees for record-keeping and for purposes of dissemination both within and outside the organization (Bogdan & Biklen). These documents included the minutes from meetings, test score analysis, meeting agendas, organizational policy and regulations, academic proposals, and directives and memos (Bogdan & Biklen; Cresswell, 1994), but were restricted to those to which access was granted. Documents were chosen from both internal and external communication, with all specific data referring to students reported anonymously to protect and respect their

confidentiality (Bogdan & Biklen). Copies of complete texts were kept to assure

accuracy (Cresswell).

<div align="center">*Data Management Procedures*</div>

As data were collected, the utmost importance of data accuracy and participant

confidentiality was maintained (Bogdan & Biklen, 1996; Cresswell, 1994). Interview

tapes were transcribed by the researcher, guaranteeing both accuracy and confidentiality.

Tapes and transcripts were kept in a locked file cabinet within the researcher's locked

office. Access to materials was limited to the researcher and her doctoral dissertation

advisory committee.

Analytic Procedures

The study was designed to identify ways districts use data to inform thinking and

make decisions about curricular changes and instructional methods. Use of a

comparative-case study allowed the researcher an expanded forum in which to examine

the districts (Bogdan & Biklen, 1998). The data were analyzed inductively to capture any

and all abstractions along with more concrete observations concerning participant

behaviors and the possible implications of these behaviors to the questions being pursued

(Bogdan & Biklen, 1998; Lincoln & Guba, 1985). The meaning participants attach to

their specific behaviors and their own perspectives was considered in the analysis of the

qualitative data (Lincoln & Guba).

Open Coding

As data were collected and transcripts of interviews and observations completed,

open coding of all materials began. Data were broken down into separate units of

meaning, and then individual phenomena were categorized (Moghaddam, 2006).

Incidents were labeled and assembled together through constant comparison to form and revise categories as part of the initial concept development (Moghaddam). Memos were written and maintained to elaborate on ideas about the data and coded categories and to facilitate reorienting the researcher at a later date. This process allowed for establishing direction before becoming selective. Concepts were further evaluated and conjoined (Moghaddam).

Data were broken down into analytical portions which evolved to a conceptual point. Questions that were continually addressed during this process were: (a) "What is happening in this data? (b) What is the basic socio-psychological problem? (c) What accounts for it? and (d) What patterns are occurring here?" (Moghaddam, 2006, p. 56).

Axial Coding

Themes were developed from categories as similarities and relationships between them appeared throughout the analysis of the data (Bogdan & Biklen, 1998; Lincoln & Guba, 1985). Setting/context codes were utilized allowing for the desegregation of data to site and varying programs. Process codes depicting words and phrases that facilitate the organization of data into specific groups demanded the sequential observation of meetings and committees so that trends could be identified and established. Activity codes were used to identify regularly occurring kinds of behavior. Event codes were directed at units of data that were related to specific events. Strategy codes referred to tactics and techniques people used to accomplish certain objectives. Relationship codes documented friendships, lines of authority and both formal and informal relationships between participants. Methods codes isolated material pertinent to research procedures (Bogdan & Biklen, 1998).

Through systematic analysis and continual comparison of data the number of codes were reduced and relationships among them were identified (Moghaddam, 2006). Once these concepts were identified, their attributes were explored in depth and characteristics dimensionalised in terms of their strengths and weaknesses. A core category was identified that united all the strands to provide an explanation for the behaviors under study (Moghaddam). During the axial coding, four analytical processes occurred: "(a) continually relating subcategories to a category, (b) comparing categories within the collected data, (c) expanding the density of the categories by detailing their properties and dimensions, and (d) exploring variations in the phenomena" (Moghaddam, p. 58).

Trustworthiness

Lincoln and Guba (1985) suggest four criteria essential to ensure the trustworthiness of naturalistic inquiries. These criteria are: (a) credibility, (b) transferability, (c) dependability, and (d) confirmability. Credibility was established with the triangulation of data (Lincoln & Guba) from various sources. Interviews and observations were cross-referenced, comparing interpretations of results from different data-collection methods (Lincoln & Guba, 1985; Oliver-Hoyo & Allen, 2006). Member checks, or member validation, were utilized to further assure credibility, with interpretations of interviews and observations returned for review from participants. Peer coding was utilized when possible (Oliver-Hoyo & Allen).

Transferability was addressed with providing in depth details based on a "thick description" allowing for the viewing of all possible meanings (Geertz, 1973; Oliver-Hoyo & Allen, 2006). Dependability was maintained through external audits and the

establishment of clear audit trails (Lincoln & Guba, 1985). Confirmability was established by the referencing of results to literature and findings by other authors (Lincoln & Guba, Oliver-Hoyo & Allen).

Summary

The No Child Left Behind act signed into law in 2002 increased the attempts at governmentally imposed accountability in our public school systems (Standerfer, 2006) and created new levels of data collection about students as individuals and as part of a larger student body (Jones, 2006). This increased body of data brought about the need for better collection and retrieval systems (McIntire, 2002) and improvements in the evaluation and decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been a part of organizational learning and improvement for some time (Scholtes, 1994; Senge, 1990), this increased attention focused on the effectiveness of such evaluative review cycles (Rudalevige, 2003). Problems have been identified (Jones, 2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings, 2006).

The problem identified in this study was the lack of research on the effective use of data in the decision making process utilized by Missouri schools. The purpose of this study was to examine how the use of data informs thinking and drives academic planning in rural Missouri school districts. The research questions were framed to assess the specific data collected and the specific roles of school personnel involved in that collection and analysis. A comparative study was designed to expand the format of inquiry, with document review and personnel interviews used to gather the majority of the information to be analyzed. During both interviews and observations, precautions

were taken to ensure the comfort and confidentiality of the person agreeing to be

interviewed or those participating in the meeting being observed. Of the types of

documents available, official documents were the ones upon which the study focused.

Analytic procedures included the use of open and axial coding, with measures taken to

ensure the trustworthiness and transferability of the findings.

CHAPTER FOUR

ANALYSIS OF DATA

Introduction

The No Child Left Behind (NCLB) act signed into law in 2002 increased attempts

at governmentally imposed accountability in our public school systems (Standerfer,

2006) and created new levels of data collection about students both as individuals and as

part of a larger student body (Jones, 2006). This increased body of data brought about

the need for better collection and retrieval systems (McIntire, 2002) and improvements in

the evaluation and decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been viewed by scholars and

leaders as being essential to high quality organizational learning and improvement for

some time (Scholtes, 1994; Senge, 1990), this increased attention brought about by

NCLB highlighted the effectiveness of such evaluative review cycles (Rudalevige, 2003).

Problems, including but not limited to the quality of subjective information obtained and

the security and privacy of individual student testing data, have been identified (Jones,

2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings,

2006).

The parameters for the conceptual underpinnings of this study were established by

the human resource framework (Bolman & Deal, 1997) and the study of learning

organizations (Morgan, 2006). The purpose of the study was to examine how the use of

data drive academic decision making in two Missouri schools. Three research questions

were used to guide the study and informed the qualitative data collection process of

interviews, observations, and document collection. In-depth interviews and observations

were used to gather qualitative data that directly addressed academic decision making. Observations focused on the appearance of the respondents and their surroundings, noting respondent demeanor as well as physical characteristics of the interview setting. Documents that were related to academic decision making were collected and reviewed. Relevant information disclosed in earlier interviews was incorporated into subsequent interviews allowing me to pose more specific questions and thus eliciting more and more finely detailed data from interviews. Observations and document reviews were compiled prior to the interviews, to expedite the study and better inform the researcher.

Nine people were selected from each of the two districts to be interviewed. The purpose of this data collection process was to gather general and specific information pertaining to how all information gathered about student performance was utilized, specifically in regard to decisions concerning curriculum and instructional development.

Limitations included: 1) no way was identified to discern the quality of decision making of those interviewed and 2) the scope of the research was limited to two Missouri schools. Key terms intrinsic to the study were earlier defined.

Organization of Data Analysis

The interviews with the eighteen respondents were recorded, transcribed, and then reviewed. Responses were coded and analyzed for similarities and trends and placed in thematic sets. As data were further analyzed, five distinct themes emerged. These five themes are used to provide a framework for the presentation of the findings. The essence of the research questions was addressed through this thematic framework. The purpose of the study guided the development of the three research questions. As data were collected, the organization of the original data lent itself to the collection of even more

detail and this increased data drove the development of these five themes. All data reported were assigned to at least one of the themes, with some data falling between and or across two or more themes. Care was taken to make no general statements that were not corroborated by different respondents. If a statement was included that represented the views of only a singular respondent, it was so indicated.

Research findings are presented in a narrative format. Uses of school data and the role of school district personnel in that use were simply reported as discovered through inquiry. Data were corroborated to the extent possible through multiple interviews with varying respondents and correlation to observations and document review. Although all data reported was that discovered through inquiry, depth, breadth and specific topics of inquiry were often dictated by information uncovered through observations and document review. As data were originally organized, separate codes were used to dissimilate the three types.

