A LONGITUDINAL INVESTIGATION OF CHANGE IN TEACHER EFFICACY AND PERCEPTIONS OF LEADERSHIP FOLLOWING PARTICIPATION IN A TECHNOLOGY INTEGRATION PROGRAM

A Dissertation

by

ROBIN A. RACKLEY

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2004

Major Subject: Educational Psychology

A LONGITUDINAL INVESTIGATION OF CHANGE IN TEACHER EFFICACY AND PERCEPTIONS OF LEADERSHIP FOLLOWING PARTICIPATION IN A TECHNOLOGY INTEGRATION PROGRAM

A Dissertation

by

ROBIN A. RACKLEY

Submitted to Texas A&M University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Approved as to style and content by:

Stephanie L. Knight (Chair of Committee)	Michael J. Ash (Member)
David A. Erlandson (Member)	Glenda L. Griffin (Member)
Michael R. Benz (Head of Department)	

December 2004

Major Subject: Educational Psychology

ABSTRACT

A Longitudinal Investigation of Change in Teacher Efficacy and Perceptions of Leadership Following Participation in a Technology Integration Program.

(December 2004)

Robin A. Rackley, B.S., Texas A&M University;

M.Ed., Texas A&M University

Chair of Advisory Committee: Dr. Stephanie L. Knight

A longitudinal study was conducted to investigate the relationship between teachers' perceptions of leadership capabilities and teachers' efficacy beliefs in the context of their participation in a technology integration project. Participants included seventeen elementary school teachers and seven administrators in a school district located in the southwestern United States. Qualitative and quantitative methodologies were utilized over the course of the three and a half year project.

Bandura's (1997) social cognitive theory served as the framework for defining self-efficacy and explaining the potential influences of empowerment on teacher efficacy. Since the goal was to understand and describe the relationship between participation in the district project and the teachers' efficacy beliefs, a qualitative research approach was chosen. Descriptive information related to teachers' experiences and perceptions were gathered through observations of team meetings and interviews with teachers and administrators. All of the notes from the interviews and observations were transcribed using the constant comparative method of qualitative data analysis.

Quantitative analyses were conducted to investigate the fluctuation of teacher efficacy over the course of the project. Teacher efficacy was measured at three points: prior to participation, at the end of the planning stage and after implementation of the technology in the classrooms.

Qualitative results indicated that participation in the technology integration project did not have a positive effect on teachers' perceptions of their leadership capabilities. Interview data included multiple reports of teachers' negative feelings of empowerment and leadership opportunities. Four of the seven administrators supported the teachers' position that leadership was not developed. Three of the administrators felt that leadership was developed but no support was provided for their assertion.

Quantitative results found no statistical difference in general teaching efficacy. An increase in personal teaching efficacy was evident between the second and third administrations of the TES. The qualitative data provided an explanation for this increase. The qualitative data revealed that the addition of new technology tools allowed these teachers to develop new teaching methods. This in turn allowed the TIP teachers to reach more students which led to an increase in personal teacher efficacy.

Dedicated to:

Answered prayers, Madelyn, Brinson and Lauren, the lights of my life

My husband, Kyle, for his unconditional love and support

My parents, James and Paula Phelps for always believing in me

ACKNOWLEDGEMENTS

I could not have accomplished the completion of this dissertation without the love and support of my family and friends. I am deeply grateful to have been blessed with the following people in my life.

My husband, Kyle, without whose sacrifice and support this dissertation would never have been possible. Thanks for always being there. I realize every day how lucky I am to have you in my life. My children, Madelyn, Brinson and Lauren, who both before and after their birth did their best to delay this process, you taught Mom what multi-tasking really means.

The most wonderful parents anyone could ever hope for, James and Paula Phelps. It is because of the love and commitment of my parents that I have been able to reach my goals and become the person I am today. I am eternally grateful to you both. Thanks Dad, for never letting me take things too seriously.

I would like to express my gratitude to the members of my doctoral committee. As chair of my committee, Dr. Stephanie Knight, was a remarkable mentor. I can never thank her enough for the numerous research and teaching opportunities she provided. I will take with me all that I have learned from her. I thank Dr. Mike Ash, for his support and encouragement. I thank Dr. Dave Erlandson for asking the “what if” questions and forcing me to think outside of the box. I thank Dr. Glenda Griffin for her friendship, for always being willing to listen, and for her support and encouragement. Thanks for going

to bat for me. I would like to thank the teachers and administrators that were willing to share their experiences in the technology integration project.

I would also like to thank the friends I have been blessed with during the course of my graduate experience. Carol Wagner was the first one to show me the ropes, thanks for the support and encouragement and thank you for always looking out for me. Brooke Durbin, conference partner, thanks for the laughs, the encouragement, listening to me, and being there. Peggy Sue, I could never have made it with out you. We laughed until we cried and sometimes we cried until all we could do was laugh.

This dissertation would never have been possible if it weren't for all of you. I give thanks every day for the family and friends for which I have been tremendously blessed.

TABLE OF CONTENTS

Page

ABSTRACT iii

DEDICATION v

ACKNOWLEDGEMENTS vi

TABLE OF CONTENTS viii

LIST OF TABLES xii

CHAPTER

I INTRODUCTION 1

Statement of the Problem 1
Background 3
Purpose of the Study 4
Design of the Study 5
Educational Significance 5
Definition of Terms 6
Limitations 8

II REVIEW OF LITERATURE 8

Self-Efficacy 8
Social Cognitive Theory 8
Sources of Self Efficacy 10
Mastery Experience 10
Physiological and Emotional Arousal 10
Vicarious Experiences 11
Social Persuasion 11
Teacher Efficacy 12
Historical Overview 12
Measurement of Teacher Efficacy 14
Challenges to the Teacher Efficacy Scale 18
Correlates of Teacher Efficacy 19
Teacher Efficacy and Student Achievement 23
Teacher Efficacy and Context Variables 24
Teacher Leadership 27

CHAPTER Page

Historical Overview 28
Collaboration 29
The Role of the Principal 30
Teacher Leadership Roles 31
The Need for Organizational Change 32
Teacher Empowerment 33
History of Teacher Empowerment 34
Teacher Empowerment, Motivation and Other Correlates 36
Summary 38

III METHODOLOGY 39

District Setting 39
Technology Integration Project 41
Participants 43
The Role of the Researcher 44
Procedures 46
Observations 46
Teacher Interviews 48
Administrative Interviews 49
Document Search 51
Teacher Efficacy Scale 52
Analysis of Instrumentation 53
Estimates of Internal Consistency 58
Quantitative Data Analysis 59
Qualitative Data Analysis 59
Building Trustworthiness 61
Credibility 61
Transferability 63
Dependability 64
Confirmability 64
Summary 64

IV RESULTS 66

The Community 66
The Participants 68
The Teachers 69
The Administration 70
The Superintendent 70
The Associate Superintendent 73

CHAPTER Page

Coordinator of Student Services 73
Instructional Technology Department 75
The Director of Technology 77
Instructional Technology Officer 77
Instructional Technology Teachers 78
Planning Stage 80
Implementation Stage of Technology in the TIP Classrooms 89
Evaluation of Research Questions 93
Research Question 1 93
Research Question 2 98
Research Question 3 105
Summary 107

V DISCUSSION AND CONCLUSION 109

Summary of Research Findings 109
Research Question 1 109
Research Question 2 114
Research Question 3 117
Summary 120
Implications for Theory 121
Implications for Practice 124
Recommendations for Future Research 127
Conclusions 128

REFERENCES 130

APPENDICES 150

APPENDIX A 151

APPENDIX B 154

APPENDIX C 160

APPENDIX D 247

APPENDIX E 249

APPENDIX F 251

APPENDIX G 254

VITA 256

LIST OF TABLES

TABLE Page

3.1 Item Statistics for Subscales of the Teacher Efficacy Scale-First Administration 55

3.2 Item Statistics for Subscales of the Teacher Efficacy Scale-Second Administration 56

3.3 Item Statistics for Subscales of the Teacher Efficacy Scale-Third Administration 57

3.4 Means, Standard Deviations and Alpha Coefficients for TES 58

4.1 One-way Repeated Measures ANOVA Summary Tables 100

4.2 Personal Teaching Efficacy 102

CHAPTER I

INTRODUCTION

For years, the business world has profited from the use of such processes as team building and focus groups that empower workers. Corporations report such gains as higher morale and increased productivity. Educators are beginning to implement teacher empowerment processes similar to those that benefit employees in cooperate America (Bishop, Tinley, & Berman, 1997). The accountability issues confronting public schools means that the relegation of management responsibilities solely to the administration is no longer adequate; it requires that teachers become full partners in school-based planning, decision-making, and assessment (Clemson-Ingram & Fessler, 1997). The added responsibility of shared decision-making has opened new ways to expand teacher leadership.

Statement of the Problem

Teacher leadership has gained much attention with the current push for school improvement. The pressure to raise student performance on standardized tests is increasing. This, coupled with a growing teacher shortage and the need to retain quality teaching professionals, all add to the demand for improved leadership in schools.

This dissertation follows the style and format of the *American Educational Research Journal.*

Historically, schools have been perceived by many in the teaching profession as well as in other professions, as bureaucratic organizations which attach more importance to the enforcement of rules than to the well-being of teachers and students (Seyfarth & Bost, 1986). Teachers have been described as clinging to a precarious autonomy, threatened by abusive parents on one side and uncaring administrators on the other (Bogdan & Bilken, 1982). Public school teachers have almost no authority over design and administration of the schools in which they exercise their "educational authority" as subject matter specialists (Heid & Leak, 1991; Nyberg & Farber, 1986; Williams, 1990). Several studies have cited a need for elevating teaching to the status of a profession by genuinely empowering teachers and giving them a sense of autonomy (Fier, 1985; Hart, 1990, Heid & Leak, 1991; Kremer & Hofman, 1981; Romanish, 1987; Sacks, 1984; Williams, 1990). According to Shanker (1985), "we [teachers] ought to have the power to make educational decisions because we know more-more about what is right and wrong to do in the education of children, more about what distinguishes a good textbook from a poor one, more about a wide range of issues in education (p.15)." The driving force behind the current interest in teacher empowerment is the desire for improved school effectiveness (Stone, Horejs, & Lomas, 1997).

One of the current trends associated with improving school effectiveness is technology integration in the classroom. Technology integration provides students with skills they need to be successful in an information-based society. Not only does technology help the students, but it also benefits the teachers. Technology gives teachers new strategies and methods to help meet the diverse needs of all students. (Sherry,

Billig, Talvin, & Gibson, 2000). Cuban, Kirkpatrick, & Peck (2001) point out that for a technology integration project to be successful, changes have to be made in how a school is organized. The relationships between administrators and teachers have to be clear and supportive enough that the pressures and stresses of integrating something new can be managed together" (Miles, 1983). According to Sherry and Gibson (2002) this is where schools are falling short.

Background

Increasing student achievement is one of the biggest challenges facing educators today. Positive correlations have been established between teacher efficacy and student outcomes in general academics as well as in the specific content areas of reading and math (Allinder, 1994). Teachers with high expectations about their ability to teach produce higher student achievement in core academic subjects (Anderson, Green, & Loewen, 1988; Ashton & Webb, 1986; Cancro, 1992; Moore & Esselman, 1994; Ross, 1992; Ross and Cousins, 1993; Watson, 1991) and on affective goals like self-esteem (Borton, 1991), self-direction (Rose & Medway, 1981), motivation (Roeser, Arbreton, & Anderman, 1993) and attitudes to school (Miskel, McDonald, & Bloom, 1983). Teacher efficacy contributes to achievement because high efficacy teachers try harder, use management strategies that stimulate student autonomy, attend more closely to low ability student needs, and modify students' ability perceptions (Ross, 1998).

This study was conducted in a district that attempted to promote teacher leadership by building teacher efficacy with the ultimate goal of increased student

achievement scores. To accomplish this, the district established the Technology Integration Project (TIP). In a press release, the district stated, "the approach to TIP was based on empowering classroom teachers to research, study, discuss, and design a classroom for the twenty-first century"(Warren, 2001). The purpose, according to the district superintendent, was to study how technology can improve teaching methods.

The district in this study utilizes a statewide accountability system that includes statewide testing as well as a state required curriculum. Schools are held accountable for the test results and are given a rating based on aggregated scores as well as disaggregated scores by ethnicity and socioeconomic status.

Purpose of the Study

The purpose of this study was to investigate the relationship between teachers' perceptions of leadership capabilities and teachers' efficacy beliefs in the context of implementation of a technology integration project that proposed to give teachers decision-making opportunities. More specifically, this study investigates three research questions:

(1) How have participating teachers' perceptions of leadership capabilities changed after implementation of the Technology Integration Project (TIP)?

(2) How have teachers' beliefs about their teaching efficacy changed after implementation of the TIP?

(3) How do administrators' perceptions of teachers' leadership relate to program outcomes?

Design of the Study

This research began as a case study, defined by Asmussen and Creswell (1995) as studying a case with clear boundaries. This study investigated a single case of phase I of the TIP project. In a case study, the case is explored over time through detailed, in depth data collection. For this study, data was gathered from multiple sources, such as observations, interviews, documentation, and archival records. Data were gathered through the use of qualitative and quantitative research methods. The qualitative methods included teacher and administrator interviews and weekly observations of TIP team meetings held in the spring of 2001 as well as monthly meetings held in the fall and winter of 2001. Teacher and administrator interviews were used to collect qualitative data regarding interactions between participating teachers, administrators and colleagues. The Teacher Efficacy Scale developed by Gibson and Dembo (1984) was used to determine teachers' change in personal and general teaching efficacy.

Educational Significance

Increasing student achievement is one of the primary challenges facing educators today. Research has identified several factors that can be altered by educators to positively impact student achievement. Two of these factors are teacher efficacy and teacher leadership. Teacher efficacy has been related to student outcomes in general academics as well as in the specific content areas of reading and math (Anderson, et al., 1988; Midgley, Feldaufer, & Eccles, 1989). It has been established in the research that

teachers are more likely to be efficacious in schools that promote and support teacher leadership (Lee, et al., 1991). Investigating the relationship between participation in this technology integration project and teacher's perceptions of leadership capabilities and their efficacy beliefs will help educators gain a better understanding of these constructs when implementing future programs.

Definition of Terms

The following terms were used throughout this study.

Self Efficacy - a belief system that one has concerning his or her self-perceived ability to change, alter, facilitate, and/or function in a specific or general task (Bandura 1977, 1982, 1997).

General Teaching Efficacy - (GTE) represents a teacher's belief about the general relationship between teaching and learning (Woolfolk, Rosoff, & Hoy, 1990). This scale includes items such as "The influences of a student's home experiences can be overcome by good teaching."

Personal Teaching Efficacy (PTE) - represents a teachers' belief in his or her ability to affect student learning (Kurz, 2001). The personal teaching efficacy scale (Gibson & Dembo, 1984) includes items such as "When a student is having difficulty with an assignment, I am usually able to adjust to his/her level."

Teacher Leadership - there is not a structured definition of teacher leadership, but there are some common themes in the literature. Leadership focuses on acts as opposed to roles. Adjectives describing teacher leadership include: directing, coordinating, and

commanding (Paulu & Winters, 1998).A central purpose of teacher leadership is to improve the teaching profession and assist in school reform (Smylie & Denny, 1990).

Teacher Autonomy - "the right [of] the members [in the] occupation to make their own decisions and use their own judgment" (Newman, 1998, p. 121).

Teacher Empowerment – Dunst (1991) defines two parts of teacher empowerment: (a) enabling experiences that are provided in an organization to promote autonomy, choice, control and responsibility and (b) opportunity for the individual to display existing abilities as well as learn new skills that support and enhance the individual's functioning.

Limitations

This study was conducted during a specific project conducted by a single school district. The goal of this research is not to evaluate the training the participants received. The objective is to examine the effects on teacher efficacy and perceptions of leadership capabilities after participation in this district defined, autonomy-building project. The subject pool is limited to seventeen elementary teachers in a single school district. It would therefore not be appropriate to generalize these findings. However, it is hoped that findings from this study would further dialogue and research about ways to develop teacher autonomy and leadership. Educators implementing similar leadership building programs may reference the findings for future use.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents a review of the literature related to the major components of the study. The chapter is divided into four sections: 1) self-efficacy, 2) teacher efficacy, 3) teacher leadership and 4) teacher empowerment. The goal of this literature review is to summarize the relevant research in each of these areas.

Self-Efficacy

Self-efficacy refers to one's belief in his or her ability to be an active agent on and in the environment (Bandura 1977, 1982, 1997). It in essence describes a system of beliefs that a person holds regarding his or her self-perceived ability to change, alter facilitate, and/or function in a specific or general task. Bandura (1997) states, "Perceived self-efficacy is not a measure of the skills one has but a belief about what one can do under different sets of conditions with whatever skills one possesses" (p. 37).

Self-efficacy beliefs are significant because they are highly predictive of human behavior (Pajares, 1997). Under various circumstances the same person may perform poorly, adequately, or exceptionally, depending on variations in their self-efficacy beliefs.

Social Cognitive Theory

The notion of self-efficacy stems from social cognitive theory put forth by Albert Bandura (1977). The social cognitive theory serves to make a distinction between

enactive and vicarious learning (Woolfolk, 2003). Enactive learning is defined as doing and experiencing the consequences of your actions. In contrast, vicarious learning is learning which occurs by observing others. The social cognitive theory is grounded on the assumption that humans actively shape their lives, as opposed to being passive creatures upon whom environmental factors act (Bandura, 1986, 1997). As such, people choose to pay attention to, actively participate in, or ignore given situations.

The method through which this human agency works is called triadic reciprocal causation (Bandura, 1986, 1997). As the title implies, behavior is caused by multiple factors and behavior can impact those factors equally. As outlined in this view, internal personal factors (e.g. cognition, affect, attitudes, etc.) and the environment exercise bi-directional causal influence on each other. "In agentic transactions, people are both producers and products of social systems" (Bandura, 1997).

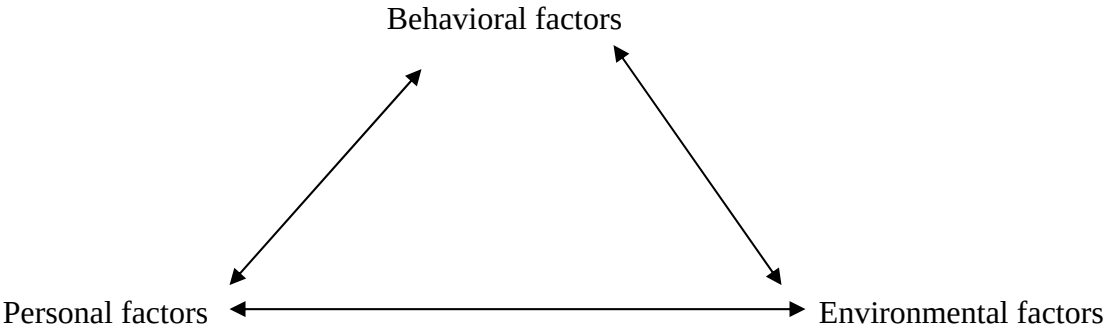


Figure 2.1. Bandura's (1997) Triadic Reciprocal Causality Model.

Each of these elements can influence behavior and cognition. Assume for example that a teacher receives the class roster and after review realizes that she has been assigned a student that has a history of hostile behavior. When the teacher greets this student, her behavior (e.g. manner of communication, nonverbal demeanor) interacts with her internal personal factors (e.g. emotional reaction, memory of similar students) and the environment (e.g. presence of other students, school climate). This blend of factors impacts the teacher's perceived ability to interact positively with this student in the future. The teacher's future behavior is a result of many factors, and ultimately is function of the teacher's cognitive processing of the value and influence of all components involved.

Sources of Self-Efficacy

Bandura identified four sources of self-efficacy expectations: mastery experiences, physiological and emotional arousal, vicarious experiences, and social persuasion.

Mastery Experience

Mastery experiences are an individual's direct experiences and as such are the most powerful source of efficacy information (Woolfolk, 2003). When individuals experience success at a task, behavior, or skill, their self-efficacy for that task, behavior, or skill increases. Conversely, if previous experiences resulted in failure, then self-efficacy is decreased.

Physiological and Emotional Arousal

The level of arousal associated with the task also impacts self-efficacy. As an individual faces the task, are they anxious and worried (lowers efficacy) or excited and psyched (raises efficacy) (Pintrich & Schunk, 2002)?

Vicarious Experiences

In vicarious experiences someone else models accomplishment or failure. Vicarious experiences (observational learning, modeling, imitation), influence self-efficacy expectations when people observe the behavior of others, see what they are able to do, note the consequences of their behavior, and then use this information to form expectancies about their own behavior and consequences (Maddux, 1995). According to Bandura (1997), people compare themselves to particular associates in similar situations. Exceeding associates or competitors raises efficacy beliefs, while being outperformed lowers efficacy beliefs. Therefore, the more closely the person identifies with the model, the greater the impact on self-efficacy (Woolfolk, 2003).

Social Persuasion

Maddux (1995) states that the effectiveness of social persuasion as a source of self-efficacy expectancies should be influenced by such variables as the expertness, trustworthiness, and attractiveness of the source. Just as positive persuasion can strengthen self-efficacy, negative persuasion can weaken it. It is usually easier to weaken self-efficacy beliefs through negative appraisals than to strengthen such beliefs through positive encouragement (Bandura, 1986). Educationally, self-efficacy beliefs are

associated with academic performance and self-regulated learning (Hackett, 1995; Pajares, 1997; Pintrich & Schunk, 2002; Zimmerman, 1995).

Teacher Efficacy

"For teachers, self-efficacy is defined in terms of their perceived ability to impact student learning" (Henson, 1999). Teachers with high self-efficacy may create challenging lessons, help students achieve, and have more persistence with students who have difficulty learning (Guskey, 1988; Stein & Wang, 1988). Conversely, teachers with low self-efficacy may not plan activities they feel exceed their own abilities, might not work as long with students having difficulty, and may not put forth the effort to vary instruction in the hopes of reaching all students (Kurz, 2001). Teacher efficacy has been strongly correlated with student achievement (Anderson, et al., 1988; Ashton and Webb, 1986; Moore and Esselman, 1992), with student motivation (Midgley et al., 1989), and students' own sense of efficacy (Anderson, et al., 1988). The following section reviews the history of teacher efficacy.

Historical Overview

The theoretical concept of teacher efficacy emerged from two strands of research: Rotter's (1966) social learning theory and Bandura's (1977) social cognitive theory. Rotter's (1966) research on internal versus external control of reinforcement offered the first perspective on the construct of teacher efficacy. Rotter found that people differ based on whether they believe themselves to have control over sources of personal

reinforcement or success. If a person believes that his or her actions are not successful in obtaining a desired outcome (external control) that person will not persist in repeating those actions. However, people who feel they have control over the outcome of their behavior (internal control) will exhibit greater persistence and display increased satisfaction.

The RAND cooperation conducted two studies (Armor et al.,1976; Berman, McLaughlin, Bass, Pauly, & Zellman, 1977) that attempted to measure teacher efficacy using Rotter's (1966) theory as the base. In the study published in 1976, teachers were asked to indicate their level of agreement on two items. Teacher efficacy was calculated by summing scores on these two items. Item 1 read, *"When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment."* Item 2 read, *"If I try really hard, I can get through to even the most difficult or unmotivated students."* In the beginning then, teacher efficacy was defined as a locus of control, based on whether a teacher believed he or she had control over environmental factors.

The second strand of research that made a major contribution to the concept of teacher efficacy stems from Bandura's (1977) work on social cognitive theory discussed previously. Bandura's idea of self-efficacy stems from the person's perceived ability to carry out actions toward goals. Bandura distinguishes self efficacy from locus of control and stated that "perceived self-efficacy and beliefs about the locus of causality must be distinguished, because convictions that outcomes are determined by one's own actions can have any number of effects on self-efficacy and behavior" (Bandura, 1977, p. 204).

In other words, a person's beliefs about whether or not actions will produce outcomes (locus of control; will I be successful?) is different from a person's belief in his or her ability to carry out actions (self-efficacy; can I do this?). Locus of control tends to be a weak predictor of behavior while self-efficacy has repeatedly been shown to be a very potent and consistent predictor (Bandura, 1977: Tshamnen-Moran, Woolfolk Hoy & Hoy, 1998). Bandura's (1997) social cognitive explanation of self-efficacy is currently the dominant view of self-efficacy in the literature (Tschannen-Moran, et al., 1998).

Measurement of Teacher Efficacy

Ashton and Webb (1982) used Bandura's (1977) social cognitive theory as a framework to apply the concept of self-efficacy to teachers (teacher efficacy). They believed a connection existed between the original two items used in the RAND research (Armor et al.,1976; Berman et al., 1977) and Bandura's self-efficacy and outcome expectancy dimensions, and not to Rotter's (1966) locus of control theory as originally proposed. In the RAND research the two items were summed to give one overall measure of efficacy. Ashton and Webb (1982) felt that the two items were separate measures, capturing differing aspects of social cognitive theory and should be treated as such.

The first RAND item stated, *"When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment."* This item was aligned with Bandura's outcome expectancy; and eventually labeled general teaching efficacy (GTE). The second RAND item reads, *"If I try really hard, I can get through to even the most difficult or unmotivated*

students." Ashton and Webb (1982) concluded that this statement measured Bandura's perceptions of one's ability to perform the necessary actions for goal attainment. For teachers this is correlated with student learning and motivation. This construct became known as personal teaching efficacy (PTE).

One of the biggest factors to come out of this research has been the development of the Gibson and Dembo (1984) Teacher Efficacy Scale (see Appendix A). According to Gibson and Dembo, the creation of this scale was influenced by Bandura's (1977) theory of self –efficacy as well as the teacher efficacy model developed by Ashton and Webb (1982). Gibson and Dembo predicted that teachers who believe student learning can be influenced by effective teaching, and who have confidence in their own teaching abilities, should persist longer, and provide greater academic focus in the classroom, as well as exhibit different types of feedback (Kurz, 2001). The research has supported this prediction (Tshamnen-Moran, et al., 1998). Allinder (1994) found a link between teacher's willingness to experiment and implement original teaching methods and measures of personal teaching efficacy. Teachers with a higher sense of personal teaching efficacy also work longer with students who are having difficulties (Meijer & Foster, 1988; Podell & Soodak, 1993; Soodak & Podell, 1993).

Gibson and Dembo (1984) developed a 30 item scale consisting of two factors. The first factor, Personal Teaching Efficacy, represents a teacher's perceptions of his or her ability to affect student learning. The second factor, General Teaching Efficacy represents a teacher's belief about the general relationship between teaching and learning (Woolfolk, Rosoff, & Hoy, 1990). When RAND items were included in the factor

analysis of the Gibson and Dembo measure, RAND item 1 loaded on the GTE factor and RAND item 2 loaded on the PTE factor. Other researchers in the field (e.g., Anderson, et al., 1988, Hoy & Woolfolk, 1993; Moore & Esselman, 1992; Soodak & Podell, 1993) have acknowledged the existence of these two factors in the Teacher Efficacy Scale.

Ashton and Webb (1982) and Gibson and Dembo (1984) found that the variables of general teaching efficacy and personal teaching efficacy can operate independently. For example, some teachers may believe that teachers in general can affect student learning but they do not have the individual ability to do so. Or teachers may feel they have the ability to affect student learning but the teaching profession as a whole does not.

After factor analysis, Gibson and Dembo (1984) used only 16 of the original 30 items to conduct data analysis and they suggested this revised version of 16-20 items be used in the future. Consequently, most researchers using the Gibson and Dembo scale have used the abbreviated version consisting of 16 items (e.g. Soodak & Podell, 1993 & Woolfolk & Hoy, 1990). Hoy and Woolfolk (1993) have used a shortened version consisting of only 10 items. They contribute this to problems that persist with certain items loading onto more than one factor or neither factor significantly. Due to these inconsistencies Hoy and Woolfolk suggest researchers conduct their own factor analysis.

Tshannen-Moran et al. (1998) studied other scales that have their foundation in Bandura's theory of self-efficacy. These scales include the Teacher Self-Efficacy Scale (Bandura, 1997), the Ashton Vignettes (Ashton, Buhrm & Crocker, 1984) and the Science Teaching Beliefs Instrument (STEBI; Riggs & Enrochs, 1990).

Other researchers have used diverse measures that combine items from various scales (Mone, Baker, & Jeffries, 1995) or use a single item to measure efficacy (Raudenbush, Rowen, & Cheong, 1992).

The Teacher Sense of Efficacy Scale previously called the Ohio State Teacher Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) consists of 24 items, assessed along a 9-point continuum with anchors at 1 - Nothing, 3 - Very Little,
5- Some Influence, 7 - Quite A Bit, and 9 - A Great Deal. In initial studies, the authors (Tschannen-Moran & Woolfolk Hoy, 2001; Roberts & Henson, 2001) found that the responses loaded on three factors, efficacy for student engagement, efficacy for instructional practices, and efficacy for classroom management although they note some variations of the loadings. Sample items include:

Efficacy for Instructional Strategies

To what extent can you provide an alternative explanation or example when students are confused?

Efficacy for Classroom Management

How much can you do to control disruptive behavior in the classroom?

Efficacy for Student Engagement

How much can you do to motivate students who show low interest in schoolwork?

Estimates of reliability (Cronbach's alpha) ranged from .90 to .94 for the study sample (Tschannen-Moran & Woolfolk Hoy, 2001). However, in subsequent studies, a two-factor structure was reported (Roberts & Henson, 2001). In the later study, the two factors identified were efficacy in student engagement and efficacy in instructional practices. Tshannen-Moran et al. (1998) concluded that several different ways to measure efficacy have been implemented, however none of the measures in place currently have established the proper balance between specificity and generality.

Challenges to the Teacher Efficacy Scale

The Teacher Efficacy scale previously has been considered the standard in the study of teaching efficacy (Ross, 1994). However, it has not gone uncriticized. Agreement exists that personal efficacy is related to one's owns feelings of competence as a teacher. The definition of general teaching efficacy is still in dispute Tschannen-Moran et al., (1998); Ashton and Webb, (1982); Gibson and Dembo, (1984); Riggs and Enroch, (1990); Soodak and Podell, (1996) believe general teaching efficacy to be an outcome expectancy. Woolfolk et al. (1990) claim that these researchers are misreading Bandura's notion of outcome and efficacy expectations. The researchers state, "For Bandura, an outcome expectation is a judgment of the likely consequences of an action while an efficacy expectation is a judgment about capability to perform an action" (p.138). A teacher may believe that teachers have the general ability to teach all students but that does not mean that all students will be successful in school. General teaching efficacy then is an efficacy expectation and not an outcome expectation as put forth earlier.

The wording of the items used to measure General Teaching Efficacy has also been scrutinized. Guskey and Passaro (1994) point to the fact that items on the Personal Teaching Efficacy Scale all use the referent "I", all are also positive and have an internal locus ("I can"). Items on the General Teaching Efficacy scale almost all use the referent "teachers", all are negative and have an external locus of control ("teachers cannot"). Guskey and Passaro concluded that the difference between the two factors contributes to an internal versus external locus of control.

After studying the connection between the Teacher Efficacy Scale and several other measures (Teacher Locus of Control Scale; Rose & Medway, 1981; Responsibility for Student Achievement Questionaire; Guskey, 1981), Coladarci and Fink (1995) found a moderate correlation between the TES and measures of locus of control. Based on this research, Tshannen-Moran et al. (1998) concluded that these measures are describing related constructs but the overlap is not exact. The research has shown that General Teaching Efficacy is not strongly correlated with locus of control nor does it seem to be an outcome expectation. As such, the argument over the appropriate measure of teaching efficacy continues.

Correlates of Teacher Efficacy

A significant relationship has been found to exist between teachers' feelings of efficacy and their classroom behaviors. Allinder (1994) found that teachers who had a greater belief in their ability to teach also were more likely to try different ways of teaching, to be organized and more confident and enthusiastic about teaching than teachers with a low sense of efficacy. Likewise, Guskey (1988) found a significant

relationship between high teacher efficacy and teachers' positive attitudes toward implementing innovative teaching strategies. Gibson and Dembo (1984) found teachers with high efficacy to use more whole-group instruction and to be more persistent with students, these teachers were less likely to give critical feedback. High efficacy teachers generally spend more time preparing for instruction than low efficacy teachers. Enochs, Scharmann, and Riggs (1995) used the Science Teaching Efficacy Belief Instrument and found that teachers with high personal science teaching efficacy were more likely to use activity-based learning approach, teachers with lower personal science teaching efficacy tended to use text-oriented instruction. Hoover-Dempsey, Bassler and Brissie (1987) found that highly efficacious teachers are more likely to encourage parent involvement in elementary school.

As with Allinder (1994), Guskey (1988) came to the conclusion that there is a significant relationship between high teacher efficacy and teachers' positive attitudes toward the implementation of instructional innovation. Smylie (1988) and Scribner (1999) also found a direct relationship between personal teaching efficacy and teachers' willingness to try new techniques and or change practices to improve classroom effectiveness.

Teaching efficacy has also been connected to levels of teacher stress. Parkay, Greenwood, Olejnik and Proller (1988) and Greenwood, Olejnik, and Parkay (1990) concluded that teachers with low personal and general teaching efficacy exhibit more stress than teachers with high personal and general teaching efficacy. This would imply

that teachers have less stress when they possess self-assurance as well as the belief that teachers in general can make a difference.

Collaborating to increase instructional effectiveness can also impact a teachers' sense of efficacy. Smith and Knight (1997) reported that teacher collaboration in the form of study team participation was related to higher levels of general teaching efficacy. Collaboration can be ambiguous but has at its heart the evaluation of teaching practice and the development of solutions to educational problems. With this as the goal, collaborative efforts have resulted in improvement of teaching behavior (Talbert, McLaughlin, & Rowan, 1993), the stimulation of intellectualism among teachers (Jeffrey, 1995), and the promotion of professionalism (Oja & Smulyan, 1989). Considering the Social Cognitive Theory such collaboration may influence teacher efficacy, particularly when collaboration with others results in a change in practice for the better (Henson, 1999).

Teachers with high teaching efficacy have found to be more committed to the teaching profession than those teachers' with low teaching efficacy. Coladarci (1992) conducted a survey of 170 teachers to establish the degree to which teacher's sense of efficacy predicted the response to the question "Suppose you had it to do all over again: In view of your present knowledge, would you become a teacher?" Coladarci found that personal and general teaching efficacy were both positively and significantly correlated to teaching commitment. Likewise, Trentham, Silvern, and Brogdon (1985) surveyed 155 teachers and concluded that teacher efficacy was positively and significantly correlated to a teachers' willingness to enter the teaching profession given the

opportunity to start over. Glickman and Tamashiro (1982) found a negative and significant correlation between teacher efficacy and teachers that left the profession. Teachers who left the profession had lower teaching efficacy than current teachers in either their first or fifth year of service. These findings support the conclusion that teachers with high efficacy have a high sense of commitment to the teaching profession.

The probability of a teacher making a student referral to special education has been associated with the level of teacher efficacy. Meijer and Foster (1988), Soodak and Podell (1993), and Soodak, Podell, and Lehman (1998) established that regular education teachers that possess a high sense of both personal and general teaching efficacy were more likely to agree with the mainstreaming of students with learning and/or behavior disorders. Similarly, Podell and Soodak (1993) studied the connection between teaching efficacy, student SES, and chance of referral to special education. Teachers with lower personal teaching efficacy were more likely to disagree with the regular education placement of low-achieving students from low SES backgrounds. Teachers with a higher sense of efficacy did not make a distinction based on SES. Podell and Soodak found that referral decisions were positively and significantly correlated to both personal and general teaching efficacy. Brownell and Pajares (1999) found that regular education teachers' efficacy beliefs for instructing students with learning and behavior problems had a direct impact on their perceived success in teaching mainstreamed special education students. These findings reveal that teachers with high efficacy are more likely to feel that all students can be successful despite achievement

level or family environment. Further more these teachers are more likely to agree with servicing these students in the regular education classroom.

Ross (1994) examined 88 studies of teacher efficacy and identified six correlates of efficacy connected to teacher behavior. Ross concluded the higher a teachers' efficacy the more likely they are to: (a) learn and implement new teaching techniques, (b) use developmental classroom practices, (c) attend to the needs of students with lower achievement, (d) enhance students' own self-perceptions as capable learners, (e) set high goals and (f) exhibit persistence in the face of failure. Each of these behaviors positively impacts student achievement. Studies conducted by Ashton and Webb (1986) and Gibson and Dembo (1984) support the finding that effective teaching behaviors exhibited by highly efficacious teachers positively impact student achievement. These studies establish an indirect link between teacher efficacy and student achievement. The following studies have established a direct link between teacher efficacy and student outcome.

Teacher Efficacy and Student Achievement

Increasing student achievement is one of the biggest challenges facing educators today. Positive correlations have been established between teacher efficacy and student outcomes in general academics as well as in the specific content areas of reading and math. Using the Rand items to measure the relationship between teacher efficacy and the increase in reading scores on the California Test of Basic Skills, Armor et al. (1976) concluded that the teachers with the highest sense of efficacy produced the students with the greatest gains in reading over a period of one year. Ashton and Webb (1986) also

established a positive and significant relationship between teacher efficacy and student achievement in communication and math on the Metropolitan Achievement Test. Anderson, et al. (1988) conducted a study among third and sixth grade teachers and found that for third grade students, a teachers' personal efficacy at the beginning of the year was a significant factor in student achievement. No significance was detected between teacher efficacy and student achievement at the sixth grade level. However, a teachers' sense of efficacy was found to be related to students' sense of efficacy in both grades. Similarly, Midgley et al. (1989) concluded that teachers' sense of efficacy was related to their students' sense of efficacy. They studied the change in students' thinking of mathematics during the transition to junior high school and found that students who moved from high to low efficacy math teachers ended their junior high year with the lowest expectancies and perceived performance as well as the highest perception of task difficulty.

Teacher Efficacy and Context Variables

The Social Cognitive Theory put forth by Bandura suggests that personal factors combined with behavior and environment interact to influence each other through the notion of reciprocal determinism. Several researchers have used this as the basis for their studies of classroom contextual variables and teacher efficacy.

Raudenbush, et al. (1992) found that high school teachers have an increased sense of efficacy when teaching high track students and furthermore this effect was greater for math and science teachers than for English and social studies teachers. When student engagement was controlled for in the analysis, these track effects almost

disappeared. Ross, Cousins, and Gadalla (1996) conducted a study of secondary teachers and found that teacher's efficacy was lower for courses taught outside the teacher's core department than those taught within their department.

Besides classroom level effects, studies have also been conducted to determine school-level effects. These studies found that a teacher's sense of efficacy is related to school-level factors such as principals' leadership behaviors, the social organization of the school, and organizational health of the school. Chester and Beaudin (1996) studied newly hired urban school teachers and found that such things as opportunities for new teachers to collaborate with colleagues, supervisor attention to instruction, and the level of resources available in the school all influenced teachers' sense of efficacy.

Newman, Rutter and Smith (1989) used the High School and Beyond Administrator/Teacher survey to identify five organizational features (students' orderly behavior, the encouragement of innovation, teacher's knowledge of one another's courses, the responsiveness of administrators, and teachers helping one another) that greatly impacted teacher efficacy. They found these factors had a much greater effect on teacher efficacy than did other factors such as school size and percentage of low SES and minority students. Lee et al. (1991) also used data from the High School and Beyond survey and found that teachers are more likely to be efficacious in schools that promote and support teacher leadership. These supportive environments garnered comments such as, "You can count on most staff members to help. [There is] a great deal of cooperative effort. [It is] a big family. [A school] where teachers share beliefs and values about the central mission of the school and where they feel accepted and respected" (p.204). They

also found that the degree to which teachers felt they had control of their classroom practices was strongly correlated with teaching efficacy.

Newman, et al. (1989) and Lee et al. (1991) used a single measure of teacher efficacy, while Hoy and Woolfolk (1993) examined organizational factors and their effects on both personal and general teaching efficacy. Hoy and Woolfolk (1993) found that leadership behaviors were more strongly related to a sense of personal teaching efficacy than general teaching efficacy. Schools promoted personal teaching efficacy when teachers perceived that their colleagues set high but obtainable goals, developed an orderly environment and respected academic success. General teaching efficacy was increased in schools when teachers perceived that the school protected them from unreasonable community demands and a sense of trust and support existed among colleagues.

Hipp and Bredeson (1995) investigated five leadership behaviors (models behaviors, inspires group purpose, provides contingent rewards, has high expectations, and provides support) to determine which leadership behaviors were related to personal and general teaching efficacy. They found a significant relationship between teacher efficacy and teacher leadership behaviors. The leadership factors most strongly associated with personal teaching efficacy were: models behavior and provides contingent rewards. The leadership behaviors most strongly associated with general teaching efficacy were: inspires group purpose, models behavior and provides contingent rewards. Hipp (1997) identified ten leadership behaviors of principals to increase teaching efficacy, among these were: teacher empowerment, shared decision-making,

and the ability to foster teamwork and collaboration. Fay (1992) added that leadership enables teachers to actualize their professional worth in fundamental ways, by sharing experience, working collegially, and promoting professionalism. It would follow that teaching efficacy would increase through this process of allowing teachers to develop and view examples of their professional worth.

These findings illustrate that there is a relationship between teacher efficacy and a variety of classroom and school factors, notably teacher leadership. The concept of teacher leadership will be examined in more detail.

Teacher Leadership

The pressure to increase student performance on standardized tests is increasing, this coupled with a growing teacher shortage and the need to retain quality teaching professionals all add to the demand for better leadership in schools. “The teacher leader is a master teacher and a curriculum leader, devoting talents to stimulating planning and implementation of curricular change” (Andrew, 1974, p.5). Andrew urged that the teacher leader serve as a link between the school and university as well as between theory and practice. Andrew also provided a model definition of the concept stating that a central role for teachers is promoting change that improves the quality of education. It is not meant to refer to administrative or bureaucratic leadership.

Teacher leadership has gained much attention with the current push for school improvement, however very little of the research specifically examines how teachers who assume these leadership positions define and perform these leadership roles.

According to Bennis (1991), “leadership is as hard to define as the word love”(p.46). Although there are only a few studies that provide a structured definition of teacher leadership, there are some common themes in the literature. A teacher leader is one who provides support and motivation to other teachers, is a catalyst of other teachers’ learning, is well educated, and has numerous years of experience (Stone, et al., 1997). A central purpose of teacher leadership is to improve the teaching profession and assist in school reform (Smylie & Denny, 1990). A teacher leader takes his or her qualities and shares them with other teachers for the improved well-being of the students (Suranna & Moss, 1999).

Historical Overview

The proposal that teachers take an active role in the governance of schools and that administrator’s work with teachers as equals’ dates back to 1916, with John Dewey's writings. Shared governance with the principal as a democratic leader is still an emerging idea founded on the notion that empowering others will increase their capacity and commitment to do their best for education. (Blasé & Blasé, 1999). The current emphasis on teacher leadership came from educational reform initiatives of the 1980s. The 1986 Carnegie Report, *A Nation Prepared: Teachers for the 21st Century,* found that curriculum was enhanced when teachers were provided with leadership opportunities. A 1986 report generated through the California Commission on the Teaching profession, requested, “restructuring the management of schools to involve teachers in decision making” (Stone, et al., 1997, p.50). *Tomorrow’s Teachers: A Report of the Holmes group* (1986) called for wide spread changes in current educational policies in an effort

to increase student achievement and create a more professional teaching status. This call for teacher leadership is "fueled by important and conclusive research conducted over the last 20 years that demonstrates that teachers, too long silent and isolated in the classrooms, must take on more leadership in the restructuring of public education" (Wasley, 1991, p.138).

Collaboration

For teachers to develop leadership, they must have the freedom to collaborate. Teachers need to have the freedom to develop mutual trust and respect (Mitchell, 1997). The research of Smylie and Brownlee-Conyers (1992) suggests that the development of new working relationships between teacher leaders and their principals is a complex topic. Teacher leaders may seek to shape their leadership roles and their relationship with the administration in order to minimize conflict with their colleagues. Two problems with formal leadership roles are that the roles are often undefined and ambiguous and teacher leadership often leads to resentment by other teachers (Odell, 1997). When they become leaders and decision makers, they find themselves targets of teachers who are jealous and administrators who are alarmed at giving up power (Wynee, 2001). Mitchell (1997) noted that for teachers to assume leadership roles, they must collaborate. This willingness on the part of teachers to collaborate depends on mutual trust and respect. Magee (1999) added that teacher leaders struggle with defensiveness and hostility from colleagues who feel threatened or insecure. Moreover, the matriararchal structure of schools has led many teachers to develop a sort of sibling rivalry, which prevents teachers from taking instructions from a colleague (Magee, 1999; Wynne, 2001).

The Role of the Principal

In a multi- site case study, the most important skill for teacher leaders was found to be the ability to trust the administration as well as their colleagues (Ryan, 1999). Fennell (1999, p.4) in a phenomenological study of six principals involved in developing and encouraging teacher leadership in their buildings asked, “In what ways do teachers act as leaders?” The principals identified the roles of sharing in decision-making and collaborative planning, especially of curriculum adaptations and implementation. The King, Louis, Marks and Peterson (1996) study of 24 schools involved in restructuring leadership through teacher participation found that the role of the principal was crucial in developing teacher leadership. The principal must encourage commitment to the school mission, nurture teacher decision-making, create time for teachers to lead, encourage experimentation, and protect teachers from outside pressures in order to develop sustainable teacher leadership.

Parker and Leithwood (2000) conducted a mixed method research design on 51 schools using quantitative methods to identify five schools in which two were rated high for teacher leadership, two were rated low, and one was neutral. The five schools participated in a qualitative study using the grounded theory approach. Parker and Leithwood compared the five schools and identified characteristics in the schools that resulted in high ratings for teacher leadership. These schools had principals who “knew how to build consensus and encouraged collaboration” (p.52). The principals provided opportunity for professional development that facilitated collaboration among teachers

and between teachers and parents. The principals also demonstrated “good communication, enthusiasm, and staff appreciation (p.48).

Teacher Leadership Roles

Leithwood and Jantzi (1999) conducted a study surveying 2727 teachers and 9025 students in Canada. They found that teachers identified three types of leadership roles: department heads, committee members, and individual teacher leadership. Smylie and Denny (1990) studied how teachers view themselves. They expressed phrases such as facilitator, helper, and catalyst for improvement, emotional supporter, and source of knowledge.

The roles of teacher leadership often evolve through school need, previous experience or interest. The functions of teacher leaders include roles such as participating in school level decision-making and leading in-service training. Teacher leadership becomes a fluid role that extends beyond traditional roles. Teacher leaders engage teachers, students and the community in public problem solving (Devaney, 1987; O’Hair & Reitzug, 1997; and Childs-Bowen, Moller, & Scrivner, 2000).

Today’s teachers live in a society where professional duties and responsibilities are continually changing and expanding. Teacher leadership promotes “ideals that include inquiry, discourse, equity, authenticity, shared leadership, and service which in turn promotes examination of school practices and ways to improve upon them (O’Hair & Reitzug ,1997, p.68). Ryan (1999), applying a meta analysis to existing case studies, concluded that the role of the teacher leader is to improve fellow teachers’ teaching skills, to influence staff, to accept change, and share expertise. Their excitement about

learning new things and their commitment to the profession becomes infectious to others. Teacher leaders need to be the leading learners. Teacher leaders show commitment to school community and serve as change agents (Barth, 1999; Mooney, 1994).

The Formal Leadership Theory, developed by Ash and Persall (2000), described numerous leadership possibilities and identified many leaders in the school. According to their theory, leadership is not role specific only for administrators; it is based on the notion of teachers as leaders and the principal as the leader of leaders. Other studies lend support to this theory (Alvardo, 1997; Coyle, 1997). The Formal Leadership Theory and the studies that support it indicate that effective teacher leadership involves moving away from top-down, hierarchical modes of functioning toward more shared-decision making. Teachers must be willing to accept responsibility for factors beyond the classroom and be full partners in school-based planning, decision-making, and assessments (Clemson-Ingram & Fessler, 1997).

The Need for Organizational Change

Smylie and Denny (1990) stated that teacher leadership should be approached as an issue of organizational change and not merely as a task of enhancing individual opportunity and performance. They went on to suggest that the definition and performance of teacher leadership might be influenced substantially by and understood only within the confines of the organizational structure, especially with regards to time and space. Conditions such as rigid school schedules, unrelated instructional tasks, lack of support from colleagues and administrators, and overemphasis on state mandated high

stakes tests hamper the effectiveness of many teachers who step beyond their classrooms to lead (Wynne, 2001). Traditional barriers such as time (the lack thereof) can greatly affect the development of teacher leadership (Carter & Powell, 1992; Wynne, 2001).

In order for this change to be effective schools must become more egalitarian in decision-making and reduce isolationism among teachers and between teachers and administrators (Evans, 1996; Wilkins, 1992). This will require schools to revolutionize how administrators and teachers use power and decision making processes (Lee et al., 1991; Short & Rinehart, 1992; Wu & Short, 1996).

Cuban (1993) divided these organizational changes into two strands, first and second order. First order changes include incremental shifts in items such as testing practices and structure of the school calendar, while second order changes include items that alter the structure of the school and allow for teacher decision making, planning and reflection. These changes would result from rethinking how education is carried out and more specifically the assignments given to educators.

Teacher Empowerment

Teacher empowerment has been viewed as a common goal in school restructuring. Teacher Empowerment is a multi-dimensional construct used to aid in the definition of ‘new roles’ for classroom teachers. It is essential to the success of school restructuring efforts (Klecker & Loadman, 1996).

There are many definitions of empowerment in the literature. Lightfoot (1986) defines empowerment as the chances afforded a person for autonomy, responsibility,

choice, and authority. Other researchers have also made attempts at defining empowerment. Melenyzer (1990) believes teacher empowerment is the chance to act upon one's ideas and to impact the way one performs in one's profession. Rapport (1987) stated that empowerment is a tool teachers' use to become "masters of their own fate and involved in the life of several communities" (p.142). Dunst (1991) narrowed down this definition and said that empowerment contains two issues: (a) enabling experiences that are provided in an organization which promotes autonomy, choice, control, and responsibility and (b) opportunity for the individual to display existing abilities as well learn new skills that support and enhance the individual's functioning.

A common thread in these definitions is a teacher's self-perception. Does a teacher perceive him or herself as having the opportunity to pursue activities that are meaningful to him or her? Do teachers' have a sense of control over their classrooms?

History of Teacher Empowerment

Pearson (1993) stated that teachers are seen as having an inferior status in a hierarchy that bases reward on increased distance from students. The teacher's work is defined in technical, specialized, and detached terms with pedagogical decisions being defined by rules external to the school (Heid & Leak, 1991). Decisions about what gets taught are made in distant, impersonal, and legal-rational sources – tests, standards, textbook adoptions, curriculum guidelines, and expert opinion (Elmore, 1987). Powell, Farrar, and Cohen (1985) supported this notion that what is taught in school is developed outside of the school, valuable knowledge is increasingly believed to be coming from external sources – legislators, administrators, board members, bureaucratic experts –

working from authority in the name of abstract principles – equity, efficiency, effectiveness. This reliance on outside "expertise" puts teachers at a significant disadvantage in their relationships with administrators and students. "Because they have no authority from their own expertise, they must rely on authority of a formal position. They are forced into becoming bureaucratic subordinates to administrators and into treating students as even lower subordinates (Elmore, 1987, p.73)." This reported lack of teacher empowerment is of serious concern in the literature. Increasing attrition rates and the lack of college graduates choosing to enter the teaching field are leading to an increased teacher shortage. An examination of the causes can be linked to the lack of teacher empowerment. A third to a half of all teachers said they would not enter the teaching profession if they could begin again (Grant, 1983). During a two-year study in which more than 200 teachers in 33 schools were observed and interviewed, Grant concluded that the leading cause of leaving the profession was "teacher burnout." The two major causes of teacher burnout were reported to be deteriorating conditions in the schools and lack of reasonable authority teachers needed to do their jobs. In a study conducted by Hall, Pearson, and Carroll (1992) teachers leaving the profession described themselves as enjoying less autonomy in teaching than their counterparts. It is pointless to draw intelligent and capable people into teacher education programs and prepare them for employment in schools in which creativity and initiative are stifled (Seyfarth & Bost, 1986). An examination of the career expectations of non-education college seniors (Berry, 1995) found that the brightest students reported they would avoid teaching, not because of the lack of financial reward, but because of frustrating working conditions,

bureaucratic requirements, lack of professional control, little opportunity for intellectual growth, and the intolerance for diversity in the workplace. Shanker (1985) warns of the excessive guidelines for teachers issued by state legislators. This lack of confidence in teachers not only demoralizes the position of existing teachers, but no bright, young, self-directed college graduate will want to become a teacher, to enter a field in which there is little occasion to exercise judgment or to make professional decisions. Shanker went on to say that if teachers continue to be treated as they currently are, as employees in an old-fashioned factory who may not use discretion and make decisions, who are managed and directed by everyone from the state legislature to the school principal, we will never attract the best and brightest into this profession.

Teacher Empowerment, Motivation, and Other Correlates

Just as with efficacy, teacher empowerment is essential in understanding teacher motivation. According to Henson (2001) empowerment focuses on the personal factor of human agency to make meaningful decisions and follow courses of action while efficacy deals with individual belief systems. Empowered teachers are more likely to show higher levels of job commitment and motivation than their non-empowered peers. Wu and Short (1996) used the School Participant Empowerment Scale and concluded that the self-efficacy and professional growth subscales predicted job satisfaction ($\underline{R}^2$ =.42). Self-efficacy, professional growth, and status predicted organizational commitment ($\underline{R}^2$ =.45)

Research has confirmed the positive influence of teacher empowerment on school environments and student learning (Bredeson, 1989; Stimson & Applebaum,

1988; Blasé & Blasé, 1994). A social cognitive interpretation of these relationships would suggest a reciprocal influence as well (Henson, 2001). A key asset of teacher empowerment is the creation of organizational systems in which the teacher can develop confidence and motivation through active involvement in school functioning and taking control of one's work. Empowerment has shown to enhance career opportunities for teachers (Short, Greer, & Michael, 1991). Empowered teachers are also more willing to work cooperatively to solve problems, take on additional projects, reach agreement on team-based decisions, and provide support and motivation for colleagues (Bredeson, 1986; Short, Greer, & Melvin, 1994).

Several studies have cited a need for elevating teaching to the status of a profession by genuinely empowering teachers and giving them a sense of autonomy (Fier, 1985; Hart, 1990, Heid & Leak, 1991; Kremer & Hofman, 1981; Romanish, 1987; Sacks, 1984; Williams, 1990). Albert Shanker (1985), former president of the American Federation of Teachers, states professionalism indicates, "A person who is an expert, and by virtue of that expertise is permitted to operate fairly independently, to make decisions, to exercise discretion, to be free of most direct supervision (p.10)." If teaching is to elevated to full status of a profession, teachers need to be empowered in genuine ways and simultaneously given increased autonomy (Romanish, 1987).

The Social Cognitive Theory would suggest that perceptions of empowerment are required for persons to focus internal personal factors such as goal directed cognition and affective responses toward teachers' work, namely educating students effectively (Henson, 2001). Consequently, perceptions of empowerment may influence teacher

efficacy. An empowered teacher, might focus his or her efforts toward individual goals which could result in mastery experiences, potentially affecting a teacher's sense of efficacy.

Summary

This chapter has provided evidence that teacher efficacy is positively related to student achievement, teacher effectiveness and teacher motivation. According to social cognitive theory, behavior is caused by multiple factors and conversely behavior can impact those factors. The two factors focused on in this study are teacher efficacy and teacher leadership. The literature has shown teacher efficacy to be positively correlated to teacher leadership (Lee et al., 1991; Hoy & Woolfolk ,1993; Newman et al.,1989; Hipp and Bredeson 1995).

Given the current state of school reform, the rate of teacher attrition and the dramatic need to attract quality individuals to the profession many districts are attempting to increase teacher efficacy by implementing shared leadership plans that allow for increased teacher empowerment.

CHAPTER III

METHODOLOGY

This chapter outlines the methodology that was employed in the present study. The purpose of this study was to investigate the relationship between teachers' perceptions of leadership capabilities and teachers' efficacy beliefs in the context of their participation in a technology integration project. Since the intention of the study was to understand and describe the relationship between participation in the district project and the teachers' efficacy beliefs and their perceptions of leadership capabilities. A qualitative research design was chosen as the primary research approach. However quantitative analysis of the Teacher Efficacy Scale was used as a means of triangulation of the data. This chapter includes a description of the district setting where the study was conducted, the participants, the research questions examined in this study, data collection procedures and the procedures used for data analysis.

District Setting

The district is located in a suburb of a large metropolitan city. The school district has approximately 35,000 students. The district includes 19 elementary schools with a total enrollment of approximately 14,600 students. Twenty-two percent of the students in this district are considered economically disadvantaged. The ethnic distribution of the students consists of fifty-six percent white, twenty two percent Hispanic, thirteen percent African-American, eight percent Asian, and less than one percent Native American.

The district is located in the state of Texas, which utilizes a statewide accountability system that includes statewide testing as well as a state required curriculum (Texas Education Agency, 2003). The Texas Assessment of Knowledge and Skills (TAKS) is a statewide assessment program given in grades 3-9 with and exit level test given during high school. The tests measure competencies in reading, writing, math, science, and social studies (Texas Education Agency, 2003). Students must pass the exit level of the TAKS test in order to graduate from high school.

Schools are held accountable for the test results and are given a rating based on aggregated scores as well as disaggregated scores by ethnicity and socioeconomic status. Factors such as dropout rate are also considered in the rating. A district may be rated as Exemplary, Recognized, Acceptable, or Not Acceptable. (Texas Education Agency, 2003). The district in this study received a Recognized rating for the both the 2001-2002 and 2002-2003 school years (Texas Education Agency, 2003).

Generally speaking, high stakes accountability is connected to implementation of standards-based reform programs. Forty-eight states have undertaken standards-based reform to some extent according to The State of State Standards 2000. The Bush administration has made the concept of educational accountability the cornerstone of their educational policy. The growing national attention on accountability in education has heightened the seriousness of such tests' consequences-- for students, schools, districts and individual teachers (Carpenter, 2001). Policy makers with the intention of improving education enact these various high-stakes testing applications. According to the position statement of the American Educational Research Association (2002)

teachers may be held responsible or penalized for inequitable resources over which they have no control; and curriculum and instruction may be severely hindered if high test scores, rather than learning, become the overriding goal of classroom instruction.

The state also utilizes a required curriculum entitled the Texas Essential Knowledge and Skills (Texas Education Agency, 2003). The Texas Essential Knowledge and Skills (TEKS) outline what every student is expected to know and be able to do at every grade level and in all foundation subjects as well as enrichment subjects. TEKS identifies foundation subjects as English, Language Arts, Reading, Math, Science, and Social Studies. Enrichment subjects are identified as Languages other than English, Fine Arts, Health, Physical Education and Technology Applications (Texas Education Agency, 2003).

Technology Integration Project

In a press release (see Appendix B), the district stated, "The approach to the Technology Integration Project (TIP) was based on empowering classroom teachers to research, study, discuss, and design a classroom for the twenty-first century." The purpose, according to the district superintendent, was to study how technology can improve teaching methods. "We're looking at how you change your whole teaching process and why you want to change. The model will serve as a guide for future district initiatives that support student learning. The basic component is to select successful teachers and provide them with enough planning time to review literature, consider technology options and create the most positive solution for our district, which they know better than anyone else."

A committee of pre-kindergarten, kindergarten, and first-grade teachers were granted an internal sabbatical during the spring and fall semesters of 2001. Each teacher was released from her classroom assignment for two and a half days each week during the spring semester and one day each month during the fall semester. This time was spent in collaboration with the other TIP teachers at a designated campus within the district. The purpose of the committee was to research, study, discuss and design a classroom for the twenty-first century that would provide the optimum support system needed for students to master all TEKS.

According to the superintendent, "The Elementary Technology Integration project is exciting because the committee has been given the time and resources to create our own best practices solution. Committee members are conducting research in a professional environment to make decisions that will influence all teachers and students in the district over time." The committee received input from district staff as well as outside consultants. Professional development was provided on teamwork development, leadership, strategic planning, institutional research and planning, and understanding and utilizing differences. The committee visited schools that have been recognized for their use of research-based practices to achieve high academic success, as well as schools that had implemented the types of technology the committee was interested in acquiring.

The committee met directly with the vendors of the technology that interested them. Each company was given the opportunity to present their material to the committee. The committee questioned each representative as to software compatibility, ease of use in an early childhood setting, required peripherals, as well manufacturer

support after purchase and available warranties. The committee realized that the sale of these high-ticket items in bulk and the potential for future sales created the opportunity for some negotiation with these vendors, for example extended warranties, bonus software, or added features.

Each grade level submitted to the district a written request for equipment along with a research based rationale, outlining use of the equipment in their classes (see Appendix C). In their recommendation to the district the committee stated, "It is the dedication of the staff at the schools we visited that makes them exemplary. Technology was not used to replace people."

Participants

The sample for this study includes both teachers and administrators. Participants in this study include seventeen female teachers from seventeen elementary schools in the district previously described and seven district administrators. Building principals chose the teachers in this sample. The principals were asked to select a pre-kindergarten, kindergarten or first-grade teacher who was respected by teachers in the school and parents in the community. The district chose to start with the youngest students because as one administrator put it "for the students in our district to reach their potential, the children who are at-risk must be reached as early as possible. This program would engage students at a very early age which our research has shown to be the most advantageous."

The teacher participants consisted of two pre-kindergarten, six kindergarten, eight first-grade teachers and one Title One teacher. (Title One is a federally funded

program developed to ensure the needs of economically disadvantaged children.) All teachers held bachelor's degrees and two had master's degrees. Two of the teachers dealt solely with economically disadvantaged and/or limited English proficient learners (LEP). The other teachers had students in their classrooms that were economically disadvantaged and/or LEP.

Administrators involved both directly and indirectly were identified through interviews with participating teachers and through analysis of archival records such as district press releases, newspaper articles, electronic documentation of presentations, district reports, reflection journals, and award documentation. These administrators included the superintendent, associate superintendent, coordinator of student services, director of technology, district technology officer and two district instructional technology teachers.

The Role of the Researcher

In qualitative research, the researcher serves as the main instrument for data collection (Griffin, 1997). As Lincoln and Guba (1985) explain:

> It would be virtually impossible to devise a priori a nonhuman instrument with sufficient adaptability to encompass and adjust to the variety of realities that will be encountered; because of the understanding all instruments interact with respondents and objects but that only the human instrument is capable of grasping and evaluating the meaning of that differential interaction; the intrusion of instruments intervenes in the mutual shaping of other elements and can be

> appreciated and evaluated only by a human; and all instruments are value-based and interact with local values but only the human is in a position to identify and take into account (to some extent) those resulting biases (p. 39-40).

The researcher was trained in elementary education, having taught in public schools for eight years. This experience allowed the researcher to understand teacher concerns, teacher-to-teacher interactions, and teacher to administrator interactions.

Research began as a case study, defined by Asmussen and Creswell (1995) as studying a case with clear boundaries. A case study may include an in-depth analysis of a single case or multiple cases. This study investigated a single case of phase I of the TIP project. In a case study, the case is explored over time through detailed, in depth data collection. Information is gathered from multiple sources, such as observations, interviews, documentation, and archival records.

The researcher became involved with this project while co-conducting a presentation on teacher leadership. While gathering data the researcher attended weekly meetings of the committee during the spring semester of 2001 and monthly meetings during the fall semester of 2001. Having a background in early childhood education, as well as having practical classroom experience the researcher was able to make meaningful contributions during discussions related to curriculum issues. The participants became accustomed to seeing the researcher on a regular basis and as time evolved, the participants became more willing to share thoughts and concerns with the researcher through conversations at meetings, e-mail, and phone conversations. As the

project progressed the participants began to include the researcher in their conversations as well as “non-committee” activities (i.e. lunch, technology related to personal use). The line between being strictly an observer and a peer sharing in the experience became blurred.

Procedures

Descriptive information related to teachers’ experiences and perceptions were gathered through observations of team meetings and interviews with teachers and administrators. The Teacher Efficacy Scale (TES) developed by Gibson and Dembo (1984) was administered to determine teachers’ change in personal and general teaching efficacy. The TES was administered at three points. The first administration occurred in February of 2001 at the beginning of the planning phase. The second administration occurred at the conclusion of the planning phase and prior to classroom implementation of technology in January, 2002. The final administration of the TES was after classroom implementation of technology in March, 2004.

Observations

Informal observations were made during the three-year course of the research study. During the spring semester of 2001 the researcher attended one meeting of the TIP committee each week. This provided eight hours of observation each week. Through out the fall semester of 2001 the researcher attended the monthly meetings of the TIP committee.

The researcher was able to observe multiple interactions at each meeting (interactions among the TIP teachers, interactions between the TIP teachers and the administrators, interactions between the TIP teachers and vendors, interactions between the administrators as well as interactions between administrators and vendors). For example, when the TIP teachers were discussing the benefits or limitations of a particular piece of technology the researcher was able to observe the reactions of all involved, vendors, teachers and administrators.

The TIP teachers typically had an hour release time during each meeting for lunch. The researcher was included in the lunch plans. Observations were recorded during these lunch meetings. Teachers shared their reactions to vendors, the morning events, their anticipation of afternoon sessions, reflections of previous proceedings, or details of situations to which the researcher may not have been privy.

Informal observation allowed the researcher to see how the participants related to their peers and others. These observations helped clarify the relationships between the individual teachers and the administration, the group (as a whole) and the administration, as well as the un-stated hierarchy among the administration. “Observation allows the researcher to discover the here-and-now interworkings of the environment via the use of the five senses” (Erlandson, Harris, Skipper, & Allen, 1993, p. 94). Observations were transcribed. Content analysis was then preformed on the transcribed data. The data were analyzed for similarities and differences, underlying themes were identified and the data were coded by theme.

Teacher Interviews

Semi-structured teacher interviews with all participants were conducted over this three year period, some were brief lasting fifteen to twenty minutes while others lasted an hour and a half. Interviews are used to find out things that can not be directly observed such as feelings, thoughts, and intentions. Circumstances that happened outside the observer's presence were clarified through the use of interviews. Interviewing permits the researcher to see another person's perspective (Patton, cited in Merriam, 1990).

The researcher was introduced to the TIP committee during the planning stage in the spring semester of 2001. Through out the planning stage informal interviews were conducted with all TIP teachers. These interviews were conducted before meetings, during meeting breaks, over lunch and at the conclusion of meetings. These interviews were used to gather information about the teachers' understanding of the project goals, their anticipated role in the project and their beliefs about the design and implementation of the project.

The interview questions changed with the progression of the project. During the fall semester of 2001 the TIP committee's focus shifted from planning toward classroom implementation of the technology. As this shift occurred interviews were used to ascertain the TIP teachers' feelings about the level of support they were receiving, how they felt the project was progressing towards its established goals, and how their role and that of others were evolving.

Individual exit interviews were conducted with the seventeen participants remaining in the study following implementation of technology in the classrooms. All participants were interviewed in their classrooms, either during their off period or after school. These interviews focused on three areas: beliefs about teacher leadership, teachers' perceptions and attitudes of administration toward the teacher directed project, and teachers' perceptions of the attitudes of colleagues and community toward this teacher-directed project.

Three open-ended questions were included initially:

(1) How have your perceptions of leadership capabilities changed over the course of this project?

(2) What responses are you receiving from your "team" (other teachers at the same grade level in the same school) and/or parents of your students about this project?

(3) Who are the key players in this project?

These questions were posed in an effort to establish the teachers' beliefs about this project, after implementation as well as their perceptions of how the administration, other colleagues, and the community view the project. Interviews were scripted and then transcribed.

Administrative Interviews

Administrators involved in the project were identified through interviews with participating teachers and through analysis of archival records. These administrators included the superintendent, associate superintendent, coordinator of student services,

director of technology, district technology officer and two district instructional technology teachers.

Informal interviews were conducted during the planning stage with administrators directly involved. These administrators were the coordinator of student services, the district technology officer and the two instructional technology teachers. These informal interviews were conducted at the meetings of the TIP committee during the fall and spring semesters of 2001. The interviews focused on these administrators' understanding of the project's goals and their perceptions of how the project was progressing.

During the 2004 spring semester, exit interviews were conducted with all identified administrators. These administrators included the superintendent, associate superintendent, coordinator of student services, director of technology, district technology officer and two district instructional technology teachers. The associate superintendent and the coordinator of student services had retired from the district during the course of the project. These two administrators chose to be interviewed together. This interview was conducted at a local university where the former associate superintendent is currently employed. All other administrators were interviewed individually in their respective offices.

Exit interviews focused on three areas: beliefs about teacher leadership, perceptions and attitudes of administration toward the teacher directed project, and the identification of the key participants in the project.

Three open-ended questions were included initially:

(1) What is your understanding of this project's goals?

(2) How well do you think this project is meeting these goals?

(3) How do you see your role and that of others in this project?

These questions were posed in an effort to establish the administrators' beliefs about this project as well as their perceptions of how the teachers, other colleagues, and the community viewed the project.

For both interviews and observations, teachers and administrators were assured that their names and identifying characteristics would be removed from the transcripts of interviews and observation notes prior to analysis.

Document Search

A document search was conducted throughout the course of the project. The goal of the document search was to obtain information as well as to verify information, perceptions and interpretations. Documents used include press releases (see Appendix B), electronic documentation of TIP teacher presentations, e-mails, written recommendations generated by the committee (see Appendix C), the committee's proposal for program evaluation (see Appendix D), the district outline prior to initiation of the project (see Appendix E), the district overview following completion of the first stage (see appendix F) and the survey sent to parents of children in TIP classrooms (see Appendix G).

Two of the TIP teachers made a presentation at a local conference and at a school board meeting. These presentations were recorded and viewed by the researcher. This

information along with the information provided in the district outline of the project were analyzed and added to the information provided orally by the project participants. Press releases, e-mails, the written recommendations of the TIP committee, the committee's proposed program evaluation and the district overview were analyzed and used as sources of further information when considering program outcomes.

Teacher Efficacy Scale

Gibson and Dembo (1984) developed a 30-item scale of teacher efficacy containing both general teaching efficacy and personal teaching efficacy. General teaching efficacy and personal teaching efficacy were measured with the subscales of the Teacher Efficacy Scale (Gibson & Dembo, 1984). General Teaching Efficacy (GTE) is defined as a belief that any teacher's ability to bring about change is significantly limited by factors external to the teacher (Gibson & Dembo, 1984). Personal Teaching Efficacy (PTE) represents a teachers' belief in his or her ability to affect student learning (Kurz, 2001).

After factor analysis, Gibson and Dembo (1984) only used 16 of the original 30 items and suggested this revised version be used in future research. Responses are on a 6-point likert scale that ranges from a low of one for strongly disagree to a high of six for strongly agree with high means indicating high levels of general and personal teaching efficacy. The personal teaching efficacy scales include items such, as "When a student is having difficulty with an assignment, I am usually able to adjust to his/her

level." The general teaching efficacy scales include items such as "The influences of a student's home experiences can be overcome by good teaching."

Nineteen participants were administered the Teacher Efficacy scale in February of 2001 and in January of 2002. Two teachers did not participate in the final administration (March of 2004). One teacher retired prior to classroom implementation of technology and the other teacher withdrew from the study. In their study, Gibson and Dembo found that the PTE subscale yielded a Cronbach's alpha coefficient of .78 and that the GTE subscale yielded a Cronbach's alpha coefficient of .75. For this study, analysis of internal consistency reliabilities yielded Cronbach's alpha coefficients of .72 for PTE and .66 for GTE.

Analysis of Instrumentation

The Teacher Efficacy Scale (TES) was analyzed to determine the quality of individual items and score structure. Since reliability and factor structure are solely the function of scores and not of the instrument itself (Vacha-Hasse, 1998), changes in conditions, such as demographic shifts, can impact results. The deletion of items with poor item-total correlation maximizes reliability and minimizes measurement error influences.

Items with a negative item-total correlation and items that had an excessively low correlation (less than .15) were eliminated from the study. This process served to minimize random responses due to poor item construction or other variables related to measurement error.

General teaching efficacy (GTE) and personal teaching efficacy (PTE) were measured with the subscales of the Teacher Efficacy Scale (TES; 16 items as revised Gibson & Dembo, 1984). Tables 3.1, 3.2 and 3.3 report item statistics for the seven GTE items and the nine PTE items at each administration. Items statistics revealed that two of the items on each subscale did not meet the established criteria at the third administration. Responses were on a 6-point Likert-type scale with high means indicating high levels of general teaching and personal teaching efficacy. Several of the GTE items (2, 3, 4, 8, 11, 16) were reverse scored prior to obtaining mean scale scores so that high scores would indicate high levels of efficacy.

Table 3.1

Item Statistics for Subscales of the Teacher Efficacy Scale-First Administration (*N*=17)

Item No.	M	SD	IDC
	General Teaching Efficacy (GTE)		
2*	3.65	1.62	.62
3*	3.41	1.28	.51
4*	3.12	1.27	.76
8*	3.53	1.33	.60
11*	1.82	1.88	.26
14	4.00	1.17	.34
16*	3.12	1.32	.47
	Personal Teaching Efficacy (PTE)		
1	4.24	1.39	.16
5	5.24	.75	.49
6	4.41	1.37	.17
7	4.76	1.03	.75
9	4.71	.99	.41
10	4.67	.53	.55
12	4.11	.86	.26
13	4.82	.88	.41
15	4.76	.75	.24

Note. Items were scored on a 6-point Likert-type scale; *items were reverse scored; IDC=item discrimination coefficient

Table 3.2

Item Statistics for Subscales of the Teacher Efficacy Scale-Second Administration (*N*=17)

Item No.	M	SD	IDC
	General Teaching Efficacy (GTE)		
2*	4.05	1.29	.43
3*	3.47	.87	.48
4*	3.23	1.14	.44
8*	3.88	1.17	.67
11*	2.11	.92	.26
14	4.00	.79	.34
16*	3.64	1.46	.56
	Personal Teaching Efficacy (PTE)		
1	4.06	1.51	.19
5	5.00	.87	.53
6	4.30	.68	.76
7	4.47	.87	.67
9	4.41	.71	.62
10	4.29	.77	.41
12	4.12	.99	.54
13	4.71	1.04	.68
15	4.53	.94	.71

Note. Items were scored on a 6-point Likert-type scale; *items were reverse scored; IDC=item discrimination coefficient

Table 3.3

Item Statistics for Subscales of the Teacher Efficacy Scale-Third Administration (*N*=17)

Item No.	M	SD	IDC
	General Teaching Efficacy (GTE)		
2*	4.32	1.50	.56
3*	3.59	1.17	.58
4*	3.53	1.42	.49
8*	3.82	1.23	.53
11*	2.00	.94	.12
14	4.59	.62	-.10
16*	3.47	1.59	.32
	Personal Teaching Efficacy (PTE)		
1	4.00	1.69	.13
5	5.30	.70	.45
6	4.88	.99	.61
7	4.94	1.08	.75
9	4.70	1.10	.81
10	4.90	.66	.55
12	4.60	.91	.45
13	5.00	1.10	.39
15	5.35	.61	-.11

Note. Items were scored on a 6-point Likert-type scale; *items were reverse scored; IDC=item discrimination coefficient

Estimates of Internal Consistency

Cronbach's coefficient alpha (Cronbach, 1951) was computed for the TES to estimate internal consistency of scores. Estimates were calculated after deleting the items noted above. Table 3.4 reports alphas and includes the mean and standard deviation for the instrument as well as each subscale.

Table 3.4

Means, Standard Deviations and Alpha Coefficients for TES (N = 17)

Variable	M	SD	alpha
1st administration			
TES	3.93	1.31	.45
GTE	3.23	.84	.77
PTE	4.63	.44	.50
2nd administration			
TES	4.08	1.10	.81
GTE	3.72	.53	.58
PTE	4.43	.66	.82
3rd administration			
TES	4.25	1.28	.62
GTE	3.61	.72	.66
PTE	4.88	.55	.72

Note. Items were scored on a 6-point Likert-type scale

Quantitative Data Analysis

To investigate the TIP teachers change in efficacy over the course of the project the mean scores for the three administrations of the TES were compared. Mean scores and their standard deviations were computed for the instrument as a whole as well as for both subscales of the TES. Estimates for the instrument and subscales were calculated after reverse scoring and deleting the items that did not meet the established criteria in the item analysis. Scores for the two teachers not participating in the final study (one retired prior to implementation; the other withdrew) were removed from the first two administrations prior to calculation. The means and standard deviations can be found in Table 3.4.

In addition two, one-way repeated measures ANOVAs were conducted to determine the variance attributable to occasion of measurement (Hinkle, Wiersma & Jurs, 1998). This within subjects design allowed for variance due to subjects to be partitioned out of the variance due to time of measurement, thereby evaluating the effect of participation in the teacher project on PTE and GTE. Effect size was calculated to determine the extent to which the means differ. As such it is a measure of practical rather than statistical significance.

Qualitative Data Analysis

All of the transcripts from the interviews were transcribed using the constant comparative method of qualitative data analysis. According to Creswell (1998), “the

process of taking information from data collection and comparing it to emerging categories" (p.57).

The orderly steps used for analysis were those outlined in Lincoln and Guba (1985):

1. All of the information, including archival records, interviews, direct observations, participant observations, and physical artifacts were divided into individual units of data consisting of complete thoughts or in the case of physical artifacts or records relating to single ideas.
2. These individual units of data were analyzed and grouped by theme. Each theme was assigned a label to distinguish between themes.
3. Negative case analysis was employed to study alternative interpretations of the data. This is particularly important when pieces of data tend to refute the researcher's reconstruction of reality (Erlandson, et al., 1993). Hypotheses were tested against the data and revised until there were no significant differences between the data and the hypotheses.
4. Bridging was employed when the researcher observed a connection or "bridge" between two categories that had not been noted previously. When an emerging theme appeared viable but incomplete, extending was used. In extending, further data collection is made in an attempt to supplement the incomplete category (Lincoln & Guba, 1985). When data analysis pointed to the fact that the established boundaries for a theme were too restrictive, surfacing was used to extend the boundaries.

Building Trustworthiness

Qualitative research takes place in natural settings. The researcher attempts to describe and make sense of experiences. The researcher's desire is to depict things as they actually are in the real world. Qualitative researchers assume that there are multiple realities created by the participants in the study and that each participant's reality is unique, so that the reality constructed by one participant may not be the reality constructed by another (Griffin, 1997). Because of this, qualitative researchers must consider the trustworthiness of their study. According to Erlandson et al. (1993), in order for intellectual inquiry to impact knowledge it must warrant some measure of credibility. It must translate in a way that will allow for use by the intended audience and it must allow this audience to verify not only the findings but also the process used in obtaining those findings.

According to Guba and Lincoln (1981) there are four elements that should be implemented to establish trustworthiness into qualitative research. These four elements are credibility, transferability, dependability and confirmability.

Credibility

Credibility asks the question, "How well does the data represent reality?" Several strategies were employed to ensure internal validity during data collection and analysis.

The first strategy is one of prolonged engagement with the participants. This study was conducted over a period of three years. During the planning stage, the researcher met with the participants weekly and then monthly. This extended time

allowed the researcher to become a participant-observer. The researcher had the time to get to know the participants. The researcher became a part of the group and as such participants were able to be "themselves". The researcher was allowed into conversations where the participants felt free to speak their mind without fear of retribution or concern for being a team player. The time spent with the participants combined with the researcher's background as an educator allowed the researcher to understand the unstated hierarchy and inner-workings of the school district in the same way that the participants in the study understood them.

Triangulation is another means used to establish credibility in qualitative research. Triangulation occurs through the collection of data from multiple sources. Individual interviews, informal discussions, e-mails, phone-conversations, and document searches were all used to both obtain information and to check information, perceptions, and interpretations. One of the initial questions posed to participants was "Who are the key players in this project?" This question was asked in an effort to identify all parties involved, even those "behind the scenes". This allowed the researcher to consider all points of view. These methods allowed the researcher to cross-check information with various sources.

Referential materials, such as district press releases, rationales for grade level materials and equipment, journals kept by some participants were gathered in an effort to provide a "slice of life" of the participants. These materials provided background for the descriptions, analysis, and interpretations.

Peer debriefing was used in an effort to ensure internal validity. A former teacher in the district and current college professor served as my peer debriefer. She had a comprehensive understanding of my study having taught in public schools as well as having conducted her own research in the areas of teacher efficacy, empowerment and leadership. However, her experience in the public schools was at the secondary level as opposed to primary and since she had not been involved with the district for several years she was removed enough to debrief, provide feedback and provide alternative methods when needed.

As stated earlier qualitative research involves the interpretation of multiple realities. It is therefore extremely important that all perceptions be recorded accurately. It is for this reason that the researcher asked all participants to verify information gained through interviews and observations. At the conclusion of the interview the researcher restated the participant's information. Any discrepancies were then cleared up. Follow up interviews were conducted when data analysis indicated that clarification or expansion was required.

Transferability

In a qualitative research design, thick description is required to ensure transferability. Transferability refers to the notion that findings from one study will have relevance in other contexts or with other participants. In order to ensure transferability in a qualitative design, the researcher must provide thick description.

Included in this study are descriptions of the setting, descriptions of the participants, descriptions of reactions of participants, a discussion of important issues,

discussion of themes that emerged and as accurately as possible the participants constructed realities. This rich description should "enable observers of other contexts to make tentative judgments about applicability of certain observations for the contexts and to form 'working hypothesis' to guide empirical inquiry in those contexts" (Erlandson, et al., 1993, p. 33).

Dependability

In order to build dependability an audit trail has been established. Interview protocols, descriptions of participants and settings, press releases, e-mails, and transcribed interviews have all been maintained so that anyone could follow this study from implementation to conclusion.

Confirmability

The researcher attempted to remain aware of her own biases, motivations, and perceptions while conducting this research. This was done is an effort for the researcher to take the perspective of the participants in their context without interjecting the researcher's own opinion.

Summary

This chapter outlined the methodology that was used in the present study. The purpose of this study was to investigate the relationship between teachers' perceptions of leadership capabilities and teachers' efficacy beliefs in the context of their participation in a technology integration project. Included in this chapter were a description of the district setting, the participants and the research questions examined in this study. In

addition, data collection procedures and the procedures used for data analysis were explained. Quantitative analysis of the Teacher Efficacy Scale was used as a means of triangulation of the data. However, a qualitative research design was chosen as the primary research approach.

CHAPTER IV

RESULTS

This chapter reports the results of the present study. Analyses were conducted on two levels. First, qualitative analyses associated with the research questions were conducted. Second, quantitative analyses associated with the research questions were conducted. Statistical analysis reported include two one way repeated measures ANOVAs with Post hoc analysis when appropriate to determine between which administrations the mean differences actually occurred. The specific analyses used are outlined in Chapter III.

The Community

The community is halfway between Tomball and Spring, on the coastal plain north of Houston. The land is flat. The roads run straight along the old property lines and meet at right angles. There are fields with cattle and horses, the pine trees are so close, they seem to form a canopy over the road, reminiscent of tree lined streets in mature neighborhoods.

The district was officially designated by the state legislature as a community in 1977. Not being designated as a “city”, the area within the boundary of the school district has been without a post office since 1906; being served by the post offices of Houston, Spring, and Tomball. During the past thirty years the community has been rapidly transformed from a quiet rural area farmed by descendants of 19th century

German immigrants into a bustling suburb of the nation's fourth largest city. The opening of Houston's Intercontinental Airport north of Houston in 1966, and the transfer of many oil-related businesses to the Houston area, encouraged real estate developers to look at the land of northwest Harris County and this community in particular as rich in potential for suburban growth. By 1977, the Wall Street Journal declared the area the fastest growing residential community in the United States (Serverance, 1999). Descendants of the German families in the area are now often scientists, lawyers, engineers, or pop singers as well as farmers and ranchers. The rapid expansion of this community has brought in a new wave of immigrants needed for the construction of homes and businesses serving those that enjoy the quiet life of the suburb but work in the fast paced world just beyond the interstate.

In the midst of this rapid suburban development and expansion, the school district has sought to preserve the elements of the region's German heritage. The independent school district was formed in 1938 from an earlier rural high school. The district recognizes the importance to the community of the original German settlers by naming its schools after the various German families who first came to the area.

The school district has approximately 35,000 students. When this study began in 2001, the district included 19 elementary schools with a total enrollment of approximately 15,800 students. In this study's three year time period an additional elementary school has been opened and two more are currently under construction. Twenty-two percent of the students in this district are considered economically disadvantaged. The ethnic distribution of the students consists of fifty-six percent white,

twenty two percent Hispanic, thirteen percent African-American, eight percent Asian, and less than one percent Native American. However, not all elementary campuses are reflective of the district demographics. One campus, for instance reported a white population of 2.3% and an African American population of 63% with 66.7% of the students being labeled as economically disadvantaged and 20.2% having limited English proficiency; another campus reported a white population of 76.8% and an African American population of 4.8% with 4% of the students being economically disadvantaged and only 4.7 % exhibiting limited English proficiency (Texas Education Agency, 2003). Both campuses served approximately the same number of students.

Many of the teachers reported a strong division in the district between the "haves" and the "have nots". As one teacher stated, "we do not have a large middle class, we have students that have every economic and educational advantage and we have students that are extremely underprivileged."

The Participants

The participants include both teachers and administrators. As stated previously nineteen classroom teachers were selected for the program. The administration includes the superintendent, associate superintendent, coordinator of student services, the director of technology, the instructional technology officer and the two instructional technology teachers.

The Teachers

Participants in this study included seventeen female teachers from seventeen elementary schools in the district previously described. Of the original nineteen participants, one teacher retired prior to classroom implementation and another chose not to participate.

The teachers were chosen by their building principal to participate in the technology integration project. The principals were "sold" the project by the associate superintendent; he gave these principals the directive to choose a pre-kindergarten, kindergarten or first-grade teacher that "all of the parents request". When questioned about this edict, the superintendent stated, "You want to dodge the notion of the best politicians, real leaders are hard workers and they are followed because what they are doing is right". This decision about how these teachers would be chosen was one of the first made with regards to the technology integration project and this choice had a major impact on the teachers. While the administration all knew the criteria for membership in this group, the criteria was not communicated to the participating teachers or any other teacher. This action set up hard feelings on many campuses with teachers feeling they should have been chosen. Many teachers mentioned feeling resentment from their colleagues. One teacher stated "the teacher most involved with technology on my campus was not chosen to participate in this project, she was very resentful and therefore did not want to hear what I was doing. The administration should have addressed how the teachers were chosen." Another teacher clarified by saying "To start out with the rumor mill established that the criteria for appointment to the project, was that the

teacher needed to demonstrate leadership qualities, this was too ambiguous." Most of the teachers felt that by the administration being evasive on this issue, it put the burden on them to defend their appointment. Even the person charged with giving the directive to the principals agreed, "It set up hard feelings in the way that teachers were picked." The teachers were told they would be the filter of information to their campuses; however, they did not have all of the information.

The teacher participants consisted of two pre-kindergarten, six kindergarten, eight first-grade teachers and one Title One teacher. (Title One is a federally funded program developed to ensure the needs of economically disadvantaged children.). All teachers held bachelor's degrees and two had master's degrees. Two of the teachers worked solely with economically disadvantaged and/or limited English proficient learners (LEP). The other teachers had students in their classrooms that are economically disadvantaged and/or LEP. The participating teachers had an average teaching experience of 10 years. All had at least six years of experience and seven had more than 20 years of experience.

The Administration

This district is known internally as having a "top down" management style. This was affirmed repeatedly by both teachers and administrators. As such, the role of those at the top of the hierarchy becomes very influential.

The Superintendent

When this project began the district had a relatively new superintendent having been employed just one semester. Prior to coming to this district he had been a

superintendent for twenty-five years in several districts both in and out of state. Technology had long been an interest of this superintendent. During his interview he recalled one of his first assignments as an assistant principal. Among his responsibilities was the distribution and collection of text books. As he explored the bookroom he was stunned.

> The sign on the door of the bookroom of Central High School in North Carolina gave little clue as to what was really inside. This storage room that also doubled as a workroom for the assistant principal was lavishly adorned in oak and brass fixtures that indicated the original purpose was something different. It was the radio room, a laboratory where the high-tech principles were to be taught. That was the thinking in the 1930s when the lab was built on the belief that radio skills would be essential. Part of the world to be changed was the world of education. Radio also was to revolutionize how teaching and learning happened. Before radio, motion pictures were thought (by none other than Thomas Edison himself) to be the technology that would change the schoolhouse. After radio, it was television. Now it is the computer.

He stated that he had seen the benefits of creating “electronic portfolio’s or records of cognitive growth.” “Doctors don’t diagnose a condition without running tests, once they have; they use all of their tools to analyze the problem. It is the same in this case; educators can become true professionals if they use **all** of their tools, including technology.” According to him we now have the ability to collect cognitive rams and by doing so we can track a student’s cognitive growth.

"I was the one that implemented this program with the goal of setting a new standard and creating a positive virus." In order for this program to be successful, the superintendent outlined four elements of change that are essential:

> First you must have a vision; second it should be driven by the person closest to it, in this case using technology to increase instructional individualization; the teachers become leaders of change I am a game warden "protecting the eagle"; third you have to get administrators buy-in to protect these changes, you support part time teachers to free up part of their day; you don't let anyone become in charge if they don't embrace the change you are implementing; finally you create a positive virus which will spread to parents leading to the development of policies to sustain change. I have failed and succeeded in these steps through out my career. I was a catalyst in this situation. I admit I did not steward it as well as I have projects in the past, to some extent because of the time in my career (he has since retired) and in part because this district is notoriously slow to change.

As stated earlier this district is viewed by its personnel to operate with a top-down management style. As such there were several key participants "under" the superintendent. According to the director of technology, "the superintendent is the leader he throws out the idea and one of the senior staff picks it up and runs with it." In this case, that was the associate superintendent. According to one of the technology teachers, "the superintendent made a mandate; but ultimately it was the associate superintendent's responsibility."

The Associate Superintendent

The Associate Superintendent worked in the district for 29 years before retiring in 2001. He left the district prior to classroom implementation of the technology integration project. The associate superintendent stated that he implemented the directives given to him by the superintendent. He was responsible for meeting with the principals and "selling" them the project. He outlined for the principals the criteria that would be used to select the teachers. He was also charged with setting up the initial training, securing a location, and making sure all logistics had been considered. Another technology teacher described the associate superintendent as "a cheerleader focusing on district support." Once the initial ground work was complete the associate superintendent then placed the project in the hands of the administrator in charge of student services.

Coordinator of Student Services

The coordinator of student services has had experience as a classroom teacher, science department chairperson, intermediate, high school, and junior college guidance counselor, high school assistant principal, instructional officer, student services officer, and associate director of student services. At the time of the TIP program, she had 24 years with the district and nine years in education outside of the district.

According to the director of technology it was the associate superintendent that put this coordinator in charge of the project. The associate superintendent stated that the role of the coordinator was that of facilitator. She was to serve as the central office

contact. One of the coordinator's responsibilities was to ensure that the participating teacher's (TIP teachers) classes were covered. After discussion with the TIP teachers it was agreed upon that a co-teacher would be hired to give the TIP teacher release time of two and half days each week for the entire semester. The co-teacher would work with the TIP teacher on Wednesday afternoons to ease the transition, help establish continuity, and allow for shared planning time. The co-teacher would then have sole responsibility for the class on Thursdays and Fridays. It was the coordinator's responsibility to locate the nineteen necessary co-teachers. According to the coordinator, the same logic used in identifying the TIP teachers was applied in finding the co-teachers. The principals of each campus were asked to identify "the community's favorite sub." Frequently this was a retired teacher from the district. The district needed to be certain that not only were the classes covered but also that the students were not losing instruction time and that the parents felt their children's learning environment had minimal interruption. Without parental support, the district would not be able to create the "ground swell" they were hoping for to replicate this project.

In its infancy there was no specific direction for the project. One of the technology teachers recounted that the coordinator "She took a hands off approach. She did not establish agendas and she was open to how the teachers worked with their time." This approach follows the idea established by the superintendent to "create an environment where these teachers could explore technology, plan their own change, and the administration would make their sure needs were met." All of the TIP teachers felt

that they had the support of this coordinator. According to one “she was like a Mom to our group- I felt like I could say anything to her.”

According to the associate superintendent and the coordinator, once the technology equipment began to arrive in the district their roles ended and the responsibility shifted to the Instructional Technology Department.

Instructional Technology Department

The district had a teacher directed technology program in place prior to the establishment of the Technology Integration Program. In 1997, the district established a long range plan for technology which included the professional development of technology for all teachers and administrators. At that time the district instructional technology officer and one of the district technology teachers wrote a grant and created the Technology Integration Mentor Program. In an article written by the district technology officer she states, “The core of the professional development plan was the creation of a community of learners among the district's teachers and administrators that would result in teachers' mastery of technology skills at a level that would make them capable of teaching those skills to their students.” This group consisted of full-time teachers from each campus known as Technology Integration Mentors (TIMs). These teachers received an additional stipend for their efforts to learn about technology and share that knowledge with others. The TIM program created a network of teachers from each grade level and core content area who joined together to focus on how best to integrate technology into teaching and learning. The district’s technology director said this program reflected a “trainer of trainers model.” As the TIMs learned new skills, they

shared those skills with their colleagues. Therefore TIMs' classrooms served as learning labs for all teachers at each campus.

According to the associate superintendent, from the beginning there was a lot of confusion on the whole role of the Instructional Technology (IT) department with regards to the TIP program. He recalled the initial meeting during which the superintendent outlined the TIP program to himself as well as to the director of technology. In this meeting the associate superintendent stated that the director vehemently requested that IT personnel, specifically the (TIMs) be the ones picked for this project. The superintendent explained that this project was to be “teacher directed”. In his words he said, “Teachers should be in charge because they are trained professionals. I wanted to create a program in which these teachers could grow professionally, where they would feel empowered. By doing this it allows for a youthful entrepreneurial leader to emerge.”

The associate superintendent and the coordinator stated that they recognized the importance of keeping the IT people and any other “budget interested personnel” at bay, as long as possible. According to the associate superintendent “You had a belief that teachers knew what was best or that the IT people knew what was best.”

There came a point during the program in which the TIP teachers requested the IT personnel to come in as a resource. Once this request occurred, the associate superintendent and the coordinator both stated that it was difficult for the IT personnel to follow the established “hands off” policy.

The Director of Technology

The director of technology worked in the district for 24 years, as a teacher for fourteen years and as an assistant principal for three years before moving into the technology department. She is responsible for the technology infrastructure in all facilities and planning for facilities and technology needs for the future. According to her, her role in this project was that of facilitator, "I had to go through [the TIP teachers] wish list and determine if it [the requested computer hardware and software] would work on our network. It was then my responsibility to make sure all of the equipment was purchased and implemented." When asked about the infrastructure of the Technology department, the director stated "I am over all technology and instruction. The instructional technology officer is under me. She handles the instructional side."

Instructional Technology Officer

The instructional technology officer described her responsibilities as "handling instruction with technology. I am the team leader for district technology teachers." She was the person credited with writing the grant and starting the TIM program. She was informed about the TIP project by the associate superintendent. Her understanding was, "The district was attempting to design a classroom for the 21st century based on recommendations of teachers with teachers guiding the journey." She included her opinion that "These two programs [TIP and TIM] are not competing with each other. The TIM program is a totally different model. It was initially based on helping teachers to understand technology TEKs [Texas Essential Knowledge and

Skills-the state mandated curriculum]. It was to help them [teachers] learn initial technology. It follows a trainer of trainer model."

The technology officer became directly involved once the TIP teachers choose the equipment they were interested in. According to her, "I scheduled the vendors to come to the TIP meetings and answered any questions the teachers had."

Instructional Technology Teachers

There were three instructional technology (IT) teachers that worked on the TIP project. One of those teachers has retired from the district and is not participating in this research. The IT teachers responsibilities include assignment to a core group (i.e. three elementary schools, two intermediate schools and one of the high schools) and serve as facilitators for their group's technology training and implementation as well as trouble shooting problems with technology.

It should be noted that the IT teachers are not administrators. As one of them stated "I am a teacher. I make teachers pay and I am on a teacher contract." However, when the TIP teachers were questioned, they consistently referred to these IT teachers as central office staff. It was clear from multiple observations that the TIP teachers considered them administrators even if their official titles did not reflect it. For instance, even though the TIP teachers had been told this was "their project and they had the authority" one of the technology teachers said, "I want all of you to put your hands on top of your heads (while exploring a new piece of software). I am not going on while I hear computer keys clicking." ALL of the TIP teachers did it compliantly without question or hesitation. The IT teachers added to this perception by talking about the TIP

teachers (“that is not something we are not willing to discuss with the teachers at this time”; “these young ladies (some of which were old enough to be their mothers) are really working hard”) to the vendors and other administrators. The fact that these technology teachers have offices in an administrative building and are not assigned to a specific classroom also contributed to this perception.

The first IT teacher could not recall how she learned about the TIP project, but upon hearing about it she clearly remembers her reaction,

> The superintendent had a plan for putting technology in classes. We [IT department] were not consulted nor asked. I was concerned. Why would you implement a technology project and not consult the technology department? Even today when I read how he [the superintendent] started use of technology in the district classrooms it bothers me. We had a technology integration program in place and it was not considered when TIP was developed. When they were in the middle of the project and needed resources and advice we were called in.

When asked about her understanding of the project goals she stated, “Have teacher directed decisions about classrooms with the focus on technology. TIP teachers were there to make their own decisions.”

The second IT teacher felt that the concept of the TIP project was good in theory. “It was good PR in the beginning for the district. Everyone was concerned about preparing for 21st century. It was the first time in my thirty years of teaching in different states, different districts, that teachers were given time to collaborate. It was cool –

because they were getting to create it." Once the IT people began to actually participate with the project, this IT teacher saw some major problems.

> It was a transition for us – his [the superintendent] thing. He wanted teachers to create it but too many cooks mess up the stew. I felt they did not have adequate guidance or structure in the beginning. Twenty people were calling their own shots. A number of people dominated and others followed and there was a great interest in lunch and social time. The IT people were called in the middle and added structure, set agendas. We were asked to be a part and we felt it was a free for all. We couldn't have six hours of people just talking.

As the IT people became directly involved with the project, there was shift of control from shared-decision making and collaboration of the teachers to the top-down approach of the Instructional Technology department. As the associate superintendent put it, "Ultimately care and feeding went to [the] department that didn't feel they needed it."

Planning Stage

The TIP teachers met two and one half days each week from January 2001 through May 2001. Beginning in the fall semester of 2001, the committee met once each month. The committee received input from district staff as well as outside consultants. In-services were provided on: team work development, strategic planning, institutional research and planning, and understanding and utilizing differences. The committee

visited schools that had been recognized for their use of research-based practices to achieve high academic success.

Initial interview questions focused on teachers' understanding of the project goals, their anticipated role in the project and their beliefs about the design and implementation of the project. Analysis of interviews during this planning stage revealed several categories of responses.

Questions dealing with participation revealed categories related to empowerment, self-direction, and trust. One teacher said, "What is going to be effective about our project is that [it] is teacher directed and teacher led." Teachers perceived the administration during this phase to be excited and interested in the work they were doing. The teachers felt that they had control of the project. Another teacher commented, "Our charge is to research these products, and based on that research, make recommendations. We were told [by the administration] we are professionals and would be treated as such, our plans are opened ended and up to us as a team."

When discussing participation in the project many of the TIP teachers also mentioned their concern about the perceptions of other team members and/or parents. Several of the teachers made comments such as "Parents wanted to know who would be in the class when the teacher was out two days a week. They questioned the ethnicity of the teachers chosen. Parents were concerned about how children would be assigned to the TIP classrooms." TIP teachers' perceptions of their colleagues generated comments such as "I don't feel comfortable returning to my school and sharing what we are doing here. I feel the other teachers are irritated at my being gone two and one half days a

week. I have felt a great deal of resentment from a teacher who was not selected to participate. The teachers on my team are concerned with parents complaining that their children are not in "that" room."

The administration appeared to support the position that this project was to be driven by the TIP teachers. For instance, a teacher raised the question, "What does the superintendent think of this?" The response given by the coordinator of student services was, "He said, when you get nineteen teachers together it will be good." The teachers were told by the associate superintendent that the administration was "not here to persuade your decisions one way or another." When questioned about a time management concern, the coordinator of student services responded, "I'm here to facilitate not to boss." The administrators served as liaisons between the committee and various outside presenters. For instance the technology officer told one of the vendors "They [the TIP teachers] set their own agenda. This group is self directed and concerned about their time and being able to meet with the next presenter." Similarly the group was told by the coordinator of student services, "You set your own agenda for meetings and discussion. Staff development is up to the committee."

As mentioned previously when the TIP teachers began to explore the available technology they asked the coordinator of student services to have the IT department brought into the project as a resource. The teachers had questions about the equipment that only the IT department was able to answer. For instance, which technology would be compatible with the district server? Was the software being considered compatible with the current operating system in the district?

In the beginning the IT department provided positive feedback and encouragement, such as “you really dissected the various laptops.” However, as time progressed there was a shift of control from shared-decision making and collaboration of the teachers to a top-down approach of the IT department. One of the district technology teachers acknowledged that once they were brought into the project, “We [IT department] added structure, set agendas. We couldn’t have six hours of people just talking.” Observations of this shift in control included a teacher mentioning a concern about the compatibility of a piece of software with Windows 2000 (the operating system being used at that time in the district) to a presenter. One of the IT teachers stepped in and said, “This is an issue we are not willing to discuss with the teachers yet.”

The IT teachers and the technology officer gradually began to express their opinions on various pieces of equipment and software, the technology officer made comments such as, “This is very expensive and two years down the road we may be able to get it for half price or for free. Educational technology is moving towards web based instruction.” The TIP teachers recognized what was occurring and questioned this loss of control. Teachers expressed concern over the IT department eliminating some of their choices of hardware. When questioned about it, the coordinator of student services expressed surprise and concern, but did not directly address the issue. The teachers were frustrated that they weren’t allowed to view some of the equipment, “There is no shared leadership. They [the IT department] did not ask our opinions.”

The IT department began to take more control of training on the new equipment. One IT teacher often talked to the teachers like elementary students, with comments like,

"How many people don't have a folder? Everybody else hands in laps." Or "I'll stop until I see everyone's arms move." This same IT teacher told the teachers to put their hands on their heads to ensure no one was touching the computer during a vendor's presentation.

Lack of trust for the administration emerged as a theme felt by many teachers. As the administrators, particularly the IT department, took control from the teachers, the teachers' sense of importance diminished. Complaints like, "They told us we were professionals and we would plan our time. Now we get an e-mail with the whole day scheduled." Critiques surfaced such as, "This is supposed to be the superintendent's baby, but we haven't seen him since the first day."

The teachers expressed concern about administrators and the IT department making decisions that the teachers view as instructional. "I am tired of all of these people [the IT department] interfering with our rooms, and making decisions." Another teacher questioned, "How are they getting all of this power? They make a suggestion that sounds good, but as a teacher you know won't work, but that doesn't matter - the administration goes with it."

The administration had communicated through out the district that these teachers would develop this classroom and that the model would be replicated. At the conclusion of the planning stage the administration requested the TIP committee's input on extending the program. The associate superintendent asked, "What grade do you recommend for phase two? This committee represents the students in this district. We want your input." The coordinator of student services interjected, "I think your model is

research based, and technologically literate so I would think any other group would come up with a similar model. So, what's next? We have discussed a number of options but we want your advice."

The committee met, discussed all possibilities, and submitted the recommendation that the program be extended to the second and third grades. The coordinator of student services questioned extending it from second through fifth grade. "Is that too much?" The TIP teachers expressed concern that there was too big a difference in the developmental level of those students.

After actively seeking advice from the TIP Committee, the district chose to select teachers already trained in the use of technology, the Technology Integration Mentors (TIMs) to participate in the next phase of the program. The TIM program had been in the district since 1997. The program consisted of teachers from each grade level and core content area who focus on how best to integrate technology into teaching and learning. According to one of the instructional technology teachers, the technology officer made the decision to merge the TIM and TIP programs and "All of us [IT personnel] agreed. Always with direction that TIMs needed to consult with TIPs to find out what was used."

When the phase two was introduced to the phase one TIP teachers, the phase one TIP teachers were told by the director of technology that the TIM teachers would receive a stipend and "may receive additional compensation beyond the TIM stipend." The TIP teachers raised questions about the compensation being provided to this new group of teachers. The response from the associate superintendent was "This is not a stipend as

much as it is differentiated staffing. As a model you will see fewer and fewer stipends." The director of technology added, "This is part of your job. TIMS do not focus on how to do it [use technology]. We did that five years ago. We focus on integrating it into the curriculum." The teachers were very agitated by these remarks. Remarks such as," She [the director of technology] says that is part of the job. When does it go above and beyond?"

After learning about phase two of the program in the morning, the TIP teachers discussed their concerns with the coordinator of student services and the two IT teachers later that same afternoon. Teachers were concerned about how the TIP program was being perceived. One teacher said, "The perception is that we are spenders of money for gadgets, but TIMs teach, and therefore, they deserve a stipend. Our charge was to research these products." The coordinator of student services responded by saying "People have different perceptions. I didn't hear that perception." One of the IT teachers added, "We are not really adding extra responsibility. We are going to marry these two groups [TIPs and TIMs]. You are not going to have to train them [the TIM teachers]. If they need training on a piece of equipment, it will come from us [the IT department]." One teachers' reaction to this explanation was, "This is a marriage of the 30's and 40's only the TIM will be paid." Other concerns were, "We are going to have to do just as much work as a TIM."

The TIP teachers expressed their frustration at the way the program had been handled, "She [the director of technology] hasn't been about us. She flew off the handle when we wanted to order lap tops." One of the IT teachers tried to appease the group by

saying, “All pilots are a big job and I don’t think you realized this. If accountability supports what we are trying to do, more money will be generated.” The coordinator of student services added, “You have come along way, I was at her school (points to teacher) when she was just a kindergarten teacher.” The TIP teachers reiterated their points, “This is like being a first year teacher again. I want them [the administration] to know how much time I did put in.” Another teacher added, “I don’t think they [the administration] want to know how much time it takes or what we do.” Teachers were concerned about loss of time with their students with the increased time required for technology, “I can’t continue to always double my time. If I’m going to share my knowledge, that’s going to take time-kids suffer because your focus is on the technology.” One teacher voiced a different concern,” Until technology is on the TAKS (Texas Assessment of Knowledge and Skills the statewide assessment program) no one is going to take it seriously.” A teacher tried to summarize the way the group felt, “This isn’t really work. Isn’t that what she [the director of technology] said?” When questioned about the merge with the TIMs, the associate superintendent stated, “The death nail for this project was that there were no resources or personnel to pull off the original nineteen classrooms (phase one) merging with TIMs was an attempt to salvage the project when phase two (replication of the phase one model at additional grade levels) was obviously not going to happen.”

From the beginning of the project the TIP teachers were told by all administrators not to be concerned with a budget. All of the TIP teachers knew this was not realistic and so they posed questions multiple times with regards to budget and each time their

questions were answered with “the sky’s the limit.” At the end of the planning stage the TIP teachers submitted a request for equipment. Each request was supplemented with a research based rationale.

Two weeks after submitting their requests (the first week of June) the coordinator of student services attempted to contact all of the TIP teachers and ask them to come to central office for a meeting. Seventeen of the nineteen teachers attended the meeting, two having already left town on vacation. At this meeting the teachers were told by the director of technology that their requests were way out of line with respect to the budget and they would have to “rethink” their choices and prioritize what they wanted first and what could wait. The TIP teachers were instructed to meet in grade level groups and prioritize their request list. The list had to be turned it that same day to the director of technology.

The TIP teachers were also advised the laptop computers they requested were not economically feasible. The TIP teachers had requested Toughbook laptops, which are laptop computers constructed of the same material used to make football helmets in the National Football League. The laptops were chosen for the durability required for daily use by young children. It was during this meeting that the majority of TIP teachers reported losing trust in the project and the administration.

The teachers involved in the TIP project spent months together collaborating, exchanging ideas, investigating technology, analyzing data, and planning for implementation. In the beginning these teachers controlled the project and they took ownership in it; they became invested and shared a common goal. As the control was

removed so was the teacher's ownership. In other words, a withdrawal was made on their investment. The teachers became angry that something they worked so hard to develop was out of their control.

Implementation Stage of Technology in the TIP Classrooms

Teachers began receiving equipment in their classrooms in August of 2001. As one teacher reflected, "I'll never forget how it was delivered to us-things in boxes. There were no proper electrical outlets. I was on my own." The majority of teachers shared this sentiment. "There was no tech support. The things came in and I paid someone to help me set up the starboard." Another teacher added, "I was lucky because the principal allowed an aide to come help me with set up." Still another commented, "No support when materials came in. The directions for the starboard were in Japanese and there was no compensation for time." For the most part the teachers set up their own equipment and loaded all of the software on all of their student computers as well as their own.

All of the teachers agreed that this first year was an overwhelming experience. During the fall semester the TIP teachers were only meeting once a month. "We were not only teaching but also learning technology, not getting home until really late." Another added, "I was overwhelmed-by responsibility for learning all equipment and teaching all at the same time. We needed more training time in the summer or out of classroom." When asked by the coordinator of student services during one of the fall meetings, "How many of you think you were adequately trained to use what you picked out?" No one raised their hand. A teacher responded, "If we would have gotten the stuff

[equipment] this summer as we were told, we would have had more time to figure it out." Many teachers admitted feeling pressure both from local and district administration. One teacher stated, "I felt like they were saying, 'Why aren't you getting things up and going?' all of this in addition to teaching." Another teacher added, "If they are not taking care of me. I am not going to be up here until 8 pm."

The TIP teachers initially requested hiring personnel to help with the installation of equipment, to load software and to trouble shoot any problems. The teachers were told by the IT department they were not allowed to consider personnel when making their request. Every one of the seventeen teachers agreed that had they been allowed to hire personnel, the transition to a technology rich classroom would have been much smoother.

When a teacher experiences a problem with a piece of technology in this district the procedure is to submit a work order to the IT department and then the work orders are taken on a first come, first served basis. The TIP teachers were told that TIP work orders would take priority the first year of implementation to get the glitches worked out. The teachers stated this was yet another time they were told one thing and something else was done. "So many things would go wrong in the beginning and there were a thousand work orders in front of mine." Another teacher added that, by the time someone came to look at her computer, she would have something else to add but the tech person would only address specifically what was on the work order.

The IT department put filters on all district computers to ensure compliance with the acceptable use procedures for the district. When this process was complete, only the

official district load of software was put back on the computers, leaving the TIP teachers with the responsibility of reloading all of the TIP software on each of their student computers. Several teachers reported being told by the director of technology that they were on their own, that they would have to load their own software and that she made the comment that the teachers should have backed up the computers. The teachers felt like she did not understand that these were the actual programs that could not be backed up. In some cases student work was lost and the teachers felt the IT department should have let them know when they would be clearing the computers so that they could have backed them up. One teacher stated," When you are working with a classroom full of young children you do not always have the time to back up files immediately." Another teacher added, "I spent hours putting all of the programs back."

The TIP teachers consistently mentioned the fact that they were no longer communicating amongst themselves. All of the TIP teachers felt this lack of communication contributed to their perceived break down of the project. The first year of implementation [the TIP teachers] wanted to get together more- once a month or once a six weeks. One teacher stated, "We were told [that] we were meeting too much [and that the administration] wanted to cut back mid-year [we] had to compromise." The teachers then met once in the spring semester. As one teacher contributed "The last time we got together they said we need to get together via e-mail." A distribution list serve was set up to allow the TIP teachers to communicate. The majority of teachers stated that they were not comfortable using this distribution list because administrators (the superintendent, the director of technology, the instructional technology officer and the

two IT teachers) were included on it. One teacher noted, “It feels like big brother is watching.”

The TIP teachers did agree that the distribution list was an effective problem solving tool. “We used the distribution list to trouble shoot.” All of the teachers agreed that, had the administration not been included on the distribution list, they would have been more comfortable using it to also collaborate (vent frustrations; explore new methods for a piece of equipment, support each other when feeling overwhelmed).

In the fall of 2003 an internet worm infected all of the district computers. All of the computers had to be cleared and reloaded before being brought back on-line. Again according to the TIP teachers the IT department did not let them know when they would be working on their computers nor did they advise them to back up any information. The TIP teachers all noted that their computers were the very last in the district to be put back on-line so many teachers experienced six to eight weeks without the use of computers. When the computers were returned to the teachers again the IT department had only loaded the official district load leaving the teachers to reload all of the TIP software if they chose to use it.

According to one of the TIP teachers, after the incident with the worm, “E-mails were flying discussing the situation.” One of the teachers that had inherited her classroom sent an email stating “You should just be happy with what you have.” (Three of the TIP teachers have retired since the beginning of the project and their classrooms have been given to another teacher at their campus. These teachers inherited the use of all TIP equipment but did not participate in creating the design so they do not share the

same bond.) One of the TIP teachers stated, “This sufficiently ended the distribution list, leading to increased feelings of isolation.” Many teachers stated they felt embarrassed like they had just been scolded in front to the administration. Since that time (fall of 2003) the TIP teachers have not communicated. All of the teachers expressed feeling of isolation and abandonment with regards to this project.

Evaluation of the Research Questions

This section reports the results from analysis conducted to evaluate each research question. Each question is presented and followed by results in narrative form from qualitative analysis, and when appropriate discussion of quantitative results.

Research Question 1

How have participating teachers’ perceptions of leadership capabilities changed after implementation of the Technology Integration Project (TIP)?

The majority of teachers do not feel that they have developed into leaders after their participation in the implementation of the project. As one teacher put it, “By the time the program merged with the TIMS, I knew I was just making a suggestion. The answer was really coming from someone else. The asking was just a courtesy.”

Lack of support from the administration, particularly the director of technology, was a recurring theme when asked about their perceptions of teacher leadership. Another teacher added, “When we submitted our list of materials, she came in and talked to us like we were taking money out of her pocket.” Other teachers had comments like,

"She created a wall; us against them. She led the TIMs and it was a power play on her part when we were merged. We were infused with a group that did not accept us."

Some of the TIP teachers were concerned that this administrator took over the decision making. One of the TIP teachers stated, "She took control. She overrode the type of laptops we ordered. She overrode our request for palm pilots." A second teacher added, "The things we picked out were changed later." Others were frustrated. As a TIP teacher explained, "We researched these products and submitted rationales for each, we didn't pick these laptops [the ones currently being used] and I can see why. There is no rechargeable battery and they are not durable enough for young children. If they weren't going to give us a choice then why did we spend all of this time researching?" This particular teacher felt like the director "bulldozed us." Another teacher added, "She sort of she had an agenda. She was frustrated that we got more than she thought we deserved." Still another teacher saw her having ". . .a high and mighty attitude. She was not approachable and she did not understand our problems." For instance this teacher added, "There was a remediation software program and she did not want us to see it because it was expensive. Of course when we saw it we wanted it." This particular program focuses on early reading intervention. It allows students to move through the program at their own pace and provides parents and teachers individual assessment for each student. During the planning stage of the TIP project the teachers spent months researching the best program of this type. These teachers had been told by several administrators on more that one occasion that the "sky was the limit" with regards to budget for this program. This teacher continued, "Sky's the limit-made us hopeful-felt

like they were entrusting me-valued our opinion-teachers are very important-don't get that very often. However, I felt put back in my place when the tech department, tried to back us away from Waterford [the above mentioned program]."

Several teachers were uncertain as to whether it was the director's decisions or that of the entire administration and the director of technology was just the scapegoat. Comments like "We picked most of the equipment and then the administration used the tech people to say, no we can't get it, it is too expensive."

When the planning ended and the material began to arrive on the individual campuses the teachers stated they felt even less like leaders. Several teachers felt that they had been "played" by the administration. For instance as one teacher reported, "The administration said, everybody is going to be interested in what you are doing – other teachers were only concerned about how money was being spent- nobody cared what I was doing." Another TIP teacher resented the fact that she was not allowed administrative privileges for her own computer or those of her students. "Central Office took away administrative privileges on children's laptops, my laptop and desk tops. A lot of things I could do myself, but now I can't even right click and go to properties and use new software for class dictionaries. I am not allowed."

The fact that the original TIP teachers have not been consulted nor has their research been considered in any of the decisions made after implementation in their classrooms has led the majority of these teachers to feel like their opinions are not valued. One TIP teacher explained, "They acted like they wanted us to be an integral part of the second phase of this project. Once we were merged with the TIMs, none of

those people came to me for help. TIP came to an end. It became lets' give money to TIMS. The vision was gone. TIMS were given $30-35,000 per school [3 teachers] to spend on technology to improve test scores."

In most instances the TIM teachers that joined the project did not consult with the TIP teachers. A few of the TIMs met with the TIPs at their campus but this was done on their own initiative and not as a requirement. Two of the TIP teachers acknowledged that the TIM at their building had consulted with them about what equipment they should order however they did not review the research of the TIP committee. The majority of the teachers made comments such as, "They did not go back and look at research or even talk to us about it. We did the research but they are not using it. No research was involved in the second phase –we had to write a rationale for all of our material, not so with TIMs nor did they look at our rationales." Another TIP teacher added, "We spent a lot of time to develop a model classroom. Each teacher should have some leeway but the skeleton should be the same. We did the research and we continue to research."

Currently the district has established technology initiative to provide all fifth and sixth grade classrooms with a starboard set up and five desktop computers with the goal being to expand this the following year to the fourth and seventh grades and then to the second and eighth grades, etc. This decision has not been formally explained to the original TIP committee. When hearing about it through the "grapevine" one teacher described her reaction as being blown away, "How will they do the same lessons with less equipment?" Another teacher interjected, "This initiative goes against what we

found and there are two things wrong. One is space. There are no options but to use the computers as a center when you only have desktops. We use lap tops everyday. They did not listen to our suggestions. The second is that we recommended extending the program to second and third grades. As it now there will be a gap between the time a child leaves first grade and has computer use again in fifth grade. They did not listen to us." Another teacher showed concern that "In the beginning we were told our model was supposed to be duplicated in other classes. It hasn't happened."

All of the teachers felt if they were truly "leaders" they should have been consulted or at the very least told about this technology initiative. Comments were heard such as, "This year we needed to be drawn back in one more time and ask our opinion and shown results. That would have dispelled a lot of rumors. It would have solidified people's attitudes toward the leadership aspect." Another teacher added, "We should have been in on the TIM decisions, helping to work out the kinks, etc. That would have been great. We would have value and it would have been empowering." One of the teachers summarized the leadership by saying, "TIP got recognition for the district but they [the administration] moved on and have forgotten about the group."

Three of the seventeen teachers did acknowledge having some increased feelings of leadership. Only one of the three credited this to participation in the TIP project. "I only had five years experience when I started this project. After participation I felt more like a leader – people with 20 years experience were coming to me for help. I felt like I had flexibility in my classroom. This made me want to take my career a step further and go help other teachers now doing technology integration. I took a little bit [leadership]

and ran with it. I was given autonomy in my classroom through local leadership and then central office." The other two teachers attribute their feelings of leadership to self-motivation and desire. The first teacher explained, "Leadership is involved but teacher driven not administration. I went to local administration (Vice Principal) many times because I wanted to conduct an in-service. I was told the funds (salary) were not there. I was ignored. Eventually I did it on my own for no pay, leadership was self-motivated. The second teacher added, "I became more of a leader-more empowered because I trained myself. I was forced to learn because I had to give examples to my students."

The majority of the teachers agreed that as far as leadership is concerned participation in this project was not beneficial. One teacher commented, "All of the leadership opportunities stopped when we went back to our campuses. It was like being demoted."

Research Question 2

How have teachers' beliefs about their teaching efficacy changed after implementation of the TIP?

The TES was administered for the first time in January of 2001 (TES 1) at the beginning of the planning stage, again in January of 2002 (TES 2) at the end of the planning stage and finally in March of 2004 (TES 3) after classroom implementation of the technology. To investigate the TIP teachers change in efficacy over the course of the project the three administrations of the TES were compared. Mean scores and their standard deviations were computed for the instrument as a whole as well as for both subscales of the TES. Estimates for the instrument and subscales were calculated after

reverse scoring and deleting the items that did not meet the established criteria in the item analysis. Scores for the two teachers not participating in the final study (one retired prior to implementation; the other withdrew) were removed from the first two administrations prior to calculation.

Means at all three administrations of the TES reflect a moderate sense of General Teaching Efficacy for the TIP teachers (see table 3.4). The highest score on the GTE subscale across all three administrations was Item 2 *"The hours in my class have little influence on students compared to the influence of their home environment."* Item 16 *"Even a teacher with good teaching ability may not reach many students."* had the lowest score on the GTE subscale at the first and third administrations. Item 4 *"If students aren't disciplined at home, they aren't likely to accept any discipline."* received the lowest score for the GTE subscale at the second administration. All of the above mentioned items were reversed scored prior to obtaining mean scale scores so that high scores reflect high levels of efficacy. These scores indicate that the TIP teachers have a high sense of teachers' ability, in general to impact students learning that does not mean all students will be successful in school because outside influences also impact student learning.

Means at all three administrations of the TES reflect a high sense of Personal Teaching Efficacy (see table 3.4). The highest score on the PTE subscale at all three administrations was item 5 *"When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level."* The lowest score on the PTE subscale at all three administrations was item 12 *"If a student did not remember information I gave in a*

previous lesson, I would know how to increase his/her retention in the next lesson." These scores indicate that the TIP teachers have a high sense of personal ability to modify lessons for the varying needs of their students. They have less of a belief in their personal ability to provide remediation for their students.

A series of one-way repeated measures ANOVAs were conducted to determine the variance attributable to the time of measurement (Hinkle, Wiersma & Jurs, 1998). This within subjects design allowed for variance due to subjects to be partitioned out of the variance due to time of measurement. Table 4.1 presents the results for the repeated measure analyses.

Table 4.1

One-way Repeated Measures ANOVA Summary Tables

Source	SS	df	MS	F	eta^2
		General Teaching Efficacy			
Time	2.24	2	1.24	1.77	.135
		Personal Teaching Efficacy			
Time	1.73	2	.864	5.78*	.357

*$p < .05$.

Table 4.1 shows the calculated *F* value for the GTE subscale to be 1.77. This does not exceed the critical value of *F* for the degrees of freedom. Therefore the researcher failed to reject the null hypothesis. The conclusion is that the population means for the three test administrations are equal. In other words there was no statistically significant change in the scores on the General Teaching efficacy subscale. In addition a small eta^2 effect was observed for the GTE subscale.

The calculated *F* value for the PTE subscale is 5.78 as seen in Table 4.1. This exceeds the critical value of *F* for the degrees of freedom indicating a rejection of the null hypothesis. The conclusion is that the population means for the three test administrations are not equal. A moderate eta^2 effect was observed for the PTE subscale. Since the null hypothesis was rejected, it was necessary to conduct a post hoc multiple comparison analysis in order to determine which means differ.

The values presented in Table 4.2 represent the simple differences between the PTE means at each administration. A post hoc multiple comparison analysis using the Tukey test was conducted. The critical value generated in the Tukey test was .3258. In order for the difference of the means to be considered statistically significant, the difference in the means would have to exceed this critical value. The only difference that exceeded this critical value was the difference between the second and third administrations. This indicates that statistically there was no difference in the TIP teacher's scores on the PTE subscale between the first and second administrations or between the first and third administrations. There was a statistically significant difference, in this case an increase, between the second and third administrations.

Table 4. 2

Personal Teaching Efficacy

Time of Administration	Difference
Time1 and Time 2	.197
Time 1 and Time 3	.253
Time 2 and Time 3	.450*

* Exceeds critical value of .3258

While quantitative data have been collected, qualitative substantiation is required to understand the intricacies involved in this human dynamic. Personal Teaching Efficacy represents a teachers' belief in his or her ability to affect student learning. The qualitative data have shown that during the initial planning phase the teachers did hold the belief that their participation in this project would have a positive outcome with regards to student achievement. In the beginning these teachers controlled the project and they took ownership in it; they became invested and shared a common goal. However by the end of the planning phase when the second administration of the TES occurred it was apparent that the teachers felt let down by the project. The teachers became angry that something they worked so hard to develop was out of their control.

Prior to the third administration of the TES the majority of teachers expressed concern that the findings would not be solely reflective of participation in the project. As one teacher put it "So many things have changed in the district, on our campus, over the course of this project I don't know how accurate this [the TES instrument] will be." The participants attributed their increased efficacy to the technology equipment and new

methods of teaching derived from that rather than any leadership granted in the project. The time of administration can explain the increase on the PTE subscale between the second and third administrations. When the teachers started using the acquired technology, their belief in their ability to affect student learning (personal teaching efficacy) improved. The following statements illustrate this prospective.

"Overall the success was in implementing technology in the classroom. Other people on the campus benefited. What it has done for the children can impact student learning." Another TIP teacher commented, "I am thrilled to have the materials, love the starboard and Waterford but I learned them through trial and error." One TIP teacher said, "I felt like I ***was*** changing way I was teaching but not because of this project. I've learned how to use it [technology] with what I already do. [It is] all apart of the natural process." Still another teacher added," Even with all of the crap, I would do it again to get the equipment for my students. They have learned so much and so have I." In general the teachers attribute the equipment (the laptop computers, a Starboard, the diagnostic reading software mentioned previously) to increasing their efficacy. As one teacher put it, "I stuck with it to get the equipment for my kids."

General Teaching Efficacy represents the belief that teachers in general can affect student learning. The quantitative data revealed no statistically significant difference on the scores of the GTE subscale. This can be understood by examining the qualitative data. All of the teachers agreed that besides the equipment gained for their students, collaboration during the planning stage was the most positive aspect of the project. The teachers mentioned sharing ideas, learning new techniques, different uses

for equipment, and having a feeling of accomplishment after showing a colleague a new method or strategy for a piece of equipment. Collaboration by this group was essential for trouble shooting all of the glitches associated with new technology. Things as simple as letting the batteries run all the way down on the laptop before recharging to help hold a longer charge were invaluable to other teachers experiencing laptops crashing during a lesson. As noted by Henson (1999) collaboration can influence teacher efficacy, particularly when collaboration with others results in a change in practice for the better.

It is not remarkable that when the collaborative opportunities were taken away from the TIP teachers. They felt a sense of loss. After implementation of the TIP project there was only one scheduled meeting of the teachers. The district established a distribution list to enable the teachers to communicate via e-mail. Any one involved with the project including the administration was included on this distribution list. The majority of teachers felt uncomfortable using this list, they reported feeling that someone was watching and they could not speak freely.

The TIP teachers created a shared folder on the district server for to post any lessons or ideas they wished to share with each other. However the teachers were told by the IT teachers that if they posted to the folder a complete lesson plan including identification of state curriculum guides would be required. The TIP teachers reported collaboration to be most effective when they were allowed to share ideas and concerns without restraint. Since the fall of 2003, with the break down of the list serve the TIP teachers have not communicated.

Research Question 3

How do administrators' perceptions of teachers' leadership relate to program outcomes?

Most of the administrators agreed that with regards to leadership the TIP program dropped the ball. The associate superintendent commented, "We envisioned this as a technology project with leadership as a side benefit." The coordinator of student services added, "Teachers were to be given decision making experiences but we missed a big training piece." All of the administrators stated that for the leadership aspect of this project to be successful they really needed principal buy-in and principal ownership. This is the aspect the administration failed in producing. According to one of the IT teachers, "The campus leadership aspect set up a lot of friction. The superintendent established site based management decisions. This was a transition for the district as well as the principals now we understand we need administrators buy in and we didn't have it."

The superintendent, the director of technology and the instructional technology officer felt that despite not having the principal buy-in, the TIP teachers still emerged as leaders. It should be noted that the superintendent initiated the TIP project. The director of technology and the technology officer are both still heavily involved with technology in this district.

The superintendent stated, "The TIP project did develop leaders. It allowed these teachers to develop professionally." When probed for supporting evidence of leadership however, none was offered and the subject changed. The director of technology said,

"Ultimately it did develop teacher leaders, they [the TIP teachers] went through a period of only looking at equipment and software and not methods but eventually they came to that." When questioned further about evidence of leadership she included the fact that one of the TIP teachers has since moved into the IT department, leaving the classroom and working with technology integration. The technology officer related the fact that three of the TIP teachers presented at a local conference on their use of technology.

The associate superintendent, the coordinator of student services and the two instructional technology teachers all offered an alternative answer. The associate superintendent and the coordinator of student services have both retired from the district prior to their exit interviews. One of the instructional technology teachers stated "This was many of the teachers' first taste of a real job. My concern is that these teachers feel isolated [she stated that she had spoken with one or two] and let down at end of project. It could be depressing." She was implying that these teachers were allowed opportunity for leadership during the project but that when they returned to their campuses these opportunities ceased. This being the case the teachers no longer viewed themselves as leaders. The other IT teacher agreed adding that "They were told one thing and something else was done." She was reiterating the fact that these teachers had drawn the conclusion that their opinion was not valued and that the administration did not support them. The associate superintendent said, "These teachers got jerked around. They were told one thing and it was not followed through." The coordinator added, "This was not intentional. We all believed it would happen [that they would be allowed to make the decisions and that those decisions would be replicated]." The associate superintendent

summarized by saying “Empowering teachers does not have a beginning and an end. These teachers needed support post-implementation of the project.”

All of the administrators acknowledged that the most positive outcome of the TIP project was the increase in the teachers’ beliefs about their ability to impact student learning. As the director of technology stated previously during the planning stage the focus was on the equipment. When the TIP teachers returned to their classroom and began implementing the technology equipment, their focus shifted to improving teaching methods.

Summary

In summary, the results indicate that participation in the technology integration project did not have a positive effect on the TIP teachers’ perceptions of leadership capabilities. It did have a positive effect on their teaching efficacy. Several factors can be contributed to these findings.

In the beginning the teachers were told that this project would be teacher led and that they would have the decision making power. The teachers soon found that this was not the case, as their decisions from purchasing to scheduling were overridden by the technology department. The teachers felt they were told they would be leaders yet when it came down to it they were not allowed to lead.

No statistical difference in teaching efficacy was evident on the GTE subscale. An increase in personal teaching efficacy was evident between the second and third administrations of the TES. The qualitative data provides an explanation for this increase. The qualitative data revealed that the addition of new technology tools allowed

these teachers to develop new teaching methods. This in turn allowed the TIP teachers to reach more students which led to an increase in personal teacher efficacy.

Three of the seven administrators, the superintendent, the director of technology and the technology officer, felt that the participating teachers had developed leadership skills. They were not able to provide much support for their assertions. The remaining four administrators (two of whom have retired from the district) agreed with the teachers that the project was taken out of their hands and while it certainly had the potential for developing teacher leadership ultimately that is not what resulted. All of the participants agreed that the benefit of the TIP project was that it impacted the teachers' belief in their ability to impact student outcomes.

CHAPTER V

DISCUSSION AND CONCLUSION

This chapter summarizes the findings of the present study. The purpose of this study was to investigate the relationship between teacher efficacy and teachers' leadership beliefs in the context of a technology integration project that proposed to give teachers decision-making opportunities. The purpose of the project was to allow teachers to research, study, discuss and design a classroom for the twenty-first century that would provide the optimum support system needed for students to master all Texas Essential Knowledge and Skills. The results of the analyses employed to determine this relationship are examined and discussed in relation to previous research. Next, implications of the findings to both theory and practice are discussed. Finally, recommendations for future research are presented.

Summary of Research Findings

This section reviews each of the research questions and summarizes the relevant findings related to each question. In addition, this section discusses the findings in relation to previous research done in this area.

Research Question 1

How have participating teachers' perceptions of leadership capabilities changed after implementation of the Technology Integration Project (TIP)?

Three major themes emerged with regards to the teachers' perceptions of leadership capabilities. First, the teachers felt a loss of control of the project. The

decision making power that the teachers had been promised was taken out of their hands. The teachers all expressed the lack of empowerment provided by the district. Second, the teachers felt that the lack of opportunity to collaborate was the biggest hurdle in the project. Finally all of the teachers reported the total lack of support throughout the project led to their feelings of isolation, frustration and abandonment.

As stated in the literature review, a common thread among the definitions of teacher empowerment is teachers' self perceptions. Do the teachers believe they have the opportunity to pursue activities that are meaningful (Dunst, 1991)? In the beginning the TIP teachers believed that they were going to be given this opportunity to "pursue activities". As one teacher mentioned, "The administration said they would fly us to Dallas if we decided we needed to see a piece of equipment. This never happened but they lead us to believe this could happen. This [flying to Dallas] was the extreme example but they did not even do the minimum like making sure we had enough electrical outlets in our classrooms."

The teachers all admitted being skeptical in the beginning because the district is known as operating from a top-down authoritarian model. However, when the co-teachers were put into place and the teachers were actually released from their classroom responsibilities for two and one-half days a week, the teachers began to believe that the district was serious that this could truly happen and they would be making the decisions. The teachers began to collaborate and took ownership of the project, working at their own pace and setting their own agenda. The project was on the right track. As suggested by Clemson-Ingram and Fesslerm in 1997 the district was "Moving away from top-

down, hierarchical modes of functioning toward more shared-decision making. Teachers were willing to accept responsibility for factors beyond the classroom and be full partners in school-based planning, decision-making, and assessment."

All of the teachers agreed that by the time the project was to be implemented in their individual classrooms, control of the decisions and the project in general had been taken from the teachers. When they become leaders and decision makers, teachers find themselves targets of teachers who are jealous and administrators who are alarmed at giving up power (Wynee, 2001). This was evidenced in the power play made by the IT department. Alarmed at not being included in the project initially, the IT department needed to be certain their value was known to the district. In doing so, control was taken from the teachers. Magee (1999) added that teacher leaders struggle with defensiveness and hostility from colleagues who feel threatened or insecure. Moreover, the matriarchal structure of schools has led many teachers to develop a sort of sibling rivalry, which prevents teachers from taking instructions from a colleague (Magee, 1999; Wynne, 2001).

Initially the teachers were told not to be concerned with a budget. All of the TIP teachers knew this was not reasonable and so they posed questions multiple times about the project budget and each time their questions were answered with "the sky's the limit." The teachers submitted their request along with a research-based rationale for each piece of equipment. Only to be called in two weeks later and told that their requests were way out of line in respect to the budget and they would have to "rethink"

their choices and prioritize. It was during this meeting that the majority of TIP teachers reported losing trust in the project and the administration.

Just as the teachers had been led to believe that this project would be teacher led, they were also told that they would be given the time and administrative support necessary to collaborate as a group. As with the leadership component in the beginning it appeared that the project was off to a great start. Co-teachers were put in place to allow the TIP teachers release time to meet. The teachers were allowed to plan their own agendas and move at their own pace.

All of the teachers agreed that besides the technology tools gained for their students, this collaboration was the most positive facet of the project. The teachers mentioned sharing ideas, learning new techniques, different uses for equipment, and having a feeling of accomplishment after showing a colleague a new teaching method that could be utilized with a piece of equipment. Collaboration by this group was essential for trouble shooting all of the glitches associated with new technology. Things as easy as knowing how to calibrate the pen needed for the starboard were invaluable when trying to maintain the flow of a lesson with twenty two, five year olds. As stated previously, collaboration can influence teacher efficacy, particularly when collaboration with others results in a change in practice for the better (Henson, 1999).

Mitchell (1997) stated that for teachers to assume leadership roles, they must collaborate. This willingness on the part of teachers to collaborate depends on mutual trust and respect. The TIP teachers did not feel that they had the respect of the administrators. The teachers became frustrated when told by a technology administrator

if they posted a lesson to the shared folder it had to be accompanied by a complete lesson plan including the identified TEKS. One TIP teacher explained, “If we put something in the shared folder, they want a complete lesson plan to go with it. They should trust us that we are teaching the TEKS. What is going to happen is that people are going to quit posting to the shared folder. You have to forward all of your notes on the activity. There is no trust.”

The third theme that emerged with regards to teachers’ feeling of leadership was TIP teachers’ feeling that they did not have the full support of the administration. In contrast to the two previous themes lack of support was a concern from the beginning of the project.

As King et al. (1996) found in a study of 24 schools the administration must protect teachers from outside pressures in order to develop sustainable teacher leadership. This protection was not offered by this administration. Once the TIP teachers were chosen and the project was introduced to the district, feelings of animosity arose. All of the TIP teachers felt that the administration should have taken responsibility for explaining how the TIP teachers were chosen, taking some of the burden off of the participants. The associate superintendent acknowledged that the selection of the TIP teachers set up hard feelings throughout the district. He and the coordinator of student services agreed that the selection should have been explained to the rest of the district, allowing the administrators to take the heat instead of the teachers.

The administration did not explain to the TIP teachers or any other district personnel where the money to fund the TIP project was coming from. When the district

pay increment the following year seemed low to some, the assumption made by many was that the TIP teachers were to blame. The administration was well aware of this assumption but did nothing to dispel the rumor, again placing the burden of explanation on the TIP teachers.

When the decision for extending the TIP program (phase two) was made the TIP teachers felt that they should have been informed and given an explanation prior to the announcement being made to all administrators. It was never explained to the TIP teachers why their recommendation was not taken or how the decision to merge with the TIMs was reached.

The majority of problems with this project stem from the fact that little or no technical support was provided to the TIP teachers after implementation of the equipment in their classrooms. The equipment arrived in August just prior to beginning of the fall semester. No assistance was offered by the administration in unloading boxes, setting up equipment, loading software, or even assuring that proper electrical outlets were in place. When the teachers did seek help their requests were denied or the response was so delayed that by the time helped arrived the teacher had already solved the problem. The distribution list that was established for trouble shooting intimidated the majority of teachers for fear of being labeled a complainer or ungrateful.

Research Question 2

How have teachers' beliefs about their teaching efficacy changed after implementation of the TIP?

The TES was administered for the fist time in January of 2001 (TES 1) at the beginning of the planning stage, again in January of 2002 (TES 2) at the end of the planning stage and finally in March of 2004 (TES 3) after classroom implementation of the technology. Mean scores and their standard deviations were computed for the instrument as a whole as well as for both subscales of the TES. To investigate the TIP teachers' change in efficacy over the course of the project these mean scores for the three administrations were compared.

Estimates for the instrument and subscales were calculated after reverse scoring and deleting the items that did not meet the established criteria in the item analysis. Scores for the two teachers not participating in the final study (one retired prior to implementation; the other withdrew) were removed from the first two administrations prior to calculation. The means and standard deviations can be found in Table 3.4.

Two one-way repeated measures ANOVAs were conducted to determine the variance attributable to the time of measurement. There was no statistically significant change in the scores on the GTE subscale. The conclusion can be drawn that the means for the three administrations of the GTE are not different. There was a statistically significant difference on the PTE subscale, indicating that there is a statistically significant difference between means. In order to determine which means differ it was necessary to conduct a post hoc multiple comparison analysis. The post hoc analysis indicated that the significant difference occurred between the second and third administrations of the PTE subscale.

These quantitative results support the qualitative findings. The qualitative data found, that when the technology equipment arrived in the individual classrooms and the teachers had new tools with which to meet student needs their belief in their ability to impact student learning (personal teaching efficacy) increased. This supports the previous findings reported in the literature. A direct relationship has been found (Smyle, 1988; Scribner, 1999) between personal teaching efficacy and teachers' willingness to try new techniques and modify practices to improve student outcomes. Allinder (1994) and Gusky (1988) also both came to the conclusion that there is a significant relationship between teachers' positive attitudes toward the implementation of instructional innovation and high teacher efficacy.

General Teaching Efficacy represents the belief that teachers in general can affect student learning. The quantitative results for the GTE subscale indicated that there was no difference in the teachers' scores over the course of the project. The qualitative data showed that when the teachers were allowed to collaborate during the planning stage the TIP teachers felt they were impacting student learning. The teachers were excited about sharing ideas and learning new techniques for the use of technology by their students. The teachers expressed a sense of accomplishment after showing a colleague how to integrate a piece of equipment into a lesson.

As stated in the literature review Hoy and Woolfolk (1993) found that general teaching efficacy increased when teachers perceived that they were protected from unreasonable demands and sense of trust and support existed among colleagues. While this was true for the TIP teachers during the initial planning stage it was not maintained

throughout the project. The administration was derelict in their duty to provide a buffer between the TIP teachers and outside influences including the IT department.

It cannot be determined from the present study whether the reported gains will be maintained or diminish with time. Bandura (1997) proposed that persons who experience gains in efficacy due to the development of new knowledge or skills tend to "hold their efficacy beliefs in a provisional status, testing their newly acquired knowledge and skills before [ultimately] raising their judgments of what they are able to do" (p.83). Consequently the PTE gains observed in this study may not last.

Research Question 3

How do administrators' perceptions of teachers' leadership relate to program outcomes?

Three themes surfaced in the qualitative analysis of the administrators' perceptions. The first theme was the administrators' perceptions of the teachers diminishing trust in the administration. Secondly, the campus administration, specifically the principals, had no commitment to the project. Lastly, there was a mismatch between the administrators' beliefs in the TIP teachers' leadership.

As stated by Ryan (1999) in a multi- site case study, the most important characteristic for teacher leaders was found to be the ability to trust the administration. In the present study the reported lack of trust was a major hindrance. The teachers were cautiously optimistic in the beginning but eventually they did put full trust in the administration.

The majority of the administrators admitted feeling guilt after telling the teachers that their decisions would be implemented and even replicated for future classrooms. The coordinator of student services also stated that at the time the administration was telling the TIP teachers this information she believed it to be the truth. The associate superintendent as well as the director of technology stated that they both questioned the superintendent about the funding for the project. It is their contention that the superintendent did not believe that the TIP teachers would request laptops for every student. Both the associate superintendent and the director of technology stated that they warned the superintendent that this was likely to be the choice of the TIP teachers. When it came time to purchase the requested equipment there were not enough funds.

Four of the seven administrators acknowledged that the role of the principal was a critical training piece that was not addressed in this project. As noted in the literature the role of the principal is crucial in developing teacher leadership (King et al., 1996; Parker & Leithwood, 2000). The principal is instrumental in nurturing teacher decision-making, creating time for teachers to lead, encouraging experimentation, facilitating collaboration among teachers and between teachers and parents (King et al., 1996; Parker & Leithwood, 2000). Parker and Leithwood (2000) also suggested that the principals provide opportunity for professional development that facilitates collaboration among teachers. The principals should demonstrate good communication, enthusiasm, and staff appreciation. None of this happened in the present study. Collaboration was severely hindered by outside influences and the initial configuration of the project set an atmosphere of animosity and resentment. The one teacher that wanted to share her

knowledge with her peers was discouraged from doing so by her principal. After several requests to conduct an in-service, she was finally told the funds were not available to offer her compensation for the training. It was important enough to this teacher to conduct the in-service without compensation.

Smylie and Brownlee-Conyers (1992) suggested that teacher leaders may seek to shape their leadership roles and their relationship with the administration in order to minimize conflict with their colleagues. Two problems with formal leadership roles are the roles are often undefined and ambiguous and teacher leadership often leads to resentment by other teachers (Odell, 1997). The administration all knew the criteria for teacher selection on the TIP committee; however the criteria were not communicated to the participating teachers or any other teacher. This action set up hard feelings on many campuses with teachers feeling they should have been chosen. Many teachers mentioned feeling resentment from their colleagues. One teacher stated, “The teacher most involved with technology on my campus was not chosen to participate in this project. She was very resentful and therefore did not want to hear what I was doing."

The third theme revolved around the mismatch between the administrators’ beliefs in the TIP teachers’ leadership capabilities. As stated in the district overview of the project, “The program is unique in that it builds totally on the extensive research on teacher leadership and trusts the teacher as the knowledgeable professional.” While it was certainly true that some of the administrators held this belief it was not true for all.

It was evident from multiple observations that the associate superintendent and the coordinator of student service believed that these teachers were capable of leading

this technology integration project. Both of these administrators encouraged the TIP teachers to take the initiative with vendors, talk to outside resources and collaborate as a group. The interviews with the teachers supported this observation. The teachers made comments like “She [the coordinator of student services] was on our side.” Another teacher added, “I felt like I could say anything to her [coordinator of student services].”

The IT department did not share the same belief as the coordinator of student services or the associate superintendent. One of the IT teachers made this clear. She stated that IT department began setting agendas and planning the day because in her words, “We couldn’t have six hours of people just talking. There was no direction and it was a free for all.”

In the steps the superintendent outlined for this program’s success he stated that he was the game warden “protecting the eagle.” This protection however was not provided in this instance. No one stepped in and the leadership for this project was taken out of the TIP teachers hands. One of the stated goals of this project was to empower teachers and encourage teacher leadership. This mismatch in the administrators’ perceptions of the teacher’s leadership impacted the outcome of the project by not allowing teacher leadership to develop as it could have.

Summary

While this project did not meet its goal of increasing teacher leadership it did have success in other ways. The success of this project lies in the fact that the technology equipment gained and the strategies and methods developed for integrating this equipment did increase the teacher’s belief in their ability to impact student learning

(personal teaching efficacy). The TIP project however did not have the desired impact on the teachers' perceptions of themselves as leaders. It started out with great potential. A key training piece, the role of the principal failed to be addressed. It is understandable the frustration the TIP teachers experienced. Leadership strategies were introduced and autonomy was granted only to have the autonomy taken back with no opportunity for leadership upon return to their individual campuses. One TIP teacher put it very succinctly, "We went to same environment, but a different classroom." Finally, there was a mismatch in the administrators' beliefs in the project causing a shift in control of the project. Control was taken out of the teachers' hands.

Implications for Theory

After having discussed the results for each of the research questions, it is important to address the theoretical basis used to develop the research questions and to interpret the findings. This section outlines that theoretical basis and suggests potential barriers to the present study.

The theoretical framework stems from Bandura's (1997) social cognitive theory. Particularly, human agency and triadic reciprocal causality were used to explore the effects of participation in an integration project that proposed to give teachers decision-making opportunities and encourage teacher leadership. Human agency refers to the ability of humans to take conscious courses of action toward goals (Bandura, 1982). "While efficacy addresses individual belief systems, empowerment deals with the personal factor of human agency to make meaningful decisions and pursue courses of

action" (Henson, 2001, p.61). Teachers in the present study were initially told they would be allowed to pursue courses of action toward the improvement of instruction. Importantly, these courses of action were to be defined by the teachers themselves.

Triadic reciprocal causality is a multi-directional causal model of behavior in which personal factors, individual behavior, and the environment exert mutual influence on each other to result in actual behavior by the individual (Bandura, 1986, 1997). Bandura claimed that self-efficacy may be influenced by the dynamic relationships between the personal, behavioral and environmental variables of the reciprocal causality model.

This theory is applicable in interpreting the results of the current study. The qualitative data have shown in the beginning the TIP teachers felt they controlled the project. They took ownership in it; they became invested and shared a common goal. However by the end of the planning phase when the second administration of the TES occurred it was apparent that the teachers felt let down by the project. The teachers became angry that something they worked so hard to develop was out of their control.

In relating this to Bandura's reciprocal causality model, the time of measurement corresponded to the teachers feeling a loss of empowerment which in turn led to lower reported scores of teacher efficacy between the first and second administration of the TES. Prior to the third administration, however the TIP teachers received their equipment. They reported that the success of the project was in implementing technology in the classroom. The teachers' feelings of empowerment began to increase

because through the implementation of technology they had impacted student learning. It would follow then that increased efficacy was reported on the third administration.

The relationship between teacher efficacy and teacher leadership can also aid in understanding the results of this study. Hoy and Woolfolk (1993) found that leadership behaviors were more strongly related to a sense of personal teaching efficacy than general teaching efficacy. As found in the present study when the TIP teachers felt that leadership opportunities were being lost, their scores on Personal Teaching Efficacy decreased. Fay (1992) added that leadership should allow teachers to see their professional worth in concrete fundamental ways and that efficacy would in turn increase by allowing them to view these examples of professional worth. The majority of teachers reported that they would participate in this project again to gain the equipment for their students. When the TIP teachers returned to their classrooms and implemented the new technology, their ability to impact student learning was evident. Just as Fay noted when these teachers were able to view evidence of their success their efficacy increased as seen on the third administration of the TES.

Several recommendations can be made with regards to the study of teacher efficacy. Alternate methods of assessing teacher efficacy should be examined. Efficacy varies in its predicative power by level of specificity (Bandura, 1997, Pajares, 1996). At what level of specificity should teacher efficacy be assessed so that it maintains it predictive power but can be of generalizable use? Is teacher efficacy a two-dimensional construct as put forth by Gibson and Dembo (1984) or is it more complex? To what extent does the scale of general teaching efficacy on the Gibson Dembo instrument

measure external locus of control as opposed to the social cognitive theory of outcome expectancy? The Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) has presented a new model that requires further testing. Instrumental to their model is the idea that teachers' perceptions of personal competence simultaneously interact with a means-end task analysis of the teaching situation to result in efficacy belief about whether the teacher can carry out the actions needed for success. New efficacy instrumentation is needed to test these variables.

Bandura's (1997) theory seemed suitable for the present study to examine the relationship between teacher empowerment and teachers' efficacy beliefs in the context of a technology integration project. Qualitative data support the conclusion that efficacy gains resulted from the teachers' active implementation of technological intervention. The knowledge resulting from the teachers' implementation of technology most readily explains the increase in personal teaching efficacy. Based on the social cognitive theory these effects most likely resulted because the teachers exercised human agency toward personally meaningful goals that led to consequential experiences.

Implications for Practice

Several studies have shown that teachers are more likely to be efficacious in districts and schools that promote and support teacher leadership (Lee et al.,1991; Newman et al. ,1989; Hoy & Woolfolk ,1993). The Technology Integration Project was initiated with the goal of supporting teachers through research based decision making

that would impact student achievement and develop teacher leaders. Several factors inhibited this project and this district from reaching the intended goal.

The first major hindrance was the lack of clarity with regards to the project. It should have been made clear to all district staff exactly how and why the participants were chosen. The Instructional Technology department should have received recognition for the program that was in place and been assured that this was a pilot study with no intention of replacing their department but rather a leadership opportunity for the teachers. Selection of the teachers should have been clearly defined so as to reduce animosity among colleagues. Due to the large budget required to implement such a project, the funding source for the project should have been identified so that district personnel did not readily attribute budget cuts to this project.

Funding was another factor hindering the success of this project. The participating teachers should have been given parameters with regards to budget especially when they asked for them multiple times. If the administration's concern was an interference with the creative process then the teachers should have been told that up front, with the understanding that they would submit their "wish list" and then they would be given sufficient time to prioritize and cut. Since funding was an obvious concern the district should never have stated that this project would be replicated but rather reinforced that it was a pilot study whose strengths and weaknesses would be studied prior to future implementation.

Although the participating teachers were provided with an in-service on teacher leadership no training was provided to their respective principals. These principals

should have been provided with professional development on collaboration and shared decision making. The district then should have encouraged the principals to provide leadership opportunities at the campus level.

The biggest impediment to the success of this project in developing teacher leaders was the lack of support provided after implementation of the technology equipment in the individual classrooms. Ideally the equipment would have arrived in June allowing teachers time to set up their classes and work on logistics. When the equipment was delivered in August just prior to the start of school, each teacher needed assistance in unloading and setting up the equipment. Classroom release time was needed for training on each piece of equipment as well as for collaboration with TIP colleagues. Technical support was essential in assuring that equipment was working properly, therefore the TIP teachers should have been either been given the opportunity to address personnel in their request or the district should have assigned an individual for technical assistance in these classrooms until all of the glitches had been straightened out.

If the goal of the district was in fact to develop and encourage teacher leadership, the coupling with technology integration may not have been the best choice. Technology integration is a budget intensive undertaking. When initiating teacher leadership in a district, it may be better to focus on a task that does not require an enormous budget. In addition to establishing the trust and support between administration and teachers, Kurz and Knight (2004) suggest providing clear goals, establishing and fostering open

communication between teachers, administrators, parents and students to increase teachers' sense of efficacy.

Recommendations for Future Research

This study focused on the TIP teachers perceptions' of teacher leadership capabilities and teacher efficacy. Extending this longitudinal study would allow the researcher to test Bandura's (1997) assertion that gains in efficacy due to newly acquired knowledge or skill are held in limbo. Bandura believed that people tested out their new knowledge or skill before changing their belief about what they are able to do. Additional data would need to be collected to determine if this group of teachers maintained their increased belief in their personal teaching efficacy.

Current research is focusing on the effects of and influences on collective teacher efficacy (Bandura 1993; Goddard, 1998, Kurz, 2001). Within an organization, perceived collective efficacy represents the beliefs of group members concerning "the performance capability of a social system as a whole" (Bandura, 1997, p. 469). Collective self–efficacy can control a group's goal setting, their collective efforts as well as their persistence when difficulties arise. A highly efficacious team of teachers will, therefore, be more convinced of their ability to cope with adversities. In addition, they will not easily be discouraged by setbacks (Schwarzer, Schmitz, & Daytner, 1999).

Goddard (1998) developed a quantitative instrument to measure collective teacher efficacy, the Collective Teacher Efficacy Instrument (CTEI). Research done on projects involving collaboration in the future may want to include a measure of

collective teacher efficacy. The addition of this measure would allow for comparison between individual teacher scores and the score for the group.

This study examined the relationship between teacher efficacy (the teachers' belief in their ability to impact student achievement) and perceived teacher leadership. No measure of student achievement was ever conducted. Future studies may want to conduct a measure of student achievement before and after teachers' participation in similar projects to determine the impact of changes in efficacy and/or perceived leadership capabilities on student achievement.

This study focused on a budget intensive project, technology integration. It is important that additional longitudinal qualitative research be conducted to study the sustainability and long term effects of teacher leadership and teacher efficacy across all educational disciplines.

Conclusions

This study examined the relationship between teachers' perceptions of leadership capabilities and teachers' efficacy beliefs in the context of a technology integration project that proposed to give teachers decision-making opportunities. The purpose of the project was to allow teachers to research, study, discuss and design a classroom for the twenty-first century that would provide the optimum support system needed for students to master all Texas Essential Knowledge and Skills.

A positive relationship between teacher leadership and increased teacher efficacy has been established in the literature (Hipp & Bredeson, 1995; Lee et al., 1991; Sherry &

Gibson, 2000). In addition positive correlations have been established between teacher efficacy and student outcomes. The understanding of the relationship between these variables is important to the field of education since they have been shown to ultimately impact student achievement.

The results of this study indicate that while the project did not increase the teachers' perceptions of leadership capabilities ultimately it did impact the teachers' efficacy beliefs.

This study provided a snapshot of the relationship between teacher leadership opportunities and teacher efficacy. The relationship explored in this study is specific to these participants in their particular context.

The subjects in this study were limited to seventeen elementary teachers in a single school district. The subjects were participants in a project designed and implemented by the district. It would therefore not be appropriate to generalize these findings. It is hoped that findings from this study would further dialogue and research about ways to develop teacher autonomy and leadership. Educators implementing similar leadership building programs may reference the findings for future use.

REFERENCES

Allinder, R. M. (1994). The relationship between efficacy and the instructional practices of special education teachers and consultants. *Teacher Education and Special Education, 17*, 86-95.

Alvarado, C. (1997). *If leadership was everyone's domain: I'm taking the lead: Investing in early childhood leadership for the 21st century*. Boston, MA: Wheelock College.

American Educational Research Association (2002). *AERA Position Statement: High Stakes Testing in Pre K-12 Education*. Available at http://www.aera.net/about/policy/stakes.htm

Anderson, R., Greene, M., & Loewen, P. (1988). Relationships among teachers' and students' thinking skills, sense of efficacy, and student achievement. *Alberta Journal of Educational Research, 34*, 148-165.

Andrew, M. D. (1974). *Teacher leadership: A model for change*. Washington, DC: Association of Teacher Educators. (ERIC Document Reproduction Service No. ED 096288)

Armor, D., Conroy-Oseguera, P., Cox, M., King, N., McDonnell, L., Pascal, A. et al. (1976). *Analysis of the school preferred reading programs in selected Los Angeles minority schools* (document prepared for the Los Angles Unified School District, R-2007-LAUSD). Santa Monica, CA: Rand. (ERIC document Reproduction Service No. ED 130 243)

Ash, R.C. & Persall, J.M. (2000). The principal as chief learning officer: Developing teacher leaders. *NASSP Bulletin, 84*(616), 15-22.

Ashton, P.T., Buhrm, D., & Crocker, L. (1984). Teachers' sense of efficacy: A self-or norm – referenced construct? *Florida Journal of Educational Research*, 26, 29-41.

Ashton, P.T., & Webb, R.B. (1982, March). *Teacher's sense of efficacy: Toward an ecological model.* Paper presented at the annual meeting of the American Educational Research Association. New York.

Ashton, P. T., & Webb, R. B. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York: Longman.

Asmussen, K.J. & Creswell, J.W. (1995). Campus response to a student gunman. *Journal of Higher Education, 66,* 575-591.

Bandura, A. (1977). Self-Efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,*191-215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37,* 122-147.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Barth, R. (1999). *The teacher leader*. Providence, RI: The Rhode Island Foundation.

Bennis, W. (1991). Managing the dream: Leadership in the 21st Century. *Antioch Review*. *49*, 22-29.

Berman, P., McLaughlin, M., Bass, G., Pauly, E., & Zellman, G. (1977). *Federal programs supporting educational change: Vol. VII. Factors affecting implementation and continuation* (document prepared for the Office of Education, Department of Health, Education and Welfare, R-1589/7-HEW). Santa Monica, CA: Rand.

Berry, B. (1995). School restructuring and teacher power: The case of Keels Elementary. In A. Lieberman, A. (Ed.), *The work of restructuring schools: Building from the ground up* (pp.111-135). New York: Teachers College Press.

Bishop, H., Tinley, A. & Berman, B. (1997). A Contemporary Leadership Model to Promote Teacher Leadership. *Action in Teacher Education, XIX*, 77-94.

Blasé, J. & Blasé, J. (1999*)*. Implementation of Shared Governance for Instructional Improvement: Principals' Perspectives. *Journal of Educational Administration, 37*(5), 476-500.

Bogdan, R. C., & Biklen, S. K. (1982). *Qualitative research for education: An introduction to theory and methods.* Boston, MA: Allyn & Bacon.

Borton, W. (1991, April). *Empowering teachers and students in a restructuring school: A teacher efficacy interaction model and the effect on reading outcomes*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Borton, W.M., Preston, J, & Bippert, J. (1996, April). *Validating the Comer Model: The effects of student, teacher and parent affective variables on reading and mathematics performance outcomes.* Paper presented at the annual meeting of the American Educational Research Association. New York.

Bredeson, P.V. (1989, a). *Empowered teachers-empowered principals: Principals' perceptions of leadership in schools*. Paper presented at The University Council for Educational Administration Convention, Scottsdale, AZ.

Bredeson, P.V. (1989, b). Redefining leadership and the roles of school principals: Responses to changes in the professional work life of teachers. *The High School Journal, 73,* 9-20.

Brownell, M.T., & Pajares, F. (1999). Teacher efficacy and perceived success in mainstreaming students with learning and behavior problems. *Teacher Education & Special Education, 22,* 154-164.

Cancro, G. (1992). *The interrelationship of organizational climate, teacher self-efficacy, and perceived teacher autonomy*. Unpublished doctoral dissertation, Fordham University, New York, NY.

Carnegie Task Force on Teaching as a Profession (1986). *A nation prepared: Teachers for the 21st Century*. Washington DC: Carnegie Forum on Education and the Economy.

Carpenter, S. (2001, May). The high stakes of educational testing. *Monitor on Psychology. 32*(5). Retrieved November 20, 2003, from http://www.apa. org/monitor/

Carter, M. & Powell, D. (1992). Teacher leaders as staff developers. *Journal of Staff Development, 13*(1), 8-12.

Chester, M. & Beaudin, B.Q. (1996) Efficacy beliefs of newly hired teachers in urban schools. *American Educational Research Journal, 33,* 233-257.

Childs-Bowen,D. Moller, G. & Scrivner, J. (2000). Principals: Leaders of leaders. *Bulletin*: *The National Association of Secondary School Principals*, 84(616), 27-34.

Clemson-Ingram, R. & Fessler, R. (1997). Innovative Programs for Teacher Leadership. *Action in Teacher Education, XIX*, 95-106.

Coladarci, T. (1992). Teachers' sense of efficacy and commitment to teaching. *Journal of Experimental Education, 60,* 323-337.

Coladarci, T., & Fink, D.R. (1995, April). *Correlations among measures of teacher efficacy : Are they measuring the same thing?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Coyle, M. (1997). Teacher leadership vs. school management: Flatten the hierarchies. *Clearing House, 70*(5), 236-239.

Creswell, J.W. (1998). *Qualitative inquiry and research design choosing among five traditions.* Thousand Oaks, CA: Sage.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometricka, 16,* 297-334.

Cuban, L. (1993). *How teachers taught*. New York: Teachers College Press.

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal, 38*(4), 813-834.

Dembo, M.H., & Gibson, S. (1985). Teachers' sense of efficacy: An important factor in school improvement. *The Elementary School Journal. 86,* 173-184.

Devaney, K. (1987). *The lead teacher: Ways to begin*. New York: Carnegie Forum on Education and the Economy.

Dunst, R. (1991, February). *Issues in empowerment*. Paper presented at the Children's Mental Health and Service Policy convention, Tampa, FL.

Elmore, R.F. (1987). Reform and the culture of authority in schools. *Educational Administration Quarterly*, *23*(4), 60-77.

Enochs, L.G., Scharmann, L.C., & Riggs, I.M. (1995). The relationship of pupil control to preservice elementary science teachers' self-efficacy and outcome expectancy. *Science Education, 79,* 63-75.

Erlandson, D.A., Harris, E.L., Skipper, B.L. & Allen, S.D. (1993). *Doing naturalistic Inquiry: a guide to methods.* Newbury Park, CA: Sage.

Evans, N.L. (1996). Teacher empowerment: A new role for the principal. *Principal, 76,* 55.

Fay, C. (1992). Empowerment through leadership: In the Teachers' Voice. In C. Livingston (Ed.), *Teachers as leaders: Evolving roles.* (pp. 9-17). Washington, DC: National Education Association of the United States.

Fennell, H.A. (1999, April). *Encouraging teacher leaders*. Paper presented at the annual meeting of the American Educational Research Association, Montreal. (ERIC Document Reproduction Service No. ED 431 228)

Fier, R.E. (1985, April). *The structure of school: Teachers and authority.* Paper presented at the annual meeting of the American Educational Research Association, Chicago. (ERIC Document Reproduction Service No. 257 807).

Finn, C.E., Jr., & Petrilli, M. J. (Eds.). (2000). *The State of State Standards: 2000.* Washington, DC: Thomas B. Fordham Foundation.

Fresko, B, Kfir, D., & Nasser, F. (1997). Predicting teacher commitment. *Teaching and Teacher Education, 13*, 429-438.

Gibson, S., & Dembo, M. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology, 76*, 569-582.

Glickman, C. ,& Tamashiro, R. (1982). A comparison of first-year, fifth-year, and former teachers on efficacy, ego-development, and problem solving. *Psychology in Schools, 19*, 558-562.

Goodard, R.D. (1998). *The effects of collective teacher efficacy on student achievement in urban public elementary schools*. Unpublished doctoral dissertation, Ohio State University, Columbus. (University Microfilms No. UMI 9911194)

Grant, G. (1983). The Teacher's Predicament. *Teachers College Board, 81*(3), 593-609.

Greenwood, G.E., Olejnik, S.F., and Parkay, F.W. (1990) Relationships between four teacher efficacy belief patterns and selected teacher characteristics. *Journal of Research and Development in Education, 23*, 102-106.

Griffin, G. (1997). *The phenomenon of teachers mentoring teachers in the midst of change.* Unpublished doctoral dissertation, Texas A&M University, College Station.

Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation: Improving the usefulness of evaluation results through responsive and naturalistic approaches*. San Francisco, CA: Jossey-Bass.

Guskey, T.R. (1981). Measurement of responsibility teachers assume for academic successes and failures in the classroom. *Journal of Teacher Education, 32,* 444-451.

Guskey, T.R. & Passaro, P. (1984). Teacher efficacy: A study of construct dimensions. *American Educational Research Journal. 31,* 627-643.

Guskey, T.R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional motivation. *Teaching and Teacher Education, 4,* 63-69.

Hackett, G. (1995). Self-efficacy in career choice and development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 232-258). New York: Cambridge University Press.

Hall, B.W., Pearson, L.C. & Carroll, D. (1992). Teachers' long-range teaching plans: a discriminant analysis. *Journal of Educational Research*, *85*(4), 221-225.

Hart, A.W. (1990). Impacts of the school social unit on teacher authority during work redesign. *American Educational Research Journal, 27*(3), 503-532.

Heid, C.A. & Leak, L.E. (1991). School choice plans and the professionalization of teaching. E*ducation and Urban Society*, *23*(2), 219-227.

Henson, R. (1999) *The effects of participation in teacher research on teacher efficacy and empowerment.* Unpublished doctoral dissertation, Texas A&M University, College Station. (University Microfilms No. 9957442)

Hipp, K. & Bredeson, P. (1995). Exploring connections between teachers efficacy and principal's leadership behaviors. *Journal of School Leadership. 5,* 137-150.

Hipp, K. (1997, March). *Documenting the effects of transformational leadership behavior on teacher efficacy*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.

The Holmes Group (1986). Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Hoover-Dempsey, K.V., Bassler, O.C., & Brissie, J.S. (1987). Parent involvement: Contributions of teacher efficacy, school socioeconomic status, and other school characteristics. *American Educational Research Journal, 24,* 417-435.

Hoy, W.K. & Woolfolk, A.E. (1993). Teachers' sense of efficacy and organizational health of schools. *The Elementary School Journal,* 93, 356-372.

Jeffery, S. (1995). *Teacher researcher outcomes: Collected reflections from the class of 96.* Manassas, VA: George Mason University's Institute for Educational Transformation.

King, M. B., Louis, K. S., Marks, H. M. and Peterson, K. D. (1996). *Participatory Decision-Making in Authentic Achievement*. San Francisco, CA: Jossey-Bass.

Klecker, B., & Loadman, W.E. (1996, April). *An analysis of the school participant empowerment scale based on data from 4,091 teachers in 183 restructuring schools.* Paper presented at the annual meeting of the American Educational Research Association, New York. (ERIC Document Reproduction Services No. ED 401 315)

Kremer, L. & Hofman, J.E. (1981, April). *Teacher's professional identity and job leaving inclination.* Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, (ERIC Document Reproduction Service No.202 851).

Kurz, T. (2001). *An exploration of the relationship among teacher efficacy, collective teacher efficacy, and goal consensus*. Unpublished doctoral dissertation, Texas A&M University, College Station.

Kurz, T.B. & Knight, S.L. (2004). An exploration of the relationship among teacher efficacy, collective teacher efficacy and goal consensus. *Learning Environments Research, 7,* 111-128.

Lee, V., Dedrick, R. & Smith, J. (1991). The effect of social organization of schools on teachers efficacy and satisfaction. *Sociology of Education*. *64*, 190-208.

Leithwood, K. & Jantzi, D. (1999). The relative effects of principal and teacher sources of leadership on student engagement with school. *Educational Administration Quarterly*, *35*, 679-706.

Lightfoot, S.L. (1986). On goodness of schools: Themes of empowerment. *Peabody Journal of Education, 63,* 9-28.

Lincoln, Y.S. and Guba, E.G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Maddux, J.E. (1995). Self-efficacy theory: An introduction. In J.E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 3-33) New York: Plenum Press.

Magee, M. (1999). Curse of the trophy. *Journal of Staff Development*, 20(4), 23-26.

Marks, H. & Printy S. (2002). Organizational learning in high stakes accountability environments: Lesson from an urban school district. *Theory and Research in Educational Administration, 1*(1), 1-3.

Meijer, C.J.W. & Foster, S.F. (1988). The effect of teacher self-efficacy on referral chance. *The Journal of Special Education, 22,* 378-385.

Melenyzer, B.J. (1990, November). *Teacher empowerment: The discourse, meaning, and social action of teachers,* Paper presented at the annual conference of the National Council of States on In-service Education, Orlando, FL. (ERIC Document Reproduction Service No. ED 327 496)

Merriam, S.B. (1990) *Case study in research education: A qualitative approach.* San Francisco, CA: Jossey-Bass.

Midgley, C., Feldlaufer, H., & Eccles, J. (1989). Change in teacher efficacy and student self – and task-related beliefs in mathematics during transition to junior high school. *Journal of Educational Psychology, 81*, 247-258.

Miles, M.B. (1983, November). Unraveling the mystery of institutionalization. *Educational Leadership,* 14-19.

Miskel, C., McDonald, D., & Bloom, S. (1983). Structural and expectancy linkages within schools and organizational effectiveness. *Educational Administration Quarterly, 19*(1), 49-82.

Mitchell, A. (1997). Teacher identity: A key to increased collaboration. *Action in Teacher Education, XIX*, 1-14.

Mone, M., Baker, D., & Jeffries, F. (1995). Predictive validity and time dependency of self efficacy, self esteem, personal goals, and academic performance. *Educational and Psychological Measurement, 55,* 716-722.

Mooney, T. (1994). Teachers as leaders: Hope for the future. Washington, DC: ERIC Clearinghouse. ED389407.

Moore, W. P., & Esselman, M. E (1992, April). *Teacher efficacy, power, school climate and achievement : A desegregating district's experience.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Moore, W. P., & Esselman, M. E. (1994, April). *Exploring the context of teacher efficacy: The role of achievement and climate*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Mulvenon, S., Murry, J. & Ritter, G. (2001). The impact of socioeconomic status on performance: A case study of Arkansas schools. *Arkansas Educational Research and Policy Journal, 1*(1), 76-97.

Newman, J. W. (1998). *America's teachers: An introduction to education* (3rd ed.) New York: Addison Wesley Longman, Inc.

Newmann, F.M., Rutter, R.A., & Smith, M.S. (1989). Organizational factors that affect school sense of efficacy, community, and expectations. *Sociology of Education, 62,* 221-238.

No Child Left Behind Act of 2001, 20 U.S.C. 6301. Retrieved November 20, 2003, from http://www.ed.gov/legislation/ESEA02/index.html

Nyberg, D. & Farber, P. (1986). Authority in Education. *Teachers College Record, 88,* 4-14.

Odell, S. J. (1997). Preparing teachers for teacher leadership. *Action in Teacher Education, XIX*, 120-124.

O'Hair, M. & Reitzug, U. (1997). Teacher leadership: In what ways? For what purpose? *Action in Teacher Education, XIX*, 65-76.

Ohmart, H. (1992). *The effects of an efficacy intervention on teachers' efficacy feelings*. Unpublished doctoral dissertation, University of Kansas, Lawrence. (University Microfilms No. UMI 9313150)

Oja, S., & Smulyan, L. (1989). *Collaborative action research: A developmental approach*. London: The Falmer Press.

Pajares, F. (1997). Current directions in self-efficacy research. In M. Maher & P.R. Pintrich (Vol. Eds.), *Advances in motivation and achievement* Vol. 10. (pp.1-49). Greenwich, CT: JAI Press.

Parkay, F.W. ,Greenwood, G., Olejnik, S. & Proller, N. (1988). A study of the relationships among teacher efficacy, locus of control, and stress. *Journal of Research and Development in Education, 21*,13-22.

Parker, K., Leithwood, K. (2000). School councils' influence on school and classroom practice, *Peabody Journal of Education, 75*(4), 37-65.

Paulu, N. & Winters, K. (Eds.). (1998) Teachers leading the way: Voices from the National Teacher Forum. Washington, DC: ERIC Clearinghouse. ED 419 778.

Pearson, L.C. & Hall, B. W. (1993). Initial construct validation of the teaching autonomy scale. *Journal of Educational Research, 86*(3), 172-178.

Pintrich, P. R. & Schunk, D.H. (2002). *Motivation in education theory, research, and applications* (2nd ed.) Upper Saddle River, NJ : Merrill/Prentice Hall.

Podell, D. & Soodak, L. (1993). Teacher efficacy and bias in special education referrals. *Journal of Educational Research, 86*, 247-253.

Powell, A., Farrar, E., & Cohen, D. (1985). *The shopping mall high school*. Boston: Houghton Mifflin.

Rappaport, J. (1987). Terms of empowerment/exemplars of prevention: Toward a theory for community psychology. *American Journal of Community Psychology, 15,* 121-147.

Raudenbush, S.W., Rowan, B., & Cheong, Y.F. (1992). Contextual effects on the self perceived efficacy of high school teachers. *Sociology of Education, 65,* 150-167.

Riggs, I. & Enrochs, L. (1990). Toward the development of an elementary teacher's science teaching efficacy belief instrument. *Science Education, 74*, 625-638.

Roberts, J. K. & Henson, R. K. (2001, April). *A confirmatory factor analysis of a new measure of teacher efficacy: Ohio State Teacher Efficacy Scale*. Paper presented at the annual meeting of the American Educational Research Association, Seattle.

Roeser, R., Arbreton, A., & Anderman, E. (1993, April). *Teacher characteristics and their effects on student motivation across the school year.* Paper presented at the annual meeting of the American Educational Research Association, Atlanta.

Romanish, B. (1987). A skeptical view of educational reform. *Journal of Teacher Education, 38*(3), 9-12.

Rose, J., & Medway, F. (1981). Measurement of teachers' belief in their control over student outcomes. *Journal of Educational Research, 74*, 185-190.

Ross, J. A. (1992). Teacher efficacy and the effect of coaching on student achievement. *Canadian Journal of Education, 17*(1), 51-65.

Ross, J. A., & Cousins, J. B. (1993). Enhancing secondary school students' acquisition of correlational reasoning skills. *Research in Science & Technological Education, 11*(3), 191-206.

Ross, J.A. (1994). The impact of an inservice to promote cooperative learning on the stability of teacher efficacy. *Teacher and Teaching Education, 10,* 381-394.

Ross, J.A., Cousins,J.B.,& Gadalla, T. (1996) Within-teacher predictors of teacher efficacy. *Teacher & Teacher Education, 12,* 385-400.

Ross, J. A. (1998). The antecedents and consequences of teacher efficacy. In J. Brophy (Ed.), *Research on Teaching. Vol. 7.* (pp. 49-74). Greenwich, CT: JAI Press.

Ross, J.A., Hogaboam-Gray, A. & Hannay, L. (2001, April). *Effects of teacher efficacy on computer skills and computer cognitions of Canadian students in K-3.* Paper presented at the annual meeting of the American Educational Research Association, Seattle.

Rotter, J.B. (1966). Generalized expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs,80,* 1-28.

Ryan, S. A. (1999, April). *Principals and teachers leading together.* Paper presented at the annual meeting of the American Educational Research Association, Montreal.

Sacks, S.R. (1984). *The classroom lives of teachers: Issues, observations, and recommendations*. New York: New York City Board of Education, Office of Educational Assessment, (ERIC Document Reproduction Service No. 282 839).

Scribner, J.P. (1999). Teacher efficacy and teacher professional learning: Implications for school leaders. *Journal of School Leadership, 9,* 209-234.

Schwarzer, R., Schmitz, G.S. & Daytner, G.T. (1999*). Teacher self-efficacy and collective teacher self-efficacy.* Department of Health Psychology. Freie, University at Berlin.

Serverance, D. (1999). *Deep roots, strong branches: A history of the Klein family and the Klein community*. San Antonio, TX: Historical Publishing Network.

Seyfarth, J.T. & Bost, W.A. (1986). Teacher turnover and the quality of work life in schools: An empirical study. *Journal of Research and Development in Education, 20*, 1-6.

Shanker, A. (1985). The making of a profession. *American Educator*, 9(3) 10-17.

Sherry, L., Billig, S.H., Tavalin, F., & Gibson, D. (2000). New insights on technology adoption in schools. *T.H.E. Journal, 27*(7), 43-46.

Sherry, L., & Gibson, D. (2002). The path to teacher leadership in educational technology. *Contemporary Issues in Technology and Teacher Education* [Online serial], *2*(2). Available: http://www.citejournal.org/vol2/iss2/general/article2.cfm

Short, P.M., Greer, J. T., & Michael, R. (1991). Restructuring schools through empowerment: Facilitating the process. *Journal of School Leadership, 1*, 127-139.

Short, P.M. & Rinehar, J.S. (1992, April). *Teacher empowerment and school climate.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Short, P.M., Greer, J. T., & Melvin, W.M. (1994). Creating empowered schools: Lessons in change. *Journal of Educational Administration, 32*, 38-52.

Smith, R., & Knight, S. (1997). Collaborative inquiry: Teacher leadership in the practice of creative intelligence. In R. Sinclair, & W. Ghory (Eds.), *Reaching and teaching all children* (pp. 39-60). New York: Corwin Press.

Smylie, M.A. (1988). The enhancement function of staff development: Organizational and psychological antecedents to individual teacher change. *American Educational Research Journal, 25*, 1-30.

Smylie, M. A. & Denny, J.W. (1990). Teacher leadership: Tensions and ambiguities in organizational perspective. *Educational Administration Quarterly, 26*, 235-259.

Smylie, M.A. & Brownlee-Conyers, J. (1992). Teacher leaders and their principals: Exploring the development of new working relationships. *Educational Administration Quarterly*, *28,*150-184.

Soodak, L., & Podell, D. (1993). Teacher efficacy and student problem as factors in special education referral. *Journal of Special Education, 27,* 66-81.

Soodak, L.,& Podell, D. (1996). Teaching efficacy: Toward the understanding of a multi-faceted construct. *Teacher and Teacher Education, 12,* 401-412.

Soodak, L., Podell, D., & Lehman, L.R. (1998). Teacher, student, and school attributes as predictors of teachers' responses to inclusion. *Journal of Special Education, 31,* 480-497.

Stein, M.K. & Wang, M.C. (1988). Teacher development and school improvement: The process of teacher change. *Teaching and Teacher Education, 4,* 171-187.

Stimson, T.D., & Applebaum, R.P. (1988). Empowering teachers: Do principals have the power? *Phi Delta Kappan, 67,* 313-316.

Stone, M., Horejs, J. & Lomas, A. (1997). Commonalities and differences in teacher leadership at the elementary, middle, and high school levels. *Action in Teacher Education, XIX,* 49-64.

Surannna, K.J. & Moss, D.M. (1999, October). *Describing preservice teachers' conceptions of the role of teacher leader.* Paper presented at the annual meeting of the Northeastern Educational Research Association, Ellenville, NY. (ERIC Document Reproduction Service No. ED 477 078)

Talbert, J.E., McLaughlin, M.W., & Rowan B. (1993). Understanding context effects on secondary school teaching. *Teachers College Record, 95*, 45.

Texas Education Agency. (2003). 2002-2003 District Performance Report. *Texas Academic Excellence Indicator System*. Retrieved March 12, 2003, from http://www.tea.state.tx.us/perfreport/aeis/

Trentham, L., Silvern, S., & Brogdon, R. (1985). Teacher efficacy and teacher competency ratings. *Psychology in Schools, 22*, 343-352.

Tschannen-Moran, M. Woolfolk Hoy A., & Hoy, W.K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68,* 202-248.

Tschannen-Moran, M. & Woolfolk, Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17,* 783-805.

Vacha-Haase, T. (1998). Reliability generalization: Exploring variance in measurement error affecting score reliability across studies. *Educational Psychological Measurement, 58,* 6-20.

Warren, M. (2001, March 14). School district to study technology uses in the classrooms. *The Houston Chronicle,* p.16.

Wasley, P.A. (1991). *Teachers who lead: The rhetoric of reform and realities of practice.* New York: Teachers College Press.

Watson, S. (1991). Cooperative learning and group educational modules: Effects on cognitive achievement of high school biology students. *Journal of Research in Science Teaching, 28*(2), 141-146.

Wilkins, S.R. (1992). *Teacher empowerment and student performance in selected north Georgia school systems*. (Doctoral dissertation, University of Georgia, 1992). *Dissertation Abstracts International, 54 (2),* AD398.

Williams, R.B. (1990). Teacher professional autonomy and collective bargaining: Conflict or compromise? *Education Canada, 30*(4), 4-7.

Woolfolk, A.E., Rosoff, B., & Hoy, W.K. (1990). Teacher's sense of efficacy and their beliefs about managing students. *Teaching and Teacher Education, 6,* 137-148.

Woolfolk, A.E., & Hoy, W.K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology, 82,* 81-91.

Woolfolk, A.E., (2003). *Educational Psychology* (9th ed.) Boston, MA: Allyn & Bacon.

Wu, V., & Short, P.M. (1996). The relationship of empowerment to teacher job commitment and job satisfaction. *Journal of Instructional Psychology, 23,* 85-89.

Wynne, J. (2001). *Teachers as leaders in educational reform.* ERIC Clearinghouse on Teaching and Teacher Education. Washington, DC: ERIC Clearinghouse. ED462376.

Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-efficacy in changing societies* (202-231). New York: Cambridge University Press.

APPENDICES

APPENDIX A

TEACHER EFFICACY SCALE

Teacher Efficacy Scale
Developed by Sherri Gibson, Ph.D.

Directions: Please indicate the degree to which you agree or disagree with each statement below by circling the appropriate numeral to the right of each statement.

	Strongly disagree 1	Moderately disagree 2	Disagree slightly more than agree 3	Agree slightly more than disagree 4	Moderately agree 5	Strongly agree 6
1. When a student does better than usual, many times it is because I exerted a little effort.	1	2	3	4	5	6
2. The hours in my class have little influence on students compared to the influence of their home environment.	1	2	3	4	5	6
3. The amount that a student can learn is primarily related to family background.	1	2	3	4	5	6
4. If students aren't disciplined at home, they aren't likely to accept any discipline.	1	2	3	4	5	6
5. When a student is having difficulty with an assignment, I am usually able to adjust it to his/her level.	1	2	3	4	5	6
6. When a student gets a better grade than he/she usually gets, it is usually because I found better ways of teaching that student.	1	2	3	4	5	6
7. When I really try, I can get through to most difficult students.	1	2	3	4	5	6
8. A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	1	2	3	4	5	6

	Strongly disagree 1	Moderately disagree 2	Disagree slightly more than agree 3	Agree slightly more than disagree 4	Moderately agree 5	Strongly agree 6
9. When the grades of my students improve it is usually because I found more effective teaching approaches.	1	2	3	4	5	6
10. If a student masters a new concept quickly, this might be because I knew the necessary steps in teaching that concept.	1	2	3	4	5	6
11. If parents would do more with their children, I could do more.	1	2	3	4	5	6
12. If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	1	2	3	4	5	6
13. If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	1	2	3	4	5	6
14. The influences of a student's home experiences can be overcome by good teaching.	1	2	3	4	5	6
15. If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	1	2	3	4	5	6
16. Even a teacher with good teaching abilities may not reach many students.	1	2	3	4	5	6

APPENDIX B

DISTRICT PRESS RELEASES

ISD news

ISD initiates elementary technology integration project

A committee of prekindergarten, kindergarten and grade one teachers in the Independent School District is meeting this semester to determine the optimum support system needed for students to master all Texas Essential Knowledge and Skills (TEKS).

As a result of their time together, these teachers will establish a classroom model utilizing technology for teachers to maximize student learning. The model will serve as a guide for future district initiatives that support student learning.

To determine the ideal classroom for utilizing technology for maximum student learning, the committee receives input from district staff and outside consultants including Dr. Stephanie Knight of Texas A.&M. University, Dr. Colleen Hester of the University of St. Thomas, Dr. Nita Copley of the University of Houston, and Mrs. Patsy Lanclos who is a private consultant.

Additionally, the committee members visit schools that have been recognized for their use of research-based practices to achieve high academic success.

associate superintendent of the said, "Our goal is to provide a seamless, convenient, robust, and reliable technology support system so that in all classrooms students will master all the Texas Essential Knowledge and Skills.

"In addition, we are looking for ways to improve communication between the school and the community using electronic technology," he said. "The Elementary Technology Integration Project is exciting because the committee has been given the time and resources to create our own 'best practices.' Solution. Committee members are conducting research in a professional environment to make decisions that will influence all teacher and students in over time."

school district to study technology uses in the classroom

By MIKE WARREN
Chronicle correspondent

First-graders in the school district could be using hand-held computers by next fall as part of an initiative to utilize computer technology in classrooms.

Superintendent has appointed 19 teachers — one from each of the district's elementary schools — to study how technology can improve teaching methods in pre-kindergarten, kindergarten and first grade.

"We're looking at how you change your whole teaching process and why you want to change," said the district's associate superintendent for instructional services, said Surratt has witnessed successful results from similar committees at other school districts.

"The basic component is to select successful teachers and provide them with enough planning time to review literature, consider technology options and create the most positive solution for our district, which they know better than anyone else," he said.

The committee is studying how teachers could take advantage of computers and the Internet in developing curriculum, using educational software, interfacing with peers, managing data and communicating with parents,

"The teachers are visiting other districts and hearing from consultants and vendors to get some sense of what the options are," he said. "They are meeting for two days a week through the spring semester."

Using child-friendly and sturdy laptop or desktop computers to help teach students in the first grade is possible, said.

"We're looking at a wireless laptop that kids would be able to use," said committee member , a first-grade teacher at Elementary School. "Children have hand-held games. Using computers, even at that young of an age, is a part of who they are."

said the committee has not encountered another district that is using laptop computers in the first grade.

Once approved, the committee's ideas will be implemented during the 2001-02 school year, said.

He said it might take awhile for some teachers to see the merits of teaching methods based on use of technology.

"Eventually, other teachers will want to use similar technology. Presumably, the next committee will study technology for grades two and three.

"If it's done right, somewhere around a committee for grades three and four, there will be a rush of people who say 'let's do it.'"

Upgrading the district's technology and implementing the committee's plans will be expensive, said.

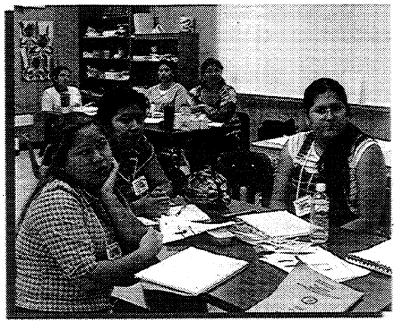
The district has enough money to purchase new computers and software for pre-kindergarten, kindergarten and the first grade. Outfitting classrooms with the latest technology in higher grades would require a bond issue, he said.

Estimate the Options - - -

new programs to meet changing student needs

Even Start

To support a population whose first language is Spanish, the district applied for and received a grant for $250,000 to establish an Even Start program at Elementary School. This grant provides for 28 hours of instruction per week for Hispanic parents to learn English and to gain parenting skills while their youngest children receive childcare and their older ones attend classes at During 2002-2003, Even Start served 21 families with 55 children, infants through 8 years.

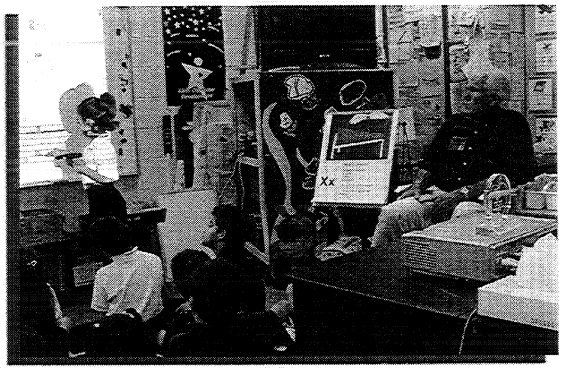


Parents at Even Start training at Elementary.

International Baccalaureate

The ISD recognizes the most successful high school programs stretch the minds of students while encouraging them to achieve their potential. To enhance the challenge already offered by its variety of Advanced Placement courses, the district has applied through the International Baccalaureate (IB) program to provide the IB curriculum at High School. This rigorous, two-year, ' pre-university liberal arts course of study meets the needs of highly motivated and academically oriented secondary students and impacts elementary and intermediate schools as they prepare students for a more challenging high school experience.

Conferring on IB



Commissioner Eversole visits TIP classroom at Elementary.

Technology Integration Project – Classrooms for the 21st Century

Approximately 370 children in pre-kindergarten through second grade were enrolled in classes taught by teachers who are a part of the district's Technology Integration Project (TIP). An evaluation of the project indicates positive trends in the use of technology in the district. According to teachers, students in the TIP program appear to be more self-confident and motivated when attempting new tasks, demonstrate higher order thinking skills, engage in problem solving with peers, and exhibit on-task behavior more often than students in comparable non-TIP classrooms. TIP students consistently demonstrate a higher degree of mastery of the Technology Applications portion of the Texas Essential Knowledge and Skills than non-TIP students. Parental perceptions of the project are highly positive in all areas. Ninety-nine percent of all parents returning the TIP evaluation surveys agreed that they would choose to place their children in a technology rich classroom.

January 2004

Volume 3, Issue 3

Please visit our website at

School students in Advanced Placement Physics discover that time spent in planning pays off with a successful entry in the school's boat race.

School News

This issue:

Message.....1

7 Period Day.....2

Our Past and Our Future.....3

New Leadership...3

Demographics.....4

Educational Technology Plans..4

Professional Development Action Plans.....5

School Calendar....5

Keeping You Informed.....6

Dates to Remember 6

A Message From Our Superintendent

Goal setting is essential for attaining excellence. I have seen lofty academic goals produce dramatic changes for boys and girls. In Texas, the state's academic achievement goals are creating that level of change. And in the ISD, a commitment to excellence and quality is making a difference for all students.

One of my goals is that we will spend the most time on things that are the most important. An area where we are investing employees' time is the component of planning. Effective planning requires employee time.

The students taught by Technology Integration Project (TIP) teachers have been the beneficiaries of the district's most visible commitment to planning. Two years ago, I urged the district to allow a teacher from each elementary school to experience an in-house sabbatical to create the ideal classroom of the 21st Century. At the beginning of the project, teachers focused on purchasing hardware and software that they presumed would be the tools of the teachers of this century. By the end of the semester, teachers shifted their focus toward changing instruction to reflect how students learn and creating the best environment to increase learning. The TIP teachers created a positive virus that still affects elementary education today.

Last year many aspects of the TIP program were replicated to impact nearly 60 elementary classrooms. I hope bond elections in the future will allow the district to share these efforts with more classrooms. An adjunct of the TIP program was the 21st Century Classroom grant program allowing over 200 secondary classrooms to increase technology tools.

Phase Three of TIP is currently in development and will be implemented during the spring semester of this school year (2003-2004).

The constant that runs through all phases of the TIP program is that teachers, working in collaboration, conduct research and determine the technology components that will best meet the instructional needs

Continued.....on page 2

Continued.....

of their students within their curriculum, based on the TEKS (Texas Essential Knowledge and Skills), higher order thinking and 21st century literacy skills.

The opportunity to catch the vision does not knock loudly. We know that amazing things happen when teachers do research, dream big dreams, and plan. The initial TIP team seized the chance to create a prototype for outstanding primary classrooms. The work they did set an example for others to follow.

Action teams and committees are looking at a number of issues related to curriculum. I expect exciting results from these efforts.

In the district's move toward excellence, all planning is centered on the achievement of the district's vision statement, *Excellence—the Quest.* The district values, mission, and goals guide the district toward achieving its vision. To ensure the attainment of the vision, the district has created strategic objectives by which it can measure the attainment of the values, mission, and goals.

Our commitment to quality requires that we continue to plan and assess our achievement. Our campuses analyze what they are doing to attain excellence and what they can do to be more successful. Similar planning goes on at the district level. The process is like taking a trip. We set excellence as our destination. We have strategic plans to keep us focused on the road we have chosen. Our improvement plans at the district and campus levels serve as the vehicles to carry the district to breakthrough performance.

Seven- Period Day

After the state mandated the graduation requirement of 24 credits, the ISD Board of Trustees voted to implement a seven-period day at the high school level. Committees have addressed the issues created by the addition of one period to the school day. Community members, students, parents, teachers, counselors, and administrators have been a part of the planning process. Key Communicators also discussed this significant change.

student services officer who works with guidance counselors, said, "The change to a seven-period day is a student-centered change created so that all students in the district will graduate from high school having achieved, at least, the Recommended High School Program of 24 credits. Under this plan, all students will earn four credits in English; three in mathematics including Algebra I, Algebra II, and geometry; three credits in science (one must be in biology), three and one-half in social studies, one-half in economics, one and one-half in physical education, one-half in health education, two in a language other than English, one in fine arts, one in speech, one in technology applications, and three and one-half from an array of electives."

The implementation of the seven-period high school day will be a gateway to choices for students. Some students will use the additional periods to concentrate on one interest; others will use the additional class options to pursue interests that were not available under the six-period day.

Come Join in the Fun & Festivities at the

Heritage Festival

April 3, 2004

10:00 a.m. - 4:00 p.m.

Wunderlich Farm and Museum Complex

APPENDIX C

RECOMMENDATIONS AND RATIONALES OF TIP COMMITTEE

TABLE OF CONTENTS

I. Introduction to the TIP Project

II. Outline of the TIP Project

III. Components of the 21st Century Classroom

IV. PreKindergarten Components and Rationales

V. Kindergarten Components and Rationales

VI. First Grade Components and Rationales

VII. First Grade Curriculum Recommendations

VIII. Implementation of Phase II

Introduction

As we enter into the new millenium schools, around the nation we face many challenges. This has always been true in education, not just because we are in a new century. Challenges have always been felt by all schools, bad schools trying to become better, and good schools trying to be the best. I.S.D. is no different in providing the best education possible to all children, so that no child is left behind. This has been philosophy. The philosophy hasn't changed.

What has changed is the society in which we live. There is more information to be learned than ever before. Information in all areas of the sciences, humanities, and arts is increasing faster. Children have more to learn now than ever before in our history. It is not enough to be able to read, write, and perform mathematical computation. These basic skills, although necessary, will not equip a child with enough education to function in the future. With a future that will change rapidly as the sciences and technologies advance, and in a world that is becoming globally smaller, our students need the skills and education to be able to change with the future. This is accomplished by developing higher level thinking skills, so that children can reason, analyze, evaluate, justify, infer, interpret,and synthesize information. They need to become flexible thinkers. Children not only need to learn to do all this, but also need to keep their natural curiosity, so that they become self-motivated.

Through the Technology Integration Program, we have studied and investigated ways to reach these goals. We feel it is essential to maximize the minutes in our instructional day in order to reach the needs of all learners: at risk, average, gifted and talented, ESL,and LEP. We are fortunate to live in a wonderfully diverse society where all children can learn to make contributions, first within in our classes, and then to our nation. We have devised three recommendations in order to pursue the perfect classroom for the future.

First, we recommend that the curriculum areas become integrated in the areas that overlap. This will help to maximize the minutes. All the TEKS are still addressed under our plan. Also, by teaching the TEKS, and eliminating other lessons, it will allow a more in depth study of the subject areas. In depth study provides the time necessary to do higher level thinking. Higher level thinking requires time. By teaching the TEKS through integration of the curriculum areas we provide that time. It gives children time to setup, manipulate, ponder, investigate and write their ideas in all subject areas. Although we are a pre-k through first grade model, it is necessary that our children are given opportunies to develop these thinking skills early so they are prepared to take TAAS II in their

future.

Second, we propose the use of technology to be used as a tool in mastering the TEKS objectives and higher level thinking skills.Technology serves two purposes. It can save the teacher time by giving instant analysis of data, so that more effective planning for a student can occur. It can eliminate steps for preparing report cards and other tasks. This allows the teacher more time to prepare for her students. Technology allows for electronic communication with parents, administrators, teachers, and other professional online resouces. It also provides teachers with intranet, as well as, internet access. Second, technology can maximize the minutes that students have with direct instruction, or computer assisted instruction.Technology isn't meant to imply the use of computers only. There are other technologies to be used to create effective teaching strategies and engaging lessons. These are listed later in the document.

Third, as the first grade classroom of the future begins to take shape, it is essential not to forget the importance of personnel. As classrooms use technology, there is a need for technicians so when problems occur they can be fixed quickly. We don't have time to waste. We also need technology education so we can maximize all the resources and programs that we have. Learning to use the technology available to us will be constant since technology changes all the time.

Our site investigations said that it was the dedication of the staff that made their schools exemplary. Technology was not used to replace people. These schools continued to use classroom reduction teachers, reading specialist, reading recovery programs and classroom aides. In one school principals and assisted principals also taught small group reading classes. Research and investigations show that early intervention, and small class sizes, not only help children succeed in the early years, but produce better students, who stay in school longer.

Implementing these proposals is just the beginning. As technology changes,we will have to constantly re-evaluate what is effective. Teachers will need to adapt and be flexible. Even with the constant change that is predicted for this millineum, our decisions are still made with the same thought: How will this impact the learning that a child needs to be successful for his future, his world.

TIP Project Goal

teachers were provided two and one half days per week in the spring semester, 2001, for them to determine the optimum support system needed for students to master all TEKS and establish the model classroom utilizing technology for the student and teacher to maximize student learning. The following goals are the TIP committee's vision for the model First Grade classroom of the 21st century:

I. Mastering the TEKS objectives in:
   a. Reading & Language Arts
   b. Math
   c. Science/Health
   d. Social Studies
   e. Fine Arts

II. Developing higher level thinking skills, creativity, and problem solving to master the TAAS II
   a. Confidence
   b. Engaging active learners to be self motivated
   c. Enable students to acquire a global view
   d. Develop effective communication skills in speaking and writing
   e. Sparking curiosity

III. Student Centered Classroom
   a. Maximizing instructional time
   b. Individualized learning
   c. Meeting the needs of all students
      1. at-risk
      2. average
      3. gifted and talented
   d. Formal and informal assessment that leads to scaffolding instruction
   e. Collaborative learning

IV. Utilizing a communication system for the community including parents, teachers, students, and administration

a. Electronic access to student data – TBEC (Texas Business Education Correlation) access of all student information for teachers; will also have online curriculum, lessons, sharing of materials throughout the state
b. Ongoing professional interaction
c. Staff development continually to work together as a TIP team, along with the integration of all faculty members on campus

Components of the 21st Century Classroom

To achieve these goals, the TIP committee will be integrating the following technology into the First Grade curriculum. We will continue to assess the effectiveness of each of these tools in meeting the criteria we established for the model classroom.

- Multimedia station: Teacher laptop with standard Klein load, 32" T.V. and VCR with a cart, Classroom Performance System from eInstruction with wireless mouse, Frey Flex2 camera model # 15567742 (wireless model), LCD projector Mitshibishi XGA 70, Starboard interactive white board – Hitachi software (70" diagonal – model number DE4256), external CD/RW burner for teacher computer
- Student computers (Panasonic ToughBook C28) Qty = 24 with Klein standard load
- Mobile laptop storage cart to lock and charge computers
- surge protectors by Curtis (2) model # 024328
- Additional batteries for laptops
- External mice for each laptop
- Headphones with microphones for each student
- School server
- Stand alone scanner with Zip drive– Image Deck Microtech
- Network color, laser printer by Lexmark – Optra C720
- Software titles:
- *Kidspiration – Inspiration Software Corp.
- *ZooZillion Math - Edmark
- *Carnival Countdown - Edmark
- *Sammie's Science House – Edmark
- *Thinkin' Things 1 & 2 - Edmark
- *Kid Works Deluxe – Davidson
- *Graph Club (with activity box) – Tom Snyder
- *Neighborhood Map Machine – Tom Snyder
- *Choices, Choices – Tom Snyder
- Waterford Reading program: 2 systems, all 3 levels, including 30 sets of materials in multiples of 5 that will be recycled instead of keeping at home

- Furniture
  - for Waterford computers : Demi computer table w/ CPU bay
  - for networked printer (Buddy laser printer & Copier stand; model # 616506N; Beckley Cardy)
  - mobile laptop cart – Bretford
- Staff Development – will meet the 2nd Wednesday of each month
- Full time technical support

PreKindergarten Components

Pre-Kindergarten Rationale for the Purchase of Children's Laptops

Each teacher will need:

12 Panasonic Toughbook CF-289 due out in July (has internal wireless network card) each with AC adapter, floppy drive, and CD-ROM (product # CF-VCD271)
1 CD-RW Drive (product #CF-VCW281W)
12 extra lithium ion batteries CF-VZSU18,
12 battery chargers (product #CF-VCB371)
All ToughBooks should be loaded with Klein Elementary Student Load
12 3.5 Floppy drive

Rationale for Request:

A Panasonic Tough Book for each student is a necessary part of the "model classroom". The Tough Book is highly durable for use with young children and has a handle for ease in carrying. By using the laptop each student will be actively engaged in learning. It will spark the curiosity of the learner and broaden the student's experiences. The equipment can be used to:

- Help all students master the TEKS objectives in all curriculum areas
- Help meet the needs of each individual student in our classroom
- Help students develop effective communication skills in speaking and writing
- Maximize instructional time
- Develop higher level thinking skills, creativity, and problem solving to master the TAAS II
- Allow teachers to create appropriate learning environments for each individual student
- Reach students that are not successful with traditional teaching methods
- Teach touchscreen tasks
- Send information through an infrared port

ADDITIONAL ACCESSORIES NEEDED:

- 12 mice from School Specialty #038239 page 88

- 12 mouse pads from School Specialty #055326 page 86
- 12 headphones from School Specialty #471269 page 271
- 1 laptop storage carts from Bretford #LAP15E-GM

Pre-K and Kindergarten Rationale for the Teacher Multimedia Station

Each Pre-K and Kindergarten teacher will need one multimedia station. (Nine Total)

Multimedia station will include:

- Computer with CD-RW (burner), DVD, Mini Tower, and Floppy drive
- 19 inch computer monitor
- VCR
- Color Printer
- 32 inch Color TV
- All in WonderCard
- Cart capable of holding the mini tower

Rationale:

- Engage all learners
- Maximizes instruction time
- Creating teacher presentations
- Mastery of TEKS
- Whole group presentations
- Mini Tower will allow streaming video
- CD-RW saves large files that can be used in multiple locations
- All in WonderCard allows the computer to interface with the TV
- Encourages collaborative learning
- Small group instruction

Pre-Kindergarten TIP Request for the Purchase of Audio/Video Equipment

Mitsubishi XGA70 Projector (on bid list)

Purchase from Video Services of America
1-800-888-2140:

2 Digital Video Cameras ...Sony DCR-TRV330
2 Floppy disk adapters for NT operating system....Sony MSAC-FD2M
2 Extra Rechargeable Batteries...195 minute batteries #NPF550
2 32 MB memory sticks...MSA32A
2 Packs of Digital video tapes (those suggested are: hi8 for digital recording, hi8XR or digital 8) Panasonic 60 minute tapes product #AYVM63EB
2 VHS adapter for 8mm tape (To be purchased from Wal-Mart or Target)

Purchase from Visions Technology:
2 Movie Works Interactive by Visions Technology...Software for editing video ...Purchase from Vision Technology (1-800-877-0858) most economical to purchase a 10 pack for $699. Product number 99052. Fax the order Attn: Nisco. Fax # 541-349-0944

Purchase from Frey Scientific: Fax # 1-877-256-FREY
Contact Person: Whitney West 713-898-3190

- wireless Frey Flex II - #15567742
- 24 ft cable – Product # 15585945
- battery and charger – Product #15585942

Rationale for Request

Audio Video Equipment is an integral part of the "model classroom". It will spark the curiosity of the learner, actively engage the student in the learning process, and broaden the student's experiences. The equipment can be used to:

- Record student creations for storage in electronic portfolios

- Give pictorial directions of assignments
- Improve parent communication by taping classroom activities and "checking out" the video tapes for students to take home
- Enhance teacher web pages to improve communication between school and community.
- Use video or still pictures as a writing prompt
- Engage students in active learning through taking pictures, discussing and writing about class videos and slide shows of still pictures
- Use pictures and videos to sequence real life events in chronological order
- Create multimedia presentations
- Promote creativity in individuals
- Promote cooperative group learning and planning

PRE-K RATIONALE FOR THE PURCHASE OF A NETWORK PRINTER CART

A special stand for the network printer is necessary because of the size and weight of the printer. This particular stand also provides space for keeping computer paper and other accessories. Each teacher will need 1:

- #616506N Buddy Laser Printer and Copier Stand
  (Beckley Cardy Catalog p. 413)

RATIONALE FOR PRE-KINDERGARTEN ACCESSORIES

Each teacher will need:

- 2 electrical outlet surge protectors
- 2 extension cords

In order to successfully use our new technology equipment we will need the accessories to help us be more flexible with our room arrangement, and it will help with the mobility of some equipment.

PRE-K FURNITURE

RATIONALE FOR PRE-K TABLES

We will need 2 trap tables for each Pre-K teacher and 1 riser shelf to house the Waterford System and to help make a computer center.

- #633585N Gray/Blue trap table by Smith System (Beckley Cardy p. 355)
- #633599N Gray/Blue riser shelf by Smith System (Beckley Cardy p. 355)
- #025-7(06) 11 trap table w/ 19-30" adjustable legs (abc Early Learning Catalog p. 27)

RATIONALE FOR STUDENT CHAIRS

Additional chairs will be needed for students to fully utilize the computer areas.

- #7103 Blue Uniflex Stack Chairs – 6 for each teacher (Beckley Cardy p. 285)

RATIONALE FOR PRE-K STORAGE CABINET

Additional storage is necessary to house new material for Waterford, headphones, software, etc.

- #631056N Royal Blue Tall Storage With Lock by Tot Mate 1 for each teacher (Beckley Cardy p. 521)

RATIONALE FOR PROJECTOR CART

The Pre-K teachers would like mobility for the LCD projector, and a place to securely lock the projector and other audio-visual equipment when not in use.

- #652241N Adjustable Cabinet Cart (CA2642)
  1 for each teacher (Beckley Cardy p.278)

Pre-K Rationale for Computer Software

The Pre- K teachers would like to order software for their new computer station. They have chosen software to meet several different academic areas. In order to utilize the computer center to its fullest potential, they feel that having software readily available is extremely important. These titles would be excellent choices for the Pre-K room:

Language-
Bailey's Book House *p.72 (Edmark)
Chicka Chicka Boom Boom *p.71
Living Books Library-Includes: Just Grandma & Me, Little Monster at School, Sheila Rae the Brave, Stellaluna, The Tortoise and the Hare, The Art Lesson, Arthur's Teacher Trouble * p.115

Math-
How Many Bugs In A Box? (Simon & Schuster Interactive)
Millie's Math House *p.72 (Edmark)

Science-
Sammy's Science House *p.72 (Edmark)

General-
Jumpstart Preschool *p.70
Jumpstart Kindergarten *p.70
Stickybear's Early Learning Activities *p.77
Kidspiration

Technology-
Kid Keys *p.182

*All of these can be found in the Education Resources catalogue.

If these software programs are not going to be run through a server, we would like the need to order more than one copy of each.

OTHER AREAS FOR CONSIDERATION FOR PRE-KINDERGARTEN

The Pre-Kindergarten teachers are concerned that there will not be a sufficient number of electrical outlets in each classroom. They would like to be able to work with an electrician in deciding where to place additional outlets in their classroom. They are considering having two-three per wall.

Kindergarten Components

Components of the 21st Century Classroom

Each classroom will be equipped with the following:

Hardware

Teacher Multimedia Station to include: (Mini Tower)

- Computer (CD-RW, DVD drive, 3.5" floppy)
- 19 inch monitor
- All in Wonder Video Card
- VCR
- Color Printer
- 32 inch Color TV
- Cart capable of holding all this equipment including the mini tower

Networked Laser Color Printer (Lexmark C720)

Panasonic ToughBook CF-28 with integrated wireless card, CD, and Klein student load

- 24 per teacher
- 24 external mice for the ToughBooks
- 24 extra batteries with chargers
- 24 3.5" floppy drive that swaps out wit the CD drive

Headphones (24 …1per laptop).
Microphones (6… to be used for recordings by students)

Wireless networked laptop for teacher
External CD-RW for the teacher laptop

Frey Flex Camera (wireless)
24 ft. cable
Battery and charger

Digital Video Camera (digital video and still pictures)
Tripod
Extra Battery and Charger
Memory stick
VHS Tapes

VHS Tape Adapter
Floppy disk adapter
Mavica 75 digital camera for student use
Projector System

Stand Alone Color Scanner

Hand Held Device
1 teacher hand held with a temperature probe
Compaq iPAQ (the one that will be available in September 2001…color, with voice recognition that can be converted to text)
Retain the option to purchase additional handheld devices for student use.

Starboard

Access to a Distance Learning Lab with Elmo (consider this in the future)

School Server on each campus to store software and student files

E-instruction Classroom Performance System (CPS)

- All software
- Make sure it is packaged with a wireless mouse (per Darrell)

Software Must be 2000 compatible

Waterford Early Reading Program and associated hardware and accessories

- 3 systems per teacher

Movie Works Interactive (for editing videos)
Screen sharing software (Net Op School Professional)
Standard Load Software
Leonardo's Tool Box
Picture Phonics
Thinkin' Things Collection 1
Graph Club+ Activity Box
Type to Learn Jr.
Kidspiration
Sammy's Science House
I Spy Jr.

Leap into Phonics
Trudy's Time & Place
Learning.com (teaching TATEKS)

Furniture
Tables for Waterford systems (trapezoid w/riser)
3 student chairs
Locking cabinet to hold 24 laptops, 24 external mice, extra batteries and chargers. The cabinet top should hold the scanner.
Cart for networked printer
Cart for projector, laptop, and Frey Flex camera
Shelf for equipment storage
Cart for multi media station
Teacher chair for multi media station
Table for small group instruction using laptops
Chairs for Teaching table
Retain the option to change furniture as needed during the next school year

Staff Development Topics
Training on AppleWorks (scheduled for June 2001)
Training on Prescriptive Software
Training on all other software
Training on Leonardo (by Klein Instructional Technology Team)
Ongoing time for TIP teachers to meet to troubleshoot and brainstorm
Ongoing Curriculum Technology Integration Training
Opportunities to attend conferences specific to Educational Technology (ex. TCEA and Classroom Connect)

Personnel
1 technician per building
1 instructional technologist per building

Other things to consider:
A district replacement policy for all technology equipment
A transition should begin to place all curriculum guides online
Teachers should have access to student data online
An electronic Grade book should be designed for Kindergarten

Pre-K and Kindergarten Rationale for the Teacher Multimedia Station

Each Pre-K and Kindergarten teacher will need one multimedia station. (Nine Total)

Multimedia station will include:

- Computer with CD-RW (burner), DVD, Mini Tower, and Floppy drive
- 19 inch computer monitor
- VCR
- Color Printer
- 32 inch Color TV
- All in WonderCard
- Cart capable of holding the mini tower

Rationale:

- Engage all learners
- Maximizes instruction time
- Creating teacher presentations
- Mastery of TEKS
- Whole group presentations
- Mini Tower will allow streaming video
- CD-RW saves large files that can be used in multiple locations
- All in WonderCard allows the computer to interface with the TV
- Encourages collaborative learning
- Small group instruction

Rationale for a Networked Printer
C720

The Lexmark C720 printer…

~Cost effective
~Price per copy is less expensive
~Faster than an ink jet and more efficient
~Color engages the young child
~More people are able to utilize the printer
~Print quality is better
~High performance
~Easy to use
~Network Connectivity
~Ideal for multi platform environments
~Compatible with Windows 2000 NT
~Easy loading for ink cartridges
~Easy management
~Fast color printing –less than 24 seconds
~Convenience
~ Safety and security for the children (children will not need to be roaming the halls to retrieve printed copies)
~Young children like to have ownership of their work and this networked printer will give them the opportunity.

Kindergarten Rationale for the Purchase of Children's Laptops

Each teacher will need:
24 Panasonic Toughbook CF-28 each with AC adapter, floppy drive, and CD-ROM (product # CF-VCD271) These will be available in July 2001. It has an internal wireless network card.
1 CD-RW Drive (product #CF-VCW281W)
24 extra lithium ion batteries CF-VZSU18, 24 battery chargers (product #CF-VCB371)
24 mice (mouses) (product number unknown...it just needs to be compatible.
24 headphones...the small ones on the bid list
6 external microphones used for recording (on bid list)
24 swappable 3.5" floppy drives

All ToughBooks should be loaded with Klein Elementary Student Load

Rationale for Request:

A Panasonic Tough Book for each student is a necessary part of the "model classroom". The Tough Book is highly durable for use with young children and has a handle for ease in carrying. The CF-28 will have an integrated wireless card and protected screen that will decrease the chances of breakage. By using the laptop, each student will be actively engaged in learning. The ToughBook will spark the curiosity of the learner and broaden the student's experiences. The equipment can be used to:

- Help all students master the TEKS objectives in all curriculum areas
- Help meet the needs of each individual student in our classroom
- Help students develop effective communication skills in speaking and writing
- Maximize instructional time
- Develop higher level thinking skills, creativity, and problem solving to master the TAAS II
- Allow teachers to create appropriate learning environments for each individual student
- Reach students that are not successful with traditional teaching methods
- Teach touch screen tasks

- Send information through an infrared port

A laptop issued to teachers would not only benefit teachers, but students and parents as well. Teachers would be given a flexible workspace whether they are at home, school or waiting in the doctor's office. They could always be connected to their grade book, online curriculum guides, and lesson plans. This could also enhance parent communications. When working away from school, there would be a consistency of available software. A laptop would be a space saver in the classroom as well as increase teacher mobility when working with small groups in various locations in the room. Small group instruction would be easily managed with a laptop. Student data could be entered as small group instruction is taking place. (This would also give an indication of how children will work with and around a laptop.) It would be possible for instructors to use the laptop in small group instruction utilizing a slide show to demonstrate a skill. Overall, a laptop would improve manageability in the classroom.

TIP Rationale for the Purchase of External CD-RW

Each of the 19 TIP teachers will need an external CD-RW to be used with the Compaq Armada E500.

After using the TIP laptops for three months, we have found there is a need for an external CD-RW. Occasions have occurred where presentations created on the laptop needed to be saved to a CD. Storing large files on a CD is more economical than on a Zip Disk. Having an external CD-RW will be an efficient use of equipment and manpower.

3/9/01

TIPS Wish List:

1. 17 StarBoards-large size model # DE4256 70 inch diagonal, floor stand model for K and first. (Troxell)
2. 2 StarBoards- small size model # DE3040 50 inch diagonal, floor stand model for pre-k. (Troxell)
3. 19 LCD projectors. High resolution. One for each TIP.
4. 19 Digital/video cameras. One for each TIP
5. 19 Create It with kidspiration manuals, ISBN: 1-57369-963
6. 19 Kidspiration software programs - one for each TIP

Our rationale for ordering these items is that we would like to implement them into our daily instruction before the end of the year. We feel that these pieces of equipment would not only benefit teachers, but students and parents as well. These items will enhance student learning, since they are interesting and unique.

The StarBoard will be an interactive learning tool for the students and teachers. It allows the students to interact directly with the curriculum on the Internet and the software that supports mastery of the TEKS. The LCD projector is required to work with the Star Board and other technology tools that we are considering.

Use of the digital/video camera engages the students in their learning process. Learning becomes meaningful to the student when their image is used in lessons and multi-media presentations. It will be useful to the teacher and parent in portfolio assessments and home school communications.

Kidspiration is a software program that sets itself apart from other software. It encourages higher level thinking skills for the students in preparation for TAAS and for TEKS mastery in all curriculum areas. The teacher can design open-ended activities that are specific to her students needs. The manual offers innovative ways to utilize the program.

The members of the TIPS Team have collectively decided that the above-mentioned items would be valuable technological tools for the model classroom. (See back of page.)

Kindergarten TIP Request for the Purchase of Audio/Video Equipment

Mitsubishi XGA70 Projector (on bid list)

Purchase from Video Services of America
1-800-888-2140:

7 Digital Video Cameras ...Sony DCR-TRV330
7 Tripods for the Digital Camera Product # VCTR670RM
7 Floppy disk adapters for NT operating system....Sony MSAC-FD2M
7 Extra Rechargeable Batteries...195 minute batteries #NPF550
7 32 MB memory sticks...MSA32A
7 Packs of Digital video tapes (those suggested are: hi8 for digital recording, hi8XR or digital 8) Panasonic 60 minute tapes product #AYVM63EB
7 VHS adapter for 8mm tape (To be purchased from Wal-Mart or Target)
Sony Mavica #75 (for student use) Product # MVCFD75

Purchase from Visions Technology:
7 Movie Works Interactive by Visions Technology...Software for editing video ...Purchase from Vision Technology (1-800-877-0858) most economical to purchase a 10 pack for $699. Product number 99052. Fax the order Attn: Nisco. Fax # 541-349-0944

Purchase from Frey Scientific: Fax # 1-877-256-FREY
Contact Person: Whitney West 713-898-3190

- wireless Frey Flex II - #15567742
- 24 ft cable – Product # 15585945
- battery and charger – Product #15585942
- extra battery

Rationale for Request

Audio Video Equipment is an integral part of the "model classroom". It will spark the curiosity of the learner, actively engage the student in the learning process, and broaden the student's experiences. The equipment can be used to:

- Record student creations for storage in electronic portfolios
- Give pictorial directions of assignments
- Improve parent communication by taping classroom activities and "checking out" the video tapes for students to take home
- Enhance teacher web pages to improve communication between school and community.
- Use video or still pictures as a writing prompt
- Engage students in active learning through taking pictures, discussing and writing about class videos and slide shows of still pictures
- Use pictures and videos to sequence real life events in chronological order
- Create multimedia presentations
- Promote creativity in individuals
- Promote cooperative group learning and planning

Rationale for Purchasing a Stand Alone Scanner
Image Deck Micro Tech

A stand alone scanner is needed to:

- Scan children's work to be housed in an online student portfolio
- Create slide shows for classroom presentations and parent presentations
- Scan pictures and objects for instructional purposes
- Scan documents to edit
- Scan student work to be attached to email and sent to parents
- Publish class work
- Scan student worksheets and use computer to translate into another language
- Scan photos to be edited with photo software

Rationale for Purchasing an iPAQ Hand Held

An iPAQ hand held (3rd Quarter model, available in Sept.) is needed to:

- Keep track of meetings, conferences, programs, and special events
- Take attendance
- Record voice and convert it into text for conferences with parents, to do lists or reminders for the day, assessments, and record notes from IDC, CIC, etc. meetings
- Conveniently carry a small, mobile PDA to access Microsoft Office documents such as Word and Excel
- Access Outlook from any place in or out of the school
- Access the Internet
- Take notes when observing students
- Compute calculations
- Use the program, Bluetooth, in order to synchronize equipment with PDA

*The model that we want will not be available until September. We will want the latest model with the most memory possible and a color display. We also want the fold out keyboard for the iPAQ hand held and a sleeve (slip cover) to keep it safe when not being used.

Rationale for Server Accessibility

(At each campus or through a central location)

A Server is needed to:

- save and store electronic student portfolios
- save and store electronic student files
- house networked software
- access teacher made electronic lessons
- access student data

Rational for the Classroom Performance System – eInstruction along with the Phonics and Math software for Kindergarten and First Grade:

- Gathers student information immediately
- Provides opportunities for formal and informal assessment that leads to scaffolding instruction
- Engages all learners
- Maximizes instructional time
- Helps teacher to individualize instruction
- Provides electronic data of student performance
- Provides teacher, student, and parent with immediate feedback
- Encourages collaborative learning
- Provides an analysis of student performance of the TEKS objective
- Facilitates district-wide benchmark testing

WATERFORD EARLY READING PROGRAM

PRE- KINDERGARTEN REQUESTS:

- A Level 1 Three Station Site for each Pre-K teacher (2)
- One year of take-home materials for check out

KINDERGARTEN REQUESTS:

- A Level 1, 2, & 3 Three Station Site for each teacher (7)
- One year of take-home materials for check out

FIRST GRADE REQUESTS:

- A Level 1, 2, & 3 Two Station Site for each teacher (10)
- One year of take-home materials for check out

RATIONALE FOR WATERFORD EARLY READING PROGRAM

1. Every child that qualifies for the Pre-K program in Texas public schools, qualifies because they are either language deficient or they are at risk because of low income. Most of the English-speaking students who qualify on low-income are also deprived of meaningful language experiences before they enter school. This program will allow these at-risk students to become familiar with the English language through the use of rhyme, rhythm and repetition at their own pace.

2. Extensive research has shown an especially high level of success with students who speak languages other than English. Other at-risk student achievement has been significantly increased as well through using Waterford Early Reading Program.

3. For the district to be Recognized or Exemplary and for the students to be able to reach their potential, the children who are at risk must be reached as early as possible. This program would engage students at a very early age which research has shown to be the most advantageous.

4. The Waterford Reading Program would involve the parents and other siblings of students using this program. Books and video tapes are made available to take home to ensure parent and family involvement.

5. To help the Spanish-speaking parents use the books provided, there is a guide in Spanish for them to use to help their children learn English.

6. The Waterford Early Reading Program appeals to many different brain intelligences at the same time. Each lesson has a strong visual and auditory base with classical music or traditional tunes and animation to further engage the learner.

7. We would like to be able to add the Waterford Math program, if it comes out in the fall.

Rationale for Software

This software is needed for the student laptops, teacher laptops, and teacher media station. This software will either be networked versions or stand alone versions depending on which server (1 central farm or 1 per campus) best suits the needs of the district.

1. Thinkin Things (Collection 1)
2. Kidspiration
3. I Spy Jr.
4. Trudy's Time and Place
5. Sammy's Science House
6. Graph Club and activity box
7. Sticky Bear's Reading Room
8. Type to Learn Jr.
9. Picture Phonics
10. Leonardo
11. Screen Sharing Software (Net Op School Professional)
12. Elementary Standard Load
13. Learning.com

This software is needed to:

1. Reinforce the skills being taught in the classroom to facilitate mastery of the TEKS.
2. Actively engage the students in learning.
3. The screen sharing software can help keep students on task by redirecting their attention when necessary.
4. Create a simple multimedia presentation.

Rationale for Purchasing Furniture for Kindergarten

Furniture Requested:

- Cart for Flexi Cam and LCD Projector with locking doors
  - Beckley Cardy pg. 278
    Item#652241N Adjustable Cart $235.88
- Table for Waterford ~~Software~~ Early Reading Program
  -Beckley Cardy pg. 355
  Item#633585N 40x80 gray/blue
  Riser Item#633599N
- Cart for Multimedia Station
- Cart for Wireless laptops (purchased through Alan clark, School Specialty) that will hold battery and battery charger. A customized power strip with 24 plugs for charging batteries (purchased through Alan Clark, manufactured by EFI). The top of the cart will need to hold the scanner and battery chargers.
  Notebook storage cart Item #LAP24E-GM

5. A box constructed by Klein maintenance that will hold 24 chargers and batteries. These will be housed on top of the wireless Laptop Cart.
6. Teacher Chair
   -Beckley Cardy pg. 333
   Managerial Mid Back Chair Model 4703
   Item#658095N (Charcoal)

- Shelf for equipment storage
  -ChildCraft pg. 13
  Item #SP343582 With 20 Clear Trays
  $519.79 on sale for $499.99
- Table for small group instruction while using the laptops
  Lakeshore pg. 39
  Teaching Table Item# CN72S
  $199
- Chairs for the small group instruction table
  Lakeshore pg. 37
  Classroom stacking chairs
  Item#CN814 131/2" 6 Chairs for the table (Blue)
  3 more (blue) chairs to go at the Waterford table

- Buddy Laser Printer and Copier Stand Beckley Cardy page 413 616506N $269.77

Rationale:

- **For secure (lockable) storage of all equipment**
- **Tables and chairs are ergonomically correct**
- **Mobility of equipment**
- **Convenience**

Rationale for the Installation of Additional Electrical Outlets:

- Due to the added technology in the classroom, additional electrical outlets are needed to support it.
- Power Strips and Surge Protectors for all equipment

First Grade Components

Panasonic Toughbook 28 – First Grade

- 24 Panasonic Toughbook 28 with AC adapter, floppy drives
- 24 CD-ROMs CF-VCD271
- 1 CD-RW Drive CF-VCW281W
- 24 extra lithium ion batteries CF-VZSU18
- 24 battery chargers CF-VCB371
- The laptops are to be loaded with Elementary student load and also include Kidspiration all each laptop.

Each first grade T.I.P. classroom needs all of the above.

Rationale

- Will be used to help all students master the TEKS objectives in all curriculum areas
- To help meet the needs of each individual student in our classroom
- To engage active learning
- To help students develop effective communication skills in speaking and writing
- To spark curiosity in learning
- Maximizing instructional time
- Develop higher level thinking skills, creativity, and problem solving to master the TAAS II
- Allow teachers to create appropriate learning environments for each individual student
- To reach students that are not successful with traditional teaching methods
- Touchscreen capability
- Daylight-readable
- Handle for easy of mobility by young students
- Highly durable in the hands of young students
- Infrared capability

Accessories needed for laptops

- 10 classroom sets of 24 mice from School Specialty (2001) #038239 page 88
- 10 classroom sets of 24 mouse pads from School Specialty (2001) #055326 page 86
- 10 classroom sets of 24 headphones from School Specialty (2001) #471269 page 271
- 1 laptop storage cart for each TIP First Grade Classroom LAP24E-GM from Bretford Manufacturing
- 10 classroom sets of 3 surge protectors by Curtis #024328 from School Specialty (2001) page 274
- 10 classroom sets of 2 electrical cord ducting #650552 from School Specialty (2001) page 474
- 10 classroom sets of 6 Kensington FlexClip Copyholders #038996 from School Specialty (2001) page 83

Multimedia Station for 10 First Grade Classrooms

- Black U.L. listed cart for T.V. and locked compartment for e-instruction model #BBULC48 on page 53 for a 32inch T.V in Bretford Basics 2001 Collection catalog
- 32 inch color T.V.
- VCR

Rationale

- Support instruction in all curricular areas contributing toTEKS.
- Houses locked container enclosing e-instruction
- Facilitates group electronic instruction and lessons on the web
- Facilitates student benchmark testing via e-instruction
- Maximizes student access to flex cam presentations
- Facilitate economic use of LCD projector avoiding costly bulb replacements

Digital Camera – for Pre-Kindergarten and First Grade:

- model # MVC-FD92 Mavica Digital Still Camera Engages students in active learning

Rationale

- Sequences real-life events, stories, and plays in chronological order
- Student hands on tool that will help in creating multimedia presentations
- Enhancing teacher web pages to improve communication between school and community
- Record products for electronic student portfolios
- Sparks curiosity
- Creates an innovative way to encourage written expression
- Promotes individualized learning
- Promotes cooperative, group learning

LCD projector Mitsubishi XGA70 LCD Panel for each First Grade Classroom

Rationale

- Necessary to operate the Starboard DE4256
- Necessary to operate the Classroom Performance System from eInstruction
- Clearer and more precise resolution than a television set
- Helps to engage active learners
- Sparks curiosity so that students are motivated
- Demonstrating classroom software and internet activities to the whole class
- Maximizing instructional time to reach the needs of all learners

Frey Flex II for Pre-Kindergarten and First Grade

1-Frey Flex II #15567742 (wireless model)
1-24-foot cable #15585945
1-battery and charger #15585942

Each Pre-Kindergarten and First Grade T.I.P. classroom needs one of all of the above.

Rationale

- Facilitates whole group instruction when using math manipulatives, science experiments, and word building activities
- Facilitates introducing literacy and math centers
- Will turn any size book into a big book so that all students can learn concepts of print
- Helps to engage active learners
- Sparks curiosity so that students are motivated
- Enables the teacher or student to project an actual object for all the classroom to see
- Works like a microscope to enlarge objects allowing all students to view at one time
- Mobile science lab
- Videotaping capabilities for teachers and student

Classroom Performance System – eInstruction along with the Phonics and Math software for Kindergarten and First Grade

Rationale

- Gathers student information immediately
- Provides opportunities for formal and informal assessment that leads to scaffolding instruction
- Engages all learners
- Maximizes instructional time
- Helps teacher to individualize instruction
- Provides electronic data of student performance
- Provides teacher, student, and parent with immediate feedback
- Encourages collaborative learning
- Provides an analysis of student performance of the TEKS objectives
- Facilitates district-wide benchmark testing

Networked Printer for Pre-Kindergarten, Kindergarten and First Grade

The Lexmark C720 printer

- Cost effective
- Price per copy is less expensive
- Faster than an ink jet and more efficient
- Color engages the young child
- More people are able to utilize the printer
- Print quality is better
- High performance
- Easy to use
- Network Connectivity
- Ideal for multi platform environments
- Compatible with Windows 2000 NT
- Easy loading for ink cartridges
- Easy management
- Fast color printing –less than 24 seconds
- Convenience
- Safety and security for the children (children will not need to be roaming the halls to retrieve printed copies)
- Young children like to have ownership of their work and this networked printer will give them the opportunity.

Edmark Software for First Grade

- *Zoo Zillions* by Edmark
- *Carnival Countdown* by Edmark
- *Trudy's Time & Place* by Edmark
- *Thinkin' Things Collection 1* by Edmark
- *Thinkin' Things Collection 2* by Edmark
- *Sammy's Science House* by Edmark

Each first grade T.I.P. classroom needs 10 CDs of each software title.

Rationale

Carnival Countdown

- Used to teach concepts of size, area, perimeter, symmetry and fractions
- Used to teach concepts of place value
- Helps students to understand relationships of numbers
- Students learn to categorize by attributes to help develop logical thinking skills
- Problem solving
- Allows the teacher to set the software to meet the needs of each individual student

Zoo Zillions

- Students practice addition, subtraction and skip counting
- Helps students develop spatial awareness and knowledge of 3-dimensional shapes
- Students practice counting coins and making change
- Helps students to visualize and solve addition and subtraction story problems
- Students practice solving addition and subtraction problems using a number line
- Allows the teacher to set the software to meet the needs of each individual student

Trudy's Time & Place

- Helps students learn to tell time on both analog and digital clocks
- Teaches calendar concepts
- Helps students learn cardinal directions, map symbols and landforms
- Allows the teacher to set the software to meet the needs of each individual student

Thinkin' Things Collection 1

- Helps students to strengthen observation and memory, improve problem solving and encourage creativity
- Helps build auditory and visual memory
- Students will work with patterns, attributes and analogies
- Students learn to observe, compare, contrast and recognize relationships
- Encourages creativity
- Allows the teacher to set the software to meet the needs of each individual student

Thinkin' Things Collection 2

- Helps students strengthen listening skills
- Allows students to explore rhythmic notation
- Builds auditory memory
- Helps develop visual thinking
- Allows the teacher to set the software to meet the needs of each individual student

Sammy's Science House

- Helps students practice sorting, sequencing, observing, predicting and constructing
- Helps students learn about plants, animals, rocks, weather and seasons
- Sparks student's curiosity in the world of Science
- Teachers can set the software to meet the needs of each individual student

Tom Snyder Software for First Grade

- *The Graph Club* by Tom Snyder #B-GRP-10
- *Graph Club Curriculum Kit* by Tom Snyder #B-GRK
- *Neighborhood Map Machine* by Tom Snyder #B-NEI-10
- *Choices, Choices 5.0* Savings Pack by Tom Snyder #W-PACC

Each first grade T.I.P. classroom needs one 10-pack of the above software titles excluding *Choices, Choices 5.0*. The entire first grade T.I.P. team will divide the *Choices, Choices 5.0* 10-pack.

Rationale

The Graph Club

- Teaches students to interpret tables, picture, bar, line and circle graphs
- Students can gather, sort and classify information
- Construct colorful graphs and analyze data
- Students will talk and write about their graphs
- Use graphs to solve problems and make decisions

Graph Club Curriculum Kit

- Contains 100 classroom activities to be used with *The Graph Club* Software
- Helps to engage active learners

Neighborhood Map Machine

- Students can make maps
- Students will learn geography skills, including compass directions and scale and distance
- Helps students understand symbols on a map
- Engages active learners

Choices, Choices 5.0

- Teaches students to take responsibility for their behavior
- Helps students develop skills and awareness they need to make wise choices and think through the consequences of their actions
- Students learn cause and effect relationships about their behavior
- Teaches social skills

Knowledge Adventure Software for First Grade

- *Kid Works Deluxe* by Knowledge Adventure
  Each first grade T.I.P. classroom needs 2 lab packs (5).

Rationale

- Students will be able to express themselves with pictures, words and sounds
- Students can create books, stories, poems and more
- Has the ability to read words and stories back to the student
- Sparks creativity
- Helps students with early reading and writing skills
- Helps students understand relationships between words and pictures
- Helps students with editing and composition skills

Software from Nystrom

- Exploring Where & Why Grade 1 Neighborhoods Near & Far #6605-EWW-CD1
- Program Guide #9A97500A
  Each first grade T.I.P. classroom needs 2 Five-user packs of the Exploring Where & Why. Each T.I.P. teacher needs one of the Program Guide.

Rationale

- Helps students develop critical thinking skills
- Teaches citizenship
- Helps develop multicultural awareness and sensitivity
- Reinforces reading, math, writing and science
- Allows teacher to individual instruction
- Maximizes instructional time
- Engages active learners

Stand Alone Scanner - Image Deck Micro Tech

Rationale

- Scan children's work to be housed in an online student portfolio
- Create slide shows for classroom presentations and parent presentations
- Scan pictures and objects for instructional purposes
- Scan documents to edit
- Scan student work to be attached to email and sent to parents
- Publish class work
- Scan student worksheets and use computer to translate into another language
- Scan photos to be edited with photo software

Software for Kindergarten and First Grade

- NetSupport School Software – 24 licenses for each kindergarten and first grade classroom

Rationale

- This software will help students develop effective communication skills in speaking and writing. During "Sharing time" in Writer's Workshop, a student will not only be able to read their work but to show it as well. This will boost confidence and motivation to write. It will also aid in the editing and revising process as classmates can see errors and advise their peers on how to correct them.

- Young children have difficulty typing in long URL addresses. This software will allow teachers to show an Internet site to all student laptops at the same time. Then students can navigate the web independently.

- Teacher can monitor students working independently on computers while the teacher is teaching in a small group. This will increase time on task for students. This feature also adds an extra safeguard for students working on the Internet.

- The ability to send and retrieve files between teacher and student computers will lessen the need for paper copies.

Furniture For First Grade

- SMARTdesks computer table - SDE-603024-Tx9 to put the two computers needed for Waterford. See attached page.
- Printer/storage cabinet (will also hold scanner and locks to hold additional materials) SMARTdesks SPX/362430FDx. See attached page.
- Table 24in. x 60in. #602631 from School Specialty Catalog 2001 on page 425.

Each First Grade TIP Classroom needs all of the above.

Rationale

- This furniture is necessary to house the technology in a safe and well-designed manor.
- It will be used for small group learning stations utilizing laptops.
- It is important to have a locked cabinet for securing small equipment.

Individual Furniture Needs of First Grade

- Rectangle table (2) 30in.x60in. #613521N on page 429 of School Specialty Catalog 2001. This is for Elementary.
- Open-Front Desks (48) #602577 on page 290 of School Specialty Catalog 2001. This is for

- Book Mobile (7) #52131N from School Specialty Catalog 2001 page 526. One each for the following schools:
  Elementary Schools.

Rationale

- This is for small group and individualized instruction.
- These 2 schools still have large 8-sided desks. These smaller desks are 12 inches shorter and therefore will give us much needed room in our classrooms to then accommodate our new technology components.
- To encourage daily literacy. Research shows that a child is more likely to choose a book if they can see the cover.

Rationale for Personnel

1 full time Instructional Technologist per campus
1 Technician per campus

The "electronic age" is upon us. The 21st century has brought powerful changes to the classroom. Our goal for Independent School District is to embrace this change by supporting teachers in their endeavors to learn technology and use technology in instruction. current professional development classes in technology applications and instructional technology are strong and have met the needs of attendees. There is still a large population of teachers that have not been reached and need to be trained. Not only do they need to be trained in applications, teachers need "just in time" help in the classroom. A Campus Instructional Technologist can provide immediate trouble shooting with software and hardware, deliver instruction on software applications, and provide assistance to teachers in the development of technology rich lessons.

> "Teachers are often constrained from thinking about new ways of organizing learning in their classrooms by the need to handle day to day issues, surprises, crises, and challenges." (Planning Good Change, research by Huberman and Crandall)

Some teachers are apprehensive about incorporating technology in their classroom. Our concern is that many fine teachers are thinking about leaving the profession rather than making the leap. If we create a nurturing learning environment for these teachers, we can ensure their place in the classroom of the 21st century. At a time when it is difficult to hire qualified teachers, we need to make every effort possible to keep excellent teachers in the classroom.

A full time Instructional Technologist can provide the site based, in class support needed to create lasting changes in the ways teachers teach and learners learn. It is our belief that student performance will be enhanced as a result of these changes.

In addition, we feel it is imperative to have a campus Technician supporting the technology in the classroom. This will prevent lost instructional time and provide maximum use of the equipment. Without prompt assistance the equipment is of little value.

Curriculum Recommendations

The TIP committee recommends a reduction of the number of units of study for Science and Social Studies. This will allow teachers time to develop units and concepts in more depth to encourage higher level thinking skills and problem solving. The recommended units of study are attached.

The TIP committee recommends that the focus of the math curriculum be to develop the TEKS to mastery. Inclusion of other objectives from the math textbook deters students from reaching TEKS mastery. Benchmark testing should include only the TEKS. The recommended units of study are attached.

The TIP committee recommends that the P.E. teachers be responsible for student mastery of the Health TEKS and grading of this subject.

Curriculum Recommendations

I. Integrated Thematic Units of Study to Address Science and Social Studies TEKS

The first grade TIP committee recommends the integration of curriculum areas whenever possible. We propose the following integrated thematic units of study. All Science and Social Studies TEKS are addressed in these combined units. By reducing the number of units, the students will be provided more time for in depth study and higher level thinkiing.

How Things Work

1.1 A Demonstrate safe practices during classroom and field investigations

B Learn how to use and conserve resources and materials

1.2 A Ask questions about organisms, objects, and events.

B Plan and conduct simple descriptive investigations

C Gather information using simple equipment and tools to extend the senses

D Construct reasonable explanations and draw conclusions

E Communicate explanations about investigations

1.4 C Measure objects and parts of objects using non-standard units

1.5 A Sort objects and events based on properties and patterns

1.6 A Sort organisms and objects according to their parts and characteristics

C Manipulate objects such as toys, vehicles, construction sets so that the parts are separated from the whole may result in the part or whole not working

D Identify parts that when put together can do things they cannot do by themselves camera/film, car/motor, airplane/fuel

1.7 A Observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement

Living and Nonliving Things in the Environment

1.1 A Demonstrate safe practices during classroom and field investigations

B Learn how to use and conserve resources and materials

1.2 A Ask questions about organisms, objects, and events.

B Plan and conduct simple descriptive investigations

C Gather information using simple equipment and tools to extend the senses

D Construct reasonable explanations and draw conclusions

E Communicate explanations about investigations

1.3 C Measure organisms and parts of organisms using nonstandard units

1.5 A Sort objects and events based on properties and patterns

1.6 A Sort organisms and objects according to their parts and characteristics

B Observe and describe the parts of plants and animals

1.7 A Observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement

D Observe and record changes in the life cycle of animals

1.8 A Group living organisms and nonliving objects

B Compare living organisms and nonliving objects

1.9 A Identify characteristics of living organisms that allow basic needs to be met

B Compare and give examples of the ways living organisms depend on each other for their basic needs

Weather and the Seasons

1.1 A Demonstrate safe practices during classroom and field investigations
B Learn how to use and conserve resources and materials

1.2 A Ask questions about organisms, objects, and events.
B Plan and conduct simple descriptive investigations
C Gather information using simple equipment and tools to extend the senses
D Construct reasonable explanations and draw conclusions
E Communicate explanations about investigations

1.4 A Collect information using thermometers and computers
B Record and compare collected information

1.5 A Sort objects and events based on properties and patterns

1.6 A Sort organisms and objects according to their parts and characteristics

1.7 A Observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement

1.8 B identify and test ways that heat may cause change, ex. ice melts
C Observe and record changes in weather from day to day and over seasons

Social Studies 1.6 A Identify and describe the physical characteristics of places such as weather

Natural Resources

1.1 A Demonstrate safe practices during classroom and field investigations

B Learn how to use and conserve resources and materials

1.2 A Ask questions about organisms, objects, and events.

B Plan and conduct simple descriptive investigations

C Gather information using simple equipment and tools to extend the senses

D Construct reasonable explanations and draw conclusions

E Communicate explanations about investigations

1.4 A Collect information using hand lenses and computers

1.5 A Sort objects and events based on properties and patterns

1.6 A Sort organisms and objects according to their parts and characteristics

1.10 A Identify and describe a variety of natural sources of water including streams, lakes, and oceans

B Observe and describe differences in rocks and soil samples

C Identify how rocks, soil, and water are used and how they can be recycled

Social Studies 1.6 A Identify examples of and uses for natural resources in the community, state, and nation

NOTES:
Inquiry and problem solving experiences should be developed in each unit to develop the following TEKS.
Science 1.3 A Make decisions using information

B Discuss and justify the merits of decisions

C Explain a problem in his/her own words and identify a task and solution related to the problem

1.4 Collect information using clocks, computers, balances

1.5 B Identify, predict, and create patterns including those seen in charts, graphs, and numbers

Art lessons on mixing colors will provide experience for the following:
Science 1.7 A Observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement

II. Math

A. Combination and Reduction of Units of Study

B. Integration of Math in Other Subject Areas
1. Graphing
2. Measurement

C. Delaying assessment of some skill areas to the second semester
1, Graphing
2. Numbers to 60
3. Place Value

The first grade TIP committee recommends the integration of curriculum areas whenever possible. We propose the following math units. All Math TEKS are addressed in these combined units. By reducing the number of units, the students will be provided more time for in depth study and higher level thinkiing.

FIRST SEMESTER

Numbers to 12

1.1A Compare and order whole numbers up to 99 using sets of concrete objects and pictorial models
D Read and write numbers to 12 to describe sets of concrete objects

1.6A Describe and identify objects in order to sort them according to a given attribute using informal language

Graphing is a skill that should be taught all year long and not just during one six weeks.
1.9A Collect and sort data
B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations
B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Addition Readiness and Concepts

1.3A Model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

B Learn and apply basic addition facts (sums to 12) using concrete models

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Subtraction Readiness and Concepts

1.3A Model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

1.5C Identify patterns in related addition and subtraction sentences

1.9A Collect and sort data
B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations
B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness
C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology
B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Facts and Strategies to 12

1.3A Model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

B Learn and apply basic addition facts (sums to 12) using concrete models

1.4A Identify, describe, and extend concrete and pictorial patterns in order to solve problems

1.5C Identify patterns in related addition and subtraction sentences

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

More Fact Strategies to 12

1.3A Model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

B Learn and apply basic addition facts (sums to 12) using concrete models

1.5C Identify patterns in related addtion and subtraction sentences

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Geometry and Fractions

1.2A Share a whole by separating it into equal parts and use appropriate language to describe the parts such as 3 out of 4 equal parts

B Use appropriate language to describe part of the set such as 3 out of 8 crayons are red

1.6A Describe and identify objects in order to sort them according to a given attribute using informal language

B Identify circle, triangles, and rectangles including squares and describe the shape of balls, boxes, cans, and cones

C Combine geometric shapes to make new geometric shapes using concrete models

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.10B Identify events as certain or impossible such as drawing a red crayon from a bag of red crayons

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Second Semester

Numbers to 60 and Counting Patterns

1.1A Compare and order whole numbers up to 99 (less than, greater than, or equal to)

D Read and write numbers to 99 to describe sets of concrete objects

1.4B Use patterns to skip count by twos, fives, and tens

1.5A Find patterns in numbers including odd and even

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Place Value

1.1B Create sets of tens and ones using concrete object to describe, compare, and order whole numbers

D Read and write numbers to 99 to describe sets of concrete objects

1.5B Compare and order whole numbers using place value

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Money

1.1C Use words and numbers to describe the values of individual coins such as penny, nickel, dime, and quarter and their relationships

1.4B Use patterns to skip count by twos, fives, and tens

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Telling Time

1.8B Describe time on a clock using hour and half-hour

C Order 3 or more events by how much time they take

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.10A Draw conclusions and answer questions using information organized in real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Measurement

1.7A Estimate and measure length, capacity, and weight of objects using non-standard units

B Describe the relationship between the size of units and the number of units needed in a measurement

1.8A Recognize temperature such as a hot day or a cold day

1.9A Collect and sort data

B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations

B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness

C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology

B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Facts and Strategies to 18

1.3A Model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences

B Learn and apply basic addition facts (sums to 18) using concrete models

1.5C Identify patterns in related addtion and subtraction sentences

1.9A Collect and sort data
B Use organized data to construct real object graphs, picture graphs, and bar type graphs

1.11A Identify mathematics in everyday situations
B Use a problem-solving model, with guidance as needed, that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness
C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out it order to solve a problem

1.12A Explain and record observations using objects, words, pictures, and technology
B Relate informal language to mathematical language and symbols

1.13 Student is expected to reason and support his/her thinking using objects, words, pictures, and technology

Science 1.7 A Observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement

Our School

1.4 B Describe the location of self and objects relative to other locations in the classroom and school

1.5 B Create and use simple maps to identify the location of places in the classroom, school, community, and beyond

1.10 A Explain the need for rules and laws in the home, school, and community

B Give examples of rules or laws that establish order, provide security, and manage conflict

1.12 C Identify the responsibilities of authority figures in the home, school, and community

1.13 C Use voting as a way of making choices and decisions

1.17 A Obtain information about a topic using a variety of oral sources such as conversation, interviews, and music

B Obtain information about a topic using a variety of visual sources such as pictures, graphics, television, maps, computer images, literature, and artifacts

D Identify main ideas from oral, visual, and print sources

1.18 A Express ideas orally based on knowledge and experiences

B Create visual and written material including pictures, maps, timelines, and graphs

Families - Here and Around the World

1.6 B Identify and describe the human characteristics of places such as types of housing and ways of earning a living

1.11 C Identify the responsibilities of authority figures in the home, school, and community

1.13 C Use voting as a way of making choices and decisions

1.14 A Describe ways that families meet basic human needs

B Describe similarities and differences in ways families meet basic human needs

1.15 A Describe various beliefs, customs, and traditions of families, and explain their importance

1.17 A Obtain information about a topic using a variety of oral sources such as conversation, interviews, and music

B Obtain information about a topic using a variety of visual sources such as pictures, graphics, television, maps, computer images, literature, and artifacts

C Sequence and categorize information

D Identify main ideas from oral, visual, and print sources

1.18 A Express ideas orally based on knowledge and experiences

B Create visual and written material including pictures, maps, timelines, and graphs

The United States - Then and Now

1.2 B Compare the observance of holidays and celebrations, past and present
C Identify anthems and mottoes of the United States and Texas

1.3 A Distinguish among past, present, and future
B Create a calendar or timeline
C Use vocabulary related to chronology

1.4 A Locate places using the four cardinal directions

1.5 A Create and use simple maps to identify the location of places in the classroom, school, community, and beyond
B Locate places of significance on maps and globes

1.6 A Identify and describe the physical characteristics of places such as landforms, bodies of water, natural resources, and weather
B Identify examples of and uses for natural resources in the community, state, and nation

1.11 A Identify leaders in the community, state, and nation
B Describe the roles of public officials including mayor, governor, and president

1.13 A Explain selected national and state patriotic symbols such as the US and Texas flags, the Liberty Bell, and the Alamo
B Recite and explain the meaning of the Pledge of Allegiance and the Pledge to the Texas flag
C Explain how selected customs, symbols, and celebrations reflect an American love of individualism, inventiveness, and freedom

1.16 A Describe how household tools and appliances have changed the ways families live
B Describe how technology has changed communication, transportation, and recreation
C Describe how technology has changed the way people work

1.17 A Obtain information about a topic using a variety of oral sources such as conversation, interviews, and music

B Obtain information about a topic using a variety of visual sources such as pictures, graphics, television, maps, computer images, literature, and artifacts

C Sequence and categorize information

D Identify main ideas from oral, visual, and print sources

1.18 A Express ideas orally based on knowledge and experiences

B Create visual and written material including pictures, maps, timelines, and graphs

Famous Americans

1.1 A Identify contributions of historical figures whom have influenced the community, state and nation

B Identify historic figures whom have exhibited a love of individualism and inventiveness

C Compare the similarities and differences among the lives and activities of historical figures whom have influenced the community state, and nation

1.2 A Describe the origin of selected customs, holidays, and celebrations of the community, state, and nation

1.12 A Identify characteristics of good citizenship such as a belief in justice, truth, equality, and responsibility for the common good

B Identify historic figures who have exemplified good citizenship

C Identify ordinary people who exemplify good citizenship and exhibit a love of individualism and inventiveness

1.16 A Describe how household tools and appliances have changed the ways families live

1.17 A Obtain information about a topic using a variety of oral sources such as conversation, interviews, and music

B Obtain information about a topic using a variety of visual sources such as pictures, graphics, television, maps, computer images, literature, and artifacts

C Sequence and categorize information

D Identify main ideas from oral, visual, and print sources

1.18 A Express ideas orally based on knowledge and experiences

B Create visual and written material including pictures, maps, timelines, and graphs

Our Community Workers

1.7 A Identify examples of goods and services in the home, school, and community

B Identify ways people exchange goods and services

C Identify the role of markets in the exchange of goods and services

1.8 A Identify examples of people wanting more than they can have

B Explain why wanting more than they can have requires that people make choices

C Identify examples of choices families make when buying goods and services

1.9 A Describe the requirements of various jobs and the characteristics of a job well-performed

B Describe how specialized jobs contribute to the production of goods and services

1.10 A Explain the need for rules and laws in the home, school, and community

1.11 A Identify leaders in the community, state, and nation

B Describe the roles of public officials including mayor, governor, and president

C Identify the responsibilities of authority figures in the home, school, and community

1.16 C Describe how technology has changed the way people work

1.17 A Obtain information about a topic using a variety of oral sources such as conversation, interviews, and music

B Obtain information about a topic using a variety of visual sources such as pictures, graphics, television, maps, computer images, literature, and artifacts

C Sequence and categorize information

D Identify main ideas from oral, visual, and print sources

1.18 A Express ideas orally based on knowledge and experiences

B Create visual and written material including pictures, maps, timelines, and graphs

NOTES:
Inquiry and problem solving experiences should be developed in each unit to develop the following TEKS.
Social Studies 1.19 A Use a problem-solving process to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution
B Use a decision-making process to identify a situation that requires a decision, gather information, identify options, predict consequences, and take action to implement a decision

Language Arts lessons on folktales and legends will provide experience for the following:
Social Studies 1.14 B Retell stories from selected folktales and legends such as Aesop's fables

Implementation of Phase Two

As we enter into Phase Two of the TIP program, it will be interesting to see the effect that technology has on our young children. In our research, we could not find many primary programs that had implemented the major technological changes in the classroom that we have proposed.

We have planned phase two primarily as staff development. This staff development is for learning how to use the new equipment and software that we have selected. It is also an opportunity to gather as a support group to share our ideas, concerns, problems, and solutions. As we install the equipment, we will be working with functionality of room design to meet the needs of small group, whole group, and individualized instruction.

As phase two begins, we will explore how technology changes our teaching styles to optimally meet the needs of our children. Questions will still need to be answered. What equipment did we find most useful when implementing our lessons? What equipment was utilized most by the children? What software selections did we feel served the children best? How much time did students spend using computers in the classroom? Do all children learn best using technology? Which children succeed best using the technology we have chosen? What was the excitement level of the children at the beginning of the year compared to the end of the year? Were gains made on standardized testing, TPRI testing, and benchmark testing?

Although our pilot program is set up as an educational model only, it would be interesting to study the effect that increased exposure to computers and other technologies have on our children. For example: Before this year began how much time did children spend at home using a computer for academics and pleasure? How much time did the children spend playing with Gameboy, PlayStation, and Nintendo? Did children continue to use or play with these items with the same frequency in the middle and the end of the year? Can children become stressed with technology? Is there a need to recognize when children are on technology overload?

These are just a few of the many questions and concerns to consider and evaluate as we embark on this endeavor.

APPENDIX D

TIP COMMITTEE PROPOSAL OF PROGRAM EVALUATION

Summary of Proposed Evaluation for TIP, 2001/2002

The committee looked at the goals

1) as delineated by the district on the Elementary Technology Integration Project Overview Chart (see attached) and
2) as written by the TIP teachers for prekindergarten, kindergarten, and grade 1 (see attached).

Both of these sources have as a primary goal that all students in the TIP classroom will master the Texas Essential Knowledge and Skills (TEKS) (or prekindergarten guidelines). This will be the focus of the evaluation.

The committee proposed that four aspects would be used to evaluate the program for the 2001-2002 school year. These four aspects include the following:

1) student achievement,
2) demographic make-up of the classroom
3) perceptions regarding the TIP classrooms, and
4) processes taking place in the TIP classroom

Four questions will be addressed.

1) Have TIP students mastered the Texas Essential Knowledge and Skills/Prekindergarten Guidelines?
2) What is the demographic composition of the TIP classrooms?
3) What are the students', parents' administrators', teachers', and district technology teachers' perceptions of the TIP classroom learning environments?
4) What are the unique teaching/learning opportunities (processes) that have occurred in the TIP classrooms?

The data sources listed below will be used to answer these questions:

Question	Data Source
Question #1	Students participating in KARE program as documented on EOY TPRI Literacy Card – End of Year Reading Level Report card grades – year's average for grade 1; last 6 weeks' average for PreK/K High pass – A/B; Lower pass – C/D Higher Order Skills – Identified benchmarks for Grade 1 Technology Applications TEKS Survey
Question #2	Attendance, ethnicity, gender, language proficiency (Dr. Judy Robertson will secure the data for Question #2)
Question #3	TIP teachers will provide information in the form of emails from parents, quotes, conversations, etc.
Question #4	TIP teacher written report - one of two ways: 1) Reflections on how teaching strategies have changed this year, giving an example of one teaching method: – how the concept was presented previously – how the concept was taught this year – learner outcomes and/or 2) Reflections on how TIP teaching strategies have changed this year to promote the type of learning environment delineated on original project goals document

APPENDIX E

DISTRICT OUTLINE OF TIP PROGRAM

Elementary Technology Integration Project

Goal	Product	Grades	Resources	Procedures	Issues
Provide classroom teachers with approximately two and one-half days a week in the spring semester for them to determine the optimum support system needed for students to master all Texas Essential Knowledge and Skills (TEKS)	Establish a model classroom utilizing technology for the student and teacher to maximize student learning. Means to this outcome might include the following: Produce a teacher written, research supported, grade level document integrating subject area resources and curriculum bulletins into one intranet based file to facilitate frequent updates and idea sharing. The document will clearly delineate all Texas Essential Knowledge and Skills (TEKS) with a reliance on technology based methods and higher level thinking skills. Electronic access to student data for students with whom one is currently working. A communication system for ongoing teacher professional interactions.	Prekindergarten, kindergarten (half and full day), and grade one teachers will be included in the first group.	In addition to the time for professional dialogue, this teacher group will be provided a place to work weekly, computers and internet access. Existing state TEKS, state adopted textbooks, district curriculum guides and bulletins will be used as a starting point. To encourage professional dialogue outside the structured time, teachers in the group will be provided with an email address and a list of fellow participants. The expertise of district staff, site-visits, and outside consultants will be used to help provide TIP teachers with information on current options and best practices.	Master teachers from each grade level involved from all campuses will be nominated. From this group one teacher from each campus will be selected to create a balanced group of nineteen teachers from the three grade levels involved and the instructional arrangements most commonly used in the district. A partner teacher will be hired for each of the nineteen participants for the spring semester to work with the class for the time each week the teacher is engaged in this project. Teacher participants will be encouraged to envision an ideal classroom experience for their students without restraints. The teacher group will determine the final product and its utilization. The role of central office staff will be to facilitate this project by engaging in the appropriate professional discussions and by providing the state and professional resources needed by the group.	Funding for this project will be primarily in the form of approximately five teacher salaries to provide the partner teachers for the spring. Technology for the participating nineteen teachers will be provided for their classrooms. Parents, the Instructional Development Council and other district staff members will be kept informed of the importance, progress and potential benefit for students from this effort. The resulting classrooms will serve as models for future district initiatives. Additional grade levels will be involved in this task in future years, as the process is refined through experience and changing needs.

APPENDIX F

DISTRICT OVERVIEW OF TIP PROGRAM

Overview of TIP Experience

(Note: you will see how exciting this project is when you visit the TIP classrooms and see pre-kindergarten, kindergarten, and first-grade students having the opportunity to utilize technology to increase their academic ability.)

This program, the Technology Integration Project (TIP), was a new and innovative approach based upon empowering classroom teachers to research, study, discuss and design a classroom for the twenty-first century. The program is unique in that it builds totally on the extensive current research on teacher leadership and trusts the teacher as the knowledgeable professional.

The goal for this project was stated (see chart included in this fax) as "Provide classroom teachers with approximately two and one-half days a week in the spring semester for them to determine the optimum support system needed for students to master all Texas Essential Knowledge and Skills (TEKS)." The same chart indicates the desire for the teachers to "Establish a model classroom utilizing technology for the student and teacher to maximize student learning." In essence, the program was focused upon student achievement and how student achievement can be enhanced through technology.

One classroom teacher representing prekindergarten, kindergarten, or first grade from each of the nineteen elementary schools in the district was granted an internal sabbatical during the spring semester 2001. Each teacher was released from her classroom assignment for two and one-half days each week. A partner teacher taught for those two and one-half days. The two days were spent in collaboration with the other TIP teachers at a designated campus within the district. The one-half day was spent at the home campus and provided time for interaction between the regular and partner teachers.

Since this program depended upon teachers deciding what, when, why, and how, the agenda for the two days when the TIP teachers met together was determined by the teachers. Initially, there were a few planned opportunities to establish teamwork among the teachers, to provide an understanding of teacher leadership, and to emphasize the importance of higher-order thinking and the role technology can play in that process.

Consultants who were specialists in the areas facilitated these sessions. For the teamwork development, Dr. Colleen Hester, Vice-President, Strategic Planning, Institutional Research and Evaluation, The University of St. Thomas, provided a one-day training on Understanding and Utilizing Differences. Dr. Stephanie Knight, Texas A&M University, College of Education, provided staff development on the importance of teachers as leaders and understanding teacher leadership. Dr. Juanita Copley, University of Houston, College of Education, led the group as it investigated higher-order thinking and the role of technology in developing and promoting higher-order thinking skills.

Printed materials provided a wealth of information and research. In addition to reading materials, the TIP teachers elected to visit sites where best practices were evident. They chose campuses from neighboring districts that had achieved the rating of exemplary (based on the state's accountability rating) and had utilized technology to accomplish this rating. They also visited an in-district campus where distance learning was being initiated through a Technology Integration in Education (TIE) grant in collaboration with the regional service center.

At the end of the spring semester, the TIP team developed a booklet that contained an overview of their vision for the classroom of the 21st century, the equipment they selected along with their rationale for the selections, and a proposed integrated curriculum to be considered by the curriculum and instruction department as curriculum is developed.

APPENDