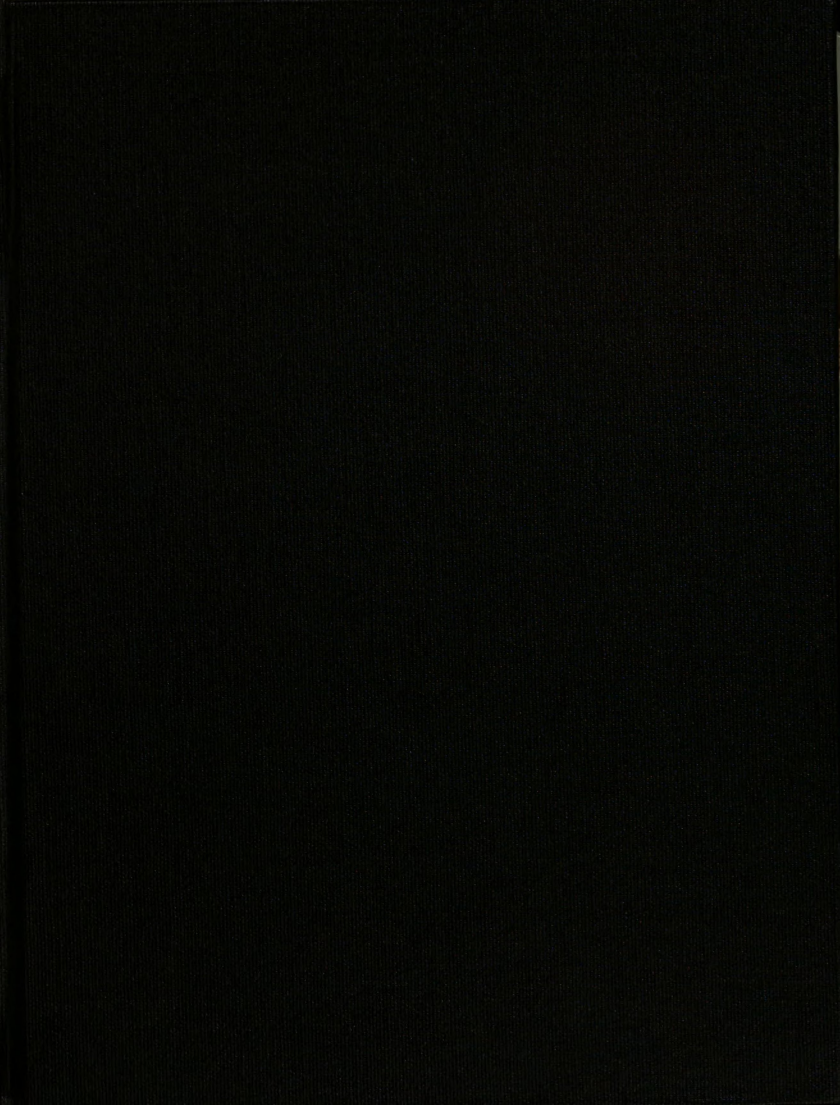




This is to certify that the

dissertation entitled

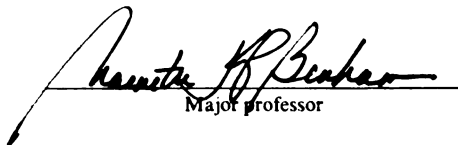
HOW COMPUTER TECHNOLOGY SHAPES
THE FORM AND CONTENT OF THE PRINCIPAL'S
WORK

presented by

CYNTHIA A. SAGER

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Educational
Administration


Major professor

Date August 27, 1999

LIBRARY
Michigan State
University

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.
MAY BE RECALLED with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE

**HOW COMPUTER TECHNOLOGY SHAPES
THE FORM AND CONTENT OF THE PRINCIPAL'S WORK**

By

Cynthia A. Sager

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Educational Administration

1999

T

demand

assist

comput

the use

underst

and con

In what

principle

Th

principle

methods

from the

leadersh

giving de

work of

provide

effective

literature

Th

ABSTRACT

By

Cynthia A. Sager

The work of the school principal is an increasingly complex and demanding job. The demands of this position have created a need for assisting the principals in their work. With the increasing development of computer technology in our society, the purpose of this study is to explore the use of computer technology by principals in their practices and to understand how computer technology does or does not shape the form and content of their work. This study will address the research question: In what ways does computer technology shape the form and content of the principal's work?

The researcher explored the use of computer technology by principals through both quantitative methods (survey) and qualitative methods (interviews and observations). The information that was gathered from this data collection allowed the researcher to look critically at the leadership and management tasks of the school principals, therefore giving details to the influence that computer technology is having on the work of the school principal. The query of how computer technology may provide principals with an avenue for increased organizational effectiveness during this turbulent time appears missing in the current literature.

The research in this study clearly indicates that principals are using

computer technology in their work, yet there is also a lack of dialogue among principals regarding computer technology. It is evident, though, that this use is almost as varied as the principals who participated in this study. It is apparent that principals have not had the opportunities to further their development of skills due to lack of access to updated equipment, software, and to training designed for principals.

Principals must be given support by their local districts and regional service agencies in order to help them understand the application of computer technology to their practices. Principals will not be able to apply computer technology to the complex tasks of their jobs without the following changes: local districts placing an emphasis on assisting the principals in learning these applications; universities addressing the computer training needs of aspiring principals; and principals themselves accepting and embracing the challenges that new technology brings to their practices. State of the art technology is available throughout our society, yet education and principals have not taken full advantage of these sophisticated technologies.

**DEDICATED
TO MY PARENTS**

***GOOD PARENTS GIVE THEIR CHILDREN
ROOTS AND WINGS***

***ROOTS TO KNOW WHERE HOME IS
WINGS TO FLY AWAY AND EXERCISE
WHAT'S BEEN TAUGHT TO THEM.***

Jonas Salk

Thanks Mom and Dad

Fr

project

possib

task I w

a fe ch

have ea

most pr

Tr

ass stan

more un

my very

to enter

me the e

class wa

incent v

learned

Benham

educato

receive

Dr Benh

I a

ACKNOWLEDGMENTS

Finishing this project has had an enormous impact on my life. This project has taken the focus of my life to places that I never thought possible, yet I have found great personal satisfaction in completing this task . I was once told by a professor that completing the Ph.D. program is a life changing event. I would not trade this adventure for anything and I have learned to learn again and realize that the knowledge I have gained is most precious.

This project would never have been completed without the assistance of my advisor, Dr. Maenette Benham. Dr. Benham has given me more time and energy than sometimes was humanly possible. I remember my very first contact with Dr. Benham. I was very unsure about my abilities to enter the Ph.D. program, but by the time I left her office she had given me the encouragement that I needed to pursue a life-long dream. My first class was with Dr. Benham and her abilities as a teacher gave me the incentive that I needed to continue in this program. One thing that I have learned as a result of my work with Dr. Benham is that I want to teach. Dr. Benham's example as a teacher has given purpose to my future as an educator. I have been told that the greatest compliment a teacher can receive is to have a student want to continue to teach others. This I thank Dr. Benham for.

I also want to acknowledge the cohort group that was created by Dr.

Bertram and

group of p

part of this

and review

with laugh

constant e

Ia's

for a low

Without th

project. A

and Lori.

of writing

and then

these goa

Benham and that I have worked with monthly for the last three years. This group of people is extraordinarily talented and I have felt privileged to be a part of this group. We have spent many hours writing, talking, listening and reviewing each other's work. At times this group has provided me with laughter and support, but most importantly they have given me constant encouragement.

I also want to thank Greg Shubel, Diane Boughton and Barb Clark for allowing me the flexibility that I needed to complete this project. Without their support at work I would have not been able to complete this project. A thank you must also go out to my friends Janet, Jack, DeAnna and Lori. Their love and support at times was a haven away from the rigors of writing. I must also thank Lori for teaching me to dream about my goals and then providing me with the support I needed in order to accomplish these goals.

LIST OF G

LIST OF T

CHAPTER

INTRODU

Intro

Purp

Stat

Sig

Con

Per

The

Te

Th

Diff

Th

Con

Res

CHAPTER

METHOD

Intro

Re

Da

Da

TABLE OF CONTENTS

LIST OF GRAPHS	ix
LIST OF TABLES	ix
CHAPTER 1	
INTRODUCTION AND OVERVIEW	1
Introduction	1
Purpose of Research Study	2
Statement of Problem and Need	5
Significance of Problem	10
Context of Study	14
The Changing Principals hip	14
Principal as Leader and Manager	19
Implications of Computer Technology Use for Principal Management and Leadership	24
Summary	31
Performance Domains of the Principals hip	32
Functional Domain	33
Programmatic Domain	40
Interpersonal Domain	45
Contextual Domain	48
The Four Performance Domains and Computer Technology: How Does Computer Technology Shape The Principal's Practice?	51
Diffusion of Innovation: Computer Technology and The Principal's Practice	52
Conceptual Framework	58
Conceptual Model	59
Research Questions	60
CHAPTER 2	
METHODOLOGY: RESEARCH DESIGN AND ANALYTICAL PLAN	
Introduction	61
Research Design	63
Target Population and Sample	64
Data Collection Tools	66
Surveys	66
Interviews	70
Observations	72
Data Analysis	73

Est
Lim
Sun

CHAPTER
PRINCIPAL
THE SUR

Intro
De
Con
Con
Pe

Nu
Nu

Tra
Op
Us
Ho
Ea
D.s

CHAPTER
PORTRAIT

Intro
Do
Gr
Ric
Pe
Lo
Bo
Ho
E

D

Ethical Considerations	75
Limitations to Study	75
Summary	76

CHAPTER 3

PRINCIPALS AND THEIR USE OF COMPUTER TECHNOLOGY: THE SURVEY

Introduction	77
Demographic Information from Surveys	77
Computer Use and Principals	81
Computer Technology Hardware	83
Performance Domains	84
Functional Domain	85
Programmatic Domain	87
Interpersonal Domain	89
Contextual Domain	91
Summary of Principal Practice	93
Number of Years as Principal and Self-Rating of Knowledge	94
Number of Years as Principal and Self-Rating of Confidence	96
Correlation: Self-Ratings of Knowledge and Confidence	98
Training	99
Open-Ended Survey Question and Perceived Effective Use of Computer Technology	100
How Do Principals Employ Computer Technology in Each of the Four Domain Areas?	106
Discussion of Survey Findings	109

CHAPTER 4

PORTRAITS OF PRINCIPAL USE OF COMPUTER TECHNOLOGY

Introduction	111
Doris: Getting Beyond the Door	113
Greg: A Friendly Step Forward	126
Rick: Creative Procurement	136
Peggy: The Proud Leader	150
Lois: Tools and Independence	161
Bob: The Confident One	172
How Do Principals Employ Computer Technology in Each of the Four Domain Areas?	185
Functional Domain	186
Programmatic Domain	189
Interpersonal Domain	191
Contextual Domain	191
Discussion of Interviews	192

CHAPTER
CONCLU
LEARNED
OF COME

Int
Ho
M
P
R
Ta
W
E
a
L
Pe
W
H

So
C
W
E
F

So

APPEND
UC
Ad
Co
Le
Su
In

BIBLIOG

CHAPTER 5	
CONCLUSIONS AND IMPLICATIONS: SO WHAT HAVE WE LEARNED ABOUT PRINCIPALS' WORK AND THEIR USE OF COMPUTER TECHNOLOGY?	
Introduction	207
How Do Principals Currently Employ Technology to Manage, To Communicate, To Lead Instructional Programs, and To Address the Philosophical, Legal and Regulatory Work?	208
Taxonomy of Themes of Computer Use	209
What is Perceived by the Principals, to be The Most Effective Application(s) of Computer Technology and the Most Ineffective for Management and Leadership of Schools?	213
Perceived Barriers to Use of Computer Technology	215
What Appears to Make the Difference Between Why and How Different Principals Employ computer Technology?	221
District Support for the Principals' Use of Computer Technology	222
Personal Attitude Toward the Use of Computer Technology	222
So, What Have We Learned about Principals' Work and Computer Technology?	229
What are the Implications of these Findings to Educational Leadership Preparation and to Further Research and Inquiry?	231
Policy Makers	231
Practicing Principals	232
Schools of Educational Leadership	233
Implications for Further Research	233
Summary	234
APPENDIX	
UCRIHS Application	237
Advertisement for Survey Participation	243
Cover Letter for Survey Participation	244
Letter of Consent for Participating Principals	245
Survey of Principals' Use of Computer Technology	246
Interview and Observation Protocol	252
BIBLIOGRAPHY	255

Figure 1

Graph 3

Graph 3

Graph 3

Graph 3

Graph 3

Graph 3

Graph 3

Graph 3

Table 1

Table 1

Table 1

Table 1

Table 1

Table 1

Table 2

Table 3

Table 3

Table 3

Table 3

Table 3

Table 3

Table 3

Table 3

Table 3

Table 3

LIST OF GRAPHS AND FIGURES

Figure 1.1 - Conceptual Framework	59
Graph 3.1 - Years of Experience of Participating Principals	78
Graph 3.2 - Type of District of Participating Principals	79
Graph 3.3 - Student Populations of Schools of Participating Principals	80
Graph 3.4 - Years of Computer Use by Participating Principals	81
Graph 3.5 - Frequency of Use of Computers in Principals' Daily Practice	82
Graph 3.6 - Frequency of Computer Type	83
Graph 3.7 - Frequency of Access to Computer Training	100
Graph 3.8 - Frequency of Access to Specific Training Designed for Principals	100

LIST OF TABLES

Table 1.1 - MA Core Coursework at Michigan State University	8
Table 1.2 - MA Core Coursework at Grand Valley State University	9
Table 1.3 - MA Core Coursework at Central Michigan University	9
Table 1.4 - MA Core Coursework at University of Michigan	9
Table 1.5 - MA Core Coursework at Saginaw Valley State University	10
Table 1.6 - Performance Domains and Tasks	33
Table 2.1 - Research Matrix	72
Table 3.1 - Means of the Tasks of the Functional Domain	86
Table 3.2 - Functional Domain	86
Table 3.3 - Means of the Tasks of the Programmatic Domain	88
Table 3.4 - Programmatic Domain	89
Table 3.5 - Means of the Tasks of the Interpersonal Domain	90
Table 3.6 - Interpersonal Domain	91
Table 3.7 - Means of Tasks of Contextual Domain	92
Table 3.8 - Contextual Domain	92
Table 3.9 - Principal Use of Computer Technology and the Four Performance Domains	94
Table 3.10-Years of Experience as Principal and Self-Rating of Computer Technology Knowledge	96

Page

Page

Page

Page

Page

Page

Page

Page

Page

Table 3.11- Years of Experience as Principal and Self-Rating of Computer Technology Confidence	98
Table 3.12-Correlation: Self-Ratings of Knowledge and Confidence	99
Table 3.13- Leadership and Management Practices of School Principals and Their Use of Computer Technology	107
Table 4.1 - Principal Interviews	113
Table 4.2 - Leadership and Management Practices of School Principals and Their Use of Computer Technology	185
Table 5.1 - Taxonomy of Themes of Computer Use	228
Table 5.2 - Continuum	224

As

serious

how com

addresse

but very

adminis

computer

about ma

substant

district

The

therefore

practice

school p

compute

the oppo

having

persona

best b

CHAPTER ONE

INTRODUCTION AND OVERVIEW

Introduction

As a longtime member of the principal team, I have recently become curious why there is little written in professional journals and books about how computer use impacts the role of the principal. The recent literature addresses the impact of computers in the teaching and learning process, but very little research addresses the impact of computers in the administration and management of schools. The reason that the use of computer technology in the principal's practice has not been written about may be that this aspect of the principal's job has not caused substantial questioning on either the part of the principal or the school district.

The complexity of my job has become almost overwhelming; therefore, this tension has led to my interest in using technology in my own practice. I often ask myself and my peers: can the expectations placed on school principals today be more effectively dealt with through the use of computer technology? Computer technology may allow school principals the opportunity to manage time and multiple tasks more effectively by having immediate access to people and information at our desktops. My personal experience with computer technology has been fragmented at best, but even with this splintered exposure, I might infer that having

access to

opportunities

The

of computer

phenomena

learning

place and

difficult to

computer

eg. video

of computer

This experience

knowledge

role of computer

apply and

To

principals

computer

of the last

educational

growing

access to information and people in a timely fashion may allow me the opportunity to become a more effective leader.

There may be very little emphasis placed on the administrative use of computers because the focus of most districts, in regards to this new phenomena, has been on how technology impacts the teaching and learning process within the school. While principals have been asked to place an emphasis on implementing technology in the classroom, it may be difficult to be educational leaders if they do not understand the capacity of computer technology. The term technology includes many different forms; e.g., voice, video, data, etc. It is the intent of this study to focus on the use of computer technology and its intersection with the principal's practice. This exploratory study does not examine the principal's intimate knowledge of the technical nature of the computer, nor will it address the role of computers in the schools. This study will investigate how principals apply and implement computer technology in their practices.

Purpose of Research Study

The purpose of this study is to examine how current K-12 school principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. Because of the lack of research regarding the use of computer technology in educational leadership, we look to the corporate world where there is a growing body of literature. This literature refers to technology and

system

techno

1996 3

about h

T

a

n

n

c

e

t

t

u

a

n

f

studen

restruc

must be

society

opport

skills s

systems thinking, the changing nature of our society, and the impact that technology is having on the world of business (Senge, 1990; Salisbury, 1996; Deal and Kennedy, 1982). White, Hodgson and Crainer (1996) talk about technology and its impact on managers:

Technology has had a huge impact on our lives. The ability to store and retrieve information from databases means that any individual has access to vast amounts of data. The comparatively cheap and ready access that most senior managers have to computer databases (whether they use them or not) means that they can easily tap into historical, financial and market information. It may be that they cannot find the right piece of data when they want it and they may feel submerged in vast quantities of data that prove unnecessary, but the availability of technology means that choice - alternative ways of identifying problems and solving them - is greatly increased.(p. 59)

In order to meet the needs of our changing society, therefore, students will need computer technology skills and schools will need to restructure to meet these needs. Our educational leaders, the principals, must lead the school organization to meet the needs of our changing society and work environment. Educational leaders must provide opportunities for our teachers to reconstruct learning experiences so that skills such as competencies in critical thinking, reasoning, creative

grad e

scrip

to em

ssues

enviro

Dej n

leade

world

t

t

t

t

t

t

s

t

techno

used in

studen

this tas

schedu

problem solving and technology application will be addressed in our schools. Principals, like managers in the corporate world, must be willing to embrace these changes and develop programs that address these issues. School leaders who accept these challenges will provide an environment for learning that will allow our students to gain the skills that they need as they move into the 21st century. The Center for Educational Leadership (1995) reflects on the challenges posed by technology in the world of educational management and leadership:

The most difficult challenge educational managers presently face is to release the gap between power of technology and their abilities to understand and use that power effectively to achieve their goal of providing quality education to all students. The variability of technology in educational management provides another catalyst for rethinking the ways we structure, organize and manage our public schools as we attempt to meet the contemporary needs of students. (p. 29)

In essence, principals should understand and apply computer technology in their practice. One example of how computer technology is used in school administration is in the creation of a class schedule for 630 students. Five years ago this task could take months to complete. Today, this task may only require a couple of days. The computer is capable of scheduling all of these students within a matter of minutes. This is one

manage

the use

stream

lead to a

It's this

school p

gives re

tasks m

leaders

team b

Lauda,

T

is limite

Bulletin

principa

practice

Curricu

not refe

produc

ment on

leaders

management task that has been modified in a very positive manner with the use of a computer. In this case, one might hypothesize that streamlining the management tasks of the principal's practice will then lead to a better use of time that might be spent in instructional leadership. It is this knowledge of the effect of computer technology on the K-12 school principal's practice that has given purpose to this study. It also gives reason to infer that if school principals can manage their managerial tasks more effectively, there will be more time available to enhance leadership processes in learning, teaching, school-community relations, team building and disseminating (See Sergiovanni, 1995; Barth, 1990; Lauda, 1994).

Statement of the Problem and Need

The research regarding the principal's use of computer technology is limited. The National Association of Secondary School Principals Bulletin (NASSP) in the last twelve months had no articles dealing with the principal's use of technology specifically in relation to the principal's practice. The last six issues of The Association for Supervision and Curriculum Development (ASCD) Educational Leadership magazine has not referred once to the principal's use of technology. Education Week produced a special report on technology in October, 1998, and not once mentioned the importance of computer technology and principal leadership. ASCD also produced a yearbook called 1999: Preparing our

State

comp

1

1993

nature

refe

mod

decis

1

1

9

a

n

n

s

i

P

Throug

inform

intervie

◀

c

Schools for the 21st Century (1999) and again did not address the issue of computer technology and school leadership.

In a recent NASSP article by Portin, Shen and Williams (December, 1998), they argue that more attention must be placed on the changing nature of the principalship especially during the era of significant changes in federal programs, state mandated curriculum standards, the growing importance of community communication, and now towards site-based decision making.

Much attention has been given to the impact these changes are having on teachers, parents, and students. Scant attention has been given, however, to the impact of these changes on principals, who are expected to lead the implementation of school reform and restructuring. The school effectiveness research of the last 20 years repeatedly affirms the role of principal leadership in school success. Principals remain key individuals as instructional leaders, initiators of change, school managers, personnel administrators, problem solvers, and “boundary spanners” for the school. (p. 1)

Through their research, Portin et al., (1998) identified the following information regarding the changing nature of the principalship from interviewing focus groups:

- ◆ They were expected to collaborate more with others when making decisions.**

of the

resear

and t

princ

during

is als

techn

Asso

diag

school

pract

techn

instru

techn

- ◆ They were required to comply with increasingly complex state reform and truancy legislation.
- ◆ They were required to assume additional and sometimes unfamiliar roles.
- ◆ They were expected to respond to changing and sometimes conflicting community demands.
- ◆ They were required to expand the work week. (p. 2)

While this article and others about the changing nature of the work of the principalship is essential to both practioners and educational researchers, they do not examine the intersection of computer technology and the principalship. The query of how computer technology may provide principals with an avenue for increased organizational effectiveness during this turbulent time appears missing in the current literature. There is also a lack of dialogue among principals regarding computer technology. The regional meetings that are a part of the Michigan Association of Secondary School Principals organization continue to dialogue about legal and regulatory issues relating to the practice of the school principal, but not the effects of computer technology on principal practice. In essence, the discussion, in the State of Michigan, of computer technology in principal leadership generally revolves around how to fund instructional technology, instead of, how to think about and use technology to frame effective practice.

At:

faces."

erology

prepare b

Review of

programs

that has a

2000

[illegible]

At the same time that K-12 level school leaders and educational leadership researchers are ignoring the intersection of computer technology and principal practice, schools of higher education that prepare building-level administrators do not focus on this issue. Reviewing the requirements for Master of Arts in Educational Leadership programs (see Tables 1.1-1.5) in the State of Michigan, the only university that has a computer technology requirement for prospective school administrators is Saginaw Valley State University.

Table 1.1 MA Core Coursework at Michigan State University	
EAD 800	Organizational Theory in Education
EAD 801	Leadership and Organizational Development
EAD 803	Planning, Budgeting, and Evaluation
EAD 804	Administration of Human Resources in Education
EAD 813	Education, Development, and Social Change
EAD 852A	Elementary and Middle School Administration
EAD 852B	Secondary School Administration
EAD 853A	Legal, Fiscal, and Policy Environment of Schools
EAD 853B	Schools, Families, and Communities
EAD 853C	Instructional Supervision
EAD 855	Research

Tat

Ta

Table 1.2 MA Core Coursework at Grand Valley State University	
ED 633	Race, Class and Language
ED 671	Current Issues in Education
EDG 666	Curriculum and Leadership
EDG 668	Personnel Administration
EDG 669	School Finance
EDG 670	School Law
EDG 665	Educational Leadership
EDG 685	Practicum/Graduate Field Experience
EDG 695	Research Applications

Table 1.3 MA Core Coursework at Central Michigan University	
EAD 600	Research in Administration
EAD 660	Principles of Educational Administration
EAD 663	Personnel Administration
EAD 664	Public School Finance
EAD 666	Public School Law

Table 1.4 MA Core Coursework at University of Michigan	
EDL 551	Organizational Analysis of Schools
EDL 552	Instructional Leadership in Schools
EDL 553	Administrative Leadership in Schools
EDL 555	Legal, Political and Fiscal Environment

Tab

comple

impact

curren

being a

becom

prepar

School

to aspi

E

schools

technol

gather

Leader

princip

some c

Table 1.5 MA Core Coursework at Saginaw Valley State University	
EDL 550	Leadership Theories and Practices
EDL 552	Curriculum Development
EDL 553	School Law
EDL 554	Administrative Microcomputing
EDL 555	Educational Research and Program Evaluation

It is clear that the principal's position is becoming increasingly complex and that at the same time, the use of technology is having an impact on all facets of our lives. The attention to technology in education is currently focused on students and teachers and very little attention is being placed on the principals' use of technology. For principals to become educational leaders in the area of technology, they must be prepared to enter this technology-driven era with technology knowledge. Schools of Educational Leadership may be able to provide this knowledge to aspiring principals.

Significance of the Problem

Because of the important role that computer technology plays in schools, the principal must be committed to modeling the use of technology for the purposes of facilitating student achievement and gathering and synthesizing information (Center for Educational Leadership, 1995; Fullan, 1993; Hughes, 1994). It is no longer possible for principals to ignore this phenomenon. School principals need to have some computer technology expertise for a variety of reasons. First, there

is the is

manage

data for

amount

ie g. C.

simpor

better

practio

learning

effectiv

access

maximiz

technoi

U

significa

Dufour

informa

dissem

should

overlo

provid

findings

is the issue of student data that is generally part of a networked student management system. Principals need to know how to access and use this data for accountability and decision making purposes. Second, the amount and type of educational information that is available on the web (e.g., curriculum research, Department of Education information, etc.). It is important information for principals to be able to access in order to better inform decisions. Third, principals must be able to model the practice of using computer technology for the purposes of teaching and learning. Fourth, building administrators must be able to communicate effectively with the community that they serve. More and more homes have access to computer technology, therefore principals may be able to maximize their communication within the community by utilizing computer technology.

Understanding computer technology as a tool, may make a significant impression on the principals' work as instructional leaders. Dufour (1999) suggests that principals must act as a gatekeeper for information and training on learning and teaching. Thereby, sorting and disseminating information effectively. Dufour (1999) writes, "principals should be committed to empowering their staff members, they must never overlook their own responsibilities as instructional leaders. They must provide staff members with relevant background information and research findings" (p. 14). Given the principal's role as instructional leader, s/he

might be

informe

teache

more e

1

necess

learnin

contro

might s

that "is

classro

their so

enhanc

T

for prin

is evide

C

4

might find computer technology an effective tool to disseminate information. At the same time, the principal must also “ensure that teachers receive the training and coaching to master skills that make them more effective” (Dufour, p. 14).

The infusion of technology into our schools not only creates a necessity to understand the impact of technology on teaching and learning, but also the impact on the limited resources with which schools continue to work. Principals must understand how computer technology might support their practice of resource allocation. Ross (1996) argues that: “Issues relating to the technology, budgeting, access, use in the classroom, must be resolved by effective building and district leaders if their schools are to participate in the next wave of educational technology enhancements” (pp. 3-4).

The impact of computer technology also has important implications for principal preparation. This information regarding principal preparation is evident in Tables 1.1-1.5. Kearsley and Lynch (1994) write:

One of the critical areas of technology leadership that has largely been ignored is school administrators. Few administrators at any level have received formal preparation for instructional technology. In general, they have learned what they know about technology through informal experiences and observation. In many cases, administrators depend completely on teachers or technology

Sp

To

prepare

prepare

techno

had to le

prospec

the dist

Commis

"Effect

Institu

incorpor

T

the cap

integrat

school s

T

P

d

V

S

Z

specialists (or, in a few cases, vendors) for guidance. (p.13)

Technology training, specific to the principals' practice, may prepare future principals in a way that practicing principals have not been prepared. Prospective principals would have an advantage with the technology knowledge that those of us who are currently practicing have had to learn on the job. Incorporating technology use into the programs of prospective principals would be advantageous for the principals and for the districts in which they will be employed (Richardson, 1991; National Commission on the Principalship, 1990). Ross (1996) further asserts, "Effective administrators will not battle with technology, but prepare for it. Institutions and organizations that prepare school leaders must incorporate these new skills into their curriculum" (p. 2).

This research study also suggests that principals who understand the capacities and applications of computer technology can impact the integration of computer technology as a teaching and learning tool in their schools. For example Kearsley and Lynch (1994) write:

Technology leadership is inherently linked to innovation and this provides unique considerations. While leadership usually involves dealing with change, technology leadership deals almost exclusively with new procedures, policies, and situations. A critical element in technology leadership is the ability to develop and articulate a vision of how technology could produce changes. (p. 6)

Drawing from this concept, principals who use the computer for

gather

dissem

develop

the inter

implem

their sc

P

can bec

through

principl

able to

student

takes p

The Ch

and the

principl

The list

chang

import

posi

gathering information on teaching and learning on the Web can disseminate this information to teachers creating professional development opportunities. Principals might search for grant money on the Internet which can have significant impact on development, implementation and sustainability of innovative educative programs in their schools.

Principals who use the computer as a tool for better communication can become more involved in the complex world of educational leadership through dialogue with other school principals and community leaders. A principal who has a thorough knowledge of the use of the computer will be able to model this to teachers, who in turn will model this practice to students; thereby having an impact on the teaching and learning that takes place within a school.

Context of the Study

The Changing Principalship

This study is grounded in the literature regarding the principalship and the complex nature of this position. It was imperative to define the principalship in a framework that could show the complexities of the job. The literature speaks to the issue of how the role of the principal has changed over time and the implications that these changes have on the importance of this position in leading our schools into the next century.

The history of the principalship traces the development of this position from that of being a “headteacher” to the current encompassing

role of

school

Richard

increas

princ p

6: The

princ p

Farrington

Davis,

from a

view of

change

F

n

h

P

e

h

C

organ

school

school

school

role of the instructional leader. The “headteacher” was in charge of the school, but spent most of his time teaching in the classroom. However, Richardson, Flanigan and Blackbourn (1991) point out that: “The increasingly complex organizational demands of schools forced many principals to abandon instructional duties for management functions” (p. 6). The literature today, on the principalship repeatedly refers to the principal as the most critical element in an effective school (Richardson, Flanigan & Blackbourn, 1991; Sergiovanni, 1996; Hallinger, Bickman & Davis, 1990). Sergiovanni (1995) points to a change in the principalship from a traditional management view of factory-like conditions (linear) to a view of nonlinear theory. Sybouts and Wendel (1994) talk about the changes in expectations for the principalship:

Perhaps one of the major changes in the principalship has been the range of expectations placed on the position. These expectations have moved from demands for management and control, with presumptions for forced compliance, to the demand for an educational leader who can foster staff development, program improvement, parent involvement, community support, and student growth. (p. 2)

Fullan (1993) adds that principals need to lead the learning organization in a complex environment which is essential for the future of schools. Principals no longer are just required to open the doors of a school building, but they are expected to create a vision through

understanding the culture of the school community. The changing nature of the principalship is important to understanding the context of the schools of the 21st century.

In an article titled The Changing Principalship and Its Impact: Voices from Principals (1998), Portin, Shen and Williams discuss the changing nature of the principals' job today:

Principals are saying they are approaching the limits of the amount of time they can dedicate to the job. Legislators, school boards, and district administrators who are proposing additional changes that will affect the school and the principal's role should realize that the capacity to take on additional duties is severely limited for many principals. In addition to the time restraints, the principals, because of external priorities, are increasingly becoming managers rather than instructional leaders. (p. 7)

Literature regarding the principalship describes the complexities and responsibilities of the building principalship. Roland Barth (1990) speaks to the fact that the principal is responsible for "almost everything" that is associated with a school. He refers to the fact that principals are accountable for everything from getting the students on the buses in the morning, feeding the students, student security and then making sure that the students arrive home safely. These concerns must be addressed while the principal is also responsible for the achievement of the students in their academic pursuits. Barth also speaks about the fact that "principals

have a

over a

more o

the

workio

These

literatu

Sergio

abrupt

(1995)

when d

T

princip

to the v

placed

change

which d

develo

suppo

to effe

these

Lune-

have assumed one small additional responsibility after another” (p. 32) over time and that these responsibilities continue to increase and become more complex.

Lunenburg (1995) describes the work of principals as a “heavy workload at a fast pace and variety, fragmentation and brevity” (p. 9). These realities of the principal’s practice are echoed throughout the literature on the principalship. Van Cleve Morris and his associates (in Sergiovanni, 1995) use such words as “moving and dynamic; frequent and abrupt shifts” (p.9) to describe the work of the principal. Sergiovanni (1995) uses terms such as “enthusiastic, aggressive and adaptable” (p.16) when describing the principal.

The fragmentation and brevity of the principal’s job require that principals find ways to manage the school so that the principal can attend to the variety of duties that h/she encounters on a daily basis. Expectations placed on the principal have changed over time. The principal’s job has changed from a position where control was the key factor to a position which demands an “...educational leader who can foster staff development, program development, parent involvement, community support, and student growth” (Sybouts and Wendell, 1994, p.2). If they are to effectively function in the 21st century, principals must understand that these changes are constant.

Many scholars (Sergiovanni, 1996; Fullan, 1993; Leithwood, 1992; Lunenburg, 1995) today speak about the contextual nature of the

pro

tar

be

(19

the

up

(19

fac

pro

tec

The

a le

che

nee

Co

of f

Pro

me

me

org

sch

rea

principalship and how the principal must understand the changes that are taking place in education. The expectations placed on the principal are becoming even more numerous as we move into the next century. Lauda (1994) writes, "Indeed, the principal's role becomes one of transforming the public school in order to meet the demands of the twenty-first century" (p. 44). The job of the principal has changed so dramatically that Hughes (1994) talks about principals venturing into "uncharted waters" in order to facilitate growth (p. 70). The dimensions that have been added to the principal's role may mean that the principal will have to develop new techniques while keeping up with the already demanding tasks of the job. The changing face of the principalship require the skills necessary to lead a learning organization. Principals must understand the importance of change within the school organization and accumulate the skills necessary to expedite the growth and changes.

Because of shifting roles and expectations, the National Commission on the Principalship in 1990 defined the principalship in terms of four performance domains, which are the Functional Domain, Programmatic Domain, Interpersonal Domain and Contextual Domain. This model was selected in order to define the role of the principal in measurable language. The Functional Domain is described as, "the organizational processes and techniques by which the mission of the school is achieved. They provide for the educational program to be realized and allow the institution to function" (p. 21). The Programmatic

Don

edu

inst

and

sig

the

pro

24

wh

eco

trac

inc

de

Pr

Prin

time

a di

Domain is defined as, “focus on the scope and framework of the educational program. They reflect the core technology of schools, instruction, and the related supporting services, developmental activities, and the resource base” (p. 23). The Interpersonal Domain, “recognizes the significance of interpersonal connections in schools. They acknowledge the critical value of human relationships to the satisfaction of personal and professional goals, and to the achievement of organizational purpose” (p. 24). The Contextual Domain, “reflects the world of ideas and forces within which the school operates. They explore the intellectual, ethical, cultural, economic, political, and governmental influences upon school, including traditional and emerging perspectives” (p. 25). These domains reflect the increasingly complex structural/organizational, human, and political demands the school places on the building-level school principal.

Principal as Leader and Manager

A major issue in this study is whether or not technology allows principals to more efficiently manage their tasks in order to have more time for instructional leadership. Larry Hughes (1994) argues that there is a distinction between managing and leading an organization:

While leaders may describe dynamic efforts such as translating into action a vision for the organization, creating change, and developing new policies, management emphasizes a supportive status quo to provide people with stability and balance in the workplace so that they can work in relative comfort. (p. 31)

This an

empha

manag

leader

c

c

s

f

i

c

f

r

f

f

c

r

T

T

signific

and lear

This argument is further supported by Fred Lunnenburg (1995). He emphasizes: “leaders are concerned with ‘doing the right things’ and managers emphasize ‘doing things right’” (p. 3).

Portin, Shen and Williams (1998) refer to the balance between leadership to management for school principals:

It is useful to think of the principal’s role as a balance between leadership and management. Leadership covers the important role of supervising the curriculum, improving the instructional program, working with the staff to identify a vision and direction for the school, and building a close and congruent working relationship between the school and its community. Management, which is also important, includes managing the budget, maintaining the building, completing and submitting required reports, and complying with legislative mandates and state and district regulations. Because the management tasks are often more explicit, not complying with them becomes very visible to district administrators. Some management tasks also can have legal consequences. As a result, principals understandably give high priority to attending to managerial responsibilities often at the expense of leadership responsibilities.

There simply is not enough time to do both. (p. 5-6)

The distinction between leadership and management is clearly a significant factor when looking at the principal’s effect on the teaching and learning process in a school. Principals must provide an environment

r

p

t

D

P

S

S

no

ro

S-

th

ma

ga

es

to

ta

in which students and staff are safe and free to engage in the learning process, but a principal must create an environment in which learning is the priority. Managing a school takes specific skills according to Gordon Donaldson (1991). He speaks about the “common time allocations” in a principal’s job: availability to clientele, supervising students, organizing staff, teaching and developing curriculum development, representing the school at public functions, running the office, and operating the school.

Sergiovanni (1995) speaks about the distinction between linear and nonlinear responsibilities of the principal. He describes the management role of the principal, which encompasses linear conditions:

Under linear conditions, simplicity, clarity, and predictability are present. Examples of administrative tasks that typically fit linear conditions include the routing of bus schedules, purchasing books, planning conference times, and other events and activities in which human interactions are simple, incidental, or nonexistent. (p. 41)

There is substantial literature (Robbins & Alvy, 1995; Richardson, Short & Pricket, 1993; Sergivanni, 1995; Donaldson, 1991) that describes the managerial functions of the principalship. The principal’s work as manager is somewhat reminiscent of the early role of the principal as gatekeeper. Understanding that the daily tasks of running a school are essential to the success of the students, principals, as practioners, “need to make sure that schedules work, the chalk is in the classroom, and transition times run smoothly” (Robbins & Alvy, 1995, p. 10).

of

SS

ies:

sta:

w

pr

W

in

ef

int

Th

th

re

th

po

d

Leading the organization, on the other hand, requires a different set of skills. Peter Senge (1990) refers to a new view of leadership. When speaking about the learning organization and the responsibilities of the leader, Senge refers to the vision that the leaders must be “designers, stewards, and teachers” (p. 22). Furthermore:

In a learning organization, the leadership continuously provides opportunities for generative learning to occur. As people learn their abilities expand. An organization that generates learning is able to grow and develop in an infinite number of ways. (p. 340)

The principal, as leader, must be able to give purpose to the people within the organization. In short, to lead a learning organization the principal must influence the people in the organization. Sybouts and Wendel (1994) write: “Successful schools do not have one set of qualities in common, but have many different, as well as similar, qualities. But effective schools share one quality; an exceptional principal or leader who influences teachers and students through knowledge of instruction” (p. 7). This particular statement by these authors inform this study by referring to the importance of the principal in the school. There is evidence of this reference throughout the literature on effective schools, therefore, giving this study purpose for defining the principalship and the tasks of this position.

Leading the 21st century organization will require a vision entirely different from that which informed previous leadership techniques.

Margan

This ap

it requ

people

school

Wheat

l

a

t

t

n

a

s

t

-

signifi

and lea

where

proces

achiev

influen

Margaret Wheatley (1992) speaks about leadership evolving from chaos. This approach, for the principal, will require asking ‘why’ when in the past it required just making the decision. Creating an environment in which all people in the organization may become leaders will test the resolve of all school administrators to truly create an authentic learning organization.

Wheatley (1992) writes:

I believe that we have only just begun the process of discovering and inventing the new organizational forms that will inhabit the twenty-first century. To be responsible inventors and discoverers, though, we need the courage to let go of the old world, to relinquish most of what we have cherished, to abandon our interpretations about what does and doesn’t work. As Einstein is often quoted as saying: No problem can be solved from the same consciousness that created it. We must learn to see the world anew. (p. 32)

The distinction between leadership and management is clearly a significant factor when looking at the principal’s effect on the teaching and learning process in a school. Principals must provide an environment where students and staff are safe and free to engage in the learning process, but a principal must also be able to lead the school to continuing achievement. Lunnenburg (1995) describes leadership “as the process of influencing individuals or groups to achieve goals” (p. 10).

Implications
Leaders

A
cannot
than we
We are
everyw
industr
integra
Althoug
behind
states,
to brin
Donat
compr
appar
our st
Indust
most i
first c
think
studen

Implications of Computer Technology Use for Principal Management and Leadership

According to Donald Ely technology is prevalent in our society: “We cannot escape the reality of the information age in which we live any more than we can avoid the need for radio or a telephone in our everyday life. We are caught up in the web of technology” (1995, p. 8). Technology is everywhere in our society: the bank, the supermarket, the telephone industry, and telecommunications; unfortunately technology and its integration into education continues to lag behind the rest of society. Although computer technology pervades our reality, schools are lagging behind in its implementation for teaching and learning. Claudia Cohl states, “Like it or not, we must deal with technological advances if we are to bring our school into the present, let alone the future” (1996, p. 22). Donald Lauda speaks to the need of “educating a generation who can comprehend, cope with and direct new technology” (1994, p. 44). It is apparent that the integration of technology is imperative to the success of our students in the 21st century. Schools have been the product of the Industrial Age where accomplishments of the individual have been the most important indicator of the school’s success. Learning in the twenty-first century will require new skills of problem-solving, collaborative thinking and connectedness to the world through the use of technology.

To meet the technological career demands of the 21st century, students will need to acquire a new set of skills. They will need to be able

to us

gene

then

his i

and

capa

com

solu

1999

exce

disc

devi

Sta

des

guar

com

/p. 1

to use a variety of tools to search and sort vast amounts of information, generate new data, analyze them, interpret their meaning, and transform them into something new. They must have the ability to see how their work fits into the larger picture, to understand how the pieces work together, and to assess the consequences of any changes. They must develop the capacity to work with others to develop plans, broker consensus, communicate ideas, seek and accept criticism, give credit to others, solicit help, and generate joint products (ASCD Yearbook, 1998). Hawkins (1993) writes "Schools must be organized to supply students with excellent materials and tools, but also to promote inquiry, interpretation, discussion, judgement, and revision of ideas and products" (p. 4).

The International Society for Technology in Education (ISTE) developed a project to develop National Educational Technology Standards (NETS) for PreK-12 students. Their organizing document (1999) describes this initiative: "The NETS Project will develop standards to guide educational leaders in recognizing and addressing the essential conditions for effective use of technology to support PreK-12 education" (p. 1). The Technology Foundation Standards for Students are as follows:

1. Basic operations and concepts

- ◆ Students demonstrate a sound understanding of the nature and operation of technology systems.
- ◆ Students are proficient in the use of technology.

2. Social, ethical, and human issues

3

4

5. Tech

- ◆ **Students understand the ethical, cultural, and societal issues related to technology.**
- ◆ **Students practice responsible use of technology systems, information and software.**
- ◆ **Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.**

3. Technology productivity tools

- ◆ **Students use technology tools to enhance learning, increase productivity, and promote creativity.**
- ◆ **Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.**

4. Technology communication tools

- ◆ **Students use telecommunication to collaborate, publish, and interact with peers, experts, and other audiences.**
- ◆ **Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.**

5. Technology research tools

- ◆ **Students use technology to locate, evaluate, and collect information from a variety of sources.**
- ◆ **Students use technology tools to process data and report**

results.

◆ Students evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

6. Technology problem-solving and decision-making tools

◆ Students use technology resources for solving problems and making informed decisions.

◆ Students employ technology in the development of strategies for solving problems in the real world. (NETS Project, 1999)

Restructuring our schools in a world of technology, in order to help our students meet technology standards, requires a shift in society's thinking about education. There has been a great deal of discussion regarding restructuring over the last twenty years, and this discussion has revolved around the fact that the world is changing dramatically and "evolving both as a technological and global society" (Richardson, et al., 1991. p. 5). These changes are forcing schools to better prepare their students for the 21st century. Richardson, et al., continue speaking about how schools need to be restructured differently for collaboration and accountability. The infusion of technology into schools may help create the restructured systems that these authors speak about.

It is essential that technology becomes "as widely infused in our schools as it is in our economy" (Center for Educational Leadership and

Tec

Tec

dem

ven.

have

*ven.

Furz

Technology, 1995, p. 3). The Center for Educational Leadership and Technology (1993) speaks to the issue of restructuring with technology:

We must use technology to restructure education to become more effective, leveraging what we know about how people of all ages acquire knowledge. We have discovered that all learners process information in distinctly personal ways; we must incorporate technology as a tool to personalize education in order to maximize individual strengths. Technology will transform our schools just as it changing all other aspects of our world. The widespread implementation of technology into the educational system will allow learning to occur in new ways (voice, video data) and will empower students to control their own learning. Teachers will view learning as an active, creative, socially interactive process that gives rise to the creation of student-centered knowledge, rather than the transfer of information intact. Managers will be accountable for decision-making since technology tools will be available to support this process. (p. 1)

However, the approach, that education has taken to meet these demands has not changed. Adams and Bailey (1993) refer to “the vehicles” that education has to deliver information and that these vehicles have not kept up with our changing society. They suggest that finding new “vehicles” to meet the changing needs of our students is imperative. Furthermore, they argue that looking to the future, not the past, is

essen

comp

(1999

techn

have

school

the in

stud

Educ

"One

is the

prac

mov

tech

learn

know

to un

tech

the p

ine,

essential in creating new paradigms for education.

School leaders must be in the forefront of this movement to embrace computer technology as a learning and teaching tool. Mecklenburger (1989) summed up some of the power of administrative control in school technology by discussing the fact that administrators are the people that have control over budgeting, purchasing, scheduling and maintaining the school organization. That is an extremely powerful tool when referring to the implementation of technology. Principals must lead schools so that students can “maximize individual strengths” according to the Center for Educational Leadership and Technology (1995). Webster (1994) asserts: “One of the increasingly sophisticated and challenging skills of principals is the management and balance of the impact of technology on school practice to the extent that learner interests are protected” (p. 48).

Given the notion that school leaders must champion this technology movement, the building-level principal must understand the impact of technology on decision-making and how it might enhance a constructive learning environment for teachers and students. With the world’s knowledge having doubled in this century, it is imperative for the principal to understand this impact on the learner. Therefore, the intersection of technology and the principalship becomes a significant issue in ensuring the principal has the knowledge and expertise to model the change that is inevitable in the 21st century.

The New England University, Northern Rivers (Australia) Faculty of

Education.

technology

speaks to

education

society that

Sch

driv

info

mea

exp

am

cha

kn

the

inc

tec

of

st

en

te

Th

regardin

teachers

Education, in a 1992 study, referred very succinctly to the intersection of technology and the practice of the building-level principal. This study speaks to the changing nature of schools in the next century and how educational leaders must lead the way in meeting the challenges of a society that is inundated with new technology.

Schools must be transformed to meet the need of a technology-driven information society, producing citizens who can analyze information, synthesize it, evaluate its worth, and extrapolate its meaning. Fundamental changes in educational values and expectations will require new skills and perspectives, especially among those who lead schools. Changes in traditional leadership characteristics and attitudes underpin many of these new skills. The knowledge and skills necessary for effective leadership must match the changing nature of the schools of the future where we will see increased collaboration with community partners, new roles for technology in instruction and management, and restructured forms of governance. School leaders need to use technology to manage student data, initiate changes, and monitor budgets. They need to embrace new technologies for classrooms and understand how technology can reform the way students learn. (p. 14)

The primary body of research that has taken place in education regarding the use of technology has been conducted with students and teachers. The research regarding the principal's use and understanding

of technolo

pertaining

for the pri

model: the

Summary

It is

impact tha

processes

must mod

teaching a

alarming r

King (1993

new schoo

organizati

learning a

new, acco

order to b

construct

the chang

principa

compute

must be

the 21st c

of technology is very limited. The research that is available specifically pertaining to the principal and technology consistently refers to the need for the principal to acquire personal technology skills so that she may model the skill for both students and staff.

Summary

It is apparent that there is a need for principals to understand the impact that computer technology is having on teaching and learning processes in their schools. It is also noted in the literature that principals must model the use of computer technology in order for this aspect of teaching and learning to be effective. Our society is changing at an alarming rate of speed and schools must keep up with this pace. Sherry King (1999) suggests that leadership in the 21st century will have to create new school systems that, "will have to be much more dynamic, data-driven organizations that can be immediately responsive and that allow for learning at all levels" (p. 165). Continuous improvement of schools is not new, according to King, but will need a different kind of organization in order to be effective. Leadership of these organizations will need new and constructive ways to create systems that will meet these challenges. It is the changing nature of schools and therefore, the changing nature of the principalship that gives purpose to this study. The intersection of computer technology and the principal's practice is a significant issue that must be addressed if school principals are going to lead our schools into the 21st century.

1

utilizing

techno

phenon

define

Princip

the fo

*defin

and s

The fo

Progr

Withi

expec

princ

(NAS

(NAE

respo

organ

had f

that t

that w

Performance Domains of the Principalship

The purpose of this study is to examine how current principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. To study this phenomenon it is first necessary to frame the principal's practice and define the tasks, as defined by the National Commission on The Principalship in 1990, that are associated with this position. It is through the four performance domains the data will be examined. The domains "define the scope of responsibility faced by principals and the knowledge and skills required to accomplish the tasks of the job" (NCP, 1990, p.18). The four domains that the Commission developed are: Functional Domain, Programmatic Domain, Interpersonal Domain, and Contextual Domain. Within each of these domains are several tasks that the principal is expected to master. This model allows the researcher to view the principalship in its totality.

In 1989, the National Association of Secondary School Principals (NASSP) and the National Association of Elementary School Principals (NAESP) co-sponsored the National Commission on the Principalship in response to the changing nature of the principalship. Both of these organizations believed that preparation programs for school principals had failed to move ahead with the times. These principal organizations felt that the preparation programs were still preparing principals for schools that were developed in the 1950's, not schools of the future. It was clear to

these pri

expectat

these org

place in

century

Principa

the four

O

A

2

A

i

these principal organizations that changes in society generated new expectations for schools and for school leaders. It was very apparent to these organizations that a change in principal preparation needed to take place in order for principals to lead their schools into the twenty-first century. To facilitate this shift, the National Commission on the Principalship defined four performance domains. These domains become the foundation of the conceptual model utilized in this study.

Table 1.6 Performance Domains and Tasks	
<u>Functional Domain</u> Leadership Information Collection Problem Analysis Judgement Organizational Oversight Implementation Delegation	<u>Programmatic Domain</u> Instructional Program Curriculum Design Student Guidance & Development Staff Development Measurement & Evaluation Resource Allocation
<u>Interpersonal Domain</u> Motivating Others Sensitivity Oral Expression Written Expression	<u>Contextual Domain</u> Philosophical & Cultural Views Legal & Regulatory Applications Policy & Political Influences Public & Media Relations

Functional Domain

"These domains address the organizational processes and techniques by which the mission of the school is achieved. They provide for the educational program to be realized and allow the institution to function" (National Commission on the Principalship, 1990, p. 21).

Leadership is defined in a variety of ways and many authors cite the fact that there is no one clear definition of this role. Joseph C. Rost (1993), in his review of leadership theories, clearly indicates the turmoil that has existed in the leadership literature. His definition of leadership, though, sets the stage for thinking about the principal's leadership role.

"Leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes" (p. 102). This definition is important when thinking about the changing role of the school principal. Sergiovanni (1996) speaks to the changes that need to take place in school leadership as a result of changing societal values and the importance of changing educational leadership theory to meet these new demands.

For schools to work well, we need theories of leadership that recognize the capacity of parents, teachers, administrators, and students to sacrifice their own needs for causes they believe in. We need theories of leadership that acknowledge that parents, teachers, administrators, and students are more norm-referenced decision-makers than individual decision-makers. Instead of making individual calculations based on self-interest, we should acknowledge that people are responsive to norms, values, and beliefs that define the standard for living together as a group and that provide them with meaning and significance. (p. 14)

This whole notion of leadership by community versus by an individual

is having great impact on the leadership skills required of principals today compared to twenty years ago. Historically, principals have been asked to make decisions and then politely pass these decisions down to staff, students and parents. The leadership expectations placed on the principal today are altogether different than those historical expectations. M.D.

Richardson (1991) cites the following:

The restructuring of public education has focused the role of the school leader squarely on facilitating the development of school organizations that engage participants in collaborative efforts and shared governance. In addition, restructuring calls for school leaders to function as change agents, having the skills to create a synergy towards organizational renewal and innovation. Finally, leaders in restructured schools must demonstrate skills in utilizing forces outside school to help the school achieve its vision for quality instruction for students. (p.14-15)

The literature regarding the principal as leader has a common thread through it all--the principalship is changing from the solitary voice of the principal as leader to a collective voice of a community of learners. Bailey (1997) continues: "The new principal must be a facilitator, counselor, coach and listener. Perhaps a better title for the principal is a 'leader of instructional experts" (p. 95).

The task of Information Collection is significant in this time of technological change. The amount of information that is available to the

principal today is significant. Information and research about all aspects of the school organization are available and the principal must learn to gather and apply this information to the total school setting. Lunenburg (1995) speaks to the issue of decision-making for the principal and the importance of this role. The principal must gather as much information as possible in order to generate alternatives to an issue, “gathering data, facts and impressions from a variety of sources about students, parents, staff members, administrators, and community members” (p. 36). According to the National Commission on the Principalship (1990), it is essential for the principal to effectively cope with this function. Information collection needs to be monitored by the principal so that s/he may be able to review the information and share the results with teachers, students and parents. Gathering this initial data is important, but then interpreting the data and helping teachers and parents devise strategies to assist the students is essential.

Problem Analysis is an indicator of how well a principal has framed a particular situation. Using the information that is gathered and proposing new ideas is an important function of the principal. Sergiovanni (1996) speaks about the importance of principals to analyze data and communicate this analysis to the school community. “In the actual world of schooling, the task of the principal is to make sense of messy situations by increasing understanding and discovering and communicating meanings” (p. 31).

There are changes that are taking place in preparation programs for aspiring principals. One school that is taking a problem-based approach to principal training is the University of Colorado at Denver (Lunenburg, 1995). This approach deals with training prospective principals in problem-solving techniques versus a theory-based approach. The change in this preparation program is an indicator of the importance of problem-solving skills for the principal.

Judgement, as defined by Webster (1994) is the “ability to make a decision, or form an opinion objectively or wisely” (p. 731). This is also true for the school principal. Gathering the appropriate information, synthesizing and analyzing the information, and making a judgement about a particular issue is done several times a day by the principal concerning a variety of issues. Exercising caution and thoughtfully reflecting on decisions is a wise use of judgement for the principal.

One of the aspects of the principal’s job that is expected, but often overlooked, is the principal’s ability to see the whole picture. The principal who takes into account the facts of a particular situation will be much better prepared to make decisions. Not taking the time to understand the facts of a situation can cause a principal to misinterpret a situation and then not properly exercise their judgement. This task of the principal may prove to be essential when the community is assessing the skills of a particular principal. Making an informed judgement which considers all the facts carries much more impact than a judgement made with limited facts.

One of the critical daily activities for the principal is the task of Organizational Oversight. Lunneberg (1995) writes:

In a very basic sense, designing the structure of the organization involves creating the organizational chart for a school. The principal establishes policies and procedures for authority relationships, reporting patterns, the chain of command, departmentalization, and various administrative and subordinate responsibilities. (p. 7)

The responsibility for organizing the school for the purpose of schooling is quite extensive. A principal is expected to schedule the students and staff, monitor what the students are eating for lunch, schedule the use of the facility for community purposes and several hundred other organizational issues daily. Managing this task is absolutely essential for the daily operations of the school to run smoothly. Sybouts and Wendel (1994) write:

Principals have the responsibility of making certain that specific tasks are completed by teachers and other staff members. Principals coordinate, direct and support the work of others by defining objectives, evaluating performance, providing resources, building a positive climate, fostering positive school-community relations, planning, scheduling, keeping records, resolving conflicts, handling student problems, working cooperatively with central staff members, and keeping the school running smoothly on a day-to-day basis.

(p. 15)

The Implementation of all of the activities within a school setting is

also the responsibility of the principal. This notion of “making things happen” is a trademark of the effective principal. This task involves everything that a principal is involved with from policies and procedures to the implementation of change within the school setting. Deal and Peterson (1994) suggest:

Plans never reach goals or achieve dreams if they are not implemented. Implementation, once seen as simply following the defined action steps of the plan, is in fact a complicated and demanding mix of cultural transition and technical activity. (p. 99)

Delegation is the “transfer of authority from one position to another” (Lunenburg, 1995, p. 53). Further he writes, the management of this task is essential if the principal is to be able to allocate time for all of the tasks of these domains:

There are many reasons for delegating. For one, delegating tasks enables principals to accomplish more than if they attempted to handle every task personally. Moreover, delegation allows principals to focus their energies on the most crucial, high-priority tasks.

Delegation also enables subordinates to grow and develop. (1995, p. 53)

The argument thus, is that it is critical for the principal to understand the importance of delegation. The days of the manager making decisions in isolation has become obsolete. Principals need to understand that delegation is a precursor to collaborative decision-making.

Programmatic Domain

“These domains focus on the scope and framework of the educational program. They reflect the core technology of schools, instruction, and the related supporting service, developmental activities, and resource base” (National Commission on the Principals, 1990, p. 23).

Some people might say that the Instructional Program may be the most important task of the principal. The National Commission on the Principals, though, lists it as one of the twenty-one tasks in the performance domains. “The most important characteristic for a principal in being an instructional leader is to make everyone at the school aware of the importance of curriculum as it relates to the total school program; the very heartbeat of the school” (Dubin, 1991, p. 40). Providing for the successful teaching and learning that must take place in a school is a very important task of the principal. The task of supervising the instructional program is defined by Pankake and Burnett (1990) as “the continuous and harmonious process of releasing the creative human potential of the instructional staff of the school in such a manner that the educational goals of the school are achieved” (p. 57). The complexity of the principalship weighs heavily on supervising the instructional program. Leithwood (1992) and others speak about the role instructional supervision plays in the principalship today:

In education, the dominant conception of school leadership with which our problem-solving conception competes at present, is 'instructional leadership'. This term symbolizes the importance, to school leadership, of an emphasis on student growth, and on much of the direct service provided by schools in fostering student growth. Such an emphasis was wholly appropriate and timely to bring to school leadership during the early 1980's, when the term gained a widespread following. But, 'instructional leadership' conveys a meaning which encompasses only a portion of those activities now associated with effective school leadership. (p. 9)

Curriculum design today relies heavily on the expertise of the principal in understanding all of the experiences that students encounter in school: "Over the years and currently, the dominant conception of the curriculum is that of content or subject matter taught by teachers and learned by students" (Lunenburg, 1995, p. 254). When discussing curriculum and the principalship it is necessary to understand that this task alone is a huge responsibility. Robbins and Alvy (1995) present a definition of curriculum that attempts to encompass the complexity of this task for the principal:

Thus curriculum is defined as planned and unplanned concepts, content, skills, work habits, means of assessment, attitudes, and instructional strategies taught in the classroom and the variety of school activities in and out of class that influence present and future

academic, social, emotional, and physical growth of student. (p. 144)

Providing a program for Student Guidance and Development

requires that the principal enlist the services of many people and organizations for the sole purpose of student development. The number of services that are needed for student development run from social services to school counselors to police agencies to parent organizations. The principal must understand the need to gather whatever resources are necessary for the positive growth of all students. Creating a culture that allows students to grow in a positive and healthy manner is critical to the principal's success. Webster (1994) in reference to teaching and learning, writes: "From removal of barriers to school attendance to simple attitude adjustments, principals deal with a seemingly endless number of simple details aimed at getting students ready to learn" (p. 93). Robbins and Alvy (1995) add: "It is not the building or instructional resources that make a school; it is the students, teachers and parents. A school is made up of people. When the doors close, we only have a building, an empty shell without a soul. The soul of the school is the kids" (p. 218). These statements exhibit the essence of why the principal needs to assure that all students have the guidance necessary in order to develop as productive learners.

In this age of technological change there is more pressure placed on the principal in reference to Staff Development. The identification of staff needs is a difficult task in itself, but is compounded by having to procure

the resources necessary for staff development. “Another important set of abilities for future school leaders to possess is contributing to the long-term growth of staff” (Leithwood & Others, 1992, p. 94). Sergiovanni (1996) writes about the need for the principal to provide opportunities for teachers to interact with others. This paradigm shift of professional development is another area that principals must be aware of when meeting staff training needs. Professional development has taken on a whole new meaning. Therefore, the principal must be aware of the research indicating that staff must not only have opportunities to receive the necessary training, but must also have the chance for immediate feedback. Principals must be aware of the needs of adult learners and apply these concepts to professional development opportunities.

In relation to staff development, the principal, according to David Erlanson (1994) must “foster the skill of learning” (p. 15) both for herself and for the staff. The principal must model continuous learning so that the “school can move forward” (p. 9). It is important for the principal to stay current in this field in order to motivate the staff by example. Staying abreast of current information through professional activities is a strong example of how the principal can model professional development for the staff (Robbins & Alvy, 1995, p. 256).

The next task, Measurement and Evaluation, has become an area with which the public is especially interested. The listing of state mandated test scores in print and video media creates an environment which requires

the principal to pay significant attention to the scores. Analyzing this data for purposes of improving student learning is expected of the building principal. Principals must be aware of the kinds of evaluations that are important for students and how these instruments can be useful in helping the students reach desired outcomes. Standardized testing is only one form of evaluation, and principals should be aware of the many evaluative instruments that are available to them. Lunneberg (1995) writes:

Testing, evaluating, and measuring pupil progress is a part of every comprehensive pupil personnel program. Practically every faculty member in a school is involved in the appraisal service. Teachers spend a great deal of time testing, measuring, and evaluating their students, as do counselors, social workers, and school psychologists. Few people who work in schools would deny that the modern school could operate effectively without some means of measuring and evaluating student progress.

The basic purpose of the assessment service is to help the student in school. More specifically, six basic purposes of assessment include (1) to help the student understand herself; (2) to provide information for educational and vocational counseling; (3) to help administrators, faculty, and personnel staff understand the nature of their student population; (4) to evaluate the academic progress and personal development of students; (5) to help the administrative staff appraise the educational program; (6) to

facilitate curriculum revisions (p. 229).

The last task of the Programmatic Domains is Resource Allocation. Allocating budgets has become very tricky business for the principal. With the advent of site-based decision making the days of creating a budget in isolation are over for the principal. As with almost all school decisions, the principal needs to develop collaborative teams for effective decision making. The allocation of funds is no different. Many schools today are forming school budget committees that principals are involved in, but regardless of the committee's decision, the principal is ultimately responsible to the central office for the expenditure of funds. With greater expectations for student success than ever before and with continued limitations of funds, resource allocation is proving to be a very pressurized situation for the principal.

Interpersonal Domain

***“These domains recognize the significance of interpersonal connections in schools. They acknowledge the critical value of human relationships to the satisfaction of personal and professional goals, and to the achievement of organizational purpose”
(National Commission on the Principals, 1990, p. 24).***

Motivating others requires that the principal understand the culture of the school and the teachers. The principal must help the teachers be creative so that innovation can take place. Smith (1995) asserts that the

principal's role in motivating staff is critical to the creation of an environment which provides for participation and effective performance by the staff:

It is obvious that whatever the skills, enthusiasm and expertise of the headteacher (principal) and senior managers and however successful the selection strategies are when recruiting new staff, no school can service effectively without well-motivated teachers.

There is no doubt that motivation is difficult. Different people react different ways to situations in which they find themselves. It is possible to suggest some basic common needs that, if met, should help motivate all of us. For example, it is important that all staff, whether old or new colleagues, should feel that they are members of the school community. At the same time they should have a sense of progressing achievement, of getting somewhere, of not standing still. If these criteria are met, most colleagues will know that what they do is appreciated and that through their efforts they can exert some influence over what is happening in the school. (p. 131)

This notion of motivation falls squarely on the principal's shoulders. There are numerous avenues to extrinsically motivate the staff, but the hardest part of this task is to help the staff discover the intrinsic motivation that is so essential to successful teaching and learning.

Sensitivity is a trait that all effective school leaders need in order to work in a trusting environment with others. The task of being sensitive to

others' needs and managing conflict is very important if the principal is to be considered as a credible and caring leader. Understanding all the people within the school environment and tactfully dealing with them is the focus of Terry's 1996 claim:

The principal must foster a positive school climate where failure is safe and reflection is encouraged. This he/she must do for the teachers and they, in turn, must provide the same for students. The spirit should be team-oriented and cooperative both at the building level and in the classroom. The instructional leader should be sensitive to the needs of all shareholders, with an ability to not only see but act on other viewpoints. The nurturing principal is also sensitive to the history of the organization, knowing when to maintain the traditional and when to introduce the new. (p. 4)

The first impression that a community member may have of the principal is in the area of Oral and Written Expression. Expressing oneself in a confident and articulate manner reflects dramatically on the school. Webster (1994) asserts that, "Communication is simply, transmission of meaning. Whether principals are explaining new, board-adopted crisis intervention policies and procedures to their faculties, or writing a memo to staff members about new lunchroom hours, they are communicating" (p. 52). And, Smith (1995) adds that, "Communication is about the sharing of information, attitudes and beliefs and within schools this can cover both internal and external events involving speaking, listening, meeting, writing,

discussing and reading” (p. 136). Communicating effectively with all the school’s constituents is imperative for principals to be effective leaders.

Contextual Domain

“These domains reflect the world of ideas and forces within which the school operates. They explore the intellectual, ethical, cultural, economic, political, and governmental influences upon the schools, including traditional and emerging perspectives” (National Commission on the Principalship, 1990, p. 25).

Defining the Philosophical and Cultural Values of the principalship is important when understanding the health of the organization. The school’s culture and community provide the structure for the values that determine what is appropriate within this organization. The principal’s role in this task is to help define these values and then conduct him/herself in a manner that manifests them. Sergiovanni (1996) talks about a value-based approach for the principal:

One way to capitalize on the advantages of an outcomes-based approach to defining the role of the principal, while avoiding some of the disadvantage, is to adopt a values-based approach. When using this approach, assumptions and beliefs presumed to be important are specified and used as a basis for deciding what it is that principals and others should do. The specifications of assumptions and beliefs provides a standard for determining what is good and

bad, effective and ineffective, and acceptable and unacceptable.

Using a value-based approach for defining the role of the principal, not only ensures that what principals decide to do meets acceptable standards, but also provides the school with a set of indicators that defines its educational and moral health . (p. 7)

The next task of this domain is the area of Legal and Regulatory Applications. Principals must be fully aware of the laws and regulations that frame the environment in which we work. There are legal implications in every decision a principal makes and in order to avoid disastrous lawsuits, the principal must understand the law and its application. The National Commission on the Principalship (1990) says that a principal must “act in accordance with relevant laws, rules, and policies; recognize governmental influences on education; work within local rules, procedures, and directives; and administer contracts” (p. 25). This area of the principal’s job can be extremely time-consuming, especially if the principal does not understand and apply the law fairly and consistently. The principal’s knowledge of the law and its application may be placed in the category of preventive medicine. A clear knowledge and understanding of the law may be one of the most valuable time-savers that a principal possesses.

The Policy and Political Influences that affect the principal are instrumental in defining the principal’s role in a particular organization. Dubin (1991) talks about the principal’s role as politician:

In addition, the principal will likely be more of a politician/CEO.

Because of the need to make more of the fundamental decisions with constituent input at the school site, he will likely need to politic more in order to have various groups of his community 'buy into' his decisions. Traditionally, decisions are often made at the district level and so he would be relieved of some of the responsibility associated with those specific decision-making sources, committees, teacher groups, business interests, etc. Now he must be particularly artful in managing and directing the host of needs that will be desired by these divergent groups. This will require expert political planning to effectively manage the organizational system and strong human relation abilities to sensitively work with people cooperatively and supportively . (p. 191)

An ever-increasing responsibility of the principal is in the area of Public and Media Relationships. With media being so prevalent in our society today, the principal should realize that what occurs within the school is not exempt from media pressure. Topics from test scores to violence to athletics are in the media everyday. The pressure to publicize the good things in our buildings is becoming a daily expectation. The principal is expected to use a variety of means in order to get the "good news" out. These means may include newsletters, surveys, parent-teacher conferences and parent advisory groups just to name a few. Gordon Donaldson (1991) talks about his role in public relations as a principal:

Public events demanded a surprising amount of my time, and much of that time was beyond school hours because these events occurred in the afternoons and evenings and frequently away from Ellsworth. Basically, I reasoned that these were the points at which the public has most access to the work and activity of the school, so they were the samples of school life on which the public was most likely to base their comments, criticisms and praise. I felt a need to have access to the facts and events on which opinions were made, both to permit me to handle appropriately public comments, whether negative or positive, and to understand more fully how the public reasoned. The longer I was the principal, the more I understood that public relations was less a campaign to put our best face forward and more a function of establishing relationships with the public that demonstrated my informed leadership. (p. 32)

The public relations task is both personal and public. The principal must understand her/his role in the public perception of the school.

The Four Performance Domains and Computer Technology: How Does Computer Technology Shape the Principal's Practice?

The Four Performance Domains, as defined by the National Commission on the Principalship, describe the complex work of the building-level principal. The tasks of the Four Performance Domains show that the work of the principal is inundated with a multitude of responsibilities. Given the complexity of the work of the principal, how does

computer technology shapes the principal's practice. In order to understand the impact that computer technology may or may not have on the principal it is important to look at how principals adopt the innovation of computer technology.

Diffusion of Innovation: Computer Technology and The Principal's Practice

The introduction of an innovation in any social system (i.e. business or education) requires an understanding of how the innovation is diffused within the particular system. The business world gives us a greater history than education to study the diffusion of technological innovations. Rogers (1995) defines diffusion of innovation as: "The process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 11). Rogers further states that: "an innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 11).

It is important to understand the characteristics of an innovation in order to comprehend the importance of adoption of a technological innovation in a social system, such as a school. Roger indicates that these characteristics which are "perceived by individuals, help to explain their different rate of adoption:

- 1. Relative advantage is the degree to which an innovation is perceived as better than the idea that it supersedes.**
- 2. Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past**

experiences, and needs of potential adopters.

3. Complexity is the degree to which an innovation is perceived as difficult to understand and use.

4. Trialability is the degree to which an innovation may be experimented with on a limited basis.

5. Observability is the degree to which the results of an innovation are visible to others.” (Rogers, 1995, p. 15-16)

These characteristics are important to the understanding of the rate of adoption of an innovation. In order for principals to feel comfortable in adopting the use of computer technology they must first understand the above characteristics and their effect on their practice. For example, principals, similar to business managers, must first see that there is relative advantage to an innovation. The “relative advantage” of using technology might be the implication that technology can help increase productivity. (i.e., cost savings in business and time savings in education)

In reference to compatibility of an innovation it is important to understand how this innovation is perceived by members of a social system to be compatible with existing norms. The influx of technology into the school system has been received with a varying degree of adoption. The literature indicates that adoption has been somewhat easier for the students than for the adults in the school setting because students have grown up knowing computers, whereas the adults have had to integrate technology into a world that previously had not been exposed to

technology. This is true for the principals. Principals, historically, have used their secretaries to gather data for them. The introduction of computers into the principals' practices has caused principals to begin to gather their own data and information, therefore causing a change in the "way things are done". As principals see the advantages of having information available to them at their desktops, the adoption of technology practices may increase in their practice.

The complexity of using computer technology is an important issue in the principals' adoption of computer technology. The complexity of the principal's practice is described by the Performance Domains of the National Commission on the Principalship. These domains indicate the number of skills that a principal must possess in order to be effective. The use of computer technology must assist the principals in streamlining these tasks in order for computer technology to be adopted by the principal. This, in effect, is an important change process for the principal. The "old way" of accomplishing tasks is now being challenged by an innovation that in itself, is a complex task. In order for computer technology to be effectively diffused among principals, it must be shown that this use will create an environment that is relatively easy to understand and use and that shows a distinct advantage over the "old way" of accomplishing tasks.

The fourth concept, trialability, means that the adopter of the innovation must have some availability to experiment with the innovation. This issue has not been a positive issue when related to principals and their

adoption of computer technology. The principals that were interviewed for this project all spoke about the lack of training that they have had in reference to computer training. There has been an expectation that principals will use the technology that is given to them and use it for information purposes, yet with little or no opportunity to advance their skills through experimentation or training. The complexity of the principal's job is difficult enough without the expectation that a principal understand and use a complex computer.

The last indicator, regarding adoption of an innovation, is the issue of observability. The adoption of computer technology within a school setting rests a great deal with the opportunity for the staff to observe the advantages of this use. Therefore, principals must model the use of computer technology in order for everyone else within the school setting to see that the adoption of this innovation has an advantage for everyone to learn these skills.

The adoption of an innovation is presented by Rogers (1975) in the shape of an S-curve. The S-shaped curve of adoption and normality speaks to the issue of adoption within a social structure (i.e. principals). Rogers says:

We expect a normal adopter distribution for an innovation because of the cumulatively increasing influences upon an individual to adopt or reject an innovation, resulting from the activation of peer networks about the innovation in a system. This influence results from the

increasing rate of knowledge and adoption (or rejection) of the innovation in the system. We know that the adoption of a new idea results from information exchange through interpersonal networks. If the first adopter of an innovation discusses it with two other members of the system, and each of these two adopters passes the new idea along to two peers, and so forth, the resulting distribution follows a binomial expansion, a mathematical function that follows a normal shape when plotted over a series of successive generations. The process is similar to that of an unchecked infectious epidemic.
(p. 259)

This framework of adoption is important in understanding how principals have adopted or not computer technology. The principals that were surveyed and interviewed indicated a lack of training specific to their positions, therefore, their learning of computer technology has come from their personal interest and their interaction with their peers. The use of computers by principals has also come as a result of the infusion of computer technology within the school systems with students. As Rogers indicated, the process of learning technology by principals is “similar to an unchecked infectious epidemic”. Principals have had to be adopters in order to keep up with the demand that student use of technology has placed on them.

In relation to the adoption of an innovation Rogers (1975) also speaks to the styles of adoption and “adopter types”. Rogers describes adopters

in the following categories:

- 1. Innovator: eager to try new ideas, open to change and willing to take risks.**
- 2. Leader: open to change, but more thoughtful about getting involved.**
- 3. Early majority: cautious and deliberate about deciding to adopt an innovation.**
- 4. Late majority: skeptical of adopting new ideas and “set in their ways”.**
- 5. Resister: suspicious and generally opposed to new ideas.**

These categories as described by Rogers apply to principals and their adoption and acceptance of computer technology into their practices. Among principals there are the innovators as well as the resisters in reference to computer technology.

An important effect of technology innovation is the issue of mental workload. Miller (in Larsen and McGuire, 1978) states: “It is well known that very high or very low mental workload levels have dysfunctional effects on individual performance” (p. 51). This notion of mental workload is a significant factor in the principal’s adoption of new technology. The amount of information that a principal needs in order to make informed decisions is enormous. The question for principals in reference to the adoption of a new innovation like technology is whether or not the innovation will provide useful information in a manner that does not demand that the principal use

other resources in order to adopt this innovation.

The adoption of computer technology then depends greatly on the individual principal, but it also depends on how well the principal understands the complex tasks of the position and how computer technology may affect each and every area of the principal's practice. Understanding the impact that diffusion has on any social is important in acknowledging how computer technology may or may not be accepted and appreciated by the principal.

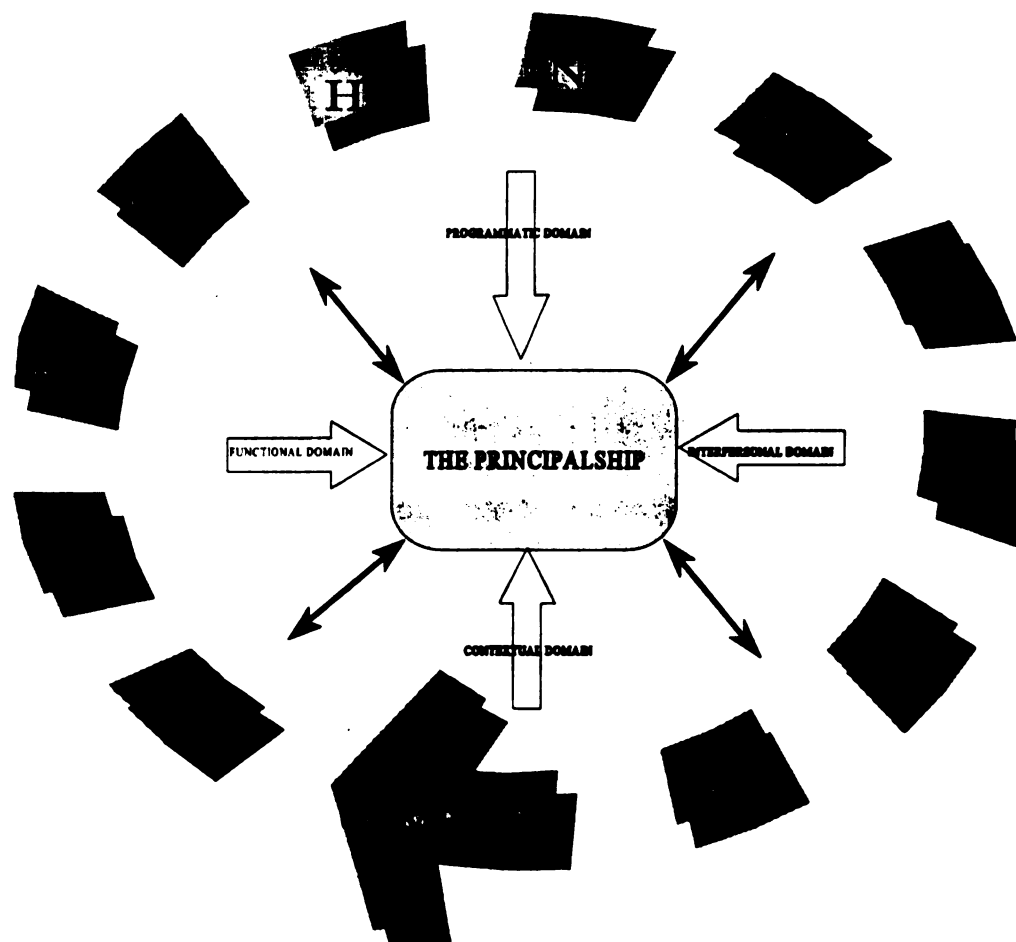
The conceptual framework utilized in this study takes into account the four performance domains and the infusion of computer technology onto the principal's practice. It is apparent from this study that principals, theoretically, will adopt computer technology quicker if they are able to balance their work (4 domains), if they understand the capacity of computer technology, and if they are trained appropriately. Given the four performance domains and the Diffusion of Innovation Theory, it is apparent that principals must understand the whole context of their work in order to find value in the adoption of computer technology into their practices.

Conceptual Framework

The conceptual framework (Figure 1.1) created for this research study illustrates the tensions that have an affect on how the principal incorporates, or not, technology into their work. This framework shows the work of the principal is at the center of the diagram. The four performance domains place pressure on the principal's work. The double arrows are

representative of diffusion of innovation. In particular, how and what events of each affect the principal's adoption of computer technology. This diagram is encircled by an arrow that shows continuous impact of computer technology on the principalship. This portion of the diagram indicates the tensions that are constantly being placed on the work of the principal from an ever-increasing amount of technology that is available in our society.

Figure 1.1 Conceptual Model: The Principalship and Computer Technology



1

utilizing

techno

seek to

practic

1

techno

1

n

a

R

2

a

n

3

c

4

l

Research Questions

The purpose of this study is to examine how current principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. This study will also seek to provide guidance to professional development opportunities for practicing and prospective principals.

This study will address the research question: How computer technology shapes the form and content of the principal's work?

- 1. How do principals currently employ computer technology to manage, to communicate, to lead instructional programs, and to address the philosophical, legal and regulatory work? (Four performance domains)**
- 2. What is perceived, by the principals, to be the most effective application(s) of computer technology and the most ineffective for management and leadership of schools?**
- 3. What appears to make the difference between why and how different principals employ computer technology?**
- 4. What are the implications of these findings to educational leadership preparation and to further research and inquiry?**

CHAPTER 2

METHODOLOGY: RESEARCH DESIGN AND ANALYTICAL PLAN

Introduction

This study was undertaken because, as a longtime member of the principalship, I have become curious in the last couple of years about the use of technology in the principal's practice. The research regarding the principalship has indicated a significant shift in the duties of the principal (Sybouts and Wendel 1994; Sergiovanni, 1995; Hughes, 1994; Lunenburg, 1995). While the principal's "work" has shifted over the last several decades, the introduction of computer technology has occurred in all phases of our society. With this introduction of computer technology in many areas of schooling, the work of school principals and their use of computer technology has remained somewhat ambiguous. Much research has been and is currently being conducted in the examination of the application of technology in education (i.e., teaching and learning). Because of this, school principals have had to make decisions about computer technology usage, allocating resources to computer technology, and modeling computer technology use. Kearsley and Lynch (1994) speak about educational leaders and their roles in the use of technology in schools:

Educational technology leaders need to be able to use technology to solve real problems in schools. In order to do this they must understand the strengths and limitations of various technologies as

well as the conceptual issues underlying the application of technology. They must know how to successfully implement technology and be familiar with the type of changes that adoption of technology will entail.

(pp. 13-14)

Principals, therefore, need to know the implications of technology on the educational environment in their schools. In order for this to take place, principals must have the knowledge and capacity for personal and professional understanding of technology in order to effectively understand the impact on a school level.

The purpose of this study, therefore, is to examine how current K-12 principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. In this chapter I will describe the methods used to study the principal's practice and the use of computer technology in this work. The design of this study employed a combination of survey and qualitative elements, which allowed me to respond to four research questions proposed at the end of chapter one. In this chapter, I first discuss my theoretical approach to defining a grounded theory of principal practice and use of computer technology. I then define the target population and the sample as well as describe my data collection procedures (i.e., survey, interviewing, and observations). This is followed with an overview of my data analysis procedures, ethical concerns, and limitations of the study. I conclude with a summary

statement that captures the actual inquiry process.

Research Design

The purpose of this study is to examine how current principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. The research that was conducted was apparent in the fields of educational leadership and technology. This exploration of principals and technology was a combination of both qualitative (interview and observation) and quantitative (survey) research. Qualitative and quantitative research provides alternative ways of viewing a particular phenomenon. In this particular study the survey was used to gain basic demographic and informational data from the population of principals that were willing to participate in the study. The interviews were then used to gain a deeper knowledge of how principals view computer technology in their practices.

I began this study by employing the model of the four performance domains as described by the National Commission on the Principalship in 1990. This model was chosen as the interpretive framework to better understand the current practice of the school principal. I understood that the introduction of computer technology into this framework would help inform the way that I would eventually view the use of computer technology and principal practice. Therefore, I remained flexible. I allowed the empirical data collected from the surveys and interviews to guide the final version of the framework.

This study represents an initial attempt to better understand how principals did or did not (and why) employ computer technology in their work and how knowing this information might better inform the larger body of knowledge and research conducted around the school principalship. Surveying a large group of school principals and interviewing a diverse sampling of school principals, gave me a way to analyze the differences and similarities in the practices of school principals.

Target Population and Sample

This study was conducted with practicing principals in the State of Michigan who attended the Michigan Elementary and Middle School Principals Association (MEMSPA) and Michigan Association of Secondary School Principals Association (MASSP) conferences in 1998. 482 surveys were distributed and 157 principals completed the survey during these conferences. The principals were asked to volunteer for follow-up in-depth interviews. Forty-seven principals volunteered to be interviewed. Six principals were selected to be interviewed.

The principals who attended these conferences were from all areas of the state of Michigan. Most of the principals came from suburban and rural school districts. There is an inherent bias in this sample due to the lack of principals from urban school districts. A large segment of the principal population in the state of Michigan comes from urban school districts. The principals from these school districts were very unrepresented in the survey population.

Principals were notified at the MEMSPA and MASSP conferences that I would be located at the entrance of the conference hall at a table with a sign that said “Principals and Technology”. This notification was in the form of a flyer (Appendix) that was placed underneath their hotel room doors during the night and also placed in their conference packets. I was assisted in the placement of the flyers in the hotel rooms and the placement of the surveys in the conference packets by members of the MEMSPA and MASSP staffs. I was also assisted in the collection of the surveys by my mother, Audrey. I was highly visible to the conference attendees and many principals approached the table and asked for the survey. I also approached principals with a survey on a clipboard and invited them to take the survey with them, complete it, and return it to me later in the conference. The surveys were actually placed in the conference packets of the principals who attended the MEMSPA conference, therefore, they were able to complete the surveys at their convenience and return them to me at the table.

The interview population includes three male and three female school principals representing grades Pre-K-12 (N=6). The principals who were selected for the interviews initially identified themselves by signing the back of the survey (Appendix) where I had asked for volunteers. The principals were then selected by using the criteria of: self-rating of confidence and knowledge; grade level of school; type of school district (suburban or rural--no urban school principals volunteered to be

interviewed); size of school district; area of state where school district is located; and gender of principal. This process was somewhat time consuming as I did not ask the principals to identify their school districts. I had to identify the school district by area code and first three digits of the telephone number. I then listed all of the principals that volunteered to be interviewed and began the identification of area of state. Once this process was completed, I then called each of the six principals that I chose for the interviews. All of the initial six selected principals agreed to be interviewed.

Data Collection Tools

Data was collected in three primary formats: survey (Appendix), interview (Appendix) and observation (Appendix). The survey was used to collect particular information regarding practice from a large number of school principals. The interviews allowed the researcher to collect more nuance and detailed information about “actual” use of computer technology in principal practice. The observation at the site allowed for more descriptive information that helped the researcher understand how and if computer technology was easily accessible as well as to determine what hardware and software was actually being used in the principal’s work setting.

Surveys

The survey (Appendix) was utilized in this research in order to provide “a quantitative or numeric description of some fraction of the population—the sample—through the data collection process of asking

questions of people” (Cresswell, 1994, p. 117). This data collection allows the researcher to generalize the findings of this sample of principals to the population of principals throughout the State of Michigan. This is a self-designed survey and was field-tested. I consulted surveys used by Robert Benham (1998), Meg Ropp (1998) and Francis Morse (1995). The survey was reviewed by a committee of educational experts. The survey was designed using the framework of the four performance domains by the National Commission on the Principalship. The 35 questions under Section 3 of the survey come directly from the descriptions of the tasks of the domains.

Section 1 consisted of demographic information that was necessary for the study. Section 2 consisted of the questions regarding the principals’ self-rating of their knowledge and confidence of computer technology in their practices. Section 4 included more demographic information and also questions regarding the nature of computer technology training for the principal. The last portion of Section 4 was the question asking the principals to volunteer for the in-depth interviews. The research questions that were used to design the survey are as follows:

- 1. How do principals currently employ computer technology to manage, to communicate, to lead instructional programs, and to address the philosophical, legal and regulatory work? (Four performance domains)**
- 2. What is perceived, by the principals, to be the most effective**

application(s) of computer technology and the most ineffective for management and leadership of schools?

3. What appears to make the difference between why and how different principals employ computer technology?

4. What are the implications of these findings to educational leadership preparation and to further research and inquiry?

The survey was pilot-tested by five principals in the Green School District. The principals included three elementary, one middle school assistant and one high school principal. There were two female and three males who pilot-tested this survey. The principals in this pilot test are all colleagues in the district where the researcher is employed. The researcher asked these five principals to provide feedback regarding the nature of the questions; length of question; length of time it took to complete the survey; and the clarity of the survey and its questions. The information for improving the survey instrument that was gathered from these principals included the amount of time it took to complete the survey, clarity of questions, and size of type font. The revisions were made to the survey instrument prior to the collection of data at the principals' conventions.

The survey was the preferred type of data collection for this study because it allowed for a "rapid turn-around in data collection and the ability to identify attributes of a population from a small group of individuals" (Cresswell, 1994, p. 119). This survey was cross-sectional because the

surveys were administered at the MEMSPA and MASSP 1998 conventions. The respondents were given the opportunity to complete the survey during the convention. The researcher established herself at a table in the convention center and approached the principals as they entered the MEMSPA convention. This method of data collection was changed for the MASSP convention. The researcher placed the survey in the principals' MASSP convention packets in order to allow the principals more time to complete the survey. The researcher then was available throughout the convention in order to collect the surveys from the principals. The convenience of rapid turn-around and the face-to-face contact with the principals was valuable in gathering the survey information. The availability of a large number of principals (approximately 1000) at these conventions was also very useful in administering this survey.

This form of self-administered questionnaire was used because of its flexibility and broadness of scope. The majority of the items on the survey used a Likert scale method. "The aim (of the Likert scale) is to spread out people with various attitudes or traits along a continuum" (Polit & Hungler, 1995, p.281). The Likert scale was used primarily in reference to the questions regarding the four performance domains and the principals' knowledge and self-confidence regarding the use of computer technology in their practices.

Interviews

The principals were asked to volunteer for follow-up in-depth interviews when completing the survey. 47 of the 157 respondents volunteered for these interviews. The six interviewees were selected based on the following criteria:

- 1. Grade level of building of which they are the principal.**
- 2. Type of district—Urban, suburban and rural.**
- 3. Size of student population of their buildings.**
- 4. Area of state in which they were located.**
- 5. Gender of the principal.**

The interview was selected as a means of gathering information because “the interview provides opportunity for in-depth probing and elaboration and clarification of terms, if necessary” (Wiersma, 1995, p. 196). The voices of the interviewed principals was an important piece of research for this study. It was important for me as the researcher to gain a view of the principal’s work from someplace other than my own office. Marshall and Rossman (1989) talk about the importance of the interviewee’s viewpoint in the interview process:

This, in fact, is an assumption fundamental to qualitative research—the participant’s perspective on the phenomenon of interest should unfold as the participant views it, not as the researcher views it. (p. 80)

The interviews followed an interview protocol (Appendix). The

interview protocol was constructed using the four performance domains as described by the National Commission on the Principalship. This framework was used in order to understand the practice of the principals while they were being interviewed. The interview protocol was pilot-tested with an administrator in the Green School District. The pilot test of the interview was conducted with a male assistant middle school principal. The pilot test lasted approximately 60 minutes and the assistant principal was helpful in giving the researcher immediate feedback to the questions and to the manner in which the questions were posed. This interview provided the researcher with information regarding the process of the interview, clarity of questions and the amount of time it took to administer the instrument.

The interviews were conducted in the principals' schools and lasted approximately 90-120 minutes. The interview questions were based on the information obtained from the surveys and were asked in an open-ended fashion so that the interviewees had ample opportunity to respond in their own words to the questions. The interview questions were asked in such a way, that the researcher remained open and flexible to any information that would be surprising and would lead to an understanding of the use of computer technology in the principal's practice. The interview protocol provided a standardized format from which to question the interviewed principals. The interview questions were derived from the research and survey questions as displayed in Table 1.

Table 2.1 Research Matrix		
RESEARCH QUESTIONS	SURVEY QUESTIONS	INTERVIEW QUESTIONS
How do principals currently employ computer technology to manage, to communicate, to lead instructional programs, and to address the philosophical, legal and regulatory work? (The four performance domains)	The use of computer technology assists my work as principal in...	How do you use computer technology in your work as principals in reference to the four performance domains? Functional Domain Programmatic Domain Interpersonal Domain Contextual Domain
What is perceived by the principals, to be the most effective application(s) of computer technology and the most ineffective for management and leadership in schools?	What areas of your practice have been most affected (positively or negatively) by the infusion of technology?	In what ways has the infusion of computer technology allowed you to manage your daily tasks more efficiently? How has it hindered your management of daily tasks?
What appears to make the difference between why and how different principals employ computer technology?	How many years have you been using computer technology in the work setting? During the last 12 months, how often did you use computer technology to do tasks directly related to your job?	How has computer technology changed the way you do business as a school principal? What have been the challenges/barriers that have arisen from the organizational structures impeding the use of computer technology in your practice?
What are the implications of these findings to educational leadership preparation and to further research and inquiry?	Have you had access to computer technology training in your current district? If yes, was the training specifically designed for you as a principal?	How was computer technology addressed in your formal academic experience? How would you design professional development and principal preparation opportunities for practicing and aspiring principals?

Observations

Observation of the principals' offices, the school setting, and the technology that was available to the principals is also used in this data collection. The observations were conducted during the course of the interviews and also before and after the interviews. The observations provided the researcher with information regarding the access of computer technology for the principals and the context in which these

principals used the technology.

Data Analysis

Using both a quantitative and qualitative approach to this study lends a sense of credibility to the research because one approach by itself tells only a portion of the story. Polit and Hungler (1995) talk about how the blending of these two methods are complementary:

One argument in support of blending qualitative and quantitative data in a single project is that they are complementary; they represent words and numbers, the two fundamental languages of human communication. Webster's (dictionary) defines complementary as "mutually supplying each other's lack," and this characterizes the two methodological strategies well. By integrating different methods and modes of analysis, the weaknesses of a single approach may be diminished or overcome. (pp. 539-540)

It is from this combination of methods that the analysis has taken place. This two-stage approach provided the researcher with enhanced information that was first gathered by the completion of the survey and then followed by the in-depth interviews.

The initial gathering of data came from the literature review of the principalship and the use of technology in this work. It was from this information that the survey was designed. The survey was then analyzed in reference to the demographic information, frequency of data and correlational data. The data from the surveys was coded for input into a

data analysis program. The data analysis program that was used for this research is the SPSS (Statistical Package for the Social Sciences) Graduate Pack. This program was developed by researchers at the University of Chicago and National Opinion Research Center to assist researchers in the analysis of social science data. This program allowed the researcher to synthesize the survey data into tables, charts and statistical information.

The survey was constructed from the four performance domains as described by the National Commission on the Principalship (1990) and pilot-tested by five principals in the Green School District. A Likert scale was used in order to gain an understanding of the principal's use of computer technology in their practices. The data on these surveys was self-reported. The survey, coupled with the extensive interviews and observations allowed the researcher to provide the best possible snapshot of the principal use of computer technology and their practices.

The interview process was based on the information collected from the survey. Six principals were identified from their responses to the knowledge and confidence questions on the survey. The six principals were interviewed in their individual schools and observations of the principals' offices and computer equipment took place at the time of the interviews. Narratives have been written from the information gleaned from the interviews.

Ethical Considerations

I obtained a letter of consent from each participant in the survey and interview process (Appendix). All of the surveys were coded with numbers and I entered the data from these surveys into the data analysis program SPSS. The interview participants were given pseudonyms and some specific personal details were altered to protect the confidentiality of each of the participants. I served as the only interviewer. I enlisted the help of a college student to transcribe the audio tapes of the interviews. I am the only person to review the transcribed interviews.

Limitations of the Study

Several limitations were involved in this study. First, the surveys were asked to be completed at the principals' conventions. This setting was advantageous because of the number of principals that were available in one place. Because I asked the principals to complete the surveys while attending the conference, this may not have provided the best atmosphere for principals to understand and review the survey. Second, there is also a lack of principals from urban school districts who attended these conferences. There were only six principals from urban school districts that completed the survey and none of these principals volunteered to be interviewed. Third, there were some questions on the survey that did not use a Likert scale to measure the answers, therefore, it was not possible to correlate all the information gathered. Fourth, there "was the possibility of interviewer bias due to the use of qualitative research techniques. The bias

might have occurred in several ways: the development of the interview protocol, the presentation of the questions to the participants, or the nonverbal reactions of the interviewer to the respondents' answers" (Colflesh, 1996, p. 79).

Summary

This study was conducted with every effort taken to use sound research practices. Polit and Hungler talk about "reliability of an instrument is the degree of consistency with which it measures the attributes it is supposed to be measuring" and validity "refers to the degree to which an instrument measures what it is supposed to be measuring." (p. 347 & 353) This was consistent in the design of the survey instrument. Principals were asked to give demographic data and respond to questions that were directly related to the four performance domains as established by the National Commission on the Principalship in 1990.

The interview protocol was designed to give the researcher additional information that was initially given through the use of the survey. The face-to-face interaction between the interviewer and interviewees was important in gathering this in-depth information. The observations that occurred during the interview process gave the researcher "firsthand experience with the informants." (Cresswell, 1994, p. 150)

CHAPTER 3

PRINCIPALS AND THEIR USE OF COMPUTER TECHNOLOGY: THE SURVEY

Introduction

The survey designed for this research study was constructed to gather information regarding the demographic picture of the principals that completed the survey, to understand how they use computer technology in relation to the four performance domains, and to determine their access to computer technology and computer technology training. A portion of the survey also included a self-assessment by the principals of their knowledge of computer technology and their level of confidence of their use of computer technology. The information in this survey both formed a base and enhanced the information for the in-depth interviews that were conducted with six principals.

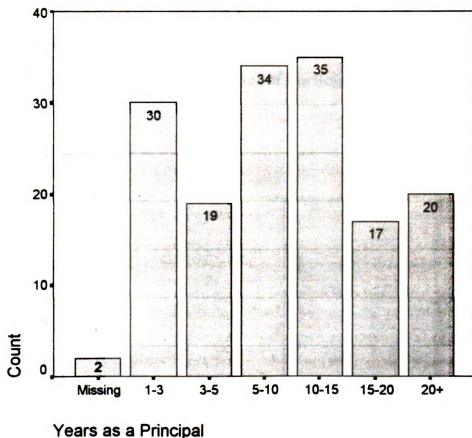
Demographic Information from Surveys

The initial data for this research was gathered through a survey that was distributed to school principals at the Michigan Elementary and the Middle School Principals Conference (MEMSPA) and Michigan Association of Secondary School Principals (MASSP) Conference in 1998. A total of 482 surveys were distributed at both conferences. Altogether, 157 respondents completed and returned the survey. This was a 33% return of the distributed surveys. The respondents included 155 principals from Michigan public schools and two principals were from

private schools.

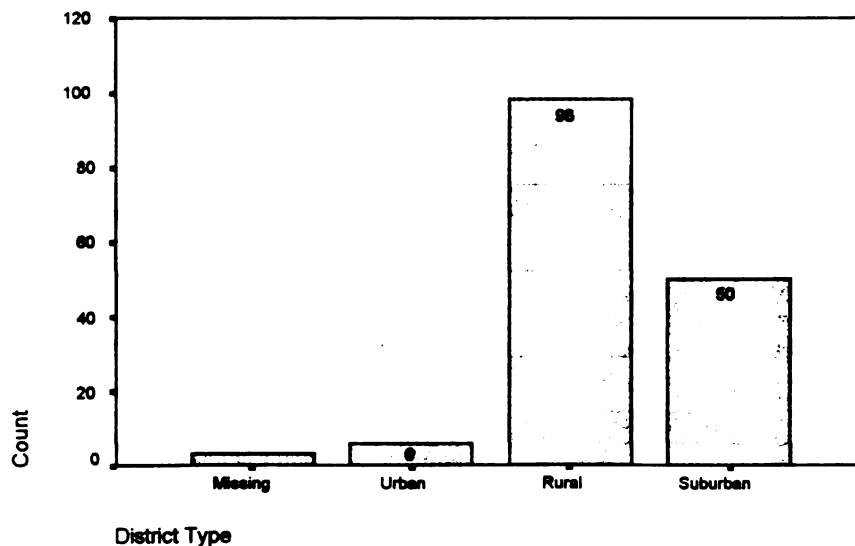
The principals who responded to the survey (see Graph 3.1) represented a wide range of years of experience as principals. Of the group of school principals in the survey pool, 79 (51%) have between 5 through 15 years of administrative experience, 49 (25%) reported less than 5 years of principalship experience, and 37 (24%) principals reported more than 15 years of experience. Of the principals surveyed, 75% have more than five years of experience as building level principals.

Graph 3.1 Years of Experience of Participating Principals



The survey information in Graph 3.2 indicated that 98 (62%) of the principals were from rural schools; 50 (32%) from suburban school; and 6 (4%) from urban schools. There is a noticeable lack of principals from urban schools participating in this survey. Approximately 13% (144) of all principals (approximately 1128) in the state of Michigan work in urban areas. Less than 2% of the returned surveys came from principals from urban schools. This lack of participation may be due to the fact that these principals did not attend these conferences because larger school districts may conduct their own professional development activities. There is an inherent bias in this sample due to the lack of principals from urban school districts. The principals from these school districts were under represented in the survey population.

Graph 3.2 Type of District of Participating Principals



Q

between

had stu

were fr

princip

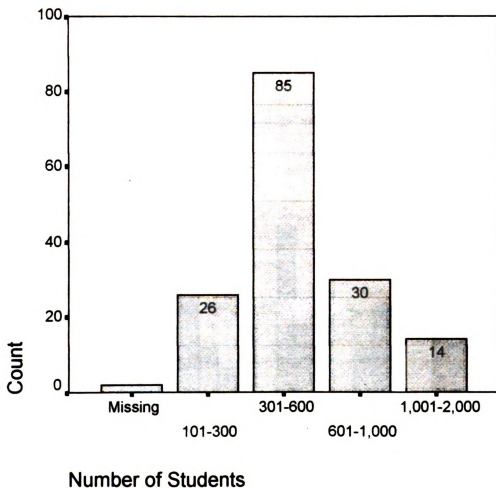
popula

Grap

Count

Of the principals surveyed, 85 (54%) cited that their schools had between 301-600 student populations in their schools; 30 (19%) principals had student populations between 601-1000; 26 (17%) of the principals were from school with student populations of 101-300; and 14 (9%) principals were in schools with populations of 1001-2000 students. The population of the schools are identified in Graph 3.3.

Graph 3.3 Student Populations of Schools of Participating Principals



Compute

Pr

compute

respond

technolo

have be

This info

compute

use.

Gr

3

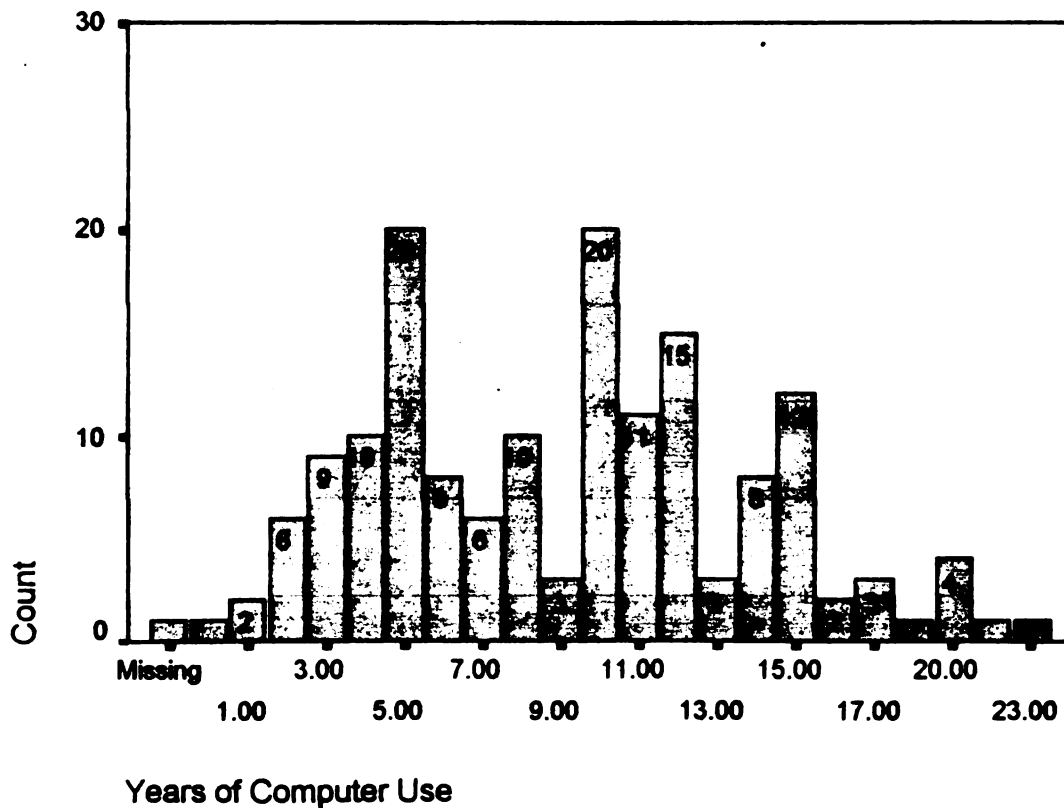
2

Count

Computer Use and Principals

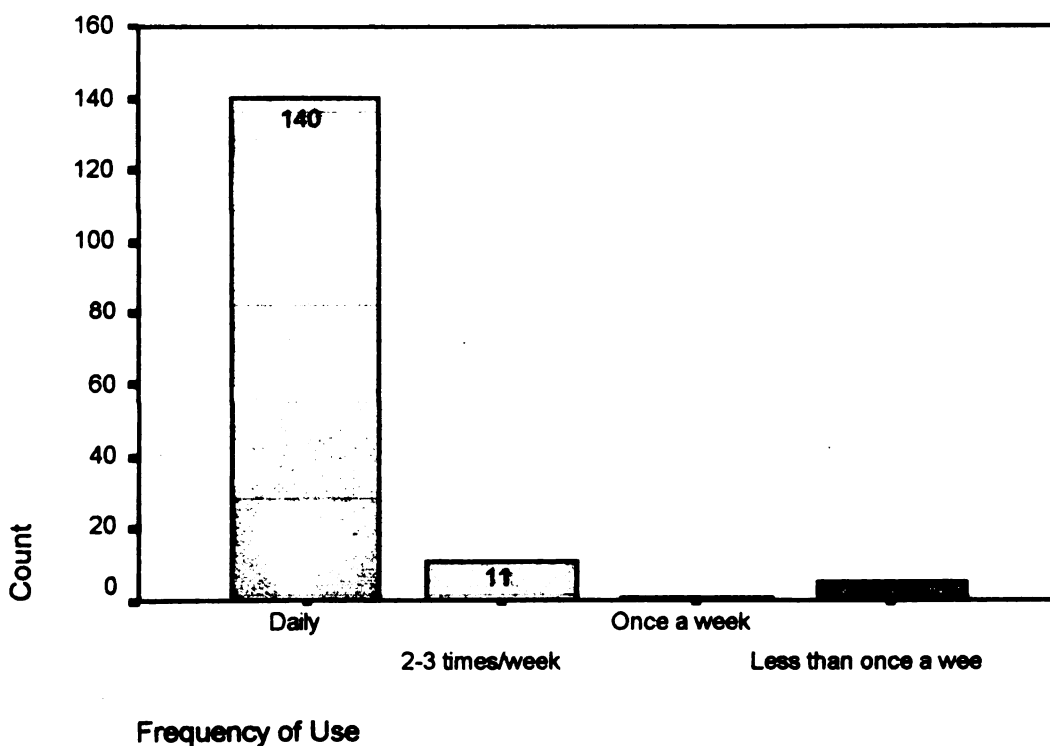
Principals were asked to report, in number of years, their use of computer technology in their practices. Graph 3.4 reveals that survey respondents reported varying years of experience with computer technology in their practices. The majority of principals (N=127 or 81%) have been using computers in their practices between five and 15 years. This information may indicate that principals see benefits to the use of computer technology and may have a comfort level based on longevity of use.

Graph 3.4 Years of Computer Use by Participating Principals



Principals were asked to indicate how often they are currently using computer technology in their daily practices. The majority of the principals (N=140 or 89%) cited (see Graph 3.5) that they used their computers on a daily basis. Only one principal indicated that they used their computer less than once a week. This again reflects that principals may see benefits to computer technology and may have a comfort level based on frequency of use.

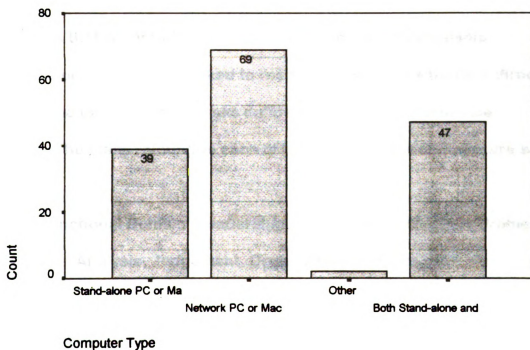
Graph 3.5 Frequency of Use of Computers in Principals' Daily Practice



Computer Technology Hardware

Principals were asked to identify the type of computer equipment they had access to in their practices. The principals indicated a wide variety of available equipment. The greatest number of principals (N=69 or 44%) had access to networked PC or MAC computers. Next in accessibility were the combination of stand-alone and networked PC or MAC computers (N=47 or 30%) and stand-alone PC's or MAC's (N=39 or 25%). This indicates that 116 principals (74%) have access to networked capabilities.

Graph 3.6 Frequency of Computer Type



Performance Domains

In 1990 The National Commission on the Principalship, which was a combined effort of the National Association of Secondary School Principals (NASSP) and the National Association of Elementary School Principals (NAESP), created a framework that defined the changing nature of the school principalship. This framework described the principal's work by identifying four performance domains, which include: functional domain, programmatic domain, interpersonal domain and contextual domain. These domains proposed 21 tasks. The framework was based on the realities of the workplace, "These domains define the scope of responsibility faced by principals and the knowledge and skills required to accomplish the tasks of the job" (p. 18). It is through this framework that we are able to view the tasks of the principalship.

The principals were asked to respond to questions that are directly linked to the description of tasks defined in the four performance domains. The tasks relating to each of the performance domains are as follows:

- ◆Functional Domain (Leadership, Information Collection, Problem Analysis, Judgement, Organizational Oversight, Implementation, and Delegation)**
- ◆Programmatic Domain (Instructional Program, Curriculum Design, Student Guidance & Development, Staff**

Development, Measurement & Evaluation, Resource Allocation)

◆ Interpersonal Domain (Motivating Others, Sensitivity, Oral Expression, Written Expression)

◆ Contextual Domain (Philosophical & Cultural Views, Legal & Regulatory Applications, Policy & Political Influences, Public & Media Relations).

This part of the survey was designed in order to gain an understanding of how principals are using computer technology in reference to the knowledge and skills required to do the principal's work. The principals were asked to respond to the questions using a Likert scale where: 1=Never; 2=Rarely; 3=Sometimes; 4=Often; 5=Regularly. In an effort to discuss the frequency of use it was determined that values of 2.5 or less would describe low use; a range from 2.6 to 3.5 would describe moderate use; and values greater than 3.5 would describe high use.

Functional Domain

The tasks of this domain “address the organizational processes and techniques by which the mission of the school is achieved. They provide for the educational program to be realized and allow the institution to function” (National Commission for the Principalship, 1990, p. 21). The information detailed in Table 3.1, indicates principals' moderate use of technology for all the tasks defined in this domain except the task of

assessing projects or tasks, which has low use.

Table 3.1 Means of the Tasks of the Functional Domain

Report										
Jobtitle	gathering data	seeking knowledge	Classifying & organizing	identifying problem solutions	identifying additional info	assisting others	reaching logical conclusions	planning & scheduling work	monitoring projects	assessing project or tasks
Principal Mean	3.18	2.67	3.17	2.58	3.03	2.61	2.84	3.11	2.68	2.48
N	157	157	157	157	157	155	157	157	157	157
Std. Deviation	1.16	1.01	1.06	.99	3.29	1.15	1.06	1.28	1.23	1.21
Total Mean	3.18	2.67	3.17	2.58	3.03	2.61	2.84	3.11	2.68	2.48
N	157	157	157	157	157	155	157	157	157	157
Std. Deviation	1.16	1.01	1.06	.99	3.29	1.15	1.06	1.28	1.23	1.21

Table 3.2 is a summary of the percentages of the principals' responses to each one of the task-related questions in the functional domain on the survey. This table indicates the percentage of the total number of principals (N=157) that responded to the level of use for each task in the functional domain. High use indicated that the principals answered "Often" and "Regularly" on the survey; moderate use was indicated by "Sometimes" on the survey; and low use was indicated by "Never" or "Rarely" on the survey.

Table 3.2 Functional Domain			
	High Use	Moderate Use	Low Use
Gathering Data	38.2%	36.9%	24.2%
Seeking Knowledge	17.9%	39.5%	42.6%
Classifying & Organizing	35.7%	40.8%	23.6%
Identifying Problem Solutions	14%	40.8%	35.2%
Identifying Additional Information	20.4%	43.9%	33.8%
Assisting Others	20.4%	38.2%	36.3%
Reaching Logical Conclusions	26.8%	38.2%	33.8%
Planning & Scheduling Work	38.2%	30.6%	31.2%

Table 3.2 Functional Domain			
Monitoring Projects	22.3%	30.6%	46.5%
Assessing Projects or Tasks	19.7%	28.7%	48.4%

The statistical information gathered from the surveys indicated that principals do use computer technology for gathering data, seeking knowledge, classifying and organizing, identifying problem solutions, planning and scheduling work, monitoring projects and assessing projects and tasks. The principals indicate though, on an average, that they only use computer technology “moderately” when referring to these tasks. The act of assessing projects or tasks was given a “low use” rating by the principals on the survey.

Programmatic Domain

The programmatic domain tasks “focus on the scope and framework of the educational program. They reflect the core technology of schools, instruction, and the related supporting service, developmental activities, and resource base” (National Commission for the Principalship, 1990, p. 23)

Table 3.3 Means of the Tasks of the Programmatic Domain

Report											
Job title	envisioning & enabling	recognizing developmental needs	mobilizing participation	providing for student guidance	providing for partnerships	creating & creating partnerships	assessing & creating prof. dev	determining diagnostic info	developing & measuring student outcomes	seeking, allocating adjusting	planning physical plant
Principals Mean	2.68	2.56	2.42	2.59	2.30	2.21	2.73	2.64	2.89	2.90	2.22
N	157	157	157	157	157	157	157	157	157	157	157
Std. Deviation	1.12	1.21	1.17	1.22	1.18	1.13	1.15	1.14	1.16	1.21	1.16
Total Mean	2.68	2.56	2.42	2.59	2.30	2.21	2.73	2.64	2.89	2.90	2.22
N	157	157	157	157	157	157	157	157	157	157	157
Std. Deviation	1.12	1.21	1.17	1.22	1.18	1.13	1.15	1.14	1.16	1.21	1.16

The information detailed in Table 3.3 reveals the principals' low use (<2.5) of computer technology for the following tasks areas: mobilizing participation, providing for partnerships, creating partnerships, planning the physical plant. The principals indicated that they use computer technology moderately (>2.5, <3.5) for the following tasks: envisioning and enabling, recognizing developmental needs of students, providing for student guidance, assessing and creating professional development, determining diagnostic information about students, developing and measuring student outcomes, and seeking and allocating resources.

Table 3.4 is a summary of the percentages of the principals' responses to each one of the task-related questions in the programmatic domain on the survey. This table indicates the percentage of the total number of principals (N=157) that responded to the level of use for each task in the programmatic domain. High use indicated that the principals

answered “Often” and “Regularly” on the survey; moderate use was indicated by “Sometimes” on the survey; and low use indicated by “Never” or “Rarely” on the survey.

Table 3.4 Programmatic Domain			
	High Use	Moderate Use	Low Use
Envisioning & Enabling	23.5%	36.3%	38.9%
Recognizing Developmental Needs of Students	20.4%	32.5%	44%
Mobilizing Participation	18.5%	28%	49%
Providing for Student Guidance	23%	31.2%	43.9%
Providing for Partnerships	15.9%	26.8%	44.1%
Creating Partnership	11.5%	27.4%	56.7%
Assessing & Creating Professional Development	24.2%	38.9%	35%
Determining Diagnostic Information	21.7%	36.9%	39.5%
Developing & Measuring Student Outcomes	28%	39.5%	31.2%
Seeking, Allocating & Adjusting Resources	29.9%	32.5%	36.9%
Planning Physical Plant	14.1%	22.9%	60.5

Interpersonal Domain

The tasks of this domain “recognize the significance of interpersonal connections in schools. They acknowledge the critical value of human relationships to the satisfaction of personal and professional goals, and to the achievement of organizational purpose” (National Commission for the Principalsip, 1990, p. 24).

The information detailed in Table 3.5 indicates high use (>3.5) by

principals in the task area of writing appropriately. The principals indicate moderate use (>2.5, <3.5) of computer technology for the following tasks: planning and encouraging, supporting innovation, providing coaching and responding, reviewing and summarizing. Principals demonstrated low use (<2.5) when referring to assessing the needs and managing conflict and recognizing multi-cultural sensibilities.

Table 3.5 Means of the Tasks of the Interpersonal Domain

Report								
Jobtitle		planning & encouraging	supporting innovation	providing coaching	assessing the needs & managing conflict	recognizing multi-cultural	responding, reviewing & summarizing	writing appropriately
Principal	Mean	3.78	4.05	3.75	3.36	2.79	3.83	4.79
	N	157	157	157	157	157	157	157
	Std. Deviation	1.29	1.17	1.23	1.18	1.04	1.35	1.26
Total	Mean	3.78	4.05	3.75	3.36	2.79	3.83	4.79
	N	157	157	157	157	157	157	157
	Std. Deviation	1.29	1.17	1.23	1.18	1.04	1.35	1.26

Table 3.6 is a summary of the percentages of the principals' responses to each one of the task-related questions in the interpersonal domain on the survey. This table indicated the percentage of the total number of principals (N=157) that responded to the level of use for each task in the interpersonal domain. High use indicated that the principals answered "Often" and "Regularly" on the survey; moderate use was indicated by "Sometimes" on the survey; and low use was indicated by "Never" or "Rarely" on the survey.

Table 3.6 Interpersonal Domain			
	High Use	Moderate Use	Low Use
Planning & Encouraging	28.1%	31.8%	38.8%
Supporting Innovation	25%	38.9%	24.9%
Providing Coaching	28.7%	29.3%	41.4%
Assessing Needs & Managing Conflict	15.9%	29.3%	43.5%
Recognizing Multi-Cultural Sensibilities	7.7%	13.4%	73.9%
Responding, Reviewing & Summarizing	35.1%	27.4%	31.2%
Writing Appropriately	66.9%	14.6%	28.5%

Contextual Domain

The tasks in this domain “reflect the world of ideas and forces within which the school operates. They explore the intellectual, ethical, cultural, economic, political, and governmental influences upon the schools, including traditional and emerging perspectives” (National Commission for the Principalship, 1990, p. 25). The information in Table 3.7 reveals that principals low use of computer technology in this domain area for acting with reasoned understanding, understanding issues, recognizing global influences and addressing ethical issues. The principals cited moderate use (>2.5, <3.5) of computer technology when referring to understanding government, administering contractual and legal issues and interacting with parental and community opinion leaders.

Table 3.7 Means of the Tasks of the Contextual Domain

Report								
Jobtitle		acting with a reasoned understanding	understanding issues	recognizes global influences	understanding government	administering contractual & legal	addressing ethical issues	interacting
Principal	Mean	2.20	2.45	2.33	2.52	2.50	2.06	2.62
	N	157	157	157	157	157	157	157
	Std. Deviation	1.30	1.16	1.13	1.14	1.12	1.07	1.36
Total	Mean	2.20	2.45	2.33	2.52	2.50	2.06	2.62
	N	157	157	157	157	157	157	157
	Std. Deviation	1.30	1.16	1.13	1.14	1.12	1.07	1.36

Table 3.8 is a summary of the percentages of the principals' responses to each one of the task-related questions in the contextual domain on the survey. This table indicated the percentage of the total number of principals (N=157) that responded to the level of use for each task in the contextual domain. High use indicates that the principals answered "Often" and "Regularly" on the survey; moderate use was indicated by "Sometimes" on the survey; and low use was indicated by "Never" or "Rarely" on the survey.

Table 3.8 Contextual Domain			
	High Use	Moderate Use	Low Use
Acting with a Reasoned Understanding	16.5%	26.8%	48.4%
Understanding Issues	17.8%	31.8%	45.9%
Recognizes Global Influences	15.3%	27.4%	46.5%
Understanding Government	17.8%	33.8%	46.5%

Table 3.8 Contextual Domain			
Administering Contractual & Legal Issues	21%	30.6%	47.7%
Addressing Ethical Issues	8.3%	26.8%	60.5%
Interacting with Leaders	26.1%	24.2%	46.4%

Summary of Principal Practice

The principal's practice is affected in a variety of areas as described in the above sections relating to the four performance domains, yet the depth of use of computer technology is still questionable. It is a fact that principals are using computer technology in their practices, but it is apparent that their use is marginal. Table 3.9 represents the use of computer technology as described by the survey data in reference to the four performance domains.

Table 3.9 Principal Use of Computer Technology and the Four Performance Domains

	Functional Domain	Programmatic Domain	Interpersonal Domain	Contextual Domain
High Use (Often- Regularly)			Writing appropriately	
Moderate Use (Sometimes)	Gathering Data Seeking Knowledge Classifying & organizing Identifying problem solutions Identifying additional information Assisting others Reaching logical conclusions Planning & scheduling work Monitoring projects	Envisioning & enabling Recognizing developmental needs Providing for student guidance Assessing & creating professional development Determining diagnostic information Developing & measuring student outcomes Seeking & allocating resources	Planning & encouraging Supporting innovation Providing coaching Responding, reviewing & summarizing	Understanding government Administering contractual & legal obligations Interacting with parental & community leaders
Low Use (Never/Rarely)	Assessing projects & tasks	Mobilizing participation Providing for partnerships Creating partnerships Planning physical plant	Assessing needs & managing conflict Recognizing multi- cultural issues	Acting with reasoned understanding Understanding current social & economic issues Recognizing global influences Addressing ethical issues

Number of Years as Principal and Self-Rating of Knowledge

The information gathered in the survey does indicate that there are slightly significant differences in the amount of knowledge that a principal possesses regarding computer technology in relation to the number of years a person has been a principal. The highest means for knowledge of computer use were in the category of people who had been principals for 10-15 years. This group of principals indicated that they rated themselves

as having greater than intermediate knowledge when referring to their knowledge about software use, hardware use and slightly less than intermediate knowledge about curriculum integration. The category of people who have 15-20 years showed the lowest ratings when speaking about knowledge. The principals in this category rated themselves as having less than intermediate knowledge about software use, intermediate knowledge about hardware use and less than intermediate knowledge when referring to curriculum integration. The category of 1-3 years indicated that the principals has less than intermediate knowledge when referring to all three areas. The principals in the category of 1-3 were most surprising because these principals would have been the most recent graduates of educational leadership programs.

Legend for Knowledge about Computers:

1=None	4=Expert 1
2=Novice	5=Expert 2
3=Intermediate	6=N/A

Table 3.10 Years of Experience as Principals and Self-Rating of Computer Technology Knowledge

Report

Years as a Principal		Knowledge of Software Use	Knowledge of Hardware Use	Knowledge of Curriculum Integration
1-3	Mean	2.93	2.73	2.77
	N	30	30	30
	Std. Deviation	.74	.78	.90
3-5	Mean	3.16	2.37	3.21
	N	19	19	19
	Std. Deviation	.83	.76	.98
5-10	Mean	2.91	2.48	2.88
	N	34	33	33
	Std. Deviation	.90	.94	1.02
10-15	Mean	3.23	3.00	2.97
	N	35	35	35
	Std. Deviation	.77	.87	.71
15-20	Mean	2.76	2.41	2.53
	N	17	17	17
	Std. Deviation	.83	.87	1.12
20+	Mean	3.05	2.80	2.60
	N	20	20	20
	Std. Deviation	.51	.62	.68
Total	Mean	3.02	2.67	2.84
	N	155	154	154
	Std. Deviation	.79	.85	.91

Number of Years as Principal and Self-Rating of Confidence

The principals who indicated the greatest amount of knowledge (10-15 years experience) also indicated the greatest amount of confidence. This set of principals indicate that their confidence lies between moderate and high. The principals who had the least amount of confidence were also the same set of principals (15-20 years experience) who indicated that they had the least amount of knowledge. These

principals have slightly more than moderate confidence when referring to software use, but less than moderate confidence when referring to hardware use and curriculum integration. The set of principals in the 1-3 year category did not necessarily follow the knowledge question. The principals in this category indicated that they have almost high confidence in the area of software use and better than moderate confidence in hardware use and curriculum integration. This group of principals has greater confidence in reference to computer use than they indicated they had knowledge in these three areas. This information indicates how principals have adopted the innovation of computer technology. It is apparent that many of the principals who have been principals for a longer period of time have greater difficulty in accepting the impact that computer technology has on their practice. This group of principals could be considered the “laggards” when referring to their knowledge and confidence of computer technology. It would appear that this may be a result of the fact that these principals began their careers as principals without the benefit of “growing up” with computer technology. This may be the reason that this set of principals has a more difficult time in adopting this innovation into their practices.

Legend for Confidence about Computers

**1=Very Low
2=Low
3=Moderate**

**4=High
5=Very High
6=N/A**

**Table 3.11 Years of Experience as Principal and Self-Rating of
Computer Technology Confidence**

Report

Years as a Principal		Confidence in Software Use	Confidence in Hardware Use	Confidence in Curriculum Intergration
1-3	Mean	3.63	3.17	3.20
	N	30	30	30
	Std. Deviation	.81	1.05	.92
3-5	Mean	3.37	2.95	3.47
	N	19	19	19
	Std. Deviation	.83	1.13	.70
5-10	Mean	3.18	2.68	3.03
	N	34	34	34
	Std. Deviation	1.00	1.07	1.11
10-15	Mean	3.60	3.51	3.31
	N	35	35	35
	Std. Deviation	.91	.95	.93
15-20	Mean	3.12	2.88	2.71
	N	17	17	17
	Std. Deviation	1.22	1.17	1.31
20+	Mean	3.25	3.00	3.05
	N	20	20	20
	Std. Deviation	.64	.56	.69
Total	Mean	3.39	3.08	3.15
	N	155	155	155
	Std. Deviation	.92	1.03	.98

Correlation of Self-Ratings of Knowledge and Confidence Levels

There were very strong relationships between the principals knowledge of software, hardware and curriculum integration to their confidence levels as evidenced by Table 3.11. Table 3.11 indicates that when principals have knowledge regarding the use of computer technology, then their confidence in using computer technology is significant. This information indicates that the rate of adoption occurs

significant. This information indicates that the rate of adoption occurs increases as the level of confidence and knowledge increases.

Table 3.12 Correlation: Self-Ratings of Knowledge and Confidence

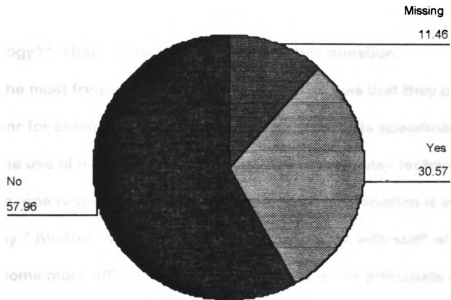
		Correlations					
		Knowledge of Software Use	Knowledge of Hardware Use	Knowledge of Curriculum Integration	Confidence in Software Use	Confidence in Hardware Use	Confidence in Curriculum Intergration
Knowledge of Software Use	Pearson Correlation	1.000	.630**	.588**	.710**	.513**	.485**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	157	157	157	157	157	157
Knowledge of Hardware Use	Pearson Correlation	.630**	1.000	.516**	.556**	.713**	.471**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	157	157	157	157	157	157
Knowledge of Curriculum Integration	Pearson Correlation	.588**	.516**	1.000	.511**	.461**	.690**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	157	157	157	157	157	157
Confidence in Software Use	Pearson Correlation	.710**	.556**	.511**	1.000	.750**	.684**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	157	157	157	157	157	157
Confidence in Hardware Use	Pearson Correlation	.513**	.713**	.461**	.750**	1.000	.655**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	157	157	157	157	157	157
Confidence in Curriculum Intergration	Pearson Correlation	.485**	.471**	.690**	.684**	.655**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	157	157	157	157	157	157

**. Correlation is significant at the 0.01 level (2-tailed).

Training

In graph 3.7 we find that the majority of the principals (88.5%) who completed this survey indicated that they have had access to some computer training in their districts. Only 30.6% (see graph 3.8) indicated that these principals had not had training specific to their jobs as principals.

Graph 3.7 Frequency of Access to Computer Training



Graph 3.8 Frequency of Access to Specific Training Designed for Principals



Open-Ended Survey Question and Perceived Effective Uses of Computer Technology

The principals who participated in the survey were asked to respond to the following open-ended question: “What areas of your practice has been most affected (positively or negatively) by the infusion of technology?”. There were 101 responses to this question.

The most frequent theme by the principals was that they used the computer for communication purposes. The principals specifically spoke about the use of e-mail as a large advantage of computer technology. For example, one respondent wrote “With e-mail communication is immediate and easy.” Another wrote: “Positive communication with staff with e-mail has become more efficient and rapid.” Several of the principals noted that a new found “freedom” from the phone was an advantage of e-mail. “The use of e-mail allows me freedom from phone interruptions. However the down side of this is that you must read and answer e-mail.” Principals referred to communication within their buildings and also with other practicing professionals. Examples included, “Communication with other principals, state office and the legislature.” “Interaction with colleagues, experts and others to do the best, most current job.” There were twelve principals that believed that having access to e-mail has allowed them to keep in touch with people that they very well would have lost contact without e-mail. Communicating more effectively with parents through the use of the computer was also mentioned as a very positive result of the

use of computer technology. Principals also spoke about communication through the use of web sites that were designed for their schools. The ability to communicate rapidly was cited as an advantage for the principals.

Word processing is also mentioned frequently by the principals. Principals use word processing for a number of things such as newsletters, teacher evaluations, memos to staff, correspondence and notes home to students. One principal noted: "Communication via word processing". Another principal indicated: "Desktop publishing, newsletters, written communication through word processing." This theme of using word processing was prevalent in 20% of the responses by the principals and one principals mentioned: "Word processing makes the job easier." Another area of positive impact by the computer was in the area of using word processing capabilities for public relation purposes. Principals cited examples of more professional-looking documents that were dispersed into the community. Two principals noted that word processing was the only thing for which they used a computer.

Another prevalent theme for the principals was the use of computer technology for student databases and student management systems. One principals noted: "Management of information and analysis of information." Principals talked about their capabilities to track student discipline and attendance and also to be able to gather information on

student achievement. “Monitoring student assessments and achievements” and “Creating student databases; filing for use in discipline tracking” was mentioned by two principals. The use of the computer by the principal to be informed about student progress was mentioned by 18 principals and one example is: “Discipline and tracking student data for student, parent and auxiliary staff conferences and managing classroom documents.” Scheduling is also an issue that principals spoke about and their comments included “Student database manipulation, attendance, scheduling, transcripts and grades” and “Access to information about students, scheduling and compiling data for decision-making.”

Making professional presentations was also spoken about by the principals: “Presentation of information in a professional and timely manner” and “Communications of all kinds are creative and professional looking and thus more effective.” Having the ability to create informative presentations was noted by a principal: “Improved communications and documentation; PR—everything looks better (i.e. reports, homepage, etc.).” Principals indicated that they currently type their own material and do not need to rely on the secretary nearly as much as prior to computer technology. This sense of “independence” appeared in a couple of the principals responses and four principals mentioned that they no longer need to wait to speak to someone else before they prepare their material

or gather

G

time ma

princip.

informa

"Regula

curricu

It

indicate

the fac

they sp

commu

to help

T

comput

"

n

"

"

"

"

"

"

or gather information.

Gathering research from the Internet and using the computer for time management purposes was also recognized as important by the principals. Seven principals felt that having the ability to access information via the Internet was not only informative, but also time saving: “Regularly use the Internet for research and sharing” and “Obtaining curriculum information from the Internet.”

It should be noted, however, that four of the principals surveyed indicated a negative aspect of using computer technology. They pointed to the fact that the more they spend time using the computer the less time they spend in personal contact with parents, students, and school community members. One principal noted, “The more we use technology to help us deal with people, the less we deal with people.”

The Principals’ comments aptly describes the benefits of the use of computer technology in their practices:

“The time spent working on projects has lessened. It has freed up my secretaries to do other important school business.”

“It is a real time saver in some areas. It also has enabled me to communicate with other administrators.”

“Word processing; information searches; fact finding; communication.”

“Organization of time; ready and easy access to information;

creativity in curriculum planning.”

“Generating print; e-mail to colleagues; mailserve; managing student records.”

“Management of information; analysis of information; communication.”

“Presentation of information in a professional and timely manner.”

“Obtaining curriculum information from the Internet and publishing staff bulletins and monthly parent newsletters.”

“Organizing daily and weekly tasks.”

“Accessing and using information to support learning and innovation.”

The most frequent response of the surveyed principals was in the area of communication. There were 101 principals who wrote a comment in reference to the question that was posed. Of these principals 48 indicated that their practice in the area of communication was positively affected by the infusion of technology. They spoke about communication with their staffs, students and parents:

“Communications with parents and staff.”

“Communication within the district and building.”

“Communication! With e-mail communication is immediate and easy.”

“Communication with other principals, state offices and the

legislature.”

“The overall level of communication has been positively affected.”

“Positive communication with staff with e-mail has become more efficient and rapid.”

How Do Principals Perceive That Computer Technology Frames Their Work Within the Four Domain Tasks?

Principals employ computer technology in a variety of ways in their practices. The description of the four performance domains provided a framework from which to study the principal’s use of technology in their practice. This section will describe how principals’ use technology in each of the four performance domains in the areas of leadership and management. Table 3.13 describes the use of technology through the lenses of the four performance domains both in leadership and management. The information in Table 3.13 is information from the survey and the interviews.

Table 3.13 Leadership and Management Practices of School Principals and Their use of Computer Technology

	Functional Domain Interview/Survey		Programmatic Domain Interview/Survey	
Leadership Roles/ Practices	Teacher Evaluation Personalization	Assisting Others	Training Staff Devel. Professional Relationship NCA CRT	Envisioning & Enabling Mobilizing Participation Provide for Partnerships Assessing Professional Development.
Management Roles/Practice s	Software Use Connectivity Curriculum Use Student Data Internet Use	Gathering Data Seeking Knowledge Classifying & Organizing Identifying problem solutions Planning & scheduling work Monitoring projects Assessing projects & tasks	Funding	Provide for student guidance Determining diagnostic info for students Developing & measuring student outcomes Seeking & allocating resources Planning for use of physical plant
Other	Independ- ence Support		Support	Recogniz- ing needs of students

Commun
Inter
Intra
E-m
Notes

Work
process

Inter
inform

comput

'Energ

'Access

"Assist

used th

informa

know t

them."

progra

progra

discipl

Interpersonal Domain		Contextual Domain	
Interview/Survey		Interview/Survey	
Commun-cation Internet Intranet E-mail Notes Home	Planning & Encouraging Supporting Innovation Providing Coaching Assessing & Managing Responding & Reviewing	MASSP MEMSPA Chat Rooms Organization Vision	Acting with reasoned understanding Understand- current social issues Interaction with parents
Word processing	Writing appropriate- ly	District policies	Administering contracts
Internet information	Recognizing multi- cultural issues	Support	Recognizing global influences Addressing ethical issues

The principals who completed the survey stated that they used computer technology in order to assist staff members and students:

“Energizing previously sluggish staff who need a new challenge.”

“Accessing and using information to support learning and innovation.”

“Assisting students and teachers in their tasks.” Bob spoke about how he used the computer in order to assist students in their search for information, “I have gone looking for specific topics upon occasion if I know that a kid is interested in a certain topic and I will explore it for them.” The surveyed principals also indicated that they used these programs for information: “Student management for alpha lists; SIRS program for immunization.” “Creating student databases; filing for use in discipline tracking.”

Some of the principals on the survey commented: “Obtaining

informat

basis"; "

Th

principa

knowled

planning

and task

use com

act of as

principa

W

survey,

the less

the prin

rural so

had a w

daily ba

these p

in their

design

information from the Internet”; “I borrow through the Internet on a regular basis”; “Internet access.”

The statistical information gathered from the surveys indicated that principals do use computer technology for gathering data, seeking knowledge, classifying and organizing, identifying problem solutions, planning and scheduling work, monitoring projects and assessing projects and tasks. The principals indicate though, on an average, that they only use computer technology “moderately” when referring to these tasks. The act of assessing projects or tasks was given a “low use” rating by the principals on the survey.

Discussion of Survey Findings

What do we know about the principals who participated in the survey, their use of computer technology in four performance domains and the lessons that we learned from the survey information? The majority of the principals who participated in this survey were from suburban and rural schools; had between 5 and 15 years of experience as principals; had a wide variety of years of computer use; used their computers on a daily basis; and have access to networked computers. The majority of these principals also had computer technology training available to them in their districts, but only 30.6% of them had access to training specifically designed for them as principals.

It was evident in the surveys that principals use computer

technology more frequently in the areas of writing appropriately and word processing than any of the other tasks in the performance domains. It was also evident that principals use computer technology less frequently in the contextual domain than in the other three domains. The information from the surveys showed that principals were more comfortable with tasks that were considered management rather than leadership tasks.

The surveys showed that there were strong relationships between the frequency of use of computers by principals and the tasks in the functional, programmatic and interpersonal domains. Limited correlations existed between frequency of computer use and the tasks of the contextual domain. The contextual domain appeared to be the most difficult for principals to understand how they would apply technology where the tasks “reflect the world of ideas and forces within which the school operates” (NCP, 1990, p. 25). The information also indicated that principals do have access to networks, but they have been given very little training designed for them to understand the application of these systems. It was apparent in the surveys that principals are using computer technology, but their use is still somewhat ambiguous.

CHAPTER 4

PRINCIPALS AND THEIR USE OF COMPUTER TECHNOLOGY: THE INTERVIEWS

Introduction

The purpose of the six interviews that were conducted was to gain a thorough understanding of how these six principals used computer technology in their practices. The information that was provided in the surveys from these principals was used to provide initial information for these interviews. The in-depth interviews that were conducted provided insight and content and affirmed, as well as enhanced, the findings from the survey.

The complexity of the building principals' jobs was very evident as I sat in each of their offices and schools; what was even more evident was the fact that these building principals were expected to be productive in spite of limited financial, emotional or technical support. I was able to reaffirm my thoughts regarding the principalship by visiting and interviewing these principals. Principals need support and I believe that the use of computer technology can help provide some of this support for the building principal by allowing the principals to be able to communicate more effectively with their peers.

Presenting the interviews in the form of individual portraits provides the reader with a sense of the particular principal and how each felt computer technology could and would impact their practice. I was

profoundly impressed by the fact that all of these principals moved their schools toward success in an undaunted fashion, regardless of their organizations' commitment to computer technology.

The process for selecting principals for these interviews began with the survey that they completed at the Michigan Elementary and Middle School Principals Association (MEMSPA) and the Michigan Association of Secondary School Principals Association (MASSP) conventions in 1998. Potential interviewees were asked to volunteer for these interviews. The selection of the interviewees was based on their responses to questions about their own personal knowledge and confidence regarding their use of computer technology, and the performance domains questions. I then reviewed the respondents that volunteered to be interviewed (48 of 157 survey respondents) and began filtering. I began the filtering process by classifying the interviewees according to their self-ratings. I chose to rate them across a spectrum of low knowledge and confidence, moderate knowledge and confidence, and high knowledge and confidence. Once they were separated according to their self-ratings on knowledge and confidence, I began to sort them according to grade levels: elementary, middle and high school. The last criterion for selection was the area of the state in which their school district was located. I tried to balance rural with suburban. I would have liked to have had the opportunity to interview a principal from an urban setting, but no one from that demographic volunteered to be interviewed. Interviews were then scheduled with each

of the six interviewees.

The interviews were scheduled for one hour, but most of the interviews took one and one half to two hours to complete. The interviewees were not given the questions prior to the interview. All of the interviews, except one, were conducted in the principal's office. The one interview that was not conducted in the principal's office was held in the media center because the principal's office was being used for MEAP testing. All of the interviews were taped and the taped interviews were then transcribed into written form. All of the principals' names and the district names are pseudonyms. Table 4.1 indicates the demographic information of the principals that were interviewed. The information obtained from the interviews follows the table.

Table 4.1 PRINCIPAL INTERVIEWS				
NAME	# OF STUDENTS	GRADE LEVELS	DEMOGRAPHIC OF SCHOOL DISTRICT	# OF YRS AS PRINCIPAL
DORIS	700	9-12	Rural--Mid MI	12
GREG	330	9-12	Rural--Northern MI	19
RICK	420	6-8	Suburban--SE MI	5
PEGGY	869	6-8	Suburban--SE MI	9
LOIS	206 116	K-5 PPI	Rural--Mid MI	
	529	K-5 PPI	Suburban--Flint Area	5

Doris: Getting Beyond the Door

I am very familiar with the drive to Doris' school because I have family that live in the area. I always get the same feeling when driving to

this town. It is a sleepy, nestled town, far enough away from any city-like features to create the feeling that it occupies a state all its own. Perhaps that is what gives this community its special charm. People drive for miles in order to shop in this community's antique and gift shops. It is a special place where the term community seems to have real meaning. I have visited this community many times in the last twenty years, and there seems to have been very little change. This is a community that conveys a sense of contentment in the fact that the closest city is nearly 40 miles away.

This community was once predominantly a farming community, but is now more of a bedroom community to the larger metropolitan areas that exist within 30-50 miles. There are 2124 students in this district. Doris' building has 700 students in grades 9-12, and is known for its prowess on the football field. In fact, this school has recently won a state championship in football. Doris has been the principal of this school for 12 years, and this is her only principalship. There is an assistant principal and full-time athletic director to assist Doris. Doris is an innovative principal who has recently led this school into a transition to a non-traditional block schedule. Doris labeled herself as "low" in her knowledge and confidence of computer technology.

Doris' office is large and nicely decorated. Doris has taken the time to wallpaper a portion of her office and has painted the office in very warm shades of green and rose. The office is large enough for a round table that

has several comfortable chairs around it. This office is in the back of the main outer office and is quiet. There are several plants and personal items that give this office a sense of warmth and comfortableness. As comfortable as her office is, she is looking forward to the day when she can have a laptop that she can take with her to “a picnic table, right where the kids are.” Doris wants technology to help her move beyond the door of her office.

We began the interview with Doris describing the hardware and software that is available to her in her office. She describes her computer equipment as a “hodgepodge.” Doris has IBM compatible equipment with a computer that was purchased in the late eighties, but has a two-year-old laptop that she refers to as “the brains.” She is using the monitor and keyboard from the old PC, but actually has the laptop as her main piece of hardware. She is using the monitor from the PC because she indicated that the laptop screen is “too small.” This equipment sits in the corner and off to the side of her large desk. This equipment is not highly visible from the table where I sit because this office is so spacious. Doris indicates that she will have all new equipment within the next two years as a result of a recent bond issue. When asked if she takes her laptop home to use, she says she does not, because it is too confusing for her to unhook the laptop from the configuration in the office. Doris indicates that she does not have a very useful computer at home, therefore she will come back to the office on the weekends in order to use the equipment. In reference to her home

computer Doris states:

We do but it is old. When Tony (son) is home from college, we are on the Internet. Do I use it much at home? I can't get on it at home because between Dick (husband) and Tony they are on it all the time.

Doris speaks about the programs that are available to her on her hardware. She has access to Windows 95, Microsoft Office and the McGraw-Hill School Systems OSIRIS student management program. The OSIRIS program is a Disk Operating System (DOS) and has been available in the high school office since 1985. This program has not had any updates in the last three years. Doris admits confusion when having to use the DOS OSIRIS Program and then switching to a Windows-based program like Office. When asked if she has ever been trained on the OSIRIS program, she indicates that she has not. Doris indicates that she has the knowledge of the output of the OSIRIS program, but does not have the computer knowledge to actually use the program and all of its modules. Doris indicates that she still relies heavily on her assistant principal in reference to the actual use of the student management software.

Doris has access to (Windows 95 and Microsoft Office), but has not had any specific training regarding these software packages.

At the Regional Educational Service Agency (RESA) they will occasionally have training that you can go to and I always have good intentions of going, but I have never made it a priority to go because I have specific training needs and when I go there I will be trained with

a kindergarten teacher, a seventh grade teacher . . . my needs and my patience and probably my time—I haven't been willing to do that. Do I need the training? Desperately.

I asked Doris why she describes herself as having a low amount of knowledge and confidence in reference to her use of computer technology:.

I think that I have more knowledge than many people in my building, but not enough to do a whole lot with it, but I am willing and open to learn more. When it comes to a decision about working with kids and being in the hallways and managing by walking around or being at my computer, I am probably going to be with kids. It just doesn't work. I come back on the weekends and that is when I can be in here and not be interrupted and be able to work on the computer. And then when I end up doing that, I end up not playing around with it and trying to do things because I am afraid that if I mess something up there is no one here that is going to get me out of this. I really, really think that I am definitely a novice at everything.

Doris' statement reflects how principals prioritize their time which speaks to the lack of time that principals have to learn and use computer technology. Doris discusses her use of the computer:

I've only had a computer in my office for two years. If I needed something from a computer, my secretaries got it for me. So I just started using a computer in the last two years. If I needed

attendance, discipline, anything like that, it came from the secretaries or the assistant principal. I'm probably the last person in this office to use computers.

Doris' use of the computer came about when her assistant principal realized that she needed better equipment in order for her to increase her use; he suggested that she purchase the laptop.

Doris begins talking specifically about the statements that were on the survey regarding the performance domains of the conceptual framework. The first domain that we discuss is was the functional domain. This is the domain that speaks to the organization of the building. In reference to her use of her secretaries Doris says:

Maybe looking at it--do I use it, do I ask for, but do I get it myself? No. I might ask my secretary for a printout of the number of kids that had discipline slips this month or this week. I use it, but I get it from someone else.

Doris indicates that she does not have Internet access at work, therefore, is not able to access information from outside sources at her desktop. Doris indicates that she is not hooked up to the Internet because she and her assistant principal were using the same phone line. She decided earlier this year that this line could be better used to benefit students, so she had the line moved to the counseling office. Doris believes, though, that when she has the Internet connection that she will use it for purposes of communicating with other principals and also for

research purposes.

We then begin discussing the programmatic domain, especially the use of the computer for curriculum design. Doris indicates that her district does not currently use any curriculum software for curriculum design. She indicates that the superintendent is anxious to find software that allows the district to plan the curriculum, but they have not found any programs that meet their needs. Finding software that interfaces with the Core Curriculum and Michigan Frameworks has been a difficult task up to this point. Doris is hopeful that someone will have software that allows the teachers to coordinate their lesson plans and design lesson plans with the core curriculum and frameworks in mind.

In reference to staff development, Doris again indicates that she does very little with computer technology for two reasons. First, she herself, needs more training. Second, she indicates that the teachers need to have access to the equipment before she can really move forward with staff professional development.

But, if they don't have it in their classrooms—if you can't use it on a daily basis, they will lose it. I have probably 60% of my teachers that have twenty years or more and they are hoping that they weather the storm and can retire before the computers come in, but that is not going to happen. They won't use it until they are forced to.

Doris does indicate, though, that she uses her own computer for teacher evaluation purposes. She uses her word processing program for

suggesting teaching strategies and writing the narratives for the evaluations. When asked if she had a standard form that is a template in her computer for teacher evaluations she indicates that she does not.

Well, I do all their evaluations in the word processor and through that I put some things down for recommendations for professional development and some ideas for teaching strategies like that. I do a narrative for each teacher. There is a standard format, but I don't even have the format in the computer because I haven't got to that part to know how to do that. But basically that is about it. That is what I basically use the computer for.

There is a standard district form and she would like this in her computer, but she has yet to figure out how to process this. She indicates that there is a scanner in the assistant principal's office, but it is not used because it is not compatible with her equipment.

Doris, again refers to her equipment as "hodgepodge" and this prevents her from "getting beyond my door" with technology. She does indicate though, that she uses her computer frequently to communicate with parents, students and staff via the written word. Doris writes her own newsletter and letters to the parents. Doris is quite comfortable using the grammar check and spell check, therefore being able to give her secretaries a finished product. Doris indicates that she relies very little on her secretaries to type for her. She indicates that the secretaries have their own jobs and that she is quite capable of handling her own word

processing.

Using the computer for motivational purposes continues to be a struggle for Doris:

That's always a challenge for me because I have note cards that we bought and I probably bought ten thousand of them, but I don't know how to run those through my printer so I hand write those and now I have spent less time doing those handwritten notes and I have started experimenting with bigger letters and different fonts and things and I've used more of my letterhead stationery and written notes in that way. I've done more of that in the past year and a half than I ever did. I do quite a bit of that.

Doris indicates that she also does notes to teachers on her computer.

Doris and I begin discussing the use of computer technology for communication purposes. Doris has real concerns about the use of e-mail in the future. Doris currently calls her daily mail chore "the worst part of my day," therefore, she is concerned about having to deal with daily e-mail. She wonders how much more time will be taken away from being with the students. Doris also is concerned about privacy in reference to e-mail.

Doris believes that even with the new technology that will begin to be installed in her district there will still be organizational barriers to widespread use. These barriers include physical problems like long distance charges between the buildings within the district, and financial issues such as general fund expenditures for technology training. The

district has yet to begin to set aside funds for staff training out of the general fund. She indicates that the district has just recently (in January of 1999) made its first major general fund expenditure for the purchase of new student management software. The school board delayed the purchase of a new bus so that this software could be purchased. Doris indicates that some members of the board were uncomfortable with this decision, but she did see this as a major step in the right direction in terms of placing technology as a priority in this district.

Doris responds to the question of whether the infusion of computer technology has allowed her to manage her daily tasks more efficiently or whether it has actually hindered the management of her daily tasks.

Oh, no, I think even the word processing part—I think that I have been able to write notes to kids or staff members—I think that I have been able to do things that are much more professional and even though—I think that it saves me time. I mean I am able to get on there and do things more quickly. So I think that it has definitely been an asset.

Does it take—is it taking me out of the hallways more—yes. The more computer literate I become, the less visible I become to staff and students. Now that is going to be a concern. There are going to be tradeoffs and that is one of the reasons that both of the assistant principals I've had working with me just love computers and have a good knowledge. So, with them spending a lot of time in doing that, I have always been the one—I think that it has been intentional and

that is probably why I have had both of them with me, but I think that it has also reached a point where I need more knowledge.

Doris also indicates that if she had a laptop that she felt comfortable moving that maybe she would just move her computer “office” out in the hallway with the kids. Doris’ reoccurring theme is that she does not want to be removed from the students, even though she sees the necessity for greater computer usage.

Doris talks about the number of issues that she now deals with such as high school proficiency tests, special education and the professional development needs of her staff that account for bigger slices of her time. She believes that with the influx of technology that is going to take place in her district in the next couple of years, her role as principal will again dramatically change.

My role and my job have changed dramatically from when I started twelve years ago. I would say that in the next four years I am going to be in for more changes than in the past twelve years. I think that it is going to be really dramatic. My evaluation is already tied to achievement scores. My last evaluation is not complete until this graduating class test scores come back. It is scary, but it makes me put into action checking lesson plans and doing all sorts of things with my staff. It heightens accountability, but it also heightens the pressure and the stress.

Doris talks about how computer technology has changed the way

she does business as a principal:

I think that in some ways it has personalized some of the things that I do because I actually do them instead of a secretary. Sometimes it creates a vacuum where I am in here more than I ever used to be. I spend more time in this office than I used to. I think that as I become more computer literate it is going to save me time, but it is also going to give me better information. I'm going to be more knowledgeable and I think that I am going to be able to measure and evaluate better, not just the curriculum, but myself, lesson plans, all kinds of data which educators never used in a professional way before. I think that when we were in college and we had classes in stats and research and things we didn't really feel it helped us in our jobs but we now are going to find useful in the future. That is what is going to be needed. It is needed now. The connections were never made for us in our curriculum, but now I am starting to see why these things are necessary and I think that they are going to be helpful and actually change what goes on in our schools.

Doris does not believe that her practice has stayed the same with the advent of computer technology. She talks about her practice being in perpetual change; she is able to give data for decision-making purposes today that she previously was not able to do.

I'll go in and look at something, but actually print it, because it is a DOS-based and the amount of time it takes--I can do it, but it takes

me ten or fifteen minutes and I can go out there (secretary's office) and they can have it for me in 60 seconds.

The last area of the conversation revolved around the issue of professional development. Doris comments about the professional development needs of principals:

I think that it has to be very, very specific to the software programs that they have and are using in their school districts. I think that for any of those programs there needs to be training. So, if I have Microsoft or whatever I have, I need training on that. I need training on National Computer Systems' Schools Administrative Student Information Software (SASI) if that is what we will be using. Anything that I expect our teachers to use then I think I need to be trained in. Because I have always said to my teachers that I am not going to ask them to do anything that I wouldn't do. So I want to make sure that I am able to do that. Especially the things that I am going to be using on a daily and weekly basis.

Doris does believe that as a principal she has needs specific to her job and that if she is expected to use programs for things like scheduling, she would expect that training be specific to her needs. Doris again raises the concern that she must be trained with people that have similar needs and similar skills.

Ideal would be to have someone come into my office and work directly with me. But I imagine that is the ultimate with a student, too.

One on one. I don't know how feasible that would be, but maybe they could do it with teams of people in our district, like all the people in this building. The problem I have with that is that I am going to be the most illiterate, but if you take me and put me with someone that has a lot more knowledge, I probably am going to get lost just like the student in the classroom that doesn't have the knowledge base. As long as I am with people with a common knowledge base it could be done in a group.

I asked Doris how computer technology was addressed in her formal academic experience. She answers the question this way:

Zero. I don't think that it was even discussed. This is a serious gap because there are a lot of us (principals) that are still going to be around for awhile.

Doris' account of her lack of knowledge and her lack of training is one of the reasons that I undertook this study. Doris truly wants to be an educational leader in the area of technology, but she must have the skills necessary for this to become a reality. Access, training and time will allow Doris to obtain the knowledge that she desperately is seeking.

Greg: A Friendly Step Forward

I travel to Northern Michigan to the town of Hill for my interview with Greg. Greg is the high school principal of one of Northern Michigan's most frequent tourist destinations. The area is full of Northern Michigan scenic beauty, yet it seems rather isolated in the blowing and drifting snow. This is

classified as a class C school district by the Michigan High School Athletic Association, with 330 students in grades 9-12. There are 1073 students in the school district. All of the school buildings are in this same location and signify the importance of the schools in Hill.

I arrive at Greg's school and find nothing that reminds me of the isolation that I felt driving to the building. This high school is only two years old and exudes a sense of warmth that is unmistakable. I walk in the front door and find an open and bright area that is the entrance to Greg's office. The outer office is brightly lit and has plenty of space. Greg comes out to greet me and takes me into his office which is representative of the rest of the building: friendly and clean, with enough windows to give a sense of bright sunshine. Greg's office is spacious and very comfortable. This was an exceptionally large office and obviously designed to portray a very welcoming feeling. There are five comfortable chairs along two walls in the office with a table in between the chairs. There are also two large bookcases situated in the corner opposite from the chairs. A bulletin board hangs on the wall directly above Greg's desk and computer equipment. Greg's desk is situated underneath the windows that are in one corner of the office, giving Greg a great vantage point from which to view the parking lots and the baseball and softball fields. Greg indicates that in the spring there is nothing better than to see the students using the fields.

Greg has been a principal in this district for nineteen years and has been in this particular office for three years. Greg had been the principal of

g

o

b

in

p

G

la

th

G

at

indi

are

with

f

r

grades 7-12 for most of these nineteen years until the district decided to open this new building and have the middle school (grades six-eight) become a separate building. Greg is a highly respected principal, not only in Northern Michigan, but throughout the state.

The hardware in Greg's office is three years old. This equipment was purchased with the bond money that was allocated for the new building. Greg's equipment is all IBM compatible. Greg has a U-shaped desk that is large and provides ample space for the laser printer, monitor and keyboard that sit to the left of his chair. The telephone is almost right in front of Greg's chair which sits squarely in front of the large window. Greg talks about how he would replace this equipment, if necessary:

A lot of this came through the original building plan when this building was built. We had a lot of money then. If I wanted to replace it now, I would have two choices. I could either take it out of my own capital outlay budget or I could go to the Board of Education through our strategic planning process and technology committee and ask for it there. I would go to them because I would see the need coming in advance. It would not be an emergency thing. If it was an emergency, I would have to take it out of my building budget.

The computer in Greg's office is networked within the district and he indicates that most of his teachers have computers at their desktops and are networked within the school to all personnel. There are two networks within this building. One is for the students and one is an administrative

netv

the

Stu

that

yea

Gra

Offi

info

The

frequ

Gre

resp

a file

the

sati

bac

syst

Dist

network. Teachers are not yet using the system for attendance, but will in the near future. National Computer Systems' Schools Administrative Student Information Software (SASI) is the student management program that is on the network. This school has had the SASI program for only a year and a half. They were using the Disk Operating System (DOS) McGraw-Hill OSIRIS Program prior to this. This system also uses the Microsoft Office package. Greg indicates that both he and his secretaries still gather information off the system. He does not use all of the modules of SASI. Therefore, his secretary still produces hard copies of items for him.

Some parts of the SASI program the secretaries are more familiar with. They work in some parts of it all the time. It is just easier for them to type it. Other parts I've found I work in it enough so that its, well, I just do it.

Greg is confident in his ability to use the modules that he uses frequently such as the scheduler, student information and attendance. Greg is currently not using the discipline module even though he is responsible for the discipline in the building. Greg still has individual files in a file drawer on each student. Greg is still more comfortable handwriting the information related to student discipline. Greg is not necessarily satisfied with the scheduling module of SASI. He feels that it is a step backward from the previous student management system. The SASI system was purchased through a consortium from the Intermediate School District (RESA). Greg is not networked with the RESA, but is able to access

o
c
t
A
s
P
v
c

an
tec
oth
dea
pro
on t

them through the Internet which he has on his desktop. Greg is also dissatisfied with the training that he received on the SASI program.

Greg has been using computers since “the beginning” which he terms as about twenty years ago. Greg mentions that he uses the entire Microsoft Office package for a variety of functions, e.g., word processing, spreadsheets, and databases. Even though Greg rates himself as highly proficient in the use of computer technology, he still needs to dictate a variety of things for his secretary because he has such a volume of correspondence to keep up with.

No, I can't keep up with the volume of it. But I do a lot of dictation. I have one of these little things (cassette recorder), and I'll do a lot of those when I need to crank out . . . see that pile of yellow slips on the desk, those are all disciplinary referrals. So there are probably eight of them there and I don't have time to personally type all of those letters, so I'll dictate those. But when I get into something very sensitive and unusual, then I'll take the time and create it myself.

We begin speaking about how technology is supported in this district and I am amazed that a district this size has two full-time employees for technology support. One of these employees is a Macintosh expert and the other is a Personal Computer Network (PC NT) expert. These employees deal mostly with the hardware. If Greg needs assistance with the SASI program he relies on his secretary who has had the majority of the training on this program.

The interview then switches gears and I ask Greg to explain why he described himself as very confident and knowledgeable on the survey. Greg begins this portion of the interview by moving to one of his bookcases and getting a document for me.

For instance, with the curriculum. I'm very proud of this. (He gives me the document.) You're familiar with the Michigan Curriculum Framework. What we have done is completed a scope and sequence curriculum that oriented to the Michigan curriculum framework. For instance, here is an example of computer aided drafting. There's three different things here. One is a course description that we are going to pull out and we are going to create a book for parents. Course objectives—what this does is it reminds the teacher of all of our NCA goals, writing across the curriculum, different initiatives that are going on. It is a mention of all of the things you've got to reach out and teach with this class. And then the third part is a scope and sequence that have the content standards. It starts off with student activities. For instance, drawing basic shapes and then here are some student activities and it correlates that to content standards and benchmarks. We have all of this in hard copy. I don't think that is very useful so I put all of this on disks and then into the network so the entire high school curriculum is on the network. So the whole curriculum, scope and sequence, dovetail very closely to the frameworks. We are about to take all of that information and go

in

ac

tw

cc

pr

pr

no

ne

cur

back to, for instance, take the framework's document itself and note on each one of the content standards where that is taught, a locator for classes. So that is something that is taught in third grade. What that will do is give us our discrepancy analysis, so that when we get our MEAP results back and we see where we are not doing well, we can look up the standards where we are falling down and locate where they are being taught and take a look at how they are being taught.

Greg indicates that this computer-based curriculum was his initiative. All of this information is on the K-12 network and can be accessed by anyone in the district. Greg is excited that within the next twelve months he believes that every part of the K-12 curriculum will be computer-based and that there will even be a parent component to this project. Greg is adamant about the use of a commercial curriculum product such as Curriculum Designer. He believes that these products do not meet the needs of his particular school district. Therefore, he felt the need to design his own product. This product, according to Greg, is currently being used in the teachers' evaluation process.

It's not in the negative sense, not in a punitive sense, but part of this evaluation that I need to go over with a teacher right now is a pre-evaluation conference. I have them show me in this conference where they are in their scope and sequence, the lessons that I have observed, and explain that in terms of content standards. We have a

rubric, I created a rubric for the Michigan Framework, the teaching and learning part of that, which is more important than the standards. I made a rubric and I ask every teacher to self-evaluate themselves and place themselves on the rubric. And then from that, select some goals that they would commit to during their next evaluation cycle. We put it right in the evaluation. For the most, when they select their own goals, they are comfortable with it.

In reference to whether computer technology has helped or hindered Greg's daily management of his tasks, he responds by indicating that computer technology has specifically helped him in record keeping and documentation, scheduling and better communication. Greg specifically talks about how e-mail has been a bonus, but he also says that he and the other administrators still utilize voice mail for intra-district communication.

Greg, like the other principals I interviewed still views the funding of instructional technology as the major challenge.

The only challenge is the funding. Being able to put together enough dollars to keep instructional technology working. So the administrative is--operates at a very high level. If you look over there, I've got a powerful computer, laser printer, and that same things exist on both secretaries desks, in the counseling office and in the student assistance office. But instructional technology, we put a lot of money into it, but we still have a long way to go.

Greg discusses his use of the Internet in reference to the contextual

domain. Greg indicates that he has 15% minority population of American Indians and that he uses the computer for communication purposes in reference to the multi-cultural issue.

I'm dealing, we have a 15% minority population here of American Indians. So I am using, and unfortunately many of these kids get into trouble in a disproportionate to their, you know, in a disproportionate way, therefore I am using the computer to communicate.

Greg still is not necessarily using the computer to gather information regarding this population because he says that he does not have the time. He does use the computer and the Internet, though, to contact the Michigan Department of Education and to access information from the department. Greg has been involved in chat rooms through the Michigan Association of Secondary School Principals with other principals and has enjoyed that particular use of the computer.

Professional development in the area of technology has been more of a personal venture for Greg rather than a formal process. When asked specifically about training for the Microsoft Office package, Greg responds:

I needed a little bit of training on pieces, but a lot of it sort of just evolved and it's friendly as you step forward. I haven't received any formal training in several years. I bought a book called Office 97 and sometimes I refer to that, but mostly I find it very intuitive where you can figure out what you need to do.

G
al
la
m

di
Ec
be
tr
so
so

Gre
Prin

Greg also has a computer at home that he has used for e-mail for years. He also has a laptop that he carries back and forth from work to home. This laptop was purchased by the school district for Greg. He uses this laptop mostly for word processing documents.

Professional development is still lacking according to Greg in this district. He has had some training with the Michigan Department of Education and some training on the student management system. Greg believes that professional development is important for all staff and that his training needs are not that different from the teachers in reference to the software packages. He acknowledges, though, that the application of the software for teachers and administrators is different.

I don't believe that my needs are exclusive or different from the needs of some other people that are working in the administrative system. I don't believe they are different, all that different from anybody else's needs in that we all essentially use the same kinds of software. How we apply them might be a bit different but we all use them. A teacher creates things using Microsoft Word. You need to learn Microsoft Word. I'm going to use Microsoft Word and I might use that for my needs, for instance, to type an agenda for a staff meeting. My secretary might use the same Microsoft Word to do a report. It's knowing the software is the big thing.

Greg continues talking about professional development and his needs as a principal:

Our kids coming out of high school are proficient using computers. Our kids in this school teach us. You know why they can teach us is because they have the time. We can give them time and an opportunity and they go in and poke and learn. . . what does this button do and what happens if I do that. They sit and show each other and its cool. They learn enormous amounts of things. I don't have time in my day to sit down and. . . I mean I would love to take that book and just say OK and work with an Excel document. There is all kinds within that program that I still don't know how to do. I'd love to learn how to do it. But who does my job for me if I take time to do that?

The last area that I cover with Greg is whether or not he had any computer training in his formal academic career. Greg indicates that this piece of academic experience was not available when he was in school.

Greg's experience with the computer certainly is evident in his innovative process for developing a K-12 curriculum. It is obvious that because Greg has a great deal of personal desire to use computer technology his practice certainly benefits. As a self-described person with a great deal of confidence and knowledge, Greg brings an expertise to his practice for which most principals can only hope.

Rick: Creative Procurement

The Golf School District is located in southeastern Michigan approximately 30 minutes north of Detroit. This district is located in the Ball

Regional Educational Service Area (RESA) and has about 1700 students K-12. As I drive into the school parking lot, I am aware that this is an aging building. It is a middle school with grades 6-8 in a building that was built in the 1930's. This aging two-story structure shows signs of being well-used. The district's high school sits adjacent to the middle school, but is not physically attached.

I walk in the closest door to the parking lot which is not easily marked as the entrance door. I enter into a tall, poorly lit hallway that leads me to the principal's office. The main office is small and every bit of available space is used. Rick's office is through the main office and is extremely small, narrow, and not well lit by available windows. Rick has an L-shaped desk that sits underneath the window. His monitor and keyboard sit atop the desk. There is no computer drawer in this old, wooden desk. A large printer sits to the left of Rick's chair and takes up all of the space available on the short end of the L-shaped desk. A bookcase is on the wall directly behind Rick's desk and does not leave Rick with a great deal of space to maneuver his chair. His telephone is also on top of his desk, but is masked by the many other items that are on the desk. There is no storage space or file cabinet in this room. Three folding chairs for visitors sit very close to Rick and his desk.

Rick's office is not designed for the Gateway PC monitor and keyboard that sit on top of the relatively small desk. There is a very large systems printer that takes up a great amount of space in this small office.

Rick is trying to print on this large systems printer and appears to be frustrated. He explains to me that he is running the high school report cards because this is the only printer in the district that will run these report card forms. He also indicates that this printer was not working when he found it, but he was able to gather parts for it and revive the printer. This printer is necessary for the forms that have to run for the district processing of report cards. The forms are specially designed three-part carbon forms.

I asked Rick how this fairly new computer in his office was purchased and Rick replied "I'm not going to tell you that." I obviously looked interested in this comment and Rick indicated that his previous computer had crashed, so he therefore had to procure this machine in an unorthodox manner; a manner of procurement that he was not necessarily willing to share with me. Rick instead speaks about how computers were bought for his building.

Here is what happened. Again, our offices had been so far behind. There was a grant a few years ago that our vocational education director in the district wrote that was able to fund a computer lab in each one of our elementary schools. So the elementary schools ended up with a whole pile of Disk Operating Systems. They began through . . . I guess I would call her a para pro . . . but it was her job to run between both buildings and run computer programs, which she did. The high school has always had a couple of labs. They have

had an IBM and a MAC lab. Until maybe three or four years ago, we (middle school) had everything that was leftover. So we still had old Apple II and Commodore 64 computers. In the office, nothing more than PS II and 286 machines and they were used for nothing more than word processing because nothing was linked up. That is why we had the funny old green systems for SIMMS which was how it was done in the high school with a feeder over to our counselor's office. So that is how she (secretary) . . . she had her typewriter for doing forms and she had a computer that could do no more than word processing. So that is what there was. This building was way behind as far as any technology. I finally threw out all those old computers.

Question: Do you have anything now?

Rick: Yes, but we have only had it just this year.

Question: Because of the bond issue?

Rick: No, because this district set aside some money finally. I said we've got kids who are working on 486 machines in the elementary schools and yet they are coming to the middle school and working on an Apple II. Now, what is wrong with this picture? So they finally threw some money our way and we were able to get, I think close to thirty Gateways.

Rick has been the principal in this school for three years and was previously an assistant principal for two years in this district. Rick had been a teacher in this district for twenty-six years prior to becoming an

ac

af

E

dis

do

in

pro

Ric

administrator. I was curious what would cause Rick to leave the classroom after many years as a teacher. Rick spoke about his involvement in the Educational Specialist program at Oakland University.

Well, another teacher in the building here, who is a good friend of mine, for some reason, she discovered the Ed Specialist program. And this was back, I think we started in 1990, although it seems like yesterday. The principal of this building at the time, a woman who is now a principal in a neighboring district, she was interested too, the three of us, just sort of on a lark, started in that program. The neat thing about the program at Oakland is that it is a cohort program. So there was a group of nineteen and we spent the two years with just that group of people, and you take all the classes in sequence and together and you really become pals. So that was just, you know, I was mid-career, and sort of in the doldrums, as people get. It just opened my eyes and totally rejuvenated me. I didn't really have any designs at that point on doing anything with the degree, but you know . . .

Rick continues to speak about how small this district is and how the district expects the teachers to assume leadership positions because they do not have the personnel to administer programs. Rick has been involved in North Central Accreditation (NCA) for years and has also designed professional development programs for teachers when he was a teacher. Rick also speaks about the organizational barriers that have created a

number of problems for him in this district.

We've never had a curriculum director. A few years ago, the woman who was the middle school principal here, against her wishes, was put into that position because there was no assistant superintendent, but actually it was just a title. She really was meant to be a gopher for the superintendent. She fought the good fight for a couple of months and then got her job in another district. They then hired a curriculum director and he was someone from out of the district who had expertise in curriculum. He had his doctorate in it. He was in that position for maybe a year or so. He then was made the interim superintendent when the board sort of canned the prior superintendent. They then hired him for a year or so. Some things happened that were beyond his control in the district and then they asked him to leave after a year. A new superintendent came in last summer, a year ago, summer of 1997. He hired an assistant superintendent. At that time, the high school principal had retired and there was an elementary principal that had been forced out. She is the reason that the superintendent had left. The Superintendent was around on paper until July 1, but he was really out of the district since February. I was, with one year of experience as a principal, was the senior administrator in the district. The director of special education had retired at the same time. There was me, one elementary principal and no assistant principals. There was a

facilities' director. We were the entire district. So the new Superintendent came in, hired the building principals and then hired an assistant superintendent. His job is to do personnel, curriculum and special education. Well, you know, special education itself, particularly in this district is more than a full time job. But he is carrying on with the curriculum issues. We didn't have a curriculum until two years ago. There was no written curriculum in this district; never had been.

Rick's involvement in technology began, not as a teacher, but rather as a businessman. Rick opened a software store in the mid 1980's that he classifies as a venture that lost money. Rick described himself as self-taught and actually taught a high school computer course for a couple of years. The classes he taught used Apple II's and Commodore 64 machines.

I did something really stupid back in the early eighties with another teacher. We opened a computer store. After being in that for close to ten years and losing, I don't want to tell you how much money . . . actually we concentrated on software . . . that was really my introduction to the whole thing. That and having no idea what retail was really like. But just assuming that here is an easy way to make your millions. I was going to be another Inacomp. So that is how I really got involved on a personal basis with it, but mostly from the software side. You know, I never particularly knew that much about the hardware. In fact, actually I taught for a couple of years, I taught

some computer classes, but they were really just application classes. So, I had, I'm trying to remember if I've ever taught any high school kids. I don't know . . . at one point I was split between both buildings so I had . . . then ran an eighth grade class here, which is a little introduction class and we used old Apple II and Commodore 64 computers. So really it was just an introduction to keyboarding and databases, spreadsheets and word processing.

The software programs that are on Rick's office computer are the Microsoft Office package and a copy of WordPerfect that he brought from home. He is more familiar with WordPerfect because he uses it at home and also because he has had no training for the Microsoft Office package. He again expresses that he is self-taught in reference to Microsoft Office.

Office, which I have had no training in. I'm familiar with WordPerfect. That is on there (office computer), but it is my copy of it because I use it at home. So I use Microsoft Word for just about all of my word processing. I'm self-taught on that. I mean that is not much different from WordPerfect. I have not gotten into Excel or Access or any of the others, although I am going to get some training in Access and possibly Excel.

The CIMS CS student management system is networked on Rick's office machine with Ball RESA. This particular software package has only been available since the summer of 1998. The district pays for the use of the CIMS package on a per pupil basis with Ball RESA, therefore saving

this

in B

stud

acc

long

dea

and

occ

lost

user

this school district from the cost of their own personnel.

One of the reasons that we stay with Ball RESA instead of looking at commercial products like SASI or whatever is because if nothing else, Ball RESA tracks all student records for us, back to the beginning of time. Particularly test data. They have archived everything from the beginning of the world out there for us. And it is easier for us to maintain that.

Rick also talks about the fact that he was a member of the committee in Ball RESA that developed this particular CIMS package. This particular student management package is basically point and click, therefore, according to Rick, when training was scheduled it did not take principals long to be ahead of the trainers. Rick believes that although there is a great deal that he and others do not know about the program, by sitting down and just using the system the knowledge of the program will eventually just occur. He also acknowledges that there are some people who are still quite lost when referring to CIMS. Ball RESA has tremendous support for the users of this program and Rick feels that is a strong selling point.

Ball RESA set up a training program. Tee was the first system that began using CIMS and that was really their Beta testing was all done at Tee. That was a couple of years ago. I think that our district is the third or so. There are some districts out of the county that are on it too. But when it came to training they told us that the training that had to be done . . . they had set up these sort of elaborate programs.

Well, as soon as people just started sitting down at the computers, they were way ahead of the trainers. You know, because it really is just about point and click on everything. So there wasn't a need for a whole lot of training. I actually sort of discouraged training based on that. The down side of that is there is an awful lot about the program that none of us quite knows yet, but the other side is that, really by sitting down and doing it, you know, you pick it up a lot quicker. But we do have some people who are still saying I haven't been trained and I don't know what I am doing.

Rick and I begin discussing how he uses computer technology for curriculum integration and he very quickly indicates that he does not use computers for this purpose. At this point Rick tells me about the changing nature of the administrative staff and the effects that these changes have had on this district. When speaking specifically about the curriculum, he reveals to me that this district has had no written curriculum up until the last couple of years when a new administrator came in and began this process. This curriculum process is working in conjunction with another school district about thirty miles from Golf.

Rick and I continue the discussion regarding how he uses computer technology in his practice. He describes his use this way:

Rick: Well, really, just as, I mean much not beyond word processing tools. I find that I don't ask my secretary to do very much at all. She does no typing for me. I do all my own typing. I create our newsletter.

I format that each month. I find it's easier to, like a lot of people, to compose on the computer and so it's a lot simpler for me to sit down and type a memo than to write it out longhand and then have to explain it to her. So, I do all that. I type all teacher evaluations. Any typing that needs to be done, pretty much I do. From that standpoint, I think it allows me, and I'm lying when I say this, but it allows me to communicate more frequently and more fully with staff because I can crank things out better than I could in the old days of sitting at a typewriter.

Question: Why did you say you were lying about it?

Rick: Because I don't do it that much.

Question: Have you found that the computer, in terms of your daily management of tasks, have found the computer to be a time saver, or have you found the computer to be a hindrance?

Rick: Well, that is a good question. I think, in many ways, it's both. It's something that I rely on more and more. If there is a day when it is down, I'm really handicapped. But by the same token, one of the ways I use it most is with templates. And so, when I am doing my newsletter, I go back to the prior month's newsletter and just delete stuff and put new in. You know how that goes. With a lot of these programs, there is some little invented something or other, and then you can't find it and the things are all screwed up and the column is over here and you don't know why. So I probably spend a great deal

more time trying to fix things that way than if I had just started over.

From that standpoint, it is sort of a hindrance. No, overall, I just can't imagine being without it.

Rick is connected to the Internet at his desktop and indicates that this is his greatest source of professional information.

It is my greatest source of professional information and professional help. I don't find that I have the time to do the reading in Ed Leadership or Education Week or any of those things the way I'd like to. So I am on a couple of listservs. The Michigan Association of Secondary School Principals and the K-12 administrative one out of Syracuse University. I contribute to those occasionally. But mostly that is how I keep my finger on what is happening elsewhere. On the listservs you'll find a strand that is interesting and start following it. If I have a question or a problem you know, you throw a question out there and see if anyone answers it.

Rick does not find the need to use the computer, especially the Internet, to find research regarding cultural diversity because his student population is mostly Caucasian. Rick talks about how this is a very small community and one where people grow up and tend to stay after they reach adulthood. This is a bedroom community, but allows people this luxury.

Vastly Caucasian. We have one black student. We are getting quite a large foreign population. Large for us. There seems, there is a couple of apartment complexes in town that have attracted some

Albanian students. We've got probably six or seven languages that are spoken here. But for the most part this is a bedroom community and there is very little industry . . . never has been. It is a very rural community. It is one of the strangest places you could ever hope to find. People seem to stay here. Lots of staff people graduated from here. Everybody is related to everybody else and even after all of these years not a day or a week goes by that I don't discover that someone is really someone else's cousin or brother-in-law. Word travels through backyards. It is a very odd place that way. But it has always been fairly consistent demographically. I would say in the high 90's as far as Caucasians. Some Asians.

Rick was able to purchase (this school year) thirty new Gateway computers for the students to use in the library. This was the first purchase of new computers ever in this building, but as a result of a successful bond issue in April of 1998, this school will have an influx of new equipment in the next two years. I asked Rick how he would purchase new equipment if the bond issue had not passed. He said "I'd have to beg a lot." I ask if he has money in his building budget for technology purchases.

I don't really, but like everybody else, if it is something that you really, really, really need and want and you can't get it any other way, then you do it that way. This district has always been very conservative financially. It has always been very poor, but we have never had any money. Our new business manager is just a young kid.

He doesn't come from education. He has been here three years. He is only thirty years old. He just looks at conditions around here and says this is garbage. This has got to go. So he has been funneling money into those kinds of things. Really, what we are able to do from the administrative and the office and clerical side now is so vastly different from just a few years ago. We have been on a program that when you get a computer like this, you realize that it will still be here ten years from now. Now we are on a program where two years, this will all be gone.

Rick and I talk about his fairly recent specialist degree completion (1992) from Oakland University. I asked him if there was a computer technology component to this program. Rick responds in the following manner:

No. I finished it (the degree) in 1992. I'm not sure that there is anything in it now. The program has changed somewhat, but I haven't heard that they have thrown a technology component in it.

Leaving Rick's school gave me a rather uneasy feeling because I was disheartened at the fact that this district seemed to have so many organizational issues that it had to overcome in order to effectively use technology. The passage of the bond issue will certainly help with the technology issue. Rick's enthusiasm, though, is not diminished by the obstacles. I believe that Rick would not have left the classroom unless he had felt that he would be able to contribute to the school and school

district.

Peggy: The Proud Leader

The Panther School District is in a rapidly growing area of southeastern Michigan. As a person who is not necessarily familiar with this area, I am awed at the new construction in this sprawling community. The Wolf Middle School is situated directly across the street from a beautiful golf course. The golf course is indicative of the beautiful homes and landscapes that I passed while driving through this community. This is a 6-8 middle school with 869 students. There is one assistant principal in the building. The school is a single floor structure and appears to be well-kept. I enter the building through the front door and almost immediately find myself in the main office. The main office has several secretaries in a very busy office. Several people come and go as I sit in the office and wait for Peggy. There appears to be several offices in this space, therefore giving good reason for the high level of activity.

Peggy arrives and escorts me to her office down a hallway away from the front desk. Peggy's office is spacious enough to have a large conference table with six comfortable chairs around it. Four large filing cabinets and a bookcase occupy wall space in this office. A large window is on the far wall of this office. There is one door that leads down the hallway to the outer office and another door that leads directly into the corridor where students pass. The desk is L-shaped and has a two month old Acer computer and Epson ink jet printer on the short part of the L. In

the corner of the desk sits a small TV/VCR monitor along with the telephone. Peggy tells me that all of the computer equipment in this district is leased.

For a district this size (14,000 students K-12), I can't speak for smaller districts, for a district this size and because of the continuous updating of equipment, we find that it works much better for us than to try to have to constantly update. We would be updating our software every month in order to keep up otherwise. So we do a lease program and then that is all inclusive when it is bid out. The district is on a staggered timetable, so not every building gets all new.

Peggy continues to talk about the software packages that she has access to from her desktop, which includes Microsoft Office and Groupline, which connects the school to Ball RESA. She also has Netscape as her Internet browser. There is a district network that allows all of the schools within the district to connect with each other. This is a fairly elaborate system that is not completely linked at this time. When Peggy's school is at full capacity, she will be able to run video as part of this network. Peggy has intra-district e-mail capabilities at this time, and expects the network to be fully operationalized in the summer of 1999. All of the teachers in Wolf Middle School have three computers in their classrooms for both student and teacher use. There are 45 laptops on portable cabinets that Peggy and her staff have access to at any time. The staff is encouraged to use these

laptops in their classrooms and in their homes. The availability of these laptops gives Peggy and her staff a great access to computer technology.

Currently Peggy is using the CIMS student management package that Ball Regional Education Service Area (RESA) provides. Peggy expresses her and the district's displeasure with the CIMS product. She feels that this system is too slow and is not able to handle the unique scheduling needs of her building. Peggy tells me that she actually has three schools within this middle school and they all require special scheduling. She mentions this school district is looking to another RESA and two private companies for a new student management software package. The high schools in Panther School District also have non-traditional scheduling and there is also a need for a different student management system for those schools.

Although we use Ball RESA with the CIMS program, it just doesn't handle everything we want to do. So we are really interested in Club RESA right now because they are developing software to meet the needs of particular schools. We have a flexible block and core block, but the teachers have total control of time. There are no specific times . . . they decide when. (The CIMS software) . . . does not allow us to flag kids. It does not allow us to have our teachers move the kids, group and regroup the kids. Once they are on, that is it. Our attendance has to be daily, hourly. Well, we don't have such a thing. At the high school, for their purposes, they have a traditional high

school schedule for two of the periods, but the other . . . they have a core block so with their core block it is not the same classes every day. It is not like a college class because, even though they are not the same day, they are different amounts of time. It (CIMS) just won't allow us to do that at all so it won't allow you to put priority scheduling in. What it does is it takes the priority . . . you can say we want to schedule the band kids, but what it does is it schedules all those students' entire schedule. We don't want that. We want it to schedule certain classes as a priority and then put them back into the mix. So it doesn't allow us to do that. We are such a big district and we need that. So that is the concern.

We began speaking about technical and instructional support and Peggy took me by complete surprise when she told me that each individual building in this school district has their own computer resource teacher (CRT). It is this person's full time job to provide for whatever technology needs Peggy and her staff have. This could include anything from professional development training to working with individual students to working with a technical issue. Wolf Middle School also shares a full time technical person with one of the other middle schools in this district.

In this district I have a computer resource teacher and that teacher is hired specifically for my building. It is a full time teaching position, but she is the person that does some of the repair. I have a half-time, because I share with one other middle school, a computer

technology person that is the repair person. So I have one and one-half positions dedicated to exactly that on a full-time basis. That is new this year. Thank you, God! This district, we are very fortunate. Joe is our assistant superintendent and he has headed this whole thing up. We are very fortunate because he understands what has to happen in order, you know. You have all of this equipment, but if you can't use it, who cares?

Peggy also tells me that one of the assistant superintendents has a very good handle on the technology needs in this district, and there is quite a bit of central office support and initiatives. According to Peggy, technology is the number one priority in this school district at this time. This district had a technology initiative that was to be completed by the year 2000 and Peggy feels that they will have accomplished this task by the end of 1999.

Peggy's training on computer technology is definitely different from the other principals with whom I have spoken. The Computer Resource Teacher in her building works with Peggy one-on-one to meet whatever Peggy's needs are for computer training. All Peggy has to do is schedule the time with this CRT and her training needs are met on an individual basis.

In reference to the use of computer technology for curriculum integration Peggy speaks about a computer program called Target Teach. She indicates that she is the chairperson for this committee in this district.

Peggy talks about the program:

It is a program that involves, the computer is part of it, but what it does is it takes our standards and benchmarks. It helps you then develop the assessments that will coordinate with those and these are computer driven, or at least the standardized piece of it. And so for curriculum integration, I think that this is a major piece, also our new reporting system will be totally computer driven. And that is why the current student management system won't work for us because this reporting system is not the traditional ABCDE report card.

Peggy believes that within the next two years, curriculum and assessment will be fully integrated in this district.

Peggy indicates that one of the ways that she will be using computer technology in relation to the interpersonal domain is in reference to communication with her teachers. All of the classrooms are networked with her and she sees herself as able to communicate with all of the teachers instantly through the use of the school e-mail system.

It will probably change over the course of the next six months because now my teachers have just gotten their computers in the last month in their classrooms. They have had student computers, but we have not been networked until that time. So that will change . . . it has already. As far as the delegation and sending them messages regarding staff meetings . . . I won't have to do it all first and then run it off. That is probably one of the quickest ways that I see that.

Peggy believes in speaking directly with her teachers, so she does not see herself as contacting them exclusively through the computer. Peggy uses her computer extensively as a communication tool within the district; in fact, a majority of Peggy's communication within the district is done with the use of the computer.

I have seventeen elementary schools that I have to communicate with and three other middle schools, three high schools, central office, OTC and a million other things. That is where, I can tell you, when the phone rings it is a parent I know. It is no longer someone in the district, unless it is somebody that has to talk to me about something confidential that we have to take care of. Otherwise, it is all done via e-mail. Totally. I do a lot of my memos to my staff now, or updates on things that I do on Microsoft Word. And then print it out, versus writing something out, giving it to my secretary or using a Dictaphone or anything like that.

Peggy still uses handwritten notes home to students for recognition purposes.

Peggy believes that computer technology has had the most impact on her practice in the area of communications. She indicates that because her school is in the northernmost part of this 33 square mile district, she could not communicate effectively without computer technology.

I could not do what I have to do from this northern most part of the district without technology. I could not do it. I know I couldn't. The

communication piece is incredibly huge. I can tell you what happened was the principal that was here prior to me . . . and that was just three years ago . . . did not attend district functions, period. He just stayed in the building. He did not go to meetings, so three days later he would get a copy of something via camel mail. And so therefore, the building was not up and running.

Peggy also uses computer technology in the contextual domain by communicating with the Michigan Association of Secondary Principals through the Internet.

No, I don't get on the Internet. Well, other than MASSP. I use MASSP and the legal assistance piece there and gather information. I'm also the middle level representative to the State Board of MASSP and so I use it exclusively in conversations with Tim Kelly in the governor's office. I do use it extensively across the district when I need to know, collect information. And now in the building, also. I seldom use it for judgement or problem analysis. Organizational oversight. Yes, that will be used a lot more now. Especially within the building and the delegation piece. Although I'll probably use it for that, sometimes I'm much more a 'let me talk to you and I'll tell you why I want you to do that.' So that probably won't change a lot. But just the functional piece, yeah, it is a huge part.

Wolf Middle School has its own web site that was designed by the students and Peggy says that she uses the web site and will add to the site,

but mostly the Computer Resource Teacher (CRT) actually does this work.

We have a web site and we update our web site all the time with our calendar. We have one right from our school that our kids designed.

It comes from the media center and we use it for all kinds of things.

Peggy does not use the student management software for student guidance, but does indicate that the counseling staff uses it a great deal for that purpose. Peggy does not necessarily use the student management piece for getting information on students because of the way she says the duties are split between her and her assistant. Peggy very rarely asks her secretaries to give her hard copies of material because she is quite capable of pulling that information herself.

The organizational structure of the district facilitates positive changes according to Peggy. Peggy says a very strong district mission exists and technology plays a major part in that mission. As an example of this, one week prior to school, the district provided a full week of technology training for the entire staff.

I will say that there is a very strong district mission that people truly buy into. We know where we are going and why. We don't always know all the pieces, but we are given an awful lot of building autonomy. We don't have to do everything that the other three middle schools are doing. If I want to try something different, it is OK. They are very open about if I call and say you know what, you guys are nuts and I don't want to do this. Can I do it if I do this? I'll go through

the thing and they will say OK, but remember this is where you are going. And so it works because it is that mutual trust and respect for the position.

Peggy talks about how she might design professional development for practicing principals:

Ok, I think first of all, I would, regardless of the size of the district, I would have sometime during the summer, summer retreat where all of the administrators were trained on things like Microsoft Word, Excel, Access, PowerPoint, those kinds of things. However, that would be a one shot deal for probably three days though. I don't think that you could do it in less than three days and even get an overview. From that point on, however, I believe that it has to be individual, one on one, in the building so that what the person is working with becomes a part of what you are trained on. I could have cared less about PowerPoint until I had to do a presentation. Then I learned PowerPoint. So I believe that we have the best of both worlds. We have a chance to have everybody together in the summer. I think that laptops are crucial because then people, if they don't have the luxury of a computer, have a way to take it home and use it. And I believe that they need to learn on the student model also. Which is considerably different because what the kids use and . . . they need to be able to converse with their populous, their community. I don't know that principals have to know how to install

hardware, or even how to install software, as far as that goes. I don't know, unless you are in a really small district, I don't think that is necessarily an issue, but I do believe that it needs to be on an ongoing basis. I don't believe you can force people to do it, but I do believe that you can make it so they don't have a choice. The need for professional development comes from the need to know something else. And then you have to have someone available to teach it to you. If it means one-on-one, shutting the doors and telling the secretary don't bother me.

Peggy and I speak about the fact that she is a fairly recent graduate of the Ph.D. program at Michigan State University in 1993. I asked her if computer technology was addressed in this formal academic experience.

No. Never has been for my Masters Degree or my undergraduate degree. I mean come on! I had to learn how to do a 16mm film strip and quite frankly I never have been successful at that.

After our interview Peggy took me on a tour of the technology lab that this school has available for the students. It is quite obvious by the pride that Peggy exhibits that she is excited about the possibilities that this district is providing for her as a principal and for her students and staff. This interview certainly showed me that there are wide disparities between districts and how they allocate resources for technology. This school has visionary leaders and certainly Peggy fits this pattern very well.

Lois: Tools and Independence

I meet Lois in her office in one of the two elementary schools where she is the principal. This is Heartland Elementary, a K-6 building with 206 students. Lois is also responsible for Lakeside Elementary school which is a pre-primary impaired, kindergarten, young five and first grade building with 116 students. Lakeside Elementary is approximately five miles from Heartland Elementary. I ask Lois if she feels a little frayed at times with these two buildings and she indicates that she “compartmentalizes pretty well, so I am really able to split when I leave one and go to the other.” These schools are part of the Duck Lake School District, a rural district that lies approximately 40 to 50 miles away from the state capital. The school district has 4306 students in grades K-12. Lois is in her seventh year as principal of these two buildings. She has spent twelve years as an administrator in this district, five of which have been as assistant principal in one of the larger elementary buildings. Lois indicates that she believes this building will double in size in the next three to five years because there is an 80-home subdivision being built whose children will be attending this school.

Lois’s office is not very large and sits off to one side of the building’s main office. Lois has been in this particular office for seven years. This office is narrower than it is wide. Lois is able to see who enters the outer office because her desk is situated in the office in such a way that she is able so see through her door when it is opened. Lois’ desk is L-shaped and

sits toward the middle of this narrow office. There is a one week old 400 Mgh Micron computer sitting on Lois' desk. Her monitor sits in the middle corner of the L-shaped desk with her keyboard sitting in the computer drawer on the short side of the desk. Lois's telephone sits near her keyboard for easy accessibility. The hard drive for the computer is under the desk. Lois' office is comfortable, yet businesslike. She describes how she has come to have the new computer equipment.

I had another Micron. It was a 233. It was a step up from what I had before which was a 133. I've bumped a couple of times and I have bumped as a result of . . . my secretary is far more skilled than I am . . . which is wonderful . . . and I have gotten her a machine that has been . . . her machine right now is a 333. I took hers. I got her more and I took hers, but because every administrator had a different model on their desks . . . we are fiber connected and we are trying to get all of that working and we needed common platforms and common machines. We all needed to have Windows 98 to operate from. It was a group purchase and that is why I have this now.

These new administrative machines have been bought out of the general fund according to Lois. These computers are networked with Regional Educational Service Area (RESA), but not with the other buildings in this district. Lois indicates that district connectivity will occur in the near future. There is no connectivity within Lois's buildings or between the building that she manages.

In reference to bond money that is needed for this connectivity, Lois talks about the failure of the last bond issue within the last three years. Lois indicates that this was a debacle and the community is having a hard time forgetting how that bond issue was packaged, therefore even though there is a great need for technology updates in this district, Lois concedes that packaging and selling a bond issue in this community will be very difficult. The connectivity that does exist with the Regional Educational Service Area (RESA) came about as a result of a consortium project two years ago. All of the county schools are connected to RESA.

The programs that are available to Lois on this network are Windows 98 and the Microsoft Office package. The student management system that is available is the National Computer Systems' Schools Administrative Student Information Software (SASI) program. Lois describes her use of the SASI program:

Attendance, the ability to . . . I have the ability in the comments section to leave notes on students. There is a disciplinary component—it has some components that I have not used a great deal personally in my little school. I don't have the need to be delving into that to be documenting fights or things that go on. I don't have that here. I get into it to pull a teacher's class and to go through and get something right here at my desk. I don't have to have someone get it for me.

Lois does not use SASI for any scheduling purposes.

The Duck Lake School District has one instructional technology person on staff that services the eight schools in the district. The building personnel call her first when they have computer problems, but if they have major technical problems, they call RESA for technical support. The Duck Lake school district has also contracted with the RESA to provide support for the district's labs and for the administrative stations.

Lois has very strong feelings about buying equipment for her office (i.e., a fax machine) when her teachers have almost no technology in their classrooms. Lois would rather have the money from the building budget go to her teachers than her own office. Lois emphasizes that her new computer was bought with district funds, not building money. Lois believes that technology ought to be bought from the district level rather than the building level. Lois allows her teachers to use her computer because they do not have access to a computer. It is obvious that Lois wants to give her teachers as much as she can, even if that means giving them access to her own office and computer equipment.

Lois describes herself as a novice on the survey that she completed at the principal's conference and I ask her why she sees herself this way.

As a novice? Because I have had some . . . some of my cohorts at my level have more expertise than I do. I guess I see my secretary as having more expertise than I do, so I see myself as a real learner. My learning is going along rapidly . . . I'm increasing in what I know and in what I can do with it, but I don't have the ins and outs. This

morning I had to say “how do go from . . . what is the control . . . what do I do to get over to the center . . . it is still not automatic for me. I have to ask the questions. I ask and she (secretary) has it for me and then I go right to business and I’m OK. I just am not as knowledgeable. I need to go somewhere and just . . . I need eight hours of sitting in front of some of this (computer) and just pound on it. That is the kind of learner that I am. I am not a learner that can take the manual out at night and sit and do it. I need to be right here and that takes time. I think that I can do more. I could be more productive and I have seen what people produce that I work with. I just consider them far more advanced and that is why I consider . . . I did that on a comparison.

Lois does not have Internet access as of this interview, but she indicates that she should have this within a week or two. She also speaks about how she uses the computer in reference to the domains. We begin discussing the domains of the conceptual framework and Lois speaks about her lack of efficiency in using the computer for things like information collection, organizational oversight, implementation and analysis. Lois indicates that she is still using paper and pencil to create her tables. She feels that this portion of her use is “still a rather cumbersome piece for me.”

Not yet, but it is coming within a week or so. We will have an e-mail address. We had a two hour awareness session this week. I have an

old computer at home and we are on AOL and so I can get out into the Internet. I feel that I need to have more training on how to use that more effectively. Information collection and problem analysis. I would like to be able to use it more. Organizational oversight, that is probably an area where this would be a good tool. Implementation . . . that ties into the organizational piece . . . that all ties into together . . . so it is a way to track. I am better able to put information in and get information out. I still need more work and more training. So I would look at all of those. You look at the MEAP or any testing that we do . . . that is going to come out of problem analysis . . . disaggregation. I don't disaggregate through this . . . it is still paper and pencil . . . writing some things down yet and then I put it in and then I create my own table. I don't yet use it efficiently and effectively. It is still a rather cumbersome piece for me.

Lois speaks about a program called Curriculum Designer:

Curriculum designer basically uses information about what assessments you use--Michigan Educational Assessment Program (MEAP), California Achievement Test (CAT), Michigan Assessment Program (MAP)--what are the core curriculums and it gives you a list. This is a completely separate program that you have to purchase, but it helps you to use different ways that you are planning for core curriculum objectives. Assessing tools that you are planning to use then it goes through a match. It gives you first grade objectives--and you can mix and match it. You can

manipulate it a lot if you don't already have a lot that already written. It is a good piece to help redesign—to maybe put some things we didn't think of before when we were creating curriculum prior. We are creating right now a real K-12 curriculum.

This program is not accessible to Lois, but is accessible in the central office. Lois uses her computer only to produce notes or other hard copies of items that she is presenting to her staff. A community newsletter is produced at the central office and not by Lois or her secretary, but a school newsletter is produced by her secretary. In reference to student development and guidance, Lois only uses the computer to gather limited information about the students in her building. Lois does produce positive notes home to students from her own computer. Lois speaks about her use of the computer in reference to the contextual domains.

What I see that as getting to when I first look at policy and regulatory pieces—we are driven by our Board's policies and by the regulations that are given to us. I can't create any of that. I really just have to follow that. It would be nice to have my Board's policies loaded on my computer instead of these thick books that I have to take off the shelf. So it would be accessing it, not creating or affecting it. Legal and regulatory pieces that would be again . . . it would be good to get on the Internet to draw other states or other district pieces or other ways that people look at it just for an educational understanding of what may be a basis for that and philosophically again to find

research to draw from. That would be wonderful once we have that hook up. I think that would be a good use for that. Public and media relations—you could go to your web site—that you could do and that would be something that would be a way to use your machine. More and more of our people are becoming users of the Internet and computer literate in their own homes or would like to be.

Lois talks about how the computer has improved her ability to stay organized, but also has taken her away from being in the classroom. Lois believes that the computer has not changed her, but rather has just given her a tool that has the potential of reducing some of her frustration. She labels herself as “more independent” as a result of using the computer. Her dependence on others to produce information has been reduced.

It is a tool. It hasn't changed me. It is a tool I use. It has potentially reduced some of my frustration. Because I have been able to put some things out that I haven't been able to . . . otherwise I was having to have someone else do it. I am maybe more independent and I am an independent person and so for me to have to wait for someone else to produce it for me, it is frustrating. If I can do it myself it eases me.

We begin talking about training, and Lois is very adamant about the fact that she believes all professional development in education is just “awareness.” When asked if she had trained on the student management system she indicates that she “had a two-hour awareness session.” In

reference to the Microsoft Office package she indicates that this district has had a contract with Snow College.

We work with Snow College. We contracted with Snow College to do the Microsoft package. I have the manual and we went through that as a team of administrators and secretaries and office aides. Now that required two hour sessions. We had a two hour on Word; a two hour on Excel; a two hour on PowerPoint and we didn't do Access because we were doing Excel so we didn't even worry about that. Again, we were on computers, we were engaged with the program and you had people that had strong computer skills to people who knew how to turn it on, but then tell me what to do next. So you had quite a range of people in that session. There was no qualifying to see if this is the stage that you are at—that if this group needs to be here and this group needs to be here and I need to work with you . . . some of us are in the center wanted to move ahead and so it was their best effort to put together an awareness of the Office package.

Lois' frustration with the brief awareness sessions is evident.

Lois has very strong feelings about professional development for herself as well as for her staff. Lois knows that she has great needs for computer training and she believes that her education would be best served by at least a week of training in the summer. She does not feel that sporadic daily training is sufficient enough for her to gain the expertise she needs. She is not interested in personal training in her office because she

does not feel that she could be in her office without distractions. Lois believes that her staff needs as much training as she does, but she also understands that her training needs are different from that of the teachers in terms of objectives and output.

I think that in a technology-based professional development program, I would most likely have the most ability to focus on it in a format in a week in the summer where that is what I do and that is all that I do. And that I have an opportunity to practice, an opportunity to ask questions. I would have the opportunity to not just have someone tell me about it, but actually do something with it and have follow-up, but a week. I think that if you look at all the different things out there that you can get trained in, I don't that a week . . . but it has to be one week. Not a day here and there and after school here next month. To me that is how we can learn it and retain it.

Lois ends the interview stating that the organization has a responsibility for providing training if it believes that technology is important. She is very emphatic about how organizations other than K-12 districts place an emphasis on training. Lois believes that a change in mind-set is necessary for school districts to provide the computer technology training that is needed for school personnel. Lois indicates that school districts must place professional development as a priority if they expect educators to assimilate changes into their practice. She does not believe that school districts give educators the time or the tools to

make positive changes with computer technology.

Any kind of expertise that we have or understanding that we have, we have gained through personal interest, so there is an issue I have that says that the organization as a whole has a responsibility to its staff. If technology is something that we need to do, then the organization has a responsibility of providing training and I know of other organizations that this is an integral part. They don't expect their people to do their work without two weeks a year. I'm talking about the state department. They expect two weeks of training investing in their people to be able to do what they are asking them to do. Until we get that mind set in education that when we look at professional development what we are saying is that we are investing in what we want them to learn. And this is a mind set change. It is not wasting money on a two day workshop. It is really looking at professional development differently. It is a course. It is a week long. It has some component that takes into account adult learning.

I questioned about whether or not computer technology was addressed in her formal academic experience. Lois responded that it had not.

Lois is still excited about the possibilities that lie ahead of her, regardless of how long her tenure may be in this position. Lois spoke with me about her impending retirement within the next year and a half, but her enthusiasm for the principal's job belies this decision. Lois' school district

certainly still has some organizational issues to overcome regarding technology, but Lois intends to be an educational leader in this area, even if it means that her staff has to use the only linked computer which sits in her office. Lois believes that with the impending access that she will have at her desktop she will continue to grow as an educational leader in the area of computer technology.

Bob: The Confident One

There is a special feeling I get as I enter Center School. This school has many bright displays and is quite obviously an elementary school. Student work is displayed in the hallway and the drawings are colorful and playful. The office is immediately inside the front door. The secretary, sitting at a counter that is sized for the children that inhabit this school, is on the phone to the parent of a sick child who has just entered the office. The child is placed in a sick room with other children who are going home as a result of illness. This school has been affected by the flu bug. As I sit and wait for Bob, a parent volunteer comes to the office to sign in and several teachers come into the office to check their mailboxes.

The Center School is a K-5 building with 529 students. There is also a pre-primary impaired program in this building that is part of a three-district consortium. The Center School is part of the Circle School District which has 3356 students in grades K-12. This is a suburban school district located about halfway between Flint and Detroit, a fast growing part of the state of Michigan. It is primarily a bedroom community with most of the

residents living here and working in the larger metropolitan areas.

Bob finally arrives and indicates that we will have to meet in the media center because his office is being used for students to take the Michigan Educational Assessment Program (MEAP) test. Bob gives me the opportunity to view his office before we go to the media center, and I see that this office is large enough to have a round table with four comfortable chairs occupying the center of the room. Bob's desk sits to the back of the office with a file cabinet directly behind his desk chair. His laptop computer sits against the back wall on a small table. His printer is on top of a file cabinet that sits next to this small table. There are two large windows in this office. One gives a view of the parking lot and the other views the outer office.

Bob has been the principal in this building for two years and had been a principal for three years prior to coming to Center school. Bob and his family have lived in the Circle School District for approximately 15 years and he tells me that his affiliation with this school actually began with his involvement as a parent. He has occupied the same office in this building for two years. Bob describes his computer equipment in his office as a Dell laptop. Bob tells me that the purchase of this \$4000 laptop was a condition of his employment.

Actually I've only had it for one and one half years since it took me six months to get it. There was an old 286 and actually what happens when you change principals and one principal is not here for a while

then the computer that was in the principal's office suddenly seems to appear on the secretary's desk during the change over.

Bob has an 855C HP printer, but he indicates that this printer does not work and he hopes that it will be replaced someday. I asked Bob how he will replace this printer and he indicated that as long as the equipment meets the district specifications, then he can purchase the equipment out of the building budget. He tells me that he just bought a new computer for one of the secretaries and that money came out of the building budget. The district, however, has not increased his building budget in light of the need to purchase some of these expensive items.

Bob begins to talk to me about the fact that the Circle School District has recently passed a bond issue (September 1998) and that there was a significant technology portion in this issue.

We have what is called a roll-out plan, so we are not getting everything all at once because we do not have everyone trained, so we are going to . . . there is a lab that was done in here with the last bond in 1990 and so we going to . . . in the elementary schools the offices will get new equipment and that area (lab in media center) will get new equipment. So that will be seventeen new computers in that lab for the students.

Bob anticipates that these changes will be completed in March of 1999.

Bob's office is networked with the Intermediate School Area (RESA) and also has a fiber-optic intra-net with all of the buildings in the Circle

School District. This school district had a Net Day that linked all of the schools; the cost of this infrastructure was taken out of what Bob labeled as sinking funds.

Bob: The conditions of going with the RESA in the county was that the high school and the administration offices had to be connected. Then we connected to the other four buildings using what we call sinking funds. The wiring all happened . . . we had a Net Day.

Question: The bond issue that you just passed in September does not have to deal then with the infrastructure?

Bob: Some, but not very much. There will be some . . . a few routers . . . all the elementary buildings . . . all the media centers, offices and fourth and fifth grades . . . not the kindergarten, first, second or third grades . . . so we will probably have another net day to finish that up. The middle school is done and so is the high school.

The teachers do not have computers on their desktops in this school, but will be receiving computers over the next two years as a result of the bond issue. This district has taken a unique approach to upgrading and giving new equipment to the teaching staff.

We have twenty-five teachers identified in the district that are going to be our teacher leaders or technology leadership team so we are doing a lot of training with them. So this March when the other computers come, each of those teachers will get a computer and training begins then for them and then another buy will happen

sometime late summer for the next early adopters. Then there will be a final buy in a couple of years.

Bob tells me that on the network he has a child accounting program and finance accounting system that he accesses. There is a student management system that Bob labels as “garbage.”

It is DOS based . . . looks like it . . . runs like it . . . acts like it. It is cumbersome, hard to do stuff . . . I can’t even run class lists without doing some extremely convoluted . . .

Microsoft Office is the other standard program on the network. This whole system is technically supported by a consulting firm.

Bob also shared how he uses the computer as a tool. Bob utilizes the computer in all phases of his practice by using the word processor for communication; PowerPoint for presentation purposes; and the Internet for research and communication. He tries to help others understand the use of the computer as a tool.

Part of my training that I used to do when I was training teachers was to try to . . . my goal is to be able to have you say this is the subject that I am interested in and the computer is a tool and I can make my teaching or imparting of the knowledge or keeping track of the knowledge . . . whatever it is . . . easier by using the computer and use an application that I can easily do. It was kind of neat the other day when I had one of the kindergarten teachers here who I trained probably six years ago . . . said that she remembered the

sort of thing and she obviously still did that. She was able to say this is what I need . . . I'm going to do it this way and she got on her computer and used Microsoft Works and made her chart or whatever it was that she needed. It is kind of . . . it is a difference between looking for some information and thinking how in the world can I use this thing as opposed to I am going to use this and what application is it now that I am going to use? Having the perspective that the computer is a tool that I am using.

Bob talks about how he uses his computer in reference to the domains:

I've gone to the head lice center. I am so amazed that they have that center and I found it going through MEMSPA or NEMSPA. I had to go to MEMSPA for updates . . . politically what is happening . . . and I also do the same kind of thing for the national. I have gone looking for specific topics upon occasion if I know that a kid is interested in a certain topic and I will explore it for them. I haven't used it probably as . . . I'd say that I am on the Internet and average of three times a week . . . sometimes it is personal things and it starts out as one thing and ends up as another.

Bob indicates that he uses the Internet three to four hours a week at work.

Bob's interest in a variety of issues gives him impetus to use the Internet frequently at home and at the office.

I have a daughter who is 15 . . . and here because of the fiber, you

just click on a site and you are immediately there as opposed to standing around waiting. Let me say . . . I've been disappointed in going to the Association for School Curriculum Development (ASCD) looking for specific topics. I have found their site to be just horrible. If it doesn't come to me intuitively, then I usually don't have the patience to stick around. I've done other things with the William Glasser Institute—reality therapy control. I go to their site fairly often and communicate with them. I am on their faculty. I have just really found that it is a great way to communicate with all kinds of people that you wouldn't spend as much time communicating with both through the Internet as well as e-mail.

Bob also indicates that he uses e-mail extensively for communication purposes. Bob says that he finds e-mail to be a great way to stay in touch with people that he would not necessarily keep in touch with otherwise. Bob also speaks about how he uses the computer in reference to organizational oversight:

I build the budget using Excel and have some formulas built in so I can move the numbers around and see where it comes out right away. I am able to help the secretaries in keeping track of individual teacher expenditures. They have what is called a discretionary amount so each grade level has \$1500 and they spend it through the year, but we have to monitor it through the year and we have to make sure that they stay within their budget. I've designed the Excel

sheet so that they can keep track of that. I also end up being the one that does the minutes to our school improvement meetings. I do the newsletter and that sort of thing so again I keep track of a lot of stuff using the tables and check sheets.

Bob continues this discussion by talking about how he may use the computer for communication and evaluation purposes when all of the teachers in his building are networked.

I will be able to do a lot more monitoring than I can do now. It is one of the ways to . . . part of the difficulty that we have I guess is that there is so much to do, but always trying to remember why we are here and to kind of keep a focus and keeping people focused is probably the biggest job that an administrator has to do. Focused on student learning. If I were to have---if they were to do their grades on their computers---I guess the question that should be asked is if somebody is failing what are we doing to make sure that they are going to learn. Right now I only find that (information) out by going and looking at the report cards or asking the teachers for their grade books. If I could just sit in my office and could click on that information that would be a great way to do that and that I could just check . . . if I could look that up right away that would be great. We have what is called a Monday note that the secretary does so if anything comes up she takes care of that. But what I try to do is on the day before a staff meeting is write what I call a 'stuff memo' all

the stuff that just kind of comes to mind that is happened in the last week or two that they need reminders of . . . so I don't have to talk about it at a staff meeting so we only have to talk about two or three things at staff meetings. But to be able to do that with e-mail and zap it to everybody . . . you can even check to see if they have read it.

In reference to the programmatic domain Bob indicates that he has used the computer on a number of occasions to demonstrate to the staff how they can access MEAP information.

Only as they have to do with the Annual Report. They are there and I have demonstrated to the teachers . . . I have shown them how they can just have a graph and click on it or a chart and you get this full color detail. And how easy it is . . . so I have done some demonstrating sorts of things. Part of that is trying to model the fact that it is just a tool that integrates, it is not something that we need to focus on by itself. It should be matter-of-fact . . . sort of . . . just like paper or an overhead projector.

Bob also expresses that his school's curriculum is on a computer so that if teachers need to search for a particular area to help plan a lesson, then a search can be conducted. I asked Bob if this was a particular curriculum program, and he indicated that the district frameworks were in Microsoft Word.

In respect to the interpersonal domain, Bob designs postcards and thank-you notes on the computer. He also, again, indicates that e-mail has

helped him communicate much more effectively with a number of people.

Mostly in the county, but also throughout the state and I can also send quick congratulations things that I would not have done. I think that it takes less time while you are sitting at the computer . . . just click on it. You do this as opposed to getting out a piece of paper, writing it down, finding their address, writing down their address, putting it in the envelope, sticking on the stamp. It just seems easier and I think it is really positive being able to maintain some of those relationships. I don't feel quite so isolated.

Bob was about the only principal that indicated that he uses the computer for multi-cultural issues. Bob has used a Martin Luther King Jr. web site and has also spoken to other principals regarding these issues. Bob feels that even though his school population is 95% Caucasian, he must become aware of multicultural issues because he knows that his school district will be changing in terms of the cultural diversity. He works in a growing community and as he says, "Some of the people will not be coming from Norway."

I go to the Martin Luther King web site. They have a thing about diversity and doing that sort of thing and then share it with people. Talked about choice theory stuff has to do with all that sort of thing so using those web sites I guess is how I have accessed that and talked to other people through e-mail.

When asked how the infusion of computer technology into his

practice has allowed him to manage his daily tasks more efficiently he responds in the following manner.

I think that it has helped. It has helped because . . . with e-mail instead of having to respond back and forth to phone calls you can communicate so much more easily. With e-mail you can read when you are ready. Respond when you are ready. It is not an on demand sort of thing, so that has helped a great deal. Being able to manufacture a newsletter just is so much easier.

When asked if he was given specific training as a principal on the network, Bob indicates that there was training available, but that he does not need this training. He indicates that both of his secretaries have had training on both the student management and financial systems. Bob tells me that he has been using computers since 1979. Bob is extremely confident about his capabilities when using the computer. Bob indicates that new programs are “just a continuum” for him. He also mentions that he has taught classes, but has never taken a class; he is self-taught. Bob feels that even if he is presented with new software programs he will be able to function just fine without training. He believes that sitting in a classroom to get training would be wasted time for him.

Bob: I have been using (computer technology) forever. Have given classes . . . never took a class . . . have only given classes.

Question: Let’s assume as you get new equipment in your office all of a sudden you are presented with a new student management

program. Do you see yourself as having a need or do you see yourself as being proficient enough that no matter what they throw at you, you will be able to handle without any training?

Bob: Yes. To go sit in a classroom for that amount of time and learn at that pace . . . most of the people that are doing that are not as comfortable with computers as I am. I can usually find my way.

Because Bob is comfortable with the computer, I ask him how he would design training for principals who are not comfortable with computer technology. He would begin with training in Windows.

In our specific case, there is a need to be able to get around Windows and understand what those things mean . . . just a kind of basic knowledge of Windows 95. So to start there . . . I know the principals in my district and actually with me too . . . I am a MAC user so I would still be interested in taking some basic Windows stuff. I've always taught in professional development a practical side so that people know how as an administrator . . . how can I use a word processor. I mean I can give stuff to my secretary and get that done, but how do I use it . . . so the professional development would have to do with how to keep track of your own files, how to make templates of things so you don't have to re-create every time you do something . . . to save things in an organized way so you can just find it the next time and have all the formatting pre done . . . having some different styles in Microsoft Word already developed and

formatted. It saves a lot of time once you know how to do it. Most people treat their computer as a typewriter as opposed to a computer . . . being able to use those sorts of things and having all those templates already setup . . . I hate re-creating . . . I mean I update stuff all the time, but I at least have something to start with. So to be able to understand the templates and how to not lose that template. In talking to one of my fellow (administrators), she is amazed that there is still . . . writing teacher evaluations is a yucky thing, but we have taken a basic format and have just sped up the process and the teachers like it.

Bob indicated that he was given no formal training in his academic experience in reference to computer technology. Bob does believe, though, that this is a necessary change for schools of education and educational leadership.

Bob's interview certainly indicated that his personal confidence in computer use was extremely valuable to him and to his staff. Bob was able to model computer use and be an educational leader in this area because of his vast amount of experience with computers. Bob certainly will be a model for the principals in his district to follow as they receive more technology in the near future. Bob also has the special ability to have a deep knowledge of the application of the computer in the practice of the principal. Bob's personal interest and ability make me pause and think about the importance of the personal interest of the principal in the

professional use of computer technology.

How Do Principals Employ Computer Technology In Each of the Four Domain Areas?

What we learn from these in-depth portraits is that principals employ computer technology in a variety of ways to enhance their practices as educational managers. Table 5.2 describes the use of technology through the lenses of the four performance domains both in leadership and management tasks. The information in Table 5.2 is information from the survey and the interviews.

Table 4.2 Leadership and Management Practices of School Principals and Their use of Computer Technology

	Functional Domain Interview/Survey		Programmatic Domain Interview/Survey		Interpersonal Domain Interview/Survey		Contextual Domain Interview/Survey	
Leadership Roles/ Practices	Evaluation Personalization Teacher	Assisting Others	Training Staff Devel. Professional Relationship NCA CRT	Envisioning & Enabling Mobilizing Participation Provide for Partnerships Assessing Professional Devel.	Communication Internet Intranet E-mail Notes Home	Planning & Encouraging Supporting Innovation Providing Coaching Assessing & Managing Responding & Reviewing	MASSP MEMSPA Chat Rooms Organization Vision	Acting with reasoned understanding Understanding current social issues Interaction with parents
Management Roles/ Practices	Software Use Connectivity Curriculum Use Student Data Internet Use	Gathering Data Seeking Knowledge Classifying & Organizing Identifying problem solutions Planning & scheduling work Monitoring projects Assessing projects & tasks	Funding	Provide for student guidance Determining diagnostic info for students Developing & measuring student outcomes Seeking & allocating resources Planning for use of physical plant	Word processing	Writing appropriately	District policies	Administering contracts
Other	Independence Support		Support	Recognizing needs of students	Internet information	Recognizing multi-cultural issues	Support	Recognizing global influences Addressing ethical issues

Functional Domain

The principals indicated that they used computer technology for leadership purposes in the tasks of teacher evaluation, personalization and assisting others. All of the interviewed principals spoke about their use of the word processor for writing their teacher evaluations. Greg actually tied his teacher evaluations into the curriculum framework that he had developed and integrated into the computer network for his teachers. Greg created a rubric for teacher self-evaluation that is also on the computer network.

The principals also spoke about how the computer allowed them to personalize their tasks. Doris said that computer technology has effected the way she does business because, “it has personalized some of the things that I do because I actually do them instead of a secretary.” Rick talked about how he uses the computer to communicate more frequently and more fully with staff because “I can crank things out better than I could in the old days of sitting at a typewriter.” All of the principals that were interviewed speak about how they do most of their personal correspondence, therefore relying less on their secretaries.

There are many tasks in the functional domain for which principals use computer technology. One of the major tasks that principals use computer technology for is using software for student data information. All of the interviewed principals indicate that they have access to student management programs and all of them indicated that they used these

programs for a variety of purposes: scheduling, attendance, student demographic data, class lists, etc. Lois described her use of the SASI program:

Attendance, the ability to. . . I have the ability in the comments section to leave notes on students. There is a disciplinary component—it has some components that I have not used a great deal personally in my little school. I get into it to pull a teacher's class and to go through and get some things right here at my desk. I don't have to have someone get it for me.

The interviewed principals also spoke about using computer technology in reference to curriculum use, but only Greg has created his own curriculum document that incorporates the Michigan Frameworks and his district's K-12 curriculum. Greg's ability to adapt this technology for this specific purpose comes as a result of his personal expertise with computers. Peggy is working on a committee in her district to search for a program that will incorporate her district's curriculum with the Michigan Frameworks and Standards and Benchmarks. Because of organizational support that enhances her adoption of computer technology, she is able to institutionalize the innovation of computer technology into the Michigan Frameworks. This is one area in which each of the principals that were interviewed indicated a need. Lois spoke about the software program Curriculum Designer:

Curriculum designer basically used information about what

assessment you use—Michigan Educational Assessment Program (MEAP), California Achievement Test (CAT). Michigan Assessment Program (MAP)—what are the core curriculums and it gives you a list. This is a completely separate program that you have to purchase, but it helps you to use different ways that you are planning for core curriculum objectives. Assessing tools that you are planning to use then it goes through a match. It gives you first grade objectives—and you can mix and match it. You can manipulate it a lot if you don't already have a lot that is already written. It is a good piece to help redesign—to maybe put some things we didn't think of before when we were creating curriculum prior.

Unfortunately for Lois, this program is accessible only in her central office, not at her desktop. So, given this limited accessibility, Lois has not been able to capitalize on the capacity of computer technology like some of the other principals.

The interviewed principals also used the Internet for gathering data to help inform their decisions. The Michigan Association of Secondary School Principals (MASSP), Michigan Department of Education, Head Lice Center, Syracuse University and the Martin Luther King web sites were mentioned by the principals.

An area that was mentioned by the interviewed principals was that using computer technology gave them a sense of independence that they

had not experienced prior to using the computer. All of the interviewed principals remarked about the fact that they were using their secretaries less frequently to do their work, therefore allowing them to feel less dependent on others. Lois said:

It has potentially reduced some of my frustration. Because I have been able to put some things out that I haven't been able to. . . otherwise I was having to have someone else do it. I am maybe more independent and I am an independent person and so for me to have to wait for someone else to produce it for me, it is frustrating. If I can do it myself it eases me.

Programmatic Domain

There are particular elements that hinder the adoption of computer technology in this particular domain: the lack of knowledge of computer programs; lack of comfort to use computer technology as a technology tool and; a notion that computer technology is limited to communication, information and data processing. These elements may cause the principals difficulty in adapting computer technology to these particular tasks.

Based on the interview data, training and staff development are areas of the principals' practice in which computer technology was not used on a regular basis. The principals indicated that they used hard copies of word processing documents for staff development, but only one principal mentioned the use of computer technology for PowerPoint

presentations as an example. Their use of computer technology in this area was still in the infancy stage, yet one in which they spoke about wanting to know and use more. The principals spoke more about the need for staff training and development, rather than their personal use of computer technology for these tasks.

One of the areas that the principals spoke about in the interviews in which they appeared to be more confident was in the development and maintenance of professional relationships. The principals that had Internet access spoke about how much easier it has become to build on these relationships. Bob talked about how he does not feel so isolated from his peers as a result of using computer technology:

Mostly in the county, but throughout the state and I can also send a quick congratulations. . . things I would not have done. I think that it takes less time while you are sitting at the computer. . . just click on it. You do this as opposed to getting out a piece of paper, writing it down, finding their address, writing down their address, putting it in an envelope, sticking on the stamp. It just seems easier and I think it is really positive being able to maintain some of those relationships. I don't feel quite so isolated.

Peggy and Bob use computer technology to stay active with statewide organizations with which they are involved. Peggy is on the State Board of MASSP and Bob is a member of the Glasser Institute. These associations stay current, according to these two principals, as a result of their use of

computer technology.

The interviewed principals also spoke about their use of technology in this particular area. These principals referred to their use of the student management systems in collecting data on students; collecting information regarding standardized tests; and for allocating resources in citing their use of these systems for scheduling purposes.

Interpersonal Domain

This is the domain that both the interviewed principals and the principals who participated in the survey cited as the most frequent use of computer technology in reference to the tasks of communication, word processing and writing appropriately. Using computer technology for these purposes may be somewhat easier for the principals because these are the tasks that most people adopt initially when learning computer technology. The principals that were interviewed also mentioned that they used the Internet for research purposes such as the Michigan Department of Education, Michigan Association of Secondary School Principals and Syracuse University.

Contextual Domain

This particular domain saw the least use of computer technology by both the principals who participated in the survey and the interviewed principals. The principals that were interviewed did use computer technology in order to enter professional chat rooms that allowed Lois was the only principal who specifically spoke about using the computer in

order to access district policies:

What I see that as getting to when I first look at policy and regulatory pieces—we are driven by our Board's policies and by the regulations that are given to us. I can't create any of that. I really just have to follow that. It would be nice to have my Board's policies loaded on my computer instead of those thick books that I have to take off the shelf. So it would be accessing it, not creating or affecting it.

Discussion of Interviews

The interviews provide a depth of information focused on the principal's use of computer technology in their daily practice. What we learn from these interviews is that principals, like all educators, must have access to computer technology. The interviews also shed light on the importance of computer technology training. Evident in these interviews is that organizational and technical support for computer technology in K-12 schools is very different from one district to another. The interviews show that principal preparation in the area of computer technology has been nonexistent. The principals tell us in the interviews that they know using computer technology for their daily tasks is becoming increasingly important, but that their knowledge regarding the application of computer technology is still at the surface learning level.

There were several factors that arose from the interviews of the principals in reference to their adoption of computer technology into their

practices. Bob, Greg and Rick all have a greater amount of comfort in reference to using computer technology. It appeared that the principals who had a higher level of comfort adopted the use of computer technology at a more rapid pace than those principals who were less comfortable. This comfort appeared to provide these principals with the ability to integrate computer technology into their practices with greater ease than the other three principals who had less confidence in their personal ability to use computer technology. Adopting computer technology into their practices seemed to follow along the lines of personal use outside of the principals' practices. The complexity of adding computer technology to the principals' practices was more compatible with a higher level of comfort. The adoption of computer technology into Peggy's practice appeared to be somewhat easier than Doris or Lois as a result of the fact that Peggy had support that could be accessed almost immediately. Her comfort level to use computer technology was raised as a result of having this accessible support. Lois and Doris had very little support, therefore, finding it more difficult to reach a comfort level that allowed them to integrate technology into their practices. Because Bob, Greg and Rick all had significant comfort levels they were able to experiment with computer technology use with the tasks of their jobs. This experimentation gave these principals an advantage in applying computer technology to their work. There were organizational barriers for all the principals (with the exception of Peggy) that prevented them from using computer technology

to its fullest extent, but Bob, Greg and Rick were able to use their personal experiences with computers to enhance their use in their practices.

The most extensive use of computer technology by all six principals is the task of information collection in the functional domain. The adoption of computer technology by principals in this area indicates that the principals see that there is relative advantage to their practices in this particular domain. All six principals have access to a student management data base that provides them with data regarding their student populations. Gathering data to inform their decisions appears to be uniformly and consistently used by all of the principals. This information is now readily available to the principals, therefore, the use of this data provides the principals with current and accurate information. The student management programs varied, but the information gathered was fairly consistent (i.e., attendance, grades, class lists, demographic data, etc.). The high school and middle school principals used the student management systems more frequently because of their scheduling needs. The student management systems provide the principals with the ability to create class schedules for all of their students. The six interviewed principals were all capable of gathering student information without the use of their secretaries, but still relied on their secretaries for gathering certain pieces of data, especially when the principals' daily tasks caused them not to have time available to sit in their offices and use their computers.

Greg, Peggy, Lois and Bob use computer technology in the area of curriculum design in the programmatic domain. Greg has created his own curriculum document for organizing the K-12 curriculum in his school district. Peggy and Lois use independently designed curriculum software for this purpose. Bob is working with a combination of personally designed and independently designed software. Greg is actually using his personally designed software in the area of instructional design and staff development by tying the teacher evaluations to the curriculum piece. Peggy and Rick indicate that they are not using computer technology for curriculum design at this time. The issue of trialability, having some availability to experiment, is important for these principals. Peggy and Rick did not have the availability of the technology in order to experiment with curriculum software. Bob and Greg, who have the most confidence in using computer technology, experiment on their own to design curriculum software. The innovation in this particular area is more readily adopted by four of the principals because they either have great personal comfort in using the technology or they have access to the hardware and software. Peggy and Lois both have access to the software and hardware that gives them the opportunity to experiment in the area of curriculum design. Peggy speaks about the fact that the administrative staff has had discussions regarding the use of curriculum software. Rick and his district have not discussed the use of curriculum software. All of the principals have experimented with using computer technology in reference to

measurement and evaluation. The principals again see the relative advantage to having this information so that outcomes can be easily and quickly measured. They indicate that they have used computer technology to inform themselves and their staffs about standardized testing, but they also see the need for improvement in this particular area.

The interviewed principals use computer technology most frequently in the interpersonal domain, particularly in the area of communication and written expression. The principals see the advantage for communication purposes of using computer technology. Principals communicate frequently as part of their work, therefore, the compatibility of using computer technology is consistent with this portion of their job. The principals who have access to e-mail indicate that this tool allows them greater ability to communicate with other principals and professional organizations. This form of communication gives the principals an opportunity to reduce the isolation that exists for the building level principal. E-mail is a common thread in five of the six interviews and four of these five principals use this aspect of computer technology extensively. E-mail is a relatively easy innovation to understand and use, therefore, principals do not find this aspect of computer technology too complex to use. Communication takes the form of intra-district communication and out-of-district communication. Three of the principals speak of the capability to communicate directly with the Michigan Department of Education as being important to them.

The contextual domain is the one area of the principalship that sees the least amount of use of computer technology. This is an area where research would be extremely important and not all of the principals had access to the Internet for this purpose. This area is also the most subjective, therefore the principals do not actually see how computer technology could be used for some of these tasks. The principals do not easily see the advantage of using computer technology in this are due to the complexity of using the Internet, especially if they do not have easy access to this innovation. The principals use sites such as the Michigan Association of Secondary School Principals and Syracuse University for understanding legal and regulatory applications.

The interviewed principals indicate a sense of independence from their secretaries and other staff members due to computer technology. The principals talked about how the role of their secretaries has changed. They rely less on their secretaries to produce documents for them because they have the ability to type their own communication. The principals speak about the use of templates for letters, memos, and newsletters and also the ability to spell check their own documents with the word processing programs. The principals know how to access information from their student management systems, therefore relying less on their secretaries to produce hard copies of information for them. Having access to current and accurate information at their desktops is a real advantage for the principals. Analyzing data for decision-making

purposes is less complex for the principal if they can access the data themselves.

There appears to be three primary challenges that define how quickly a principal adopts computer technology in their day to day tasks. The first is the lack of access to both hardware and software; the second is a lack of professional and expert advice and assistance; and the third is a lack of support and vision for computer technology at their central office level. All 3 barriers result in the principal's attitude that the adoption of computer technology is too complex and cumbersome. These barriers also result in the principal not being able to model the use of computer technology, therefore, limiting the observability of the innovation.

The first challenge, a lack of access to updated hardware and software, was experienced by most principals. Although, four of the six principals had only recently received updated equipment, two were still dealing with insufficient equipment. Furthermore, five of the six principals reported that it would be difficult to find the money to replace their hardware if the need arose. This lack of updated equipment indicates that the use of technology by the principal is not an institutional priority by the district. Allocating money for equipment also challenges the principals. It stands to reason then, without functional equipment principals could not or may not have the opportunity to quickly adopt computer technology in their daily tasks.

The challenge of using software that is constantly being updated

an

in

m

fe

E

p

n

u

e

tr

o

p

w

g

d

a

c

fi

b

w

m

ve

be

and expanded is also an issue for the principals. While the six principals interviewed have access to Microsoft Office and different student management programs in which they felt some level of expertise, only Bob felt comfortable using the other programs in Office such as Powerpoint, Excel and Access. The principals feel that the complexity of using these programs, without the proper training, is time consuming and therefore, not real advantageous. Word processing appears to be the most widely used because it requires the least expertise. Principals have been expected to use the more sophisticated programs in Office with little or no training. The student management programs for Bob and for Doris are outdated and neither principal is satisfied when working with these programs. The advantage of using a student management program is lost when the software is outdated. Bob and Doris see no advantage in gathering information from these systems because the information is difficult to obtain. Both of these programs are still DOS based and bring about confusion, especially for Doris, whose limited understanding of computer technology is with Windows based products. While Doris is finding it difficult to use even the most reasonable and sensible package, because of lack of knowledge and adequate tools, Peggy is currently working with a committee in her district to change their student management program. Rick is working with his RESD to create a new version of the current student management program. The difference between these principals in their application of the software programs is

the understanding of the potential application of the programs, the technical expertise they have or not, and the comfort they feel to experiment and make changes in their practices.

The second challenge that confronts principals is the lack of access to the professional resources and technical service they needed in order to have assistance in their buildings for both hardware and software support. The one principal who does have a computer resource teacher in her building indicates that this person was placed in her building during the current school year. Five of the six principals have no immediate access to training in their buildings or in their districts. This certainly poses problems for the principals in reference to time constraints and professional development issues. Given that principals have very little time to do their job, if technology assistance is not prioritized, computer technology adoption will be delayed because the principal will not have the “time” to give attention to learning these skills. Two of the principals who have great confidence in their abilities to use the computer still indicate that they also have training needs that are not being met. All of the principals, except Rick, did have access to some form of technical support both at the district and RESA level. Rick did have access to RESA support, but limited access to this support in his local district.

The third challenge for the principals is the lack of commitment by the central administration to support computer technology for the principal. This lack of support was certainly evident in two of the districts

where the principals were not even given the needed equipment in order to be able to use computer technology in a productive fashion. The other principals indicated that with the passage of district bond issues the importance of computer technology in the classroom was increasingly becoming a priority in their districts. All of the principals spoke about the need for the district organization to place technology as a priority, but only Peggy spoke about the vision that her district has in the area of technology. It is imperative for the adoption of this innovation to take place that the district place the use of computer technology as a priority. If this does not take place, then the issue of observability becomes important. If people within the district do not see using computer technology as an advantage, then adoption for principals and other personnel will be difficult.

The principals all spoke about the necessity for an emphasis on instructional technology, but certainly one of the major worries is the access to funds to keep technology current. Funding is important to all of the principals whether they are speaking about equipment, software or training. It appeared that computers for the principal was the last time on the list.

A closer examination of the principals' portraits, which describe their perceived use of computer technology in the work setting, revealed two interesting themes. One, there are attitudinal barriers that often stand in the way of principal use of computer technology. Two, because there is

a lack of professional development or expert assistance available to them, they fail to find interesting and useful ways to apply computer technology in their daily work. In essence, the rate of adoption is impeded by the principals not seeing computer use as an advantage to their daily work. Principals need to be trained properly so that they can understand that using computer technology is compatible with the duties of their job.

Having to use computer technology as we move into the 21st century has created an added burden for the principals. Even though these principals see the need for computer technology use, some of them still feel that they are not knowledgeable enough to use this technology in an efficient manner. So, while there is a relative advantage for principals to use computer technology, compatibility, complexity, trialability and observability still seem to be missing from the Diffusion of Innovation model. Principals are still seeking the knowledge necessary for computer technology to become an ordinary part of their daily tasks.

All of the principals indicated how computer technology has been a valuable addition, but some of the principals still have not been able to assimilate the use of this equipment into their daily routines without new difficulties arising in what they see as a larger priority. That priority is being with students and staff. A couple of the principals still see that using computer technology will take them away from people, therefore creating a dilemma. Prioritizing time is an important factor for the building-level principal because of the numerous tasks that a principal encounters on a

daily basis. The complexity of using computer technology is currently causing some principals difficulty in adopting this innovation. When computer technology can truly be seen as a time-saver, these principals will be more willing to integrate it into their daily practices.

Professional Development, the second theme, is certainly a key factor in whether these principals are using computer technology effectively in their practices. Five of the six principals have access to very little computer technology training. Two of these five principals have some personal mastery when using the computer, therefore, do not indicate a great need for training. Both of these principals, though, still indicate that they have some training needs and that these training needs are not being met. The other three principals certainly have great needs for training and indicate a lack of training. Five of the six principals have never had any training designed for them as principals. Peggy is the only exception because she has a computer resource teacher in her building. The issue of trialability, however, is hindering the principals' use of computer technology. The lack of professional development for the principals does not allow them the opportunity to experiment with the technology, therefore, not allowing them to use computer technology efficiently in their practices.

While knowledge and comfort might be low, the principals tell stories of successful application of computer technology and they appear hungry to learn more. It is apparent from these interviews that some of

these principals have had some success with their use of computer technology in their practices. Greg, who designed the curriculum piece and has his teacher evaluations tied to it, credits computer technology for allowing him the opportunity to create this structure for his staff. Lois, Peggy and Bob are also using computer technology in some fashion in reference to the curriculum. Disseminating curriculum information to the teaching staff and parents is important to these principals. Computer technology is allowing them to do this in an efficient manner. Given the attitude that there is a relative advantage for principals to use computer technology, school districts might look more closely at the services and structures they provide for principals that assist principals in integrating computer technology into their daily work. The possibility exists that the rate of adoption of computer technology by principals may increase with increased district support.

Another area of success is communication. Whether it be through the word processing or e-mail, the principals indicated that this was an area of high use. All of the principals expressed that with added capabilities in the future, this area will increase in use. Fighting the issue of isolation will be a continuing factor in the use of computer technology for communication purposes.

All of the principals see some positive changes in their practices in the area of management. All six principals use computer technology in reference to student management and four of the six (high school and

middle school) principals use the computer to assist them in their scheduling process. All of the principals are currently using computer technology to gather information about their students and their programs. The six principals also indicate that greater use of computer technology will occur in the future to help deal with student assessment and accountability.

A final interesting point is that the principals interviewed expressed a strong sense of independence or self-reliance as they became more computer literate. They no longer had to rely on secretaries or other personnel in order to help them gather information or communicate with people. Every one of the six principals indicated that they created their own documents and were able to gather information without the assistance of other school personnel. This sense of independence allowed the principal to utilize the human resources in their buildings in a much more efficient fashion than prior to the infusion of computer technology.

Being a curriculum and instructional leader in the school community is not a new role for the building level principal. However, it is becoming increasingly difficult to model effective teaching and learning practices if the principals do not employ technology in their own practices. The principals that were interviewed are using computer technology in several areas. Some of the uses of computer technology for the principal are: accessing data through student management programs; increased communication skills as a result of e-mail and production of hard copies of

letters and newsletters; increased professional contacts through e-mail and the world-wide web; gathering research through the web; budgeting; curriculum purposes and teacher evaluation.

Even though the principals are increasing their use of computer technology, the challenges that they have to face create obstacles for them. Budgetary and access challenges force the principals to be creative in their allocation of resources for computer technology. Lack of training creates a time issue for principals to gain the knowledge that they need in order to use computer technology effectively. Priorities of the school districts in which the principals work, create tensions that cause the principals to champion computer technology use without district support in some cases.

It is apparent in these interviews that regardless of the challenges they face, these principals embrace the use of computer technology in their schools and in their practices. These principals certainly vary in their knowledge and confidence of computer technology, but one thing is true about each of them—they truly want to know more about using computer technology to support their daily practice.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS: SO WHAT HAVE WE LEARNED ABOUT PRINCIPALS WORK AND THEIR USE OF COMPUTER TECHNOLOGY?

Introduction

The purpose of this study is to examine how current K-12 school principals are utilizing computer technology in their practices and how computer technology shapes the form and content of their work. In order to understand the impact of computer technology on the principal's work, it was necessary to determine just exactly what the principal's work entails. The description of the four performance domains by the National Commission on the Principals in 1990 allowed this researcher to use this description as a basis for understanding the principal's work. The information gathered from the survey and the interviews gave the researcher in-depth knowledge about the use of computer technology in the principal's practice.

Several assumptions were held by the researcher prior to the beginning of the study and it is on these notions that the focus of my work will be evaluated. First, as a practicing principal, I believed that technology was having an impact on my practice. I was not sure at the outset whether this impact was positive or negative. Second, I knew that computer technology could not possibly have a positive impact on my practice if I was not given access to updated hardware and software. Third, I also knew that computer technology would have little impact on my

practice without the proper training.

The primary research question of this study is: “How are current K-12 school principals utilizing computer technology in their practices and how computer technology shapes the form and content of their work?”

The sub-questions have been addressed through the survey findings and the in-depth interviews.

1. How do principals currently employ computer technology to manage, to communicate, to lead instructional programs, and to address the philosophical, legal and regulatory work? (Four performance domains)

2. What is perceived, by the principals, to be the most effective application(s) of computer technology and the most ineffective for management and leadership of schools?

3. What appears to make the difference between why and how different principals employ computer technology?

4. What are the implications of these findings to educational leadership preparation and to further research and inquiry?

I will address the preceding research questions in this chapter.

How Do Principals Currently Employ Technology To Manage, To Communicate, To Lead Instructional Programs, and To Address The Philosophical, Legal and Regulatory Work?

A close analysis of the data revealed specific work-related activities that help us to discern how principals think about and employ computer

technology in their practice. Principal practice and computer use is identified under the elements of knowledge, self-efficacy, access to computer technology, hardware, software, access to training, barriers to use of computer technology and benefits of use of computer technology. These themes seem to overlap in some areas, but the importance of their understanding as related to the principal's work is essential to realizing the impact of computer technology on the principal's practice. These themes arose out of conversation with the interviewed principals, survey answers, and also with the open-ended question posed to principals on the survey. Principals spoke about these themes in the in-depth interviews. All of these themes reoccurred throughout the interviews with all six principals and were referred to in the open-ended question on the survey. In Table 5.1, Taxonomy of Themes of Computer Use, an overview of principal work and computer use is presented.

Table 5.1 TAXONOMY OF THEMES OF COMPUTER USE

<u>Knowledge</u>	<u>Software</u>
Critical Thinking	Integrated Packages
Problem-Solving	Availability
Information Gathering	Limitations
Staff Development	Types/Diversity
Personal Interest/Motivation	User Friendliness
	Compatibility
	Methods of Acquisition
<u>Self-Efficacy</u>	Technical Support
Time Control	
Confidence Level	<u>Access to Training</u>
Risk Taking	Financial Support
Knowledge Acquisition	Time Factors
Completion of Tasks	Type/Location of Training
Professional Development	Appropriateness for
	Principal f Training

<u>Access to Computer Technology</u>			<u>Barriers to Use of Computer Technology</u>		
Support-Local/Regional Connectivity			Technology		
--Internet			Priorities		
--Intranet			Ease of Use		
Home Environment			Obsolete		
Work Environment			Software/Hardware		
<u>Hardware</u>			Confusion		
Diversity of Equipment			Lack of Training		
Limitations of Equipment			Lack of Time		
Availability of Equipment			People vs. Machines		
Methods of Acquisition			Connectivity		
<u>Benefits of Use of Computer Technology</u>			Financial Support		
Problem-Solving	Information Gathering		Organizational Issues		
Communication	Simplifying Tasks		Academic Preparation		
Independence	Measurement & Evaluation				
			Use of Time/Efficiency		
			Curriculum Integration		
			Dissaggregation of Data		

This taxonomy illustrates the ways principals use computer technology in their work.

Principals use technology in a variety of ways in reference to the themes provided in the taxonomy. Principals use the Internet to gather information in order to help them problem-solve. This access gives principals a great deal of information in order to critically think through a decision. All of the interviewed principals indicated that the use of the computer allowed them to be more efficient in their use of time and also gave them an opportunity to complete tasks in a timely manner because they, themselves, had control over the gathering of the data. So, there is a relative advantage to the principals when using computer technology in their practices. The rate of adoption and diffusion to practice is increased

when principals become acclimated to using computer technology.

It was quite apparent with both the interviewed principals and the principals who completed the survey, that communication was a major relative advantage of using computer technology. Principals use e-mail, as an example, to stay in touch with colleagues, staff members and professional organizations. A couple of the interviewed principals mentioned that they stayed in contact with colleagues through the use of e-mail that they would not have otherwise kept in contact. Both sets of principals (interviews and surveys) indicated that the use of word processing programs gave them another avenue to communicate more effectively. All of the interviewed principals indicated that they do much of their own typing, therefore, feeling a sense of independence from secretaries that they relied on heavily prior to the infusion of word processing in to their practices. The complexity of these tasks is generally not high for principals, therefore, the use in this area is significant. It is apparent that the principals who feel comfortable using computer technology use this as means to decrease their sense of isolation that many of them feel in their practices.

Another area that principals mentioned as beneficial has been in the area of student data bases. The information that is available to the principals in these programs is available at the principals' desktops. This information is used to make informed decisions regarding the student population of a school. This information is used in the areas of

measurement and evaluation and curriculum issues. These programs were also noted as time-savers in regards to the scheduling of the student population. Principals noted that they use their scheduling programs frequently and that once they learn the programs, time savings becomes very real. It appears that the principals' use of computer technology in this area occurred more rapidly as a result of the need to complete complex schedules. It should be noted that the outcomes of using student management programs are immediate and that they support the structure of school-related activities while saving time. The student management systems show relative advantage to using them and the low complexity of these programs is beneficial to the principal. These programs also are compatible to the daily work of the principal and the use of these programs are easily observable by the school community.

This assessment reveals that principals perceive a need, a relative advantage, for computer technology in their practice. Yet, it also appears that there exists a number of obstacles to their use, therefore slowing their rate of adoption of computer technology. Because of lack of accessibility to equipment, organizational issues, time and training, the data indicates that principals have difficulty understanding the entire framework of the principalship and all of the tasks involved. Therefore, they also indicate a lack of understanding of computer technology and the applications of computer technology to their practices.

What Is Perceived, By The Principals, To Be The Most Effective Application(s) of Computer Technology and The Most Ineffective For Management and Leadership of Schools?

Principals spoke about using the computer in order to help them critically think and problem-solve a project. "Being able to access current data from a wide variety of sources, then manipulate that information into documents" was a comment by one of the surveyed principals. Doris spoke about her knowledge of computer technology and its impact on her practice:

I think that in some ways it has personalized some of the things that I do because I actually do them instead of a secretary. Sometimes it creates a vacuum where I am in here (office) more than I ever used to be. I spend more time in this office than I used to. I think that as I become more computer literate it is going to save me time, but it is also going to give me better information. I'm going to be more knowledgeable and I think that I am going to be able to measure and evaluate better, not just the curriculum, but myself, lesson plans, all kinds of data which educators never used in a professional way before. I think that when we were in college and we had classes in stats and research and things we didn't really feel it helped us in our jobs but we are going to find useful in the future. That is what is going to be needed. It is needed now. The connections were never made for us in our curriculum, but now I am starting to see why these things are necessary and I think that they are going to be

helpful and actually change what goes on in our schools.

Doris' comments indicated the need for principals to have the knowledge necessary in order to be able to take risks and accomplish tasks that before were difficult to comprehend, let alone complete. The complexity in this particular area is high, therefore, principals might have difficulty adopting this important tool if not provided adequate training. This is key to our understanding of how principals adopt computer technology and how they employ technology's capacity in their work.

The gathering of information has become essential for principals to function effectively in their positions. Principals gather information in a variety of ways, but more frequently are using computer technology and the Internet for this purpose. Principals are realizing that the importance of having this knowledge is imperative to making decisions based on solid information. The interviewed principals used computer technology to gather information from various web sites such as the Martin Luther King web site and Head Lice Center web site. Being able to speak directly to the Michigan Department of Education also provided these principals with important information needed to make decisions. The surveyed principals also spoke about their ability to gather information on students through the use of student management systems and also in gathering information from the Internet. The compatibility of using computer technology for this purpose is easily seen by the principals in their daily work. The gathering of accurate and current information is also observed readily by other

members of the school community.

The principals made it very clear that their knowledge was certainly tied to their ability to see results of using computer technology. Peggy spoke about her frustration when realizing that she needed to know more in order to be more productive:

I just am not as knowledgeable. I need to go somewhere and just...I need eight hours of sitting in front of some (computer) and just pound on it. That is the kind of learner that I am. I am not a learner that can take the manual out at night and sit and do it. I think that I can do more. I could be more productive.

Principals must have knowledge regarding the implications of computer technology in their practices in order for them to use this technology productively and efficiently. Principals believe, even without a great deal of knowledge, that computers can and will have positive impact on their practices. Gaining the knowledge in order to be efficient is a step that must be taken for principals to have computer technology positively impact the shape and form of their work.

Perceived Barriers to the Use of Computer Technology

The themes that were prevalent in this area of the discussion were consistent throughout the interviews with the principals and were also mentioned by the principals in the open-ended question on the survey. These themes were: 1) lack of administrative and financial support, 2) the lack of training for the principals, and 3) the more time spent using

computer technology, the less time the principals spend with people. These elements characterized the level or rate of computer technology adoption and the nature of what the principal's use of technology in their practices appear to be.

A major issue that was addressed by all of the interviewed principals, was the amount of financial support available to them in their districts for equipment and training. This issue was tied directly to the organizational barriers that existed within each of the districts. These barriers included the administrative structure of the district, facilities, and the obsolescence of hardware and software. As we understand through the lens of diffusion, an innovation cannot be institutionalized without these barriers being eliminated.

Rick indicated that the organizational structure in his district prevented his district from accomplishing much with regard technology. Rick spoke about the frequent changes in administration and how this inconsistency has not allowed his district to create a vision for technology. Rick's assessment of his district's inconsistency speaks to the issue of whether the school district sees relative advantage in having a vision for technology. If school districts do not see the advantage for using technology, then schools will have difficulty excelling in the area of computer technology. Lois spoke about the difficulty that her district is currently having trying to package a technology bond issue that could pass in her district. Lois indicated that the previous bond issue was

packaged in such a fashion that the community is still angry over this issue. Doris' district has passed a bond issue within the last two years and there will be changes in the connectivity and hardware in her district, but there still seems to be a reluctance on the part of the school board to forge a place in the general fund for technology training and software purchases. Even though this district's school board recently delayed the purchase of a school bus in order to buy a new student management system, Doris indicated that some members of the board were uncomfortable with this decision.

All of the interviewed principals, except Peggy, spoke about the lack of funding for training and instructional technology. We know that to move more people to routinely use computer technology, we must provide ample opportunities for building awareness, gaining information, and allowing individuals to experiment (individually and collaboratively) with others. Professional development then, acknowledges that this innovation is a process, not an event. The issue of trialability is important in the principal gaining the knowledge necessary to use computer technology. Without the support of professional development, principals will have difficulty adopting computer technology into their practices. Peggy was the only principal that I interviewed who indicated that her district had a "vision" for technology. Peggy indicated her view of this vision came from a strong district mission that the central office administrators not only buy into, but espouse. Peggy also indicated that this vision is evident in the

fact that the district provided a full week of technology training for the entire staff of the district prior to the start of school in 1998.

All six of the interviewed principals indicated that they had no technology training in their formal academic experience. Doris said in reference to technology training in her academic experience:

Zero. I don't think that it was even discussed. This is a serious gap because there are a lot of us (principals) that are still going to be around for awhile.

Rick is the most recent graduate (1992) of a Specialist program and he indicated that technology was not addressed in his program. In reference to this issue Peggy said:

No. Never has been for my Masters Degree or my undergraduate degree. I mean come on! I had to learn how to do a 16mm film strip and quite frankly I never have been successful at that.

The survey indicated that 88.5% of the principals had access to some form of computer technology training, but only 30.6% of these principals indicated that they had access to training specifically designed for them as principals. The only interviewed principal that indicated that she had access to training designed for her specifically as a principal was Peggy who was able to work directly with her computer resource teacher. All of the other principals indicated that their training consisted of RESA training for the student management systems. Lois had access to training for the Microsoft Office package from a local college. All of the interviewed

principals indicated that they had a need for training that would give them the opportunity to be trained with other principals in which it could be individualized for their particular needs.

Another factor, in reference to training, that the interviewed principals spoke about was the time factor regarding the training. Peggy spoke about the need for summer training for principals:

OK, I think first of all, I would, regardless of the size of the district, I would have sometime during the summer, a summer retreat where all of the administrators were trained on things like Microsoft Word, Excel, Access, Powerpoint, those kinds of things. However, that would be a one shot deal for probably three days though. I don't think that you could do it in less than three days and even get an overview. From that point on, however, I believe it has to be individual, one-on-one, in the building so that what the person is working with becomes a part of what you are trained on. And then you have to have someone available to teach it to you. If it means one-on-one, shutting the doors and telling the secretary don't bother me.

Lois spoke about the need for the district organization to place an emphasis on professional development for principals in the area of technology:

Until we get that mind set in education that when we look at professional development what we are saying is that we are

investing in what we want them to learn. And this is a mind set change. It is not wasting money on a two day workshop. It is really looking at professional development differently. It is a course. It is a week long. It has some component that takes into account adult learning.

Greg also acknowledges his need for training, but refers to the lack of time available to him:

Our kids coming out of high school are proficient using computers. Our kids in this school teach us. You know why they can teach us is because they have the time. We can give them time and opportunity and they go in and poke and learn. . . what does this button do and what happens if I do that. They sit down and show each other and its cool. They learn enormous amounts of things. I don't have time in my day to sit down and . . . I mean I would love to take that book and just say OK and work with an Excel document. There are all kinds (of things) within that program that I still don't know how to do. I'd love to learn how to do it. But who does my job for me if I take time to do that?

Principals were certainly concerned about the priorities involving the use of computer technology versus dealing with people. One of the surveyed principals wrote, "The more we use technology to help us deal with people, the less we deal with people." If principals do not see the relative advantage in using computer technology, they will not make the

effort to incorporate computer technology into their practices. Doris also spoke about her concern that computer technology will take her away from her primary responsibility of dealing with kids. Doris indicated that she spent more time in her office as a result of using computer technology and looks forward to the day when she can have a laptop that she can take with her to “a picnic table, right where the kids are.” Again, this theme affirms what we know about the adoption of an innovation. That is, change must begin with the individual as it is a largely personal process of reframing one’s professional work. If change, in this case is the introduction of computer technology, occurs at the institutional level, bypassing the individual (i.e. school principals) then adoption is slowed.

What Appears to Make the Difference Between Why and How Different Principals Employ Computer Technology?

Principals indicated through the surveys and in the interviews that there are various reasons why they use computer technology, but there are two prevalent themes which can attributed to the reasons. First, there appears to be significant differences in the school districts’ support for the principals’ use of computer technology. Second, the principals’ personal attitudes towards the use of computer technology is significant. Hence, the variation between principals can be understood through a closer analysis of their stage of concern and levels of use.

District Support for the Principals' Use of Computer Technology

The information gained from the interviews clearly indicated a significant difference between school districts' support for the principals' use of computer technology and also for the funding of technology within the schools. On the one hand there was Peggy's district who clearly had a district vision for technology use. Peggy indicated that technology use was the number one priority currently for her district. On the other hand, with regard to Rick's district, he had to procure his computer in a manner that he was not willing to share. Lois's school district was having difficulty packaging a bond issue that would give this district the funds needed to address its technology issues. Greg, Bob and Doris are all in districts that have passed bond issues. Each of these districts are addressing their technology needs, but they also have continuing fiscal problems in reference to technology. It was clearly evident in the interviews that only Peggy spoke of her district having a "vision" for technology use. The lack of other principals discussing computer technology vision was apparent. Doris, in fact, spoke about the difficulty her district's school board had when delaying a purchase of a school bus in order to buy updated software for a student management system that was purchase at least ten years ago.

Personal Attitude Toward the Use of Computer Technology

Another area that accounted for the difference in use is that of the principals' personal interest in computer technology. Greg and Bob both

spoke about using computer technology for a long period of time. Greg indicated that he has been using computer technology since “the beginning” which he terms as about twenty years ago. Bob also spoke about how he has used computers extensively for years, in fact he has taught several computer classes. These two principals indicated throughout their interviews that they had very little need for technology training because of the number of years that they have been involved in using computers. Rick also has been involved in computers for several years, but he acknowledged that his experience began with software. Rick also indicated that he did not have great training needs, but that he could use some support in some areas beyond word processing.

Doris is in stark contrast to Greg and Bob. She related that she had been using computer technology in her office for only a couple of years. She had relied heavily on her secretaries and assistant principals prior to that time. She labeled her equipment as “hodgepodge” because the monitor and keyboard that she was using is at least ten years old. A couple of years ago one of her assistant principals realized her lack of equipment and provided her with a laptop computer that acts as the “brains” of her desktop equipment. Unfortunately, Doris feels inadequate about taking her laptop away from the other equipment on her desk, therefore, she does not take a computer home with her. She talks about coming back to her office on the weekends, but “ends up not playing around with it and trying to do things because I am afraid that if I mess something up there is

no one here that is going to get me out of this.”

Lois and Peggy indicated more use of computer technology than Doris, but less than Greg, Bob and Rick. Lois and Peggy have access to new updated equipment and also to a network that allows them to communicate in and out of their districts. Doris, currently, does not have this access. Peggy had the easiest access to support for training and technical issues, therefore, has less fear about using the equipment because she knows that she can have help almost immediately. All three of these principals indicated a willingness and desire to acquire more computer technology knowledge.

Every one of the six interviewed principals spoke about the lack of time that they had in order to learn more about computer technology. Even Greg and Bob, who have great personal interest in computers, spoke about their lack of time to “go in and poke and learn”. Greg, Bob and Rick are self-taught and their expertise comes from their personal interest, not because their districts have a vision for technology or technology training. It is important to understand that the issue of “lack of time” that principals have in reference to learning and using computer technology in their practices. Although the principals have different levels of concern and stages of adoption, time is an essential element that shapes their usage. According to the Innovation of Diffusion Theory, the rate of adoption is greatly dependent upon the individual’s sense of the relative advantage of the innovation. Because the adoption of computer technology requires

time to learn and the general sense that what is being learned will be useful, professional development (or lack of) shapes the principal's attitude toward and eventual (or not) use of computer technology.

It is abundantly clear to me as a practicing principal that our own personal interest has a great deal to do with our output when referring to computer technology. It is clear through the surveys and the interviews that principals are not being given the training, or still in some cases, the equipment that they need to be educational leaders in this field. Principals are being asked to model computer technology in their schools, but if not for personal interest, it is apparent that lack of access and training are preventing principals from acquiring the knowledge they need in order to be leaders in this field.

Indeed, the interviewed principals reflect the adoption of an innovation much like any member of any social structure. That is, each will come to use the innovation at a different pace. This process can be seen through Rogers, (1975) two basic premises: "stages of concern" and "levels of use of the innovation". The "stages of concern" (Rogers, 1975) stems from the understanding that an individual involved in any type of change goes through a series of perceptions ranging from personal views to the overall effects of the change before s/he can fully integrate or routinely use the innovation. Stages of concern include:

- ◆ Awareness: having little concern about or involvement with the innovation.**

- ◆ **Informational:** interested in general awareness information but worried about themselves in relation to the innovation.
- ◆ **Personal:** uncertain about the demands of the innovation, their adequacy to meet those demands, and their roles with the innovation. Might analyze their participation in relation to the reward structure of the organization.
- ◆ **Management:** focused attention on the processes and tasks of using the innovation and the best use of information and resources. Issues of import include: efficiency, organizing, managing, scheduling, and time demands.
- ◆ **Consequence:** attention is on the impact of the innovation on students. Relevance of the innovation for students, evaluation of student outcomes, and changes needed to increase student outcomes are important concerns.
- ◆ **Collaboration:** focus on the coordination and cooperation with others.
- ◆ **Refocusing:** focus on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. They have definite ideas about alternatives to the existing form of the innovation.

These “stages of concern” helps us to understand how the principals interviewed have accepted and adopted the innovation of computer technology into their practices.

It was apparent in the interviews that Doris was in the earliest stage which appears to be the Personal stage. She certainly was uncertain about the demands of the innovation and not confident about her abilities to use computer technology. She did understand, though, that there were organizational implications to her using or not using computer technology. Peggy, Rick and Lois, however, appear to be in the Management stage. They had a greater understanding of the process and the tasks involved in using the innovation of computer technology. They were beginning to appreciate the effects of using computer technology for organizing, managing, scheduling and the time demands that this new innovation was placing on them in their practices.

Finally, Greg and Bob certainly fall within the last three stages of Consequence, Collaboration and Refocusing. Both of these principals indicated that they understood the impact on students of the innovation of computer technology and that they also saw how using computer technology increased their coordination with others both in and out of their districts. Both of these principals also had strong feelings about future benefits of using computer technology in their practices.

The “levels of use of an innovation” can best be described in the following continuum in Table 5.2:

	Table 5.2	
LEVELS OF USE	DEFINITION	PRINCIPALS
Non-use	No action is being taken.	
Orientation	User seeks out information.	
Preparation	User is preparing to use innovation.	
Mechanical Use	User is using the innovation, first poorly, but make changes.	Doris
Routine	Makes few or no changes--established pattern of use.	Lois
Refinement	User makes changes to increase outcomes.	Peggy & Rick
Integration	User is making deliberate efforts to coordinate with others.	Greg & Bob
Renewal	User seeks more effective alternatives.	Greg & Bob

Placing the interviewed principals along this continuum indicates that the adoption of the innovation of computer technology into their practices is at various stages along this continuum. Doris is at the earliest stage due to her lack of personal involvement in computer technology and also because she has had organizational issues that prevented her from accessing equipment that would provide her with current technologies. Lois now has access to updated technology that will allow her to make the changes that she needs in order make computer technology a routine asset to her practice. Peggy and Bob are at the refinement stage where they are able to make changes to their use as a result of support for Peggy and personal interest on Bob's part. Greg and Bob are at the highest stages of use. They both are making deliberate efforts to use computer technology and they also both have a vision for how computer technology

may be utilized in the future.

Dealing with change is different for each individual. Change is difficult and it takes time; an issue that is very important to the building-level principal due to the multitude of responsibilities that face them each and every day. There are organizational and personal issues which affect the adoption of computer technology into the principal's practice. With the ultimate goal of change within a school setting to improve student learning, then the adoption of computer technology for principals must show 'an advantage' for the principal in this quest.

So, What Have We Learned about the Principals' Work and Computer Technology?

Given the findings to the above questions, we can now address the query: How does computer technology shape the form and content of the principals' work?

I have developed many thoughts about the principal's job over the last eighteen years that I have spent as a building principal. One of the thoughts that has occurred most frequently is the idea that building principals are isolated from their peers. Through the process of interviewing these six principals, I found that this notion of isolation for the K-12 school principal does exist. I have reflected on this idea for some time and have come to the conclusion that the use of computer technology could allow building principals to network with other principals and professionals and help alleviate this sense of isolation. Visiting and

interviewing these principals gave substance and affirmation to my thoughts regarding the isolation of the principalship.

The research in this study clearly indicates that principals are using computer technology in their work. It is evident, though, that this use is almost as varied as the principals who participated in this study.

Principals are using computer technology for tasks that range from writing appropriately to understanding multi-cultural sensibilities. What is significant, though, about this use, is that computer technology is being most frequently and most comfortably used for word processing and writing appropriately. These tasks are closely linked to the initial introduction into computer technology for most people —the use of the word processor. It is apparent that principals have not had the opportunities to further their development of skills due to lack of access to updated equipment, software, and to training designed for principals.

It is clear that the work of the principals is complex. Principals must be given support by their local districts and regional service agencies in order to help them understand the application of computer technology for the complex tasks of their jobs. Principals will have difficulty applying computer technology to the complex tasks of their jobs without their districts placing an emphasis on assisting the principals in learning these applications. State of the art technology is available throughout our society, yet education and principals have not taken full advantage of these sophisticated technologies.

It was also clear through the collection of data that principals are still at the early adopters stage because there is an indication by the principals that they do not completely understand the principalship in it's entirety and therefore, the impact that computer technology has on the principal's practice. Principals continue to make rational and irrational decisions regarding the use of technology. The principals' use of computer technology still appears to be amorphous and the indication that there is little discussion surrounding the principals' use of technology gives the allusion that no one cares. It appears that principals will adopt technology, but at a pace that will be designated by their peers and students.

What Are Implications of these Findings To Educational Leadership Preparation And to Further Research and Inquiry?

The implications of this research will be addressed in four different areas: first, policy makers (school boards and central offices); second, practicing principals; third, schools of educational leadership; fourth, further research.

Policy Makers

The research in this study indicates that school boards and central office personnel need to place an emphasis on technology in order for principals to effectively use technology in their practices. School districts must make funds available not only for hardware and software, but also for the training that is needed for all members of the school district staff.

School districts are expecting principals to model the use of technology in their schools, but in order to do this principals must have access to updated hardware and software. It was obvious through the interviews that the school district that had a district mission which included a vision for technology was probably the one district where the principal was most effective in using technology in her practice. The influx of technology into our society has not stopped at the school doors. School boards and superintendents must provide an environment for principals to use technology effectively and efficiently.

Practicing Principals

There are a variety of implications for practicing principals from this study. Principals indicated that there were a variety of themes that they needed to address when using computer technology in their practices. It is evident that there are a number of positive reasons that principals need and want to use computer technology. Some of the positive factors include information gathering, efficiency of time use, communication, curriculum integration, independence, and the ability to disaggregate data. The research showed, however, that principals are not necessarily using computer technology very effectively. Principals are using computer technology moderately in most tasks of the principals' practice. This implies principals need to gain a deeper understanding of the impact that computer technology can have on their practices.

Schools of Educational Leadership

It was evident by the information gathered from schools of educational leadership in the state of Michigan that there is very little emphasis being placed on the use of computer technology for aspiring principals. Clearly, it is indicative of higher education institutions that they must begin to help prepare our principals for work in the 21st century. In order to do this, they must address the teaching of the application of technology specifically to the principal's practice. Technology must be taught to be a tool to develop the skills that are necessary for the principal to manage and lead a school. As an example, it is no longer just enough for principals to know the law, but principals must be able to research the law and be able to apply it effectively to the decisions that they must make. Having instant access to research and instant access to communication at their desktops will allow principals to have the best available knowledge in order to make decisions. Computer technology is the tool that will allow this to happen for principals. Schools of educational leadership must provide the framework for aspiring principals to gain this knowledge of how to use computer technology effectively.

Implications for Further Research

This study created a starting point from which to examine the principal's use of computer technology, but in order to effect any real changes in this use by principals, there must be further research to understand the long-term impact of computer technology on the

principals' practice. First, a study that would delve deeper into the actual applications of computer technology in the work of the principal would be beneficial. What exactly are the "real" tasks of the principal's work in which they are using computer technology and how is this particular application benefitting the principal? Secondly, how might a professional development program be devised in order to assist principals in learning very specific skills that could help them apply computer technology to their jobs? A program to assist principals in this area must take into account the complexity of the tasks of the principals and the limited amount of time that principals have to learn these applications. Very few practicing principals have had any formal academic training in regards to technology, therefore, this professional development program must be "on the job" training. Critically reviewing the principal's work must be the basis of any research. It is only through the understanding of the complex tasks of the principals that further research would be effective.

Summary

This study was a personal journey to begin to discover a means by which the job of the principal can become more manageable and therefore, giving more time to the principal for the real purposes for which their role was originally intended: to provide educational leadership to the school community so that our students can have every possible opportunity to be successful. The work of the principal has become so complex that school districts throughout the nation are crying for qualified

candidates for school principal positions, because more and more people are leaving the profession for other, less complicated jobs. I have been a principal for almost twenty years and most days I feel that it is the finest job in the world. With the ever-increasing demands of the position, however, we must find ways to assist principals so that this job does not take its toll on the people who have chosen to lead schools. Computer technology, taught and used effectively, may be the tool that provides the principalship with the support it needs to keep principals in these important positions by lessening many of the mundane, yet essential tasks of the job. In so doing, principals will be available to be authentic educational leaders.

APPENDIX

UCRIHS APPLICATION

APPLICATION FOR APPROVAL OF A PROJECT INVOLVING HUMAN SUBJECTS

INITIAL REVIEW (and 5 yr. renewal)

UCRIHS

University Committee on Research Involving Human Subjects

David E. Wright, Ph.D., Chair

246 Administration Building Michigan State University

East Lansing, MI 48824-1046

PHONE (517) 355-2180 FAX (517) 432-1171 E-Mail -

UCRIHS@pilot.msu.edu

<http://pilot.msu.edu/unit/vprgs/ucrihs/>

Office Hours: M-F (8:00 A.M.-Noon & 1:00-5:00 P.M.)

DIRECTIONS: Please complete questions on this application using the instructions and definitions found on the attached sheets. (revised 8/97)

1. Responsible Project Investigator
(Faculty or staff supervisor)

Name: Maenette Benham
Social Security #: _____

Additional Investigator(s)

Name: Cynthia A. Sager
SS or Stu. ID#: A02721971

Department: Educational Administration
I believe the research can be safely
completed without endangering human
subjects. Further, I have read the
enclosed proposal and I am willing to
supervise any student investigators.

Name: _____
SS or Stu. ID#: _____

Name: _____
SS or Stu. ID#: _____

Signature: _____

2. Address

430 Erickson Hall
Michigan State University
East Lansing, MI 48824

Address

13153 Hitching Post
DeWitt, MI 48820

Phone #: 517-353-6613
Fax #: 517-353-6393
Email: mbenham@msu.edu _____

Phone #: 517-669-1709
Fax #: 517-669-8889
E-mail: sagercyn@pilot.msu.edu

3. Title of Project: Efficient Management and Effective Leadership: The Effect of

the Use of computer Technology on the Practice of the Building-Level Principal.

FOR OFFICE USE ONLY

Subcommittee _____

Agenda _____

4. Have you ever received **Preliminary Approval** for this project? No ☒ [X]
Yes ☐ []

If yes, what IRB # was assigned to it? _____

5. Funding (if any)

MSU Contracts and Grants app. # _____ if applicable

6. Does this project utilize an **Investigational Drug, Device or Procedure**?
No ☒ [X] Yes ☐ [] If yes, is there an IND #? No ☐ [] Yes ☐ [] IND #

7. Does this project involve the use of **Materials of Human Origin** (e.g., human blood or tissue)?
No ☒ [X] Yes ☐ []

8. When would you **prefer** to begin data collection? October, 1998
Please remember you may not begin data collection without UCRIHS approval.

9. Category (Circle A, B or C below. See instructions pp. 5 & 6)

(a.) This proposal is submitted as **EXEMPT** from full review.
Specify category or categories. _____

b. This proposal is submitted for **EXPEDITED** review.
Specify category or categories. _____

c. This proposal is submitted for **FULL** sub-committee review.

10. Is this a full review multi-site project? No ☒ [X] Yes ☐ []
If yes, do the other sites have a Multiple Project Assurance IRB that will also review this project?
☐ [] No. Please contact the UCRIHS office for further information about

meeting the

PHS/NIH/OPPR regulations.

☐ Yes. Please supply a copy of that approval letter when obtained.

11. Project Description (Abstract): Please limit your response to 200 words.

The use of computer technology is increasing at a soaring rate in our world today. We use computer technology in all phases of our life today from food shopping to banking to communication. The building-level principal is no exception to this phenomenon. It is within this context that this study will take place. The purpose of this study is to examine the work of the building-level principal at the intersection/introduction of computer technology and effective leadership. To do this, I will employ the National Commission on the Principalship (1990) description of the principal's work through the four performance domains to better understand how principals use or not use computer technology to help them become more efficient managers and effective leaders.

The methodology of this study will include an initial survey (N=400-700) to gather base data regarding how principals use technology in their practice. In-depth interviews will then be conducted with a select number of survey participants (N=6-9) to understand more thoroughly how the use of computer technology has impacted the principals' practices. Observations of the interviewed principals will add contextual data to the research.

Procedures: Please describe all project activities to be used in collecting data from human subjects. This also includes procedures for collecting materials of human origin and analysis of existing data originally collected from human subjects.

Principals will be asked to complete a written survey at the Principals' state Conventions.

(N=400-700)

In-depth interviews (N=6-9) that will provide greater detailed information regarding the

Principals' use of computer technology and its effect on their practice.

(c) Observations in the interviewed principals' buildings. These observations will give the researcher greater contextual information regarding the principals' use of compute technology.

13. **Subject Population:** Describe your subject population. (e.g., high school athletes, women over 50 w/breast cancer, small business owners)
School principals representing K-12 schools in the State of Michigan.

- a. The study population may include (check each category where subjects **may be included by design or incidentally**):

Minors	[]
Pregnant Women	(X)
Women of Childbearing Age	[X]
Institutionalized Persons	[]
Students	[]
Low Income Persons	[]
Minorities	[X]
Incompetent Persons (or those with diminished capacity)	[]

- b. Number of subjects (including controls) 400-700
- c. How will the subjects be recruited? (Attach appropriate number of copies of recruiting advertisement, if any. See p. 13 of UCRIHS instructions)
Subjects will be asked to complete a survey during the Michigan Elementary and Middle School Principal Association and Michigan Association of Secondary School Principals State Conventions. Advertisements are attached.

If you are associated with the subjects (e.g., they are your students, employees, patients), please explain the nature of the association.

The subjects are all K-12 school principals in the State of Michigan.
The researcher is also a school principal in the State of Michigan.

- e. If someone will receive payment for recruiting the subjects please explain the amount of payment, who pays it and who receives it.
- f. Will the research subjects be compensated? [X] No [] Yes. **If yes**, details concerning payment, including the amount and schedule of

details concerning payment, including the amount and schedule of payments, must be explained in the informed consent.

- g. Will the subjects incur additional financial costs as a result of their participation in this study? ☒ No ☐ Yes. **If yes**, please include an explanation in the informed consent.

- h. Will this research be conducted with subjects who reside in another country or live in a cultural context different from mainstream US society? ☒ No ☐ Yes.
 - (1) **If yes**, will there be any corresponding complications in your ability to minimize risks to subjects, maintain their confidentiality and/or assure their right to voluntary informed consent as individuals? ☐ No ☐ Yes.
 - (2) **If your answer to h-1 is yes**, what are these complications and how will you resolve them?

- 14. How will the subjects' privacy be protected? (See Instructions p. 8.)
A letter of participation/consent will be obtained from each principal who chooses to participate in the survey process. All data gathered will protect the identities of the individual participants by the use of pseudonyms. The interview tapes will be transcribed solely by the researcher and will be coded.

- 15. Risks and Benefits for subjects: (See Instructions p. 8.)

A risk to the participants is that they may volunteer their name for the purpose of participating in the in-depth interviews and site observations.

16. Consent Procedures (See Instructions pp. 9-13.)

The informed consent of the participants will be obtained through a letter from the researcher to the participant. The participants will be asked to sign the consent form for their participation. The principals will be asked to sign a consent form for each level of the study: survey, in-depth interview and observation.

Advertisement for Survey Participation

PRINCIPALS PLEASE HELP!

Your assistance in completing a research project regarding K-12 principals and their use of technology is greatly needed. This research project is in partial fulfillment of my Ph.D. in Educational Leadership at Michigan State University and will also be used to hopefully provide information for professional development activities for current and aspiring principals. Your participation in this study is essential for the completion of this research project.

Attached is a letter of consent and the survey. Please complete the survey at your convenience. I will be at a table in the lobby that will be easily visible by the sign that refers to *PRINCIPALS AND TECHNOLOGY* on Tuesday, December 1 from 9:30 A.M. until 4:00 P.M. and on Wednesday, December 2 from 7:30 A.M. until 3:00 P.M. for the collection of these surveys. The completion of this survey should take you approximately 15-20 minutes.

If you have any questions regarding your participation in this project, please stop by the table and I will be glad to speak to you about the survey and the project

**Cindy Sager
Principal, DeWitt Middle School
Ph.D Cnadidate, MSU**

**13153 Hitching Post
DeWitt, MI 48820
517-669-1709 (H)
517-669-2280 (W)**

COVER LETTER FOR SURVEY PARTICIPATION

December 1998

Dear Principal:

The survey that you are being asked to complete is part of a study that I am conducting regarding the intersection/introduction of computer technology and the building-level principal. The principals at this state convention have been selected for this survey because of the convenient number of principals in one location.

The information provided through these surveys will be used as part of my completion for my Ph.D. in educational leadership at Michigan State University. This information may possibly be used to provide information for a professional development plan for practicing administrators and for a possible recommendation for computer training for prospective administrators. Your responses to this survey will be confidential; no individual will be identified with his or her responses. Volunteered names will be used only for identifying 6-9 principals that may be contacted for a follow-up personal in-depth interview in your building.

Your response is very important to the success of this project. The information you provide is important to the study, not only for completion of the Ph.D. program, but also for possible recommendations for practicing principals and principal candidates. Completing this questionnaire should require no more than 20 minutes. Thank you very much for taking the time to complete this survey.

Sincerely yours,

**Cynthia A. Sager
13153 Hitching Post
DeWitt, MI 48820
517-669-1709
sagercyn@pilot.msu.edu**

**DeWitt Middle School
3147 Herbison
DeWitt, MI 48820
517-669-2280**

LETTER OF CONSENT FOR PARTICIPATING PRINCIPALS

Letter of Consent

I agree to participate in the study of the intersection/introduction of technology and the building-level principal.

I have received and read the letter from Cindy Sager date December, 1998, which briefly describes the purposes and procedures of the research. The letter includes her name, address and methods of telecommunications in case I have any questions or concerns regarding this study.

I understand that my participation in this study requires me to participate initially by completing the survey and may also include my participation in a follow-up interview (45-60 minutes) and site visit. I also understand that a second interview may be necessary in order to clarify information that may be gathered at the first interview.

I am aware of and understand that all interviews and survey data will be held in the strictest of confidence and that my identity will not be disclosed in any form during the preparation or completion of this study. I understand that my participation in this study is completely voluntary and that I may ask for a tape recorder to be turned off at any time. I may choose to not respond to any question, and that I may withdraw from this study at any time with no repercussions.

Signature

Date

SURVEY OF PRINCIPALS' USE OF COMPUTER TECHNOLOGY

1998

**Study Conducted by: Cynthia A. Sager
Ph.D. Candidate
Michigan State University**

Section 1: Computer Technology in your Work Setting

This first section focuses on the computer technology you currently use in your work setting.

Q-1. What job title did you have for the majority of the time during the last 12 months?

Q-2. Which of the following best describes the work setting in which you spent the majority of your time during the last twelve months? (CHECK ONE)

- ☐ Public School/Public School System (K-12)
- ☐ Independent School
- ☐ Parochial School
- ☐ Charter School

Q-3. During the last 12 months, what type of computer technology have you used in performing your job? (CHECK ALL THAT APPLY)

- ☐ Stand-alone PC or Mac
- ☐ Network PC or Mac
- ☐ Other _____

Q-4. During the last 12 months, how often did you use computer technology to do tasks directly related to your job? (CHECK ONE)

- ☐ Daily
- ☐ 2-3 times/week
- ☐ Once a week
- ☐ Less than once a week

Q-5. How many years have you been using computer technology in the work setting? Include your current work setting and any previous work settings in which you used computer technology for job-related tasks.

_____ Years

Section 2: General Knowledge and Attitudes about Computers

In answering questions in this section, please use the following definitions:

Software use: Installing, using, and understanding a variety of programs

Hardware use: Installing equipment, diagnosing problems, understanding how computers work

Curriculum Integration: Using and understanding the computer as a critical and essential tool for teaching and learning.

Q-6. How would you describe your general level of *knowledge* in each of the following areas: (a) software use, (b) hardware use, and (c) curriculum integration? Please use the following categories:

None: I have no experience
Novice: I know the basics

Intermediate: I have a fair amount of knowledge
 Expert-1: I have a lot of knowledge about the current state of the art.
 Expert-2: I have a lot of knowledge about the current state of the art as well as the cutting edge.
 Not Applicable: This category is not relevant to my job.

(CHECK ONE BOX FOR EACH AREA)

	None	Novice	Inter- mediate	Expert-1	Expert-2	Not
Applicable						
a. Software Use	☐	☐	☐	☐	☐	☐
b. Hardware Use	☐	☐	☐	☐	☐	☐
c. Curriculum Integration	☐	☐	☐	☐	☐	☐

Q-7. How would describe your general level of *confidence* in each of the following areas:
 (a) software, (b) hardware use, and (c) curriculum integration? Please use the following categories.

Very Low: I have no confidence.
 Low: I have a little confidence.
 Moderate: I have a fair amount of confidence.
 High: I have a lot of confidence, except sometimes when trying something new.
 Very High: I have a lot of confidence in all situations.
 Not Applicable: This category is not relevant to my job.

(CHECK ONE BOX FOR EACH AREA)

	Low	Very Low	Moderate	Very High	High	Not Applicable
a. Software Use	☐	☐	☐	☒	☐	☐
b. Hardware Use	☐	☐	☐	☐	☐	☐
c. Curriculum Integration	☐	☐	☐	☐	☐	☐

Q-8. How would you describe your general *attitude* toward each of the following:
 (a) software use, (b) hardware use, and (c) curriculum integration?

(CHECK ONE BOX FOR EACH AREA)

	Very Negative	Negative	Mixed Feelings	Positive	Very Positive	N/A
a. Software Use	☐	☐	☐	☐	☐	☐
b. Hardware Use	☐	☐	☐	☐	☐	☐
c. Curriculum Integration	☐	☐	☐	☐	☐	☐

Section 3: The use of computer technology to specific tasks of the principal's practice.

This section focuses on the specific uses of computer technology in your practice.

(PLEASE CHECK THE APPROPRIATE BOX FOR EACH STATEMENT)

"The use of computer technology assists my work as principal in":

	N/A	Never	Rarely	Some- times	Often	Regularly
S-1...gathering data, facts, and impressions from a variety of sources about students, parents, staff members, administrators, and community members.	☐	☐	☐	☐	☐	☐
S-2...seeking knowledge about policies, rules, laws, precedents, or practices.	☐	☐	☐	☐	☐	☐
S-3...classifying and organizing information for use in decision-making and monitoring.	☐	☐	☐	☐	☐	☐
S-4...identifying the important elements of a problem situation by analyzing relevant information.	☐	☐	☐	☐	☐	☐
S-5...identifying additional needed information.	☐	☐	☐	☐	☐	☐
S-6...assisting others to form reasoned opinions about problems and issues.	☐	☐	☐	☐	☐	☐
S-7...reaching logical conclusions and making high quality, timely, decisions given the best available information.	☐	☐	☐	☐	☐	☐
S-8...planning and scheduling one's own and other's work so that resources are used appropriately and short-and long-term priorities and goals are met.	☐	☐	☐	☐	☐	☐
S-9...monitoring projects to meet deadlines.	☐	☐	☐	☐	☐	☐
S-10...assessing projects or tasks together with clear authority to accomplish them and responsibility for their timely and acceptable completion.	☐	☐	☐	☐	☐	☐
S-11...envisioning and enabling instructional and auxiliary programs for the improvement of of teaching and learning.	☐	☐	☐	☐	☐	☐
S-12...recognizing the developmental needs of students.	☐	☐	☐	☐	☐	☐
S-13...mobilizing the participation of appropriate people or groups to develop these programs and to establish a positive learning environment.	☐	☐	☐	☐	☐	☐
S-14...providing for student guidance, counseling, and auxiliary services.	☐	☐	☐	☐	☐	☐
S-15...providing for partnerships between families and school.	☐	☐	☐	☐	☐	☐
S-16...creating partnerships between school and community groups.	☐	☐	☐	☐	☐	☐
S-17...assessing and creating professional development needs of staff.	☐	☐	☐	☐	☐	☐
S-18...determining what diagnostic information is needed about students, staff and school environment.	☐	☐	☐	☐	☐	☐
S-19...developing and measuring student outcomes.	☐	☐	☐	☐	☐	☐
S-20...seeking, allocating, and adjusting fiscal, human, and material resources.	☐	☐	☐	☐	☐	☐

S-21..planning for the use of the physical plant.	☐	☐	☐	☐	☐	☐
S-22..planning and encouraging participation of staff and community at school activities.	☐	☐	☐	☐	☐	☐
S-23..supporting innovation.	☐	☐	☐	☐	☐	☐
S-24..providing coaching, guidance or correction for performance that needs improvement.	☐	☐	☐	☐	☐	☐
S-25..assessing the needs of others and managing conflict.	☐	☐	☐	☐	☐	☐
S-26..recognizing multi-cultural sensibilities.	☐	☐	☐	☐	☐	☐
S-27..responding, reviewing, and summarizing for groups.	☐	☐	☐	☐	☐	☐
S-28..writing appropriately for different audiences such as students, teachers, and parents.	☐	☐	☐	☐	☐	☐
S-29..acting with a reasoned understanding of the role of education in a democratic society and in accord with accepted ethical standards.	☐	☐	☐	☐	☐	☐
S-30...understanding current social and economic issues related to education.	☐	☐	☐	☐	☐	☐
S-31..recognizes global influences on students and society.	☐	☐	☐	☐	☐	☐
S-32..understanding governmental influences on education.	☐	☐	☐	☐	☐	☐
S-33..administering contractual and legal obligations.	☐	☐	☐	☐	☐	☐
S-34..addressing ethical issues.	☐	☐	☐	☐	☐	☐
S-35..interacting with parental and community opinion leaders.	☐	☐	☐	☐	☐	☐

Any additional comments?

Section 4: Demographic and training information.

D-1. Currently, what are the grade levels of your school?

- K-6 ☐
 K-5 ☐
 K-8 ☐
 6,7,8 ☐
 7,8,9 ☐
 9-12 ☐
 10-12 ☐
 Other _____

D-2. How many years have been a principal? (Include all years in all districts where you have worked.)

- 1-3 ☐
 3-5 ☐
 5-10 ☐
 10-15 ☐
 15-20 ☐
 20+ ☐

D-3. Is the district that you are currently working in considered:

- Urban ☐
 Rural ☐
 Suburban ☐

D-4. How many students are currently in your building?

- Less than 100 ☐
- 101-300 ☐
- 301-600 ☐
- 601-1000 ☐
- 1001-2000 ☐
- 2001+ ☐

D-5. Have you had access to computer technology training in your current district?

- Yes ☐
- No ☐

D-6. If you answered Yes to D-5, then please answer the following question.

Was the training you had access to, specifically designed for you as a principal?

- Yes ☐
- No ☐

INTERVIEW & OBSERVATION

JANUARY, 1999

A. DEMOGRAPHIC INFORMATION

1. Date of interview:
2. Principal's name:
3. School District:
4. Name of school:
5. Grade levels of school:
6. Number of years as principal in this school:
7. Number of years as principal in this district:
8. Number of years in this particular office:

B. DESCRIPTION OF OFFICE AND OFFICE COMPUTER TECHNOLOGY

1. Type of hardware: (computer, printer, etc.)
2. How long have you had this particular hardware?
3. What is (or was) the process for purchasing the hardware that is currently in your office? For example, what is the district policy and/or building policy for the purchase of such equipment?
4. Is this hardware networked and if so, with whom?
5. What programs (i.e. word processing, student management, etc.) are currently available for you in your office?

6. If a student management system is available, how was this purchased and how were you trained on this particular program?

7. How are the hardware and the programs supported and by whom? In other words, who is designated to technically support your equipment and hardware?

8. Were you given specific training on your current programs and hardware? Could you describe your training?

C. PHYSICAL DESCRIPTION OF OFFICE

1. Describe on attached graph paper---

D. GENERAL LEVEL OF KNOWLEDGE

1. In the initial survey, you were asked a question regarding your general level of knowledge regarding software use, hardware use, and curriculum integration. You answered this question in the following manner _____. Please define why you described yourself in this manner. Could you please describe how you gained this knowledge?

E. GENERAL LEVEL OF CONFIDENCE

1. In the initial survey, you were asked a question regarding your general level of confidence regarding software use, hardware use and curriculum integration. You answered this question in the following manner _____. Please define why you described yourself in this manner. Could you please describe how you gained this level of confidence?

F. EXPLANATION OF FRAMEWORK FOR RESEARCH AND CLARIFICATION OF QUESTIONS REGARDING SURVEY STATEMENTS.

1. Functional domain
---Document examples
2. Programmatic domains
---Document examples
3. Interpersonal domains
---Document examples
4. Contextual domains
---Document examples

G. COMPUTER TECHNOLOGY AND DAILY TASKS

1. In what ways has the infusion of computer technology allowed you to manage your daily tasks more efficiently? Or has it hindered your management of daily tasks? Please provide examples to support your response.

H. CHALLENGES OR BARRIERS AND ORGANIZATIONAL STRUCTURE

1. What have been the challenges/barriers that have arisen due to organizational structures, i.e., finances, policy, attitudes, etc. in regards to your use of computer technology in your practice?

I. BUSINESS OF THE SCHOOL PRINCIPAL

1. How has computer technology changed the way you do business as a school principal?
2. In what ways has your practice remained the same?

J. PROFESSIONAL DEVELOPMENT

1. Could you please describe the professional development opportunities you have been involved with relation to computer technology? Are there any computer technology professional development opportunities currently available to you?
2. What professional development opportunities regarding computer technology might you suggest be designed for practicing principals?

K. FORMAL EDUCATION AND COMPUTER TECHNOLOGY

1. How was computer technology in school administration addressed in your formal academic experiences? What exactly was addressed and if nothing, why not?

L. FINAL COMMENTS

1. Would you like to ask me any questions or share other thoughts about your use of computer technology in your practice?

BIBLIOGRAPHY

Ackerman, R., Donaldson, G., van der Bogert, R. (1996). Making Sense as a School Leader. San Francisco: Jossey-Bass.

Adams, S., Bailey, G. (1993). Education for the Information Age: Is It Time to Trade Vehicles?. NASSP Bulletin, 77(553), 57-63.

Alvy, H.B. & Robbins, P. (1998). If I Only Knew: Success Strategies for Navigating the Principalsip. Thousand Oaks, CA: Corwin Press.

Armstrong, D., Davis, R. and Young, G. (1996). Technology Integration at the Middle and High School Levels: A Model for Staff Development. NASSP Bulletin. 80(582), 81-88.

Ash, F., Dean, J., Stock, D., Wilhelm, J. (1995). Technology: A New Paradigm for Adult Education Administrators. (Report for Michigan Adult Education Practioners Inquiry Project). Flint, Michigan. (ERIC Document Reproduction Service No. ED 391 062)

Bailey, W. (1997). Organizing Schools. Lancaster, PA: Technomic Publishing.

Balash, J. (1996). A Blinding Glimpse of the Obvious Goes Unseen. Educom Review. 31(2), 36-39.

Barta, B., Telem, M., Gev, Y. (1995). Information Technology in Educational Management. New York: Chapman & Hall.

Barth, R. S. (1980). Run School Run. Massachusetts: Harvard University Press.

Beck, L.G. & Murphy, J (1993). Understanding the Principalsip: Metaphorical Themes: 1920s - 1990s. New York: Teachers College Press.

Bennett, C. (1996). Schools, technology, and Educational Leadership: A Framework for Change. NASSP Bulletin. 80(577), 57-65.

Blase, J. & Kirby, P. (1992). Bringing Out the Best in Teachers: What Effective Principals Do. Newbury Park, CA: Corwin Press.

Blase, J., Blase, J., Anderson, G., and Dungan, S. (1995). Democratic

Principals in Action. Thousand Oaks, CA.: Corwin Press.

Bolman, L. & Deal, T. (1995). Leading With Soul. San Francisco: Jossey-Bass.

Bolman, L. & Deal, T. (1997) Reframing Organizations: Artistry, Choice and Leadership. San Francisco: Jossey-Bass.

Boschmann, E. (1996). The Electronic Classroom: A Handbook for Education in the Electronic Environment. Medford, NJ: Learned Information, Inc.

Bulach, C. (1994). The Influence of the Principal's Leadership Style on School Climate and Student Achievement. (ERIC Document Reproduction Service No. ED 374506).

Center for Educational Leadership and Technology. (Date ?). America's 21st Century School: Linking Education Reform and Technology. (ERIC Document Reproduction Service No. ED 393396).

Clegg, C. (1994). Psychology and Information Technology: The study of Cognition in Organizations. British Journal of Psychology. 85, 449-477.

Cognition and Technology Group at Vanderbilt. (1996). Looking at Technology in Context: A Framework for Understanding Technology and Education Research. A Handbook of Research on Educational Communications and Technology: A Project of the Association for Educational Communications and Technology. MacMillan Publishing Co. 807-840.

Cohl, C. (1996). The Future of Education. Principal. (?)

Couch, J. (1991). A Study of Student Achievement and how It Relates to The Principal in the Role of Instructional Leader. (ERIC Document Reproduction Service No. ED 340136).

Cross, P. (1981). Adults as Learners. San Francisco: Jossey-Bass.

Currie, G. and Rhodes, J. (1991). Uncertainty and Fragmentation: The Realities of the Principalship in the United States. (ERIC Document Reproduction Service No. ED 332362).

Dede, C. (Ed.) (1998). ASCD Yearbook: Learning With Technology. Alexandria, VA: Association for Supervision and Curriculum Development.

Donaldson, G. (1991). Learning to Lead: The Dynamics of the High School Principalship. New York: Greenwood Press.

DuFour, R.P.(1999). Help Wanted: Principals Who Can Lead Learning Communities. NASSP Bulletin, 83(604), 12-17.

Dwyer, B.M. (1995). Preparing for the 21st Century: A Paradigm for our Times. Innovations in Education and Training International, 32(3), 269-277.

Eberts, R. & Stone, J. (1988). Student Achievement in Public Schools: Do Principals Make a Difference. Economics of Education Review. 7(3), 291-299.

Ely, D. (1995). Technology is the Answer! But What Was The Question?. (ERIC Document Reproduction Service No. ED 381152).

Erlandson, D. A. (1994). Building a Career: Fulfilling the Lifetime Professional Needs of Principals. (ERIC Document Reproduction Service No. 385920).

Firestone, W. & Wilson, B. (1989). Administrative Behavior, School SES, and Student Achievement: A Preliminary Investigation. (ERIC Document Reproduction Service No. ED 374563).

Fothergill, R. (1988). Implications of New Technology for The School Curriculum. London: Kogan Page Ltd.

Fullan, M. (1993). Change Forces: Probing the Depths of Educational Reform. New York: The Falmer Press.

Gardner, J. (1990). On Leadership. New York: The Free Press.

Gilberti, A. F. (1994). Technology Education and Societal Change. NASSP Bulletin. 78(563), 10-20.

Gooden, A. (1996). Computers in the Classroom: How Teachers and Students are Using Technology to Transform Learning. San Francisco: Apple Press.

Gougeon, T.D. (1991). Principal Leadership: Communication in a Changing Educational Milieu. (ERIC Document Reproduction Service No. ED 339097).

Grace, G. (1995). School Leadership: Beyond Education Management. Washington, D.C.: The Falmer Press.

Hallinger, P. (1990). What Makes a Difference? School Context, Principal Leadership, and Student Achievement. NCEL Occasional Paper No.3. (ERIC Document Reproduction Service No. ED 332341).

Hannafin, M., Hannafin, K., Hooper, S., Kini, A., Reiber, L. (1996). Research on and Research with Emerging Technologies. Handbook of Research on Educational Communications and Technology: A Project of the Association for Educational Communications and Technology. MacMillan Publishing Co. 378-402.

Hart, A. (1992). The Social and Organizational Influence of Principals: Evaluating Principals on Organizational Criteria. (ERIC Document Reproduction Service No. ED 345 357).

Hawkins, J. (1993). Technology and the Organization of Schooling. Technical Report No. 28. (ERIC Document Reproduction Service No. ED 359933).

Heck, R. & Marcoulides, G. (1990). Examining Contextual Differences in the Development of Instructional Leadership and School Achievement. The Urban Review. 22(4), 247-265.

Heck, R., Larsen, T., Marcoulides, G. (1990). Instructional Leadership and School Achievement: Validation of a Causal Model. Educational Administration Quarterly. 26(2), 94-125.

Heck, R. (1992). Principals' Instructional Leadership and School Performance: Implications for Policy Development. Educational Evaluation and Policy Analysis. 14(1), 21-34.

Hesselbein, F., Goldsmith, M., and Beckhard, R. (Eds.) (1997). The Organization of the Future. San Francisco: Jossey-Bass.

Hodas, S. (1993). Technology Refusal and the Organizational Culture of Schools. (ERIC Document Reproduction Service No. ED 366328).

Hoffman, B. (1997). Integrating Technology Into Schools. Education Digest. 62(5), 51-55).

Hopey, E., and Ginsburg, L. (1996) Distance learning and New Technologies. Adult Learning. 8(1), 22-24.

Hughes, L. (1994). The Principal as Leader. New York: Macmillan College Publishing.

Institute for the Transfer of Technology to Education. (1995). Plan & Policies for Technology in Education. Alexandria, VA: National School Boards Association.

Jones, B. and Maloy, R. (1996). Schools for an Information Age: Reconstructing Foundations for Learning and Teaching. Westport, CT: Praeger Publishers.

Jonassen, D., & Reeves, T. (1996) Learning *With* Technology: Using Computers as Cognitive Tools. Handbook of Research on Educational Communications and Technology: A Project of the Association for Educational Communications and Technology. MacMillan Publishing Co. 693-719.

Kaufman, C. (1997). Using Technology to Upgrade the Principal's Role as Instructional Leader. NASSP Bulletin. 81(587), 98-101.

Kearsley, G. and Lynch, W. (Eds.) (1994). Educational Technology: Leadership Perspectives. Englewood Cliffs, NJ: Educational Technology Publications.

Kerchner, C. (1990). The Reflective Macintosh: A Computer-Assisted Approach to Understanding and Improving Managerial Practice. Project Report. (ERIC Document Reproduction Service ED 332289).

Kerr, S. (Ed.) (1996). Technology and the Future of Schooling. Chicago, IL: The University of Chicago Press.

Kershaw, A. (1996). People, Planning and Process: The Acceptance of Technological Innovation in Post-Secondary Organizations. Educational Technology. 44-48.

Lashway, L. (1997). Leadership Strategies. (ERIC Document Reproduction Service No. ED 402685).

Lauda, D. (1994). Responding to the Call for Technological Literacy. NASSP Bulletin. 78(563), 44-48.

Levin, B. (1994) Schools Coping With a Changing World. (ERIC Document Reproduction Service No. ED 369175).

Lewis, P. (1991). The Technology of Tomorrow. Principal. 71(2), 6-7.

Liao, T. (Ed.) (1996). Advanced Educational technology: Research Issues and Future Potential. Berlin, Germany: Springer-Verlag.

Lunenburg, F. (1995). The Principalship: Concepts and Applications. Englewood Cliffs: Prentice Hall.

MacKay, L.L. & Ralston, E.W. (1999). Creating Better Schools: What Authentic Principals Do. Thousand Oaks, CA: Corwin Press.

Marczely, B. (1996). Personalizing Professional Growth. Thousand Oaks, California: Corwin Press.

Maurer, M. & Davidson, G. (1998). Leadership in Instructional Technology. Upper Saddle River, NJ: Prentice-Hall.

Means, B. (Ed.) (1994). Technology and Education Reform. San Francisco: Jossey-Bass.

Michel, G. and Others. (1995). What are the Principal's Skills in School Communication? (ERIC Document Reproduction Service ED 383 084).

Mizell, M. (1995). The New Principal. Risk, Reform, and the Quest for Hard-Core Learning. (ERIC Document Reproduction Service ED 398 334).

Mollgaard, T. and Sides-Gonzales, K. (1995). Stockbroker of the Technological Curriculum: The Academy for Curriculum Leadership and Technology. TechTrends. 40(5), 28-30.

Mecklenburger, J. (1989) Technology in the 1990's: Ten Secrets for Success. Principal. 69(2), 6-8.

Meltzer, J., Sherman, T. (1997). Ten Commandments for Successful Technology Implementation and Staff Development. NASSP Bulletin. 81(585), 23-34.

Merriam, S. (1993). An Update on Adult Learning Theory. San Francisco: Jossey-Bass.

Mollgaard, T., Sides-Gonzales, K. Stockbroker of the Technological Curriculum: the Academy for Curriculum Leadership and Technology. TechTrends. 40(5), 28-30.

National Association of Elementary School Principals. (1990). Principals for 21st Century Schools. Alexandria, VA: NAESP.

National Commission for the Principalship. (1990). Principals for Our Changing Schools: Preparation and Certification. (ERIC Document Reproduction Service ED 326 953).

New England University, Northern Rivers, Faculty of Education. (1992). Leadership for Change. (ERIC Document Reproduction Service ED 371 430).

Organization for Economic Co-Operation and Development. (1992). New Technology and Its Impact on Educational Buildings. OECD: Paris.

Peterson, N. and Facemyer, K. (1996). The Impact of the Internet on Learners and Schools. NASSP Bulletin. 80(582), 53-58.

Polit, D.F. and Hungler, B. P. (1995). Nursing Research: Principles and Methods. Philadelphia: Lippincott Company.

Poole, B. (1995). Education for an Information Age: Teaching in the Computerized Classroom. Madison, WI: Brown & Benchmark.

Portin, B.S., Shen, J. and Williams, R. (1998). The Changing Principalship and Its Impact: Voices from Principals. NASSP Bulletin. 82(602), 1-8.

Rastogi, P. (1995). Management of Technology and Innovation: Competing through Technological Excellence. Thousand Oaks, CA: Sage Publications.

Richardson, M.D., Flanigan, J. and Blackburn, R. (1990). The Principal of the 90's: Changing Expectations Realized? (ERIC Reproduction Service No. Ed 342 116).

Richardson, M.D., Flanigan, J. and Blackburn, R. (1991). Principal Renewal: A Practical Approach to Principal Staff Development. (ERIC Document Reproduction Service No. 341 155).

Richardson, M.D. and Others. (1991). The Changing Roles of the School Principal: A Research Synthesis. (ERIC Document Reproduction Service No. ED 023635).

Richardson, M.D. and Prickett, R.L. (1994) Recognizing How Adults Learn: Implications for Principals. NASSP Bulletin., 85-89.

Richardson, M.D., Short, P.M. & Prickett, R.L. (1993). School Principals and Change. New York: Garland Publishing.

Ritchie, D. (1996). The Administrative role in the integrations of technology. NASSP Bulletin. 80(582). 42-53.

Robbins, P., Alvy, K. (1995). The Principal's Companion. Thousand Oaks, California: Corwin Press.

Rockman, S., & Robinson, K. (1993). A Works Program that: Indiana's Principals' Technology Leadership Training Program. (A report for the Indiana State Department of Education). (ERIC Document Reproduction Service No. ED 35-68 350)

Rogers, E. (1995). Diffusion of Innovations. New York: The Free Press.

Romiszwski, A., & Mason, R. (1996). Computer-Mediated Communication. Handbook of Research on Educational Communications and Technology: A

project of the Association for Educational Communications and Technology.
MacMillan Publishing Co. 438-456.

Ross, T. (1996). Preparing Administrators for Connected Schools. (ERIC Document Reproduction Service No. ED 402644).

Rost, J. (1991). Leadership for the Twenty-First Century. Westport, CT: Praeger Publishers.

Rowan, B. (1995). Research on Learning and Teaching in K-12 Schools: Implications for the Field of Educational Administration. Educational administration Quarterly. 31(1), 115-133.

Russell, A. (1995). Stages in Learning New Technology: Naive Adult E-mail Users. Computers and Education. 25(4). 173-178.

Salisbury, D.F. (1996). Five technologies for Educational Change. Englewood Cliffs, NJ: Educational Technology Publications

Saranson, S. (1995). School Change: The Personal Development of a Point of View. New York: Teachers College Press.

Sayles, L. R. (1995). Leadership for Turbulent Times. A Personal Account of the Issues Discussed at a Conference of Select Researchers and Senior Executives. (ERIC Document Reproduction Service No. ED 382854).

Scanlon, E. & O'Shea, T. (Eds.) (1992). New Directions in Educational Technology. Berlin, Germany: Springer-Verlag.

Schein, E. (1992). Organizational Culture and Leadership. San Francisco: Jossey-Bass.

Senge, P. (1990). The Fifth Discipline. New York: Doubleday.

Sergiovanni, T. (1996). Leadership for the Schoolhouse. San Francisco: Jossey-Bass

Sergiovanni, T. (1995). The Principalship: A Reflective Practice Perspective. Boston: Allyn and Bacon.

Smither, J. & Braun, C. (1994). Technology and Older Adults: Factors Affecting the Adoption of Automatic Teller Machines. Journal of General Psychology. 121(4). 381-388.

Sybouts, W., Wendel, F. The Training and Development of School Principals:

A Handbook. Westport, Connecticut: Greenwood Press.

Terry, P. (1996). The Principal and Instructional Leadership. (ERIC Document Reproduction Service No. ED 400613).

Tyack, D. & Cuban, L. (1995). Tinkering Toward Utopia: A Century of Public School Reform. Cambridge, MS: Harvard University Press.

U.S. Congress, Office of Technology Assessment. (1995). Teachers and Technology: Making the Connection. Washington, D.C.: U.S. Government Printing Office.

Webster, W. (1994) Learner-Centered Principalship. Westport, CT.: Praeger Publishers.

Wheatley, M., (1992) Leadership and the New Science. San Francisco, CA.:Berrett-Koehler Publishers.

Whitcomb, C. (1996). Will the Future Embody the Principles of the Past?. Adult Learning. 8(1). 25-27.

White, R., Hodgson, P., and Crainer, S. (1996). The Future of Leadership. Lanham, MD.: Pitman Publishers.

Williams, W. and Smith, J. (1994). Technology for the Information Age: Moving Out of the Complacency Paralysis. NASSP Bulletin. 78(560), 42-50.

**Wilson, I (?). Focusing Our Organizations on the Future: Turning Intelligence into Action.
This was an on-line article.**

Wilson, B. (1997). Thoughts on Theory in Educational Technology. Educational Technology. 22-27.