Description of Respondents

The respondents from both District # 1 and District # 2 were selected based on the levels of interaction with and varying degrees of responsibility the respondents held concerning curricular development and other aspects of the instructional process. Personnel with specific assignments and responsibilities related to curricular development and academic performance tracking were sought. All respondents were asked to be a part of this investigative process and informed that their participation was not only strictly voluntary but that lack of participation also would have no negative consequences.

The interviewees represented the following professional roles within their districts: four administrators, consisting of a superintendent and three building administrators; two board members, including the board president; and three classroom teachers, with a mix of one teacher from each level (elementary, junior high and high school) and a variety between regular classroom and special needs staff being represented. Pseudonyms were used in this description to reflect the gender and to inject a personable quality to the description of respondents while maintaining their anonymity.

Position or Title	District #1	District #2
Superintendent	Abe	Adam
HS Principal	Betty	Bob
HS Assistant Principal	Carter	Cindy
Elementary Principal	Darlene	Dan
Board President	Ed	Earl
Board Member	Fred	Frank
Middle School Teacher	Ginger	Garcia
High School Teacher	Henrietta	Helen
Elementary Teacher	Indigo	Irene

The tenures of district service of the eighteen individuals selected for interviews were considered in the selection process, and attempts made to the design as possible to fairly represent the average length of tenure for their positions in the district and their teaching careers. Both the superintendents selected were experienced administrators, with one having served in his present position for thirteen years and the other having a total of twenty-five years in administration, although only in his first year as superintendent in his present assignment.

Building level administrators had slightly lower levels of experience on the average, but were overall, seasoned educators. Teachers selected were presently serving on committees or as department heads and together had a collective average years of service of more than ten years.

Of the board members interviewed from each district, two held the position of board president in their respective districts. The other board members were selected based on their length of tenure, their assignment to any committee dealing with curriculum and instruction, or position on the board.

District 1 Respondents. Among the four administrators in District 1, leadership styles ranged from charismatic to extremely authoritative. Abe, a white, middle-aged married father of two children is in his first year as District 1 superintendent. Abe had a tenure of five years as superintendent in a previous district. Altogether, he has twenty-five years in some form of school administration. Abe's leadership style may be described as somewhat authoritarian in dealing with the administrative team. For example, Abe made it very clear that once given a task, his principals "had best have it done when they came back!" He has established a top-down hierarchy for decision making; however, once he delegates a task, he seldom follows through with supervision and review. For all practical purposes, he is done with the task once it is delegated. In dealing with resources he does not directly control, such as the school board and varying committees, Abe is more prone to exhibit characteristics of transformational leadership.

Betty is a singe white female of middle age and is employed as the high school principal. She seeks acceptance from her staff. She appears to be well-liked, which is no surprise as she is extremely supportive and very accessible to all staff members. Her leadership style is collaborative. "One of the strengths of our building is the cooperation in and among committees. I love dropping in on their meetings and seeing all of the sharing of ideas." She tries to involve as many people as possible in decisions, certainly interacting with all stakeholders. She makes people feel welcomed in her building and

likes to enjoy the same feeling when entering classrooms. "I want everyone to enjoy coming here" she stated more than once.

A fifth year educator, Carter serves in his first administrative position as an assistant to the secondary principal. This is his first administrative position. Carter is a white, divorced father of two children. Teacher empowerment remains his primary focus. "When I meet with a committee chair, I always make sure they know that I have the utmost confidence in their ability to complete the task, and complete it well." Carter interacts with students and parents as often as possible, often citing the time-honored adage "Don't let the first time you talk to someone be about something bad" to fellow staff-members. Carter is extremely comfortable in dealing with people, and most staff seemed eager to discuss issues and gain his perspective. Carter is concerned about inferior academic performance, and apparently willing to go great lengths to avoid it in his building.

Darlene is in her second year as elementary principal and her fifth year in education, all within District 1. The fact that she was viewed as being somewhat weak in the classroom by her peers still influences her ability to serve as the building's instructional leader. During observations, a noticeable lack of respect on the part of some staff members during meetings led to inquiries that substantiated this difficulty. "I still remember what she was like as a teacher" a subordinate confided. "I go to fellow staff. I find it more useful" said another.

The board members in District 1 both came from governmental positions in their vocations and brought their comfort with bureaucratic hierarchy to their roles in district decision-making. Ed has served as president of the board for four years and has been on

the board for six. He is a white, middle-aged father of two children. Ed has a Masters degree and works for the State Department of Higher Education. Fred is a white, married, middle-aged father of two and works with Migrant Education. His former experiences with education from a state and federal perspective is shown in the breath and depth of his responses. Fred has been on the board six years and served as vice-president for the last two. "What does the research say about that?" is frequently heard from one or both as the board entertains a new subject.

The backgrounds of teachers interviewed in District 1 were complimentary in that one had recently completed all administrative coursework and was preparing for the state certification examination for administration. All three teachers were interviewed in their classrooms and appeared to be very comfortable with the process. Body language reflected their level of relaxation, along with occasional laughs and interrogatories on their part as to the progress of the study. Interestingly, the levels of organization in their responses seemed to be reflected in the arrangements of their rooms and workspaces. For example, Ginger's room reflected her high degree of organization. As she had answered questions, making each point of her answer clear and concise and structuring them either by order of importance or of a timeline, her room was very structured with class rules , recent assignments and examples of superior work displayed prominently. Although not definitive proof that an organized room is indicative of an organized thinker, one could not but help note the relationship. There was certainly no definite true that the juxtaposition of this possible relationship held true.

Ginger is a white, female teacher in the upper elementary with fifteen years of experience in the district. A department chair and master teacher, Ginger has a Masters

in Administration and is a married mother of two children. "I give my kids my best. Each day, everyday. When I can't or won't, I should quit!"

During the follow-up interview, Ginger described in detail a formal curriculum meeting that she led. "We talk. The conversation is between everyone. We follow an agenda, but all are free to ask questions and offer ideas. The agenda we go from may have current topics such as recently released scores or upcoming assessments. Conversation is not directed towards the top. We are all striving towards a goal, and that is becoming better educators and better serving our students. These, and other meetings, give us a chance to work together towards these goals. The act of doing so makes us a much more effective building." This latter recognition that as a team works together towards a shared vision or common goal, they develop as a learning community and coalesce into a learning organization (Senge, 1990).

Henrietta is a single teacher in the secondary curriculum and has been with the district for twelve years and in education a total of eighteen years. "I love what we do here, the students and I. I love learning with them." She serves as a department chair and has no children. Henrietta is middle-aged and white.

Indigo is an older, married white female mother of two with thirty years within the district. Indigo has been instructor of the In-School Suspension (ISS) program for several years. "Children are changing. I guess it's the times, but they don't show staff the respect they did when I first started." Indigo has postponed retirement until her last child leaves graduate school.

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District 2 Respondents. District 2 administrative styles were uniformly authoritative despite the differences in amounts of experience. The superintendent of District 2 is Adam, a married white male with children and thirteen years in the district as its chief executive. Similar to Abe in District 1, Adam is very authoritative. Again, once Adam delegates a task, he is usually done with it. Adam is nearing retirement age. "I like what I call 'go to' people. Staff that you hand them the ball, so to speak, and you know they're going to score for you. When I find people like that, I just let them know what needs done and then get out of their way and let them do it." Subordinates verified that, and several seemed happy to be "go to" people.

Bob is a secondary administrator with few years experience. Bob is a white, married male with no children. Cindy, the assistant principal is a married mother of two, she is extremely outgoing and is also very much into teacher empowerment. She practices collaboration in her decision-making and remains extremely accessible to the entire secondary staff. Both frequently drop by committee meetings, but Bob seldom stays past a cursory hello and perhaps a glance at the agenda. "I like to listen to and be a part of the development process. That way when my staff comes to me with an idea or a

problem, I have a better understanding of where they're coming from" explained Cindy as to why she was present at so many meetings.

Dan is a young, white male, married and the father of a young child. He is in his second year of administration and his sixth year of teaching. Dan believes in teacher empowerment and attempts to practice collaborative leadership, making himself very visible and accessible to his staff, students and parents. Observation and interviews confirmed his inability to accept the final product without some of his own last minute alterations. "My staff all do a good job, it's just that as their leader I feel it my duty to add the last minute touches to make it even better" Dan explained about his behavior.

The president of the board was completely authoritarian in style, often treating subordinates as simply recipients and executors of directives rather than collaborators and colleagues. Meetings were conducted as processes of affirmation as opposed to opportunities of discussion. Earl was in his second year as board president but had held the position before during his ten years on the district board. Frank was in his third year on the board, first as vice-president, and was extremely supportive of Earl's agendas and leadership. "I am learning a lot from Earl," exclaimed Frank. "He's preparing me to run a board the right way."

The classroom teachers in District 2 were all anxious to contribute and appeared genuinely happy to be listened to and invited to participate. Gracia was in her fourth year of teaching upper elementary and was a white, single mother. Once inside her classroom, I observed several file cabinets and a large teacher desk with papers, books, and homework assignments stacked in piles. Papers of student work lined the north wall along with educational posters.

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Helen teaches communication skills for junior high and some secondary students. She is in her fourteenth year in education and her seventh year at District 2. Married with children, Helen is a white woman in her late forties. Her classroom exhibited a lot of student work, and during interviews at her school I observed that her students obviously were accustomed to finding her accessible and comfortable with sharing their personal concerns with her on a regular basis. "These kids are like family, sometimes good, sometimes bad. We all need to know there is somebody we can talk to, someone who cares. Nothing makes me prouder than when a former student calls or writes sharing some recent achievement." Helen went on to explain that similar communication was needed between professional staff. "I speak with my co-teacher informally several times daily. I've found that these, and the more formal conversations that occur in curricular meetings and specific academic meetings about a particular student, help us to see the whole picture and inspire us all to better utilize all available data when designing and implementing lessons." Helen further explained that this open communication helped to better explain the need for common, formative and summative assessments. "When we have a specific goal or a certain child's needs in mind, it helps us focus and quit quibbling about over testing and other worn out complaints."

Irene is a married white mother of three with twenty-six years of teaching experience, the last five in District 2. Teaching lower elementary, Irene serves as Curriculum Chair and MAP Senior Leader. Irene believes strongly that learning is an enjoyable experience and designs her classroom and curriculum to accomplish that end. "There is no acceptable reason that five year olds enter our systems anxious to learn and

in ten to twelve years more than half of them hate school and do not go on to become life long learners. We owe it to them, we owe it to society to do better."

Assessment of Data Collection Process

Interview data collection occurred in the form of initial interviews with eighteen respondents with twenty-one follow up interviews resulting of preliminary data analysis. Respondents were interviewed at their respective schools and at a time of their convenience. Agreed to interview schedules were adhered to with the exception of the School District # 2 interview schedule that was greatly accelerated due to a snow day. The certificated staff who had agreed to be interviewed were present and having no students, were agreeable to proceed with the interviews. Notes made from the analysis of observations and documents were utilized peripherally to further guide interviews and corroborate respondents' information.

Research Questions

The following research questions were developed to guide the research:

1) In what ways do districts use data to inform decisions around curriculum and instruction for student learning?

2) What factors impede developing and implementing curriculum and instruction for student learning?

3) What factors facilitate developing and implementing curriculum and instruction for student learning?

Presentation of Findings

Five major themes were generated through analysis of the collected data. These five themes are labeled: Resources, Curriculum Development, Assessment, External

Requirements and Leadership. Analysis also yielded sub-themes within each of the

major themes. Differences and similarities across the settings were also highlighted. To

support and clarify the research findings, relevant data strips drawn from interview

transcriptions, observations and documents are referenced. Due to the complex nature of

certain responses and indicated practices, some findings crossed thematic boundaries.

Examples of blurred boundaries will be highlighted within each section, as appropriate.

Resources

The first theme addressed is that of Resources. A school district is driven by its

resources, including personnel, student demographics, geographic location, and many

other measurable assets. Embedded within this larger theme are two sub-themes: 1) Time

and 2) Funding. Funding became separated into those funds used to invest in outside

resources and those used to compensate staff already within a specific district.

Time.   While viewed as a temporal resource, time was difficult to completely

separate from the funding issue. Staff in both districts believed that they needed more

time to prepare and that additional allocations of this important resource should be

compensated. The use of the term "timeline" was frequent among respondents in both

districts. This term was used by board members, classroom teachers and administrators.

Timelines were seen as ever-present pressures too often interfering with the day-to-day

goals and operations of the school.

Henrietta, a classroom teacher in District 1, saw the effective use of timelines as

the key to success in her classroom. "I literally 'work the plan' as I go through my day,

so planning the work must include establishing timelines." Fred, a board member from

the same district, viewed the resource of time as the essential framework for the inclusion

of all teachers and parents in the education of their children. "There is so much to do within a school year and within each week, we must consider time as a limited resource to be allocated with great care." Further elaborating on this same theme, teachers Ginger and Indigo in District 1viewed time as the limiter of Professional Development Committee meetings and the decisive factor in district commitments to teachers' work with Grade Level Expectations (GLE's). Reviews of support documents revealed that many committee meeting agendas included timeframes along with specific agenda items. Building principal Cindy from District 2 saw both necessity and opportunity for the inclusion of effective time-management in the professional development of all staff. "Covey's 7 Habits greatly affected my use of my time, and this is just one example of the practices we need to embed within our staff."

The use of the Electronic Alignment Tool (EAT) by staff is limited by both time and funding. Districts train teachers to effectively utilize this data warehousing software effectively and must have the time for the training, the staff to accomplish the training and then time for teaching staff to apply this training. In District 1, curricular training was effectively accomplished with the use of Late Start Tuesdays (LST), a program that brought students in an hour and forty-five minutes later one day each week in order for staff to focus on academic issues. These late start days have been found to be far more effective than the former practice of early dismissals a few days each semester. Ginger noted the increased productivity of these scheduled mornings. "No matter how hard I would try, early dismissal days I would almost crash when the students left. I was spent. Now, we get a lot done those mornings and somehow I find the energy to complete the day with my students. Maybe kids are more inspiring than staff!"

The purchase of the Electronic Alignment Tool (EAT) technology is one of those areas that crosses both resources sub-themes and ventures into other of the major five themes. EAT is a data warehouse that stores and organizes all district curriculum including instructional activities and assessment strategies while aligning them with state mandated grade level expectations (GLE's). The allocations for EAT could easily be considered under the theme of Curriculum Development because the importance of the software housing the district's entire curriculum weighs as heavily as its budget impact. Many other topics under this theme could be considered under Curriculum Development, as well. Examples include allocations of resources for Professional Development in the areas of Curricular and Instructional Improvement and the alterations to the schedule for Late Start Tuesdays. This is one example of the blurring of thematic lines as data are analyzed and assigned.

Funding. Betty and Carter from District 1 mentioned funding in relation to academic decision-making and in reference to the quality of that process. "It costs significant money to reimburse staff for collaborative time, and the technology to assist the process isn't cheap" reminded Carter. Ed, president of the board from District 1, also mentioned funding as an important and overarching issue. Betty was in favor of increased funding for teacher workshops to be held in-house, along with more funds available for teachers to attend appropriate training opportunities off campus. This secondary administrator focused on opportunities for training staff in effective curricular review and revision, emphasizing the importance of ongoing curricular development at all levels.

Unlike Betty's focus on off-campus training, District 2 staff Irene, Helen and Gracia sought more funding for teacher training to be done within the district on-site. "Why send our money out of state or even out of county?" inquired Irene, expressing sentiments shared by her colleagues. District 2 building administrator Cindy was concerned about maintaining the quality of professional development workshops. "I prefer to stay in-house or close to home as long as the quality of the impact on actual student learning remains high. Results mean more to me than convenience."

These district 2 teachers also expressed an interest in being paid to work during the summer on such activities as curricular alignment and lesson preparation. Irene volunteered weeks each summer to do such curricular revisions and noted "It would be nice to at least be reimbursed travel money from home to school for all of this work!" Ginger, a classroom teacher from District 1, expressed a desire to be funded to write her own curriculum. This same teacher was extremely concise and deliberate in her responses and displayed the same level of organization in her classroom and workspace that she exhibited during discussions.

Because they represent significant investment of district funds, time management tools such as the Electronic Alignment Tool can be considered as funding issues. Both District 1 and District 2 chose to fund this tool, but such allocations affected the entire budget. As Superintendent Adam from District 2 remarked, "You can only spend a dollar once!"

Leadership style impacts both sub-themes of the Resource theme heavily, as it does the other four themes. The very allocation of resources is dependent upon the leadership of the administration and board, with time and funds being made available to

those projects that are more in keeping with administrators' and board members' priorities. Leadership preferences help determine whether more funds are spent to bring in outside trainers for onsite workshops or to send staff off-site to conventions and professional meetings. Leadership helps decide whether long-range goals are addressed or the emphasis is placed on a possible quick fix. The data suggest that board members with bureaucratic backgrounds were more focused on expediency that curried immediate public favor. District 1 Board President Ed spoke of the importance of public support. "You have to have the community behind you, the quicker the better. Time allows unresolved problems to become huge. People must know you have an answer." The administrator with such an authoritarian style prioritized events and allocations as he alone viewed them. District 2 Superintendent Adam reflected the views of both superintendents when he responded that "Every school district has one superintendent for a reason. Any institution must speak with one voice if it intends to be heard."

To some extent, leadership is an integral part of all of these themes. Review of support documents, interviews and notes from observations show that all five themes mesh into an umbrella of educational design and that no sub-theme or related topic is truly independent of the other themes being utilized to frame these findings.

Curriculum Development

"Curricular is what drives instruction!" These sentiments of District 1 classroom teacher Indigo capture the importance of this theme, and were echoed by other staff from both districts. Indigo further defined curricular development as "the process of establishing educational goals and then creating lesson plans, including the selection of materials and instructional practices." District 2 lower elementary teacher Irene sees

curriculum development as "The way we introduce children to the world of learning, helping them to be able to integrate their already existing knowledge base with the larger one that surrounds them. Activities must be planned that build upon their natural inquisitiveness and are structured in a way that each of them may achieve some modicum of success." Helen, the communications teacher from the same district sees curriculum development as "the creation of instructional objectives that will enable students to actively engage the environment around them." In Curriculum Development, sub-themes include Management and Process.

Management. Although respondents, building administrator Bob and classroom teacher Gracia from District 2, perceived a diversified authority being in control of the development of curriculum, overwhelmingly administrators and board members in both districts viewed the management of Curriculum Development as a very much top-down process with ultimately the responsibility of implementation resting with the classroom teacher. The administrator Cindy in District 2 tended to shift the responsibility between committees and teachers as individuals, but remained adamant that classroom teachers must play the final role.

Teacher responsibility included what secondary principal Cindy from District 1 referred to repeatedly as "teacher buy-in." Teacher involvement was seen as being crucial, from design to implementation and as classroom teacher Helen from District 2 said, "It's just the responsibility of all staff," referring to classrooms teachers within each class and not those on committees alone. Cindy from District 2 emphasized the importance of all concerned having extremely high expectations.

Process. This last comment from Cindy also applied to the sub-theme of Process. The management of Curricular Development, and its process of execution, creates an unbelievable amount of frustration among staff, classroom teachers and administrators alike. Betty, the secondary principal from District 1, spoke of the importance, and sometimes lack, of teacher follow through. "Lessons are taught, homework assigned and grades recorded, but then nothing else happens. The same lessons are taught in the same exact manner a semester later, and again the same low scores are recorded!" Classroom teacher Irene from District 2 made the same complaint. "We have materials and lessons that are not motivating our kids, yet we continue to use them."

The theme of Curriculum Development is a good example of themes and sub-themes having blurred borders. Curriculum Development is tracked through the use of Educational Alignment Tool software and data from the internet.   This software package is part of the process of managing Curriculum Development, but also weighs heavily on the budget and so impacts Resources.

Curriculum committees are established in both districts, with their major responsibilities including the oversight of curricular review and its subsequent revision. Teachers act in concert and individually in respect to directives from these committees. Personnel from Districts 1 and 2 were in agreement as to the importance and consequences of actions taken under the auspices of Curriculum Committees. Decisions led to the development and implementation of lesson plans. "Align it, teach it, test it!" was the enthusiastic response from classroom teacher Helen from District 2, making reference to handouts she had been provided with at earlier curricular meetings.

Likewise, several responses of a similar nature showed both an enthusiasm and a frustration with the "Never ending chore!" of this important task.

These committees make reports and recommendations to the boards in both districts. Often these recommendations include which new textbooks to purchase and when. Minutes from Curriculum Committee meetings and subsequent minutes from District School Board meetings in both District 1 and District 2 corroborate respondents' indications that new text purchases are linked to their specific recommendations. Curricular changes being suggested are School Board agenda items each spring. Board members are integrally involved in the discussions following the principal's presentation, but representatives from both districts admitted that rarely did they not follow principal recommendations concerning curriculum, particularly when accompanied with support from the superintendent. As school board president Earl from District 2 succinctly put it, "That's what we're paying them for!"

Much of Curricular Development is dependent upon the actions of individual staff members, and these actions often become integral to the execution of their specific job descriptions. As classroom teacher Indigo from District 1 reported, the parameters of these descriptions frequently come from either the administration or the governing board. Again, leadership style impacts on the practices of this theme. Leadership style will often define the parameters of resources allocated to curricular development as well as establish the guidelines for educators to work within.

Assessment

Assessment is the third theme that frames the findings of this investigation. Within this theme are three sub-themes: Instruments, Management and Analysis. As the

overarching concept of this theme, assessment encompasses all aspects of determining student performance. Assessment includes students as individuals and as part of a specific demographic. Assessment reviews annual and sustained trends of performance.

Instruments. Both District #1 and District #2 utilize the scores derived from the Missouri Assessment Program (MAP), the American College Test (ACT), and the Stanford Achievement Tests 9/10. District 1 secondary principal Betty stated that the greater specificity of the MAP motivated their district to examine specific lessons and instructional designs, thus allowing for curricular changes to address the areas of concern. "The exactness of MAP results allows us to go back and closely scrutinize the lessons applicable to that objective." Classroom teachers Helen and Gracia and administrators Cindy and Dan from District 2 attested to the test being designed specifically for Missouri students as one of its strengths. Administrator Betty and classroom teacher Henrietta from District 1 remarked they were familiar with the instrument and thus more comfortable with its administration. Fred, a board member from District 1, was leery of over testing and "test burn out" and persuasively attempted to argue the case for the administration of the MAP alone.

Respondents from both school districts cited the American College Test (ACT) as an important component of their assessment process. District 2 classroom teacher Helen remarked "the national norming of this instrument makes it invaluable to accurately and objectively assess how our students are performing." Similar remarks were made about the Stanford Achievement Test. One concern consistently expressed by staff and especially by board members from both districts was the effective teaching of reading throughout the curriculum and how to assess it. Possibly because of her role as a

communications instructor, Helen repeatedly emphasized that "reading and listening

skills should be introduced and reinforced in every single subject." Although no

questions directly solicited the prioritization of assessment objectives, more than one

respondent in District 1 echoed the concerns of the elementary principal that "reading

counts most!"

Classroom teacher Irene in District 2 did note the increased testing for children

having Individual Educational Plans (IEPs) as prescribed by Federal statute. Although

mentioned by only the single respondent, it is worthy of note due to the specificity and

complex training required for administration and significant cost of many of the

instruments used for these individual assessments. A district budget can rapidly be

skewed when demands are made for these exceptional students. Superintendent Adam

from District 2 noted "Testing costs for this segment of the student population have risen

higher than even health insurance, constantly cutting into the potential budget for other

classes and programs."

Management. Data are managed through the Department of Elementary and

Secondary Education's (DESE) Crystal Reports Internet service software. This software

replaced the original DESE system Clear Access. Both districts utilized this tool to some

extent, training teachers in its usage and also in the importance and process of

information security. Board members in both districts mentioned their anxiety about "the

wrong people getting access to this information." District 1 also utilizes Tetra Data, a

software package that can be privately purchased. This data management warehouse

software tool allows for more widespread and diverse information to be tracked by

educators. District 1 educator Indigo commented on the wide range of possibilities of

this program "if only she had more time." Once again, another theme ventures over and we must consider resource allocation integral to a discussion of assessment. As noted before, leadership style and subsequent prioritization impacts on all of these themes, with assessment certainly no exception. Superintendent Abe considers "funds should be directed specifically to address already existing state mandates." This feeling that the state has already identified the appropriate learning objectives and their prioritization leads to his directives to classroom teachers and building principals "minimalize unnecessary testing as possible." Building administrator Cindy from District 2 has a more collaborative style and encourages classroom teachers to "find out as much as possible about each of your students" and subsequently encourages more resources allocated to assessment because of this more inclusive leadership style.

Analysis. Individual teachers analyze student testing data for their respective classrooms and use their findings to assess both individual students and the class as a group. Student data are also collected, assessed and analyzed on group levels. This group assessment may be done by groups of teachers within a grade level or specific curricular area. MAP scores are a main topic among staff as results come in for both districts. Classroom teachers from District 1 comment that these test scores are the results most eagerly awaited, as teachers are all anxious to see if new curricular alignment and teaching strategies for the year have paid off. The upper elementary teacher from District 1 compares these results to "sports scores that let coaches and players know if they're on the right track!" Performance irregularities are tracked and possible curricular weaknesses are identified. The process is quite similar in both districts with the most significant difference being the use by District 1 of the Tetra Data software.

Scores of students are reviewed to determine their progress as individuals and then as groups and subgroups. Although this analysis is done much the same in both districts, the Tetra Data program makes identification of subgroup deficiencies much less troublesome and much more accurate in District 1. In this district, the participative leadership style of the secondary principal invites a high degree of collaboration among teachers throughout the curriculum. The District 2 administrator is more of an authoritative leader and the emphasis is placed heavily on the preparation of results for boards and parent groups.

External Requirements

External requirements were first divided into federal and state. External requirements are defined as "those parameters given to us by forces outside our immediate control." District 1's board vice-president Fred's comment summed up the reality and attitude of both districts' leadership. The two sub-themes within this theme include: Federal and State.

Federal. The No Child Left Behind (NCLB) federal legislation was the foremost concern of the majority of the respondents, mentioned in concert with the level of intrusiveness it had reached and the amount of "extra work" it had generated for classroom teachers. More than one administrator mentioned the constraints the legislation had placed on their budgets, with board member Frank from District 2 wondering "how much longer will this thing last?" Minutes from both districts verify that some aspect of this federal legislation is a frequent topic of discussion at more than half the board meetings.

State. State legislation and regulations are the next set of external requirements considered. Many of the state requirements were in fact driven by the federal NCLB legislation. These "crossover hurdles" included test scores and other measures of minimal acceptable performance. A frustration voiced by school board member Fred from District 1 was the constant change of the standardized goals and that since the "so called standardized goals are forever changing" resources must be increasingly committed to meeting these requirements. District 2 board president Earl compared the process to "a building that never gets built!"

Betty, secondary building administrator, from District 1 did recognize that these mandates, even if changing in their construction, were consistent in their overall goals. This district recognized that the goals in general had been very consistent, starting with the Basic Essential Skills Test (BEST) and the Missouri Mastery and Achievement Test (MMAT), these tests were state mandated instruments to assess and help analyze student achievement against a set of specific objectives.   "We have been trying to establish formal parameters to assure the increased performance of our students. That's a good thing. A very good thing!" Administrators in both districts recognized the importance and inevitability of objective accountability in today's educational environment.

The Missouri School Improvement Process (MSIP) was legislatively mandated by the state and encompassed another set of external requirements for both school districts. This program, along with the Missouri Assessment Program (MAP), helps to monitor student progress. "MSIP just adds more for us to track" explained District 1 board member Ed plaintively. Classroom teacher Ginger from District 1 saw MSIP as "assuring school districts are doing everything in their power to better educate and

protect students." Henrietta, another classroom teacher in the same district was very much in favor of the "high standards" now required by these processes. This discrepancy in responses reflects the diverse levels of acceptance of external mandates by respondents within these two districts.

"The CSIP we update and revise annually helps to keep us on track and our 'eye on the prize'" said administrator Betty from District 1. The Comprehensive School Improvement Plan to which she referred is an external requirement mandated by state law, affecting both districts. Staff from both districts expressed mixed feelings about the "mixed blessings" of this process. "These plans drive the creation of common academic assignments and instructional activities for our students" remarked Ginger from District 1. Board member Frank from District 2 viewed the CSIP process as one of the more important duties of the board. "This is what the public has chosen us for, to oversee this review process of our local school."

The leadership styles at both districts impact the reactions and responses to these external requirements. The participative style of the secondary principal and the sometimes transformational style of the superintendent in District 1 combine to support a very collaborative environment with a considerable emphasis on the emotions of all students and staff involved.

Leadership

The three sub-themes within this fifth theme are the three types of leadership: participative, transformational, and transactional. All three types were displayed at one time or another by various respondents. These types became obvious in the interviews and district documentation, as well as in the observations, with the responses of staff and

board members describing their relationships and interactions with colleagues, both supervisory and subordinate. Particularly in follow-up interviews, respondents provided more detailed examples of administrative behaviors that allowed for greater insight into their types of leadership. Detailed descriptions of staff meetings and one-on-one interactions with administration further allowed for characterization of their leadership type.

Participative Leadership. The most common style that emerged from the data was that of participative leadership, though transformational leadership was close. The interviews revealed those leaders particularly in District 1 invited their subordinates' opinions, treating them much more as peers than as subordinates. "My staff see the needs far sooner than we get scores back" reflects the feelings of District 1's secondary principal Betty and the value she places on the abilities and observations of her classroom instructors. Notes and minutes from curricular meetings support this view, revealing a staff very comfortable in offering design and implementation options concerning instructional delivery. Other documents such as board minutes further supported this. As respondents discussed staff and committee meetings, teachers in both Districts 1 and 2 felt comfortable, offering their own solutions and suggestions. However this comfort was evidenced to a greater degree in District 1. These similarities and slight variances in levels of participation were confirmed by observation of meetings and staff interactions.

Teachers in both districts obviously enjoyed the empowerment they gained by being so involved in curricular decisions. Staff in District 1 and District 2 not only believed better decisions were made by the increased involvement of classroom teachers, but also felt that the execution and implementation of academic decisions were enhanced

by their increased sense of ownership. Again, this sense of ownership was observed and

noted at a higher level in the responses of District 1 staff, particularly in reference to their

administration and supervision. "We address things as a team" noted Ginger from

District 1. "Administration looks to us for creative solutions to problems."

This feeling of cohesion represents the "sense of family and mutual vision" possible

when staff members are encouraged to analyze their strengths and build on them

(Andrews, Basom & Basom, 1991, p. 96).

Leadership styles were present in the behaviors of classroom teachers, as well as

administrators, whether in their interaction with colleagues or with students and parents.

District 2 teacher Helen constantly stated the importance of "involving students in the

direction of their learning adventures, making sure that they know their desires and fears,

dreams and aspirations are important to me and to the learning process." This

involvement of students and the opportunities constantly being created by District 2

teacher Irene to involve parents in their children's education are examples of participative

leadership.

Transformational Leadership. Transformational leadership styles were almost as

common in both districts, and viewed by more than one board member as responsible for

the increased output of instructional staff as they sought to please obviously trusted and

admired supervisors. This effort to please was seen in remarks such as District 1 teacher

Henrietta's "I don't mind working harder when I know its appreciated. I don't ever want

to let down my principal when they've asked me to do something." Such commitment

may perhaps have been best reflected in two ways: 1) the commitment to discussions and

meetings concerning MAP results and 2) the amount of time and energy teachers were

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willing to provide to create necessary instructional revisions to address areas of identified weaknesses. These activities were observed to occur in both districts.

Superintendent Abe practiced transformational leadership from the central office of District 1 by articulating a clear vision and remaining confident it could and would be accomplished, although he remained somewhat authoritarian with his immediate administrative team. Secondary principal Betty says of his supervision "His confidence in my abilities makes me try harder and risk new strategies." Elementary principal Darlene was "appreciative of his support and the way we are always celebrating the completion of milestones in the district."

Other examples of transformational leadership impacting academic decision making were exemplified when the staff of both districts acted in concert to meet MSIP standards and gave of their own time to place the needs of the school as an organization, at least temporarily, above their own needs. This is in keeping with Yukl's definition of transformational leadership, where individuals are induced "to transcend their own self-interest for the sake of the organization" (1998, p. 325). Numerous respondents made similar remarks to that of the District 1 board member, who when asked if all the trouble of MSIP and creating a CSIP were worth it, replied "Of course. After all, it's our school!"

Helen and Irene from District 2 shared in their principal's constant celebrations of student and teacher success. "Cindy is frequently in my classroom to congratulate some student on a recent achievement. Typically it is an academic accomplishment, but she is not above celebrating some recent sports victory. Staff and students get little notes about jobs well done!" Helen admitted she tries hard to make her administrator feel welcome

in her room, but notes "Cindy is in someone's classroom all the time." Irene praised her administrator Dan for "attending practically all my parent get togethers."

Transactional. The central administration of District 2 exhibited transactional leadership with dictates such as "If we do not pass MSIP, we will not have jobs." and an emphasis to building administration to identify and address "poor teaching" with written correctional plans, if necessary. Coming in the form of "job targets" this latter is an example of transactional leadership through passive management by exception and seemed to have no more positive impact in practice than research would indicate (Yukl, 1998). Examples of active management by exception were slightly better received when classes "were offered rewards for good test performance."

Summary

The purpose of this study was to ascertain how data were being utilized in two rural Missouri school districts. Representatives from both districts were chosen to best represent the demographics of each district. The respondents chosen included administrators, teachers and board members from each district.

Interviews were conducted on location in the two school districts and included a series of open-ended questions designed to elicit information within the parameters of the three research questions that framed the study. Interview data were then coded and grouped for similarities. Data were organized and presented in a thematic, narrative manner to address how data were being utilized to inform decision making about curricular and instructional development, as well as what factors either facilitated or impeded such development.

As responses were subjected to axial coding, five distinct themes became apparent. Although some interview responses and observations provided data that fell across more than one of these main themes, all data still fell in this framework. These themes were as follows: Resources, Curriculum Development, Assessment, External Requirements, and Leadership. Data were then presented within the framework of these themes, with similarities and differences between the two districts noted. To some extent, leadership is an integral part of all of these themes. Review of support documents, interviews and notes from observations show that all five themes mesh into an umbrella of educational design and that no sub-theme or related topic is truly independent of the other themes being utilized to frame these findings. Because of an increased impact on the other four themes, Leadership styles were discussed to some extent within the other themes.

CHAPTER FIVE

FINDINGS, CONCLUSIONS AND IMPLICATIONS

Introduction

The fifth chapter is organized around five sections summarizing results of data

collected in this study. The first section provides an overview of the study that includes a

review of the problem, the questions that guide the study, data collection methods, and a

description of the population. The second section of this chapter includes the findings

and is comprised of the analysis of the data presented in chapter four. The third section

presents conclusions within the framework of the research questions and compares the

findings of this study to earlier research previously reviewed. The fourth section covers

practical implications of this study as they relate to the issues of curricular and

instructional development and the role played by the use of data in decisions pertaining to

such development. The fifth section addresses the implications of this study as they

relate to future research that would further expand and increase the body of knowledge

pertaining to the use of data in decision making concerning curricular and instructional

development.

Summary of the Study

The No Child Left Behind act signed into law in 2002 increased the attempts at

governmentally imposed accountability in our public school systems (Standerfer, 2006)

and created new levels of data collection about students as individuals and as part of a

larger student body (Jones, 2006). This increased body of data brought about the need

for better collection and retrieval systems (McIntire, 2002) and improvements in the

evaluation of academic decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been a part of organizational learning and improvement for some time (Scholtes, 1994; Senge, 1990), this increased attention focused on the effectiveness of such evaluative review cycles (Rudalevige, 2003). Problems in assessment have been identified (Jones, 2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings, 2006). The fact that the issue has been addressed is no indicator that further problems do not still exist (Spellings).

The problem identified in this study was the lack of research on the effective use of data in the decision making processes utilized by Missouri schools. The purpose of this study was to examine how the use of data informs thinking and drives academic planning in rural Missouri school districts. The research questions were framed to assess the specific data collected and the specific roles of school personnel involved in that collection and analysis. A comparative case study design was used to expand the format of inquiry, with document review and personnel interviews used as the primary procedures used to collect data. Data were also gathered through observations in the field. During both interviews and observations, precautions were taken to ensure the comfort and confidentiality of the person agreeing to be interviewed or those participating in the meeting being observed. Of the types of documents available, the study focused only on official documents. Analytic procedures included the use of open and axial coding, with measures taken to ensure the trustworthiness and transferability of the findings.

The quality of instruction students receive as a whole and as individuals is greatly impacted by decisions made by practitioners and policy makers at various levels of the

education enterprise (Petersen & Young, 2004). By tying funding to documented performance through standardized testing, the implementation of NCLB has significantly impacted this decision making dynamic (Bracey, 2005). The data that result from increased testing are gathered, disseminated, and later used in the decision making process. The purpose of this study was to examine how the use of data drives academic planning in rural Missouri schools by exploring and comparing the processes in two rural Missouri school districts. Previous research has identified the importance of this process in larger schools (Blink, 2005), as well as the need for examining, evaluating, and revising this process in all school districts that purport seeking to become true learning organizations (Jones, 2006; Learning Point, 2004; McIntire, 2002; Senge, et al., 2000). The following research questions were developed to guide the research:

1) In what ways do districts use data to inform decisions around curriculum and instruction for student learning?

2) What factors impede developing and implementing curriculum and instruction for student learning?

3) What factors facilitate developing and implementing curriculum and instruction for student learning?

The study was carried out in order to discern answers to these questions and to provide a foundation for further research, as well as to determine present implications of the knowledge gained in this study.

Findings

As all data were subjected to open and axial coding, five distinct themes became apparent. Although some interview responses and observations provided data that fell

across more than one of these main themes, all data still fell in this organizational outline. These themes were as follows: Resources, Curriculum Development, Assessment, External Requirements, and Leadership. Data were then presented within the guidelines of these themes, with similarities and differences between the two districts noted. Due to an increased impact on the other four themes, Leadership styles were discussed to some extent within the other themes. All findings are discussed within these five themes while the three research questions serve as the overarching framework for their presentation.

Findings to Research Question One

In addressing the first research question concerning the ways districts use data to inform decisions around curriculum and instruction for student learning, both District #1 and District #2 utilized the scores derived from the Missouri Assessment Program (MAP), the American College Test (ACT), and the Stanford Achievement Tests 9/10. Results of these standardized tests were monitored in both schools to determine how students were performing in reference to the parameters of the instrument's design and to locate those general areas where student performance was substandard or showed a trend of decline, with the greater specificity of the MAP being more useful in the specific lessons and instructional designs. This finding is in keeping with the research indicating standardized testing has been and is a part of the school curriculum (Blink, 2005) and that data are used to drive decisions (Craig, 2006) such as the design of lessons.

ACT scores in both districts were used in communications to the board and the community as an example of the dissemination of learning throughout an organization (Rashford & Coghlan, 1993). The recognition of the correlation between standardized test performance and classroom performance caused a significant number of the

certificated staff in both districts to compare annual results with classroom grades, noting

positive relationships as validation of their programs.

Examination of pertinent data by committees of staff and board members, as well

as administrators, serve as preliminary steps prior to academic recommendations being

made to the school board as part of a routine agenda item that in turn sparks discussion

among the board and administration. Such discussion is representative of an

organization's desire (Schein, 1992) and ability (Nonaka & Takeuchi, 1995) to learn. In

both school districts, boards typically support the administrative recommendations,

ultimately bowing to their levels of expertise (Morgan, 2006).

Teachers in both districts revise both curriculum and instructional design in those

areas where Grade Level Expectations (GLE) are not met. Analysis of data is done in

coordination with other teachers both within and outside traditional department structure.

MAP results are examined from the perspectives of groups and individuals. In the group

perspective, GLE's not met by the majority of the class being tested are the first academic

concerns targeted at both districts. MAP results are examined from an individual

standpoint to better meet the needs of specific children. Stanford Achievement Tests

9/10 results were reviewed in similar fashion, with emphasis varying from the

performance of individual students to the tracking of performance trends within a

particular group. The results of this standardized instrument were used in concert with

the MAP results and in like manner. Although the results of standardized tests had

frequently been used to categorize students (Abilock, 2004), they were used by these

districts in their attempts to define and revise curriculum (Jones, 2006). The processes

for the elementary levels were the same, with the sole difference from the secondary

procedures being the instruments utilized. Dibbles and Starr assessment instruments were used by both districts to assess student reading achievement. These privately developed instruments were chosen because of their compatibility and complementary characteristics when used in unison with state mandated assessments.

On the elementary level, Dibbles and Star assessment instruments are utilized to assess reading performance on a multitude of objectives. These instruments assess areas that are not covered by the other standardized testing instruments. Both districts include these assessments as part of yearly report to the community and board.

Teachers and administrators at both districts acknowledged that classroom scores from homework and testing within specific courses resulted in the most immediate instructional revisions. One teacher explained the value of reviewing the parameters and design of the homework or test itself. This finding was in keeping with research that supports the value of eliciting and utilizing data closest to the point of interest (Preskill & Torres, 1999). Principals and more than one teacher recognized the potential weaknesses of tests and the validity concerns of acting on scores from instruments that had not accurately assessed the objectives in question. Deficient vocabulary or inadequate levels of reading comprehension showing up as poor mastery of math or science skills was cited as another potential flaw of standardized or even teacher constructed assessment instruments. All of these assessment problems further reflected existing research (McIntire, 2002).

Principals and teachers shared their beliefs in the value of exploring other means of student assessment and thus enhancing student assessment by supplementing paper and pencil instruments with student interviews, observations, and oral reports. Board

members commented that they appreciated the additional measuring devices, believing them to be extremely helpful in considerations of retention. Special needs' teachers shared this sentiment, adding that observations and student interviews were much more helpful in identifying factors restricting a child's learning and gaps in the knowledge base of a child, both essential for appropriate successful design of strategies of instructional intervention.

Informal assessments such as interviews and observations provided the groundwork for further interaction among educators while addressing specific educational concerns about students. Conversations between educators were often the result of informal interaction when discussing students, but these conversational planning devices were furthered by the formalization of teacher interaction in mentor/mentee relationships and the execution of curriculum meetings.

Both districts utilize the Crystal Reports, an information warehousing system housed and maintained by the Department of Elementary and Secondary Education (DESE). District personnel can access MAP scores and identify scoring clusters over past years, and even though changes in the scoring of the MAP have occurred, trends indicative of both strengths and weaknesses may be identified in the different areas of the test's parameters. Both districts take advantage of these capabilities. The analysis of Crystal Reports is included in Administrative Reports to the School Board on an annual basis at each district.

The faculty and staff of District # 1 utilize data warehousing software from TetraData Corporation called EASE-e Data Analyzer™ to assist them with the analysis of data they collected. This software allows districts to disaggregate data from different

subgroups and recognize coefficients within this data to identify correlations of possible interest and concern. Teachers and administrators further analyze these correlations to identify relationships with elements subject to manipulation. Such manipulation may include instructional intervention strategies that allow for the possibility of improved academic performance in targeted areas.

The emphasis on warehousing data again reflects existing research suggesting the importance of better data collection methods and analysis (Jones, 2002) along with the need to isolate and remove impediments to more efficient application of the final analysis (Mercurius, 2005). Beneath the myriad of examples of responses that were quite similar in nature, a lack of a truly in-depth comprehensive plan to effectively tie assessment, in particular the standardized results, to significant changes in instruction seemed to emerge, again reflecting current research findings (Learning Point, 2004).

Findings to Research Question Two

In addressing research question two, which sought to identify impediments to the development and implementation of curriculum and instruction as they relate to student learning, respondents from both districts were in agreement on the top three. These top three impediments were the lack of funding, time, and training. Although most respondents focused on the positive aspects of curricular and instructional development, these insufficiencies became apparent during the interviews.

Teachers and administrators in both districts cited a lack of time as a barrier to substantial curricular development. Teachers and administrators acknowledged that much of the best collaboration came about through informal meetings but pointed out that finding time for such meetings is difficult to say the least. Even scheduled events do not

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provide adequate time for review of instructional materials and intense analysis of performance trends. Finding time was even more difficult when trying to meet the immediate requirements of an individual student. Special needs teachers voiced particular concern about finding adequate and convenient times to work in concert with regular teachers to react to the academic demands of their students. Time has been identified in previous academic performance studies as inhibiting effective use of data (Spellings, 2005).

Building administrators and teachers in both districts at some point in the interviews referenced the impact of adequate funding for the fiscal resources to allow staff to participate in such in-depth analysis of all pertinent student assessments, including the use of student interviews and observations, as well as peer collaboration about student needs. Funding is inevitably tied to the purchase of up-to-date software and the hardware required to run these more complex programs, to the auxiliary staff necessary to relieve teachers of the time needed to operate these programs, or to reimburse staff for these out of contract commitments of time and energy. Funding has been identified previously as a significant correlate to academic success (Bracey, 2005), whether used as an incentive or withheld as a punitive measure for academic noncompliance.

Lack of adequate training could be considered a separate impediment to the development of curriculum and instruction, although this inadequate training is closely related to lack of funding as well as the lack of time. The most glaring example may be in District # 1 where perhaps less than half the staff access and utilize the EASE-e Data Analyzer[TM] software, due in greatest part to their low comfort levels with its use. This

lack of comfort and resulting inability and non-desire to utilize this analytic tool can be traced back to inadequate training. Again, this poor utilization of a resource further reflects existing data from earlier studies (Argyris & Schon, 1978; Bolman & Deal, 1997; Scholtes, 1994; Ray-Taylor, Baskerville, Bruder, Bennett & Schulte, 2006) that support the premise that a direct correlation exists between effective training and an organization's efficient utilization of new information.

Teacher turnover was mentioned by administration in District # 1 as an obstacle to the improvement of curriculum and instruction. With a teacher turnover rate perceived as well above average, teachers remarked that the instability of committee assignments along with the number of beginning teachers entering the district each fall required additional effort by these beginning teachers and their more experienced staff to keep "curricular development on the front burner." One teacher in District # 1 responded during the interview that "her several years of classroom experience allowed her to better interpret and analyze her students' work" than when she first started. This observation appears to support the administration's feelings that not only teacher turnover but the significant influx of beginning teachers entering their district each year are, at least to some degree, an impediment to curricular development. This would be in keeping with current research indicating the students of more mature and stable educational staffs exhibit higher performance on standardized testing (Petersen & Young, 2004).

Another impediment that constrained curricular and instructional development was associated with the fact that student assessment many times was limited to only paper and pencil instruments. The files of students in both districts too often contained only objective testing data and were absent any writing samples or student observations.

Even when these latter items were included, they often were limited to isolated or sporadic coverage and hence offered little or no opportunity for longitudinal comparison. Again, this finding is in keeping with current research indicating that too many students' academic performance is tracked solely by isolated snapshots of objective testing (Gardner, 1999).

A final impediment indicated by the data was the applicability of the administrative and teacher leadership styles to the final results in the classroom. Although the superintendent of District 1 has an authoritative style of leadership, his passive follow through allows building principals to bottleneck instructional improvement. While principals and teachers feel free to offer and solicit ideas from all stakeholders, few of the ideas created are implemented to the extent that they bring about change. The somewhat passive style of transformational leadership of Superintendent Abe has not brought about effective change. This finding is in keeping with previous research that states all key decision makers must be committed to a specific action for sustained change to take place (Yukl, 1998). Teachers feel free to try different approaches, yet they are not directed by their building administration to thoroughly execute one approach. Building level administration was participative in leadership style in that they continually solicit staff input, but were perceived by staff to abdicate their responsibilities and the responsibilities of much of their instructional staff. This crucial oversight translates into poor instructional practice and less than satisfactory academic performance (Yukl).

In addressing research question three concerning the factors that facilitate developing and implementing curriculum and instruction for student learning, analysis of the data further support the impediments previously identified. Resources allocated in the areas of funding, time and training were all mentioned most often by respondents from both districts. Resources named ranged from special allocations of time, as with District # 1's practice of Late Tuesdays, to the use of Professional Development Days which are utilized similarly in both District # 1 and district # 2.

Both districts utilized visiting and hosting other schools and academic programs within their region, citing the increased collaboration as helpful in creating an environment of academic improvement, again reflective of current trends in research findings (Argyris & Schon, 1978; Ray-Taylor, Baskerville, Bruder, Bennett & Schulte, 2006; Reynolds, Murrill, & Whitt, 2006; Scholtes, 1994).

Curriculum Committees have standing appointments in both districts, with responsibilities ranging from the articulation of district wide instructional objectives to textbook selections in a specific department or grade level. These committees are also responsible for the purview of Grade Level Expectations (GLE) of the Missouri Assessment Program (MAP) and the identification of gaps between the scope and sequence of the curriculum and student performance.

The final factor identified by the respondents as addressing the facilitation of developing and implementing curriculum and instruction for student learning was the portfolio assessment of the student body. Portfolio assessment requires individual files being kept on each student. These files include recordable data from the standardized

and individualized testing, grades and examples of homework, and other written work. Notes from observations and interviews supplement these files and allow teachers a more in-depth profile of a child. This practice is in keeping with recent research (Gardner, 1999).

A behavior noted by the researcher that did facilitate developing and implementing curriculum and instruction for student learning was the leadership styles of administration and staff. Although the superintendent of District 2 practiced a transactional style of leadership which has typically been less effective in enhancing instruction (Yukl, 1998), his passivity and lack of follow-up on directives allows his principal freedom to all but ignore this direction. The building administration of District 2 was very much transformational in leadership style. By empowering their staff to share in the public vision of accomplishment (Johnson, 1996), District 2 administrators have enabled individual teachers to develop dynamic learning environments within their classrooms (Short & Greer, 1997). District 1's more authoritative style did not seem to invite similar empowerment of District 1 building administration, at least within the context of the district's administrative team.

District Results	District #1	District #2
Communication Arts 2006	Not Met	Met
Mathematics 2006	Met	Met
Attendance Rate 2006	Met	Met
Graduation Rate 2006	Not Met	Met
Communication Arts 2007	Met	Met
Mathematics 2007	Met	Met
Attendance Rate 2007	Not Met	Met
Graduation Rate 2007	Not Met	Met

Conclusions

The first conclusion drawn from the findings is that both districts actually exceed the federal and state mandates for the administration and analysis of standardized assessment instruments. This conclusion is in keeping with the research that shows standardized testing has been and is a part of the school curriculum (Blink, 2005) and that data were used to drive decisions (Craig, 2006) such as the design of lessons.

The second conclusion is that the results of the districts' data collection and analysis are communicated to the public and their representatives, both directly and indirectly. Public reports are issued to the District School Boards in open meetings and are made part of annual report cards. This communication is not restricted solely to the dissemination of data but also frequently involves a two way process where information concerning the levels of academic performance is also gathered. Such communication is in keeping with effective practices identified in research more than a decade earlier (Rushford & Coghlan, 1993).

The third conclusion from this study is that curriculum and instruction revision is a result of this process of analysis and communication. Committees and administrators, school boards and individual teaching staff revise instructional objectives and instructional materials and delivery based on the afore mentioned process. Textbooks are selected to address performance gaps that have been identified, the articulation of classes are manipulated to improve students' chances at increased performance levels. This practice is in keeping with previous studies (Jones, 2006).

A fourth conclusion drawn from this study is that the three most prevalent impediments to developing and implementing curriculum and instruction for student learning all deal with resource allocation. Inadequate amounts of funding, time and training were most often identified as inhibiting academic performance. Although at times designating a complaint into one of those three categories was difficult because of the interactive and entwined nature of the complaints, the gist of these complaints have been drawn from previous studies (Bracey, 2006; Gordon, 2006; Standerfer, 2006).

A fifth conclusion is that addressing these deficient allocations of resources has a positive effect on academic performance. This is the perception at least in the eyes of the practitioners and their governing boards (Bracey, 2005).

A sixth and final conclusion from this study is that accountability is a top down process, wherein those at the top of the administrative hierarchy have more input than those in subordinate positions. Although several respondents proclaimed their interest in the academic success of their students, the vast and overwhelming majority of references about improving the curriculum and instruction were in reference to meeting some federal or state mandate. Meeting federal and state mandates can be congruent to individual students' increased academic performance (Bracey, 2005). When building principals and or classroom teachers choose to accept responsibility and follow clear direction, organizational performance improves (Yukl, 1998). The gaps created by the lack of follow through by certain administrators allow for a lower performing type of transformational leadership to be implemented.

Implications

The first implication is that federal and state mandates being imposed on Missouri schools have possibly had a positive effect in that these mandates brought about educational analysis and reform that may otherwise have not taken place. This implication is not definitive, in that other changing conditions were not isolated and studied. With the majority of respondents framing their responses in some format or manner that consistently tied them to these mandated performance objectives, one cannot help but wonder in what reference schools would view adequate academic performance levels without these standardized assessment instruments and the emphasis on a district's performance on them.

Another implication is that concerning the objectivity of those responding to questions of resource allocation. Many peripheral advantages of increased resource allocations to the staff and governing body of a school district exist, and the potential biases of respondents were not addressed in this study. To its consequences such bias has been proven extremely difficult to identify in other studies (Bracey, 2005).

A final implication concerns leadership style and actual implementation. The question arises to how deep top-down leadership may actually be affecting, or not affecting, our schools. The degree that directives from a central office or a governing board are being followed is obviously suspect from these results. In the case of District 2, such relaxed oversight from the top of the administrative hierarchy does not appear to be a problem. In the case of District 1, the superintendent's transformational style was appreciated but not emulated by building principals and academic performance growth has not been as significant in that district. A participative style that allowed for a more

relaxed acceptance of instructional and supervisory responsibilities may appear to have led to substandard academic performance. Even administrator desire for acceptance could be in some part culpable for substandard performance.

Future Research

The findings and conclusions of this study reflected and supported the findings of previous research, as cited, and further elaborated on the role of data in academic decision making in two rural Missouri schools. These same findings and conclusions provoked other questions and concerns that can best be addressed through further studies and research. These issues and questions are as following:

1. What is the significance of staff tenure in the use of data analysis and subsequent use in developing and implementing curriculum and instruction for student learning?

2. What is the significance of administrative tenure in the use of data analysis and subsequent use in developing and implementing curriculum and instruction for student learning?

3. What is the significance of school board tenure in the use of data analysis and subsequent use in developing and implementing curriculum and instruction for student learning?

4. What is the significance of per pupil expenditure in the use of data analysis and subsequent use in developing and implementing curriculum and instruction for student learning?

5. What is the significance of proximity to College or University centers as opposed to satellite instructional opportunities in the use of data analysis and

subsequent use in developing and implementing curriculum and instruction for student learning?

Summary

The No Child Left Behind act signed into law in 2002 increased attempts at governmentally imposed accountability in our public school systems (Standerfer, 2006) and created new levels of data collection about students both as individuals and as part of a larger student body (Jones, 2006). This increased body of data brought about the need for better collection and retrieval systems (McIntire, 2002) and improvements in the evaluation and decision-making processes (Blink, 2005).

Although evaluative review mechanisms have been a part of organizational learning and improvement for some time (Scholtes, 1994; Senge, 1990), this increased attention brought about by NCLB highlighted the effectiveness of such evaluative review cycles (Rudalevige, 2003). Problems have been identified (Jones, 2006; Mercurius, 2005) and addressed with further implementation of NCLB (Spellings, 2006).

The parameters for the conceptual underpinnings were established by the human resource framework (Bolman & Deal, 1997) and the study of learning organizations (Morgan, 2006). The purpose of the study was to examine how the use of data drives academic decision making in two Missouri schools. Three research questions guided the interviews used to gather the data necessary. Limitations included no valid way to discern the quality of decision making of those interviewed and the limitation of the scope of the research to two Missouri schools. Key terms intrinsic to the study were defined.

I learned that leadership style impacts every aspect of at least these two educational organizations. Not only does the style influence and often dictate the academic planning paths chosen and followed, but also determine the types and degrees of interaction between educators. This interaction is the catalyst for and framework of organizational learning within an educational organization. As these interactions took place, and colloquial relationships developed, these school districts further progressed as learning organizations. Conversations between educators were often the result of informal interaction when discussing students, but these conversational planning devices were furthered by the formalization of teacher interaction in mentor/mentee relationships and the execution of curriculum meetings.

I also came to realize, through observations of others and introspective observation of myself, that leadership style can and does evolve just as readily and often in confluence with the evolvement of leadership skills.

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Appendix A

Informed Consent

INFORMED CONSENT

An Examination of Data Driven Decision Making In Missouri Schools

I am conducting a research study in which I invite you to participate. The purpose of this research project is to inform thinking about how two Missouri schools use data to drive decision making in curriculum and instruction. I expect the duration of your participation to be four months, beginning February 2007 and completing in June 2007.

Data will be collected for analysis and will be published as a dissertation. Data will be collected in three ways: interviews, observations, and documents. I will collect relevant documents and artifacts such as federal and state regulating polices of Missouri school districts as well as individual school board policies. I will conduct individual in-person interviews; interviews will be audio-recorded for data analysis. Each interview will take between 30 minutes to one hour. I will also conduct observations of school board and relevant curriculum and instruction planning meetings, I will make observation notes during meetings for later analysis.

Your participation is entirely voluntary. You may refuse to answer any question or choose to withdraw from participation at any time without penalty or loss of benefits to which you are otherwise entitled. This project does not involve any risks greater than those encountered in everyday life.

The anticipated benefit associated with your participation is the information gained concerning data driven decision making: the findings may offer educators information that can be used to improve decision making in school districts. Additionally, if submitted for publication, the findings of this study will give other educators an opportunity to improve education. The findings of this study will be shared with study participants and other educators.

Your confidentiality will be maintained, in that participants' names will not appear in the published study. Audio-recorded data and emails will be used only for data analysis and no other purpose.

I will maintain copies of all pertinent information related to the study, including but not limited to, audio tapes, written observation notes, copies of written informed consent agreements, and any other supportive documents for a period of three years from the date of completion of the research. The data will be stored in a secure location in my office, to which only I have primary access, to protect the confidentiality of the participants.

Thank you for your assistance. If you have any questions regarding the study, please contact Susan Wilderman at swilderm@callaway.k12.mo.us or by telephone at (573)310-3759 or Dr. Karen Cockrell (advisor) at cockrellk@missouri.edu or by telephone at (573) 882-8548. If you have questions regarding your rights as a participant in research, please feel free to contact the Campus Institutional Review Board at (573)882-9585.

Susan Wilderman, Doctoral student, Department of Educational Leadership and Policy Analysis, University of Missouri-Columbia, Principal Investigator

Informed Consent Signature Form

I have read the attached letter and understand my role as a participant. I agree to participate in this study as described.

_____
Participant's Name (printed)   Participant's Signature
Date

Appendix B

Interview Questions

Interview Questions

1) What is your role at your school district?

2) Do you presently serve on any committees involved with curricular or instructional improvement? If so, what are they?

3) In your role, what information do you gather that relates to the written curriculum and its revision?

4) What information do you gather that reflects on the effectiveness of the written curriculum?

5) How do you analyze this data to determine the effectiveness of the written curriculum?

6) In your role, what information do you gather that relates to the district's instructional strategies and their revision?

7) What information do you gather that reflects on the effectiveness of the district's instructional strategies?

8) How do you analyze this data to determine the effectiveness of the district's instructional strategies?

9) How much of what actions that you take in data collection and analysis are dictated by written policy and/or regulation?

10) In your present role, what measures can you take to initiate change in the written curriculum or in the district's instructional strategies? These changes may include the areas of data acquisition, analysis and/or process revision.

11) What resources are supplied by your district to help in the revision of the written
    curriculum and/or their instructional strategies? Include funds, time and training
    allocations in your response.

12) Which district personnel, including yourself, are involved in the change process
    in your school district?

13) What factors impede the development of curriculum? Include funds, time,
    teacher turnover…

14) What factors impede the implementation of instructional strategies?

Vita

Susan Gail Wilderman was born November 3, 1968 in St. Louis, Missouri. At the age of 11, she moved to New Bloomfield, Missouri when she attended New Bloomfield R-III School District and graduated in 1987. She then attended William Woods College (now William Woods University) and graduated in 1991 with her undergraduate degree in Elementary Education with a minor in Physical Education. Her first two years of teaching were with the Jefferson City School District. In 1993 she began teaching third grade at New Bloomfield R-III School District. Her Masters was completed in 1996 with an emphasis in Curriculum and Instruction. Course work for her K-12 administration degree was completed in 1998. She received her doctorate in Educational Leadership and Policy Analysis in December of 2007. She continues to work in the New Bloomfield R-III Public schools as the A+ Coordinator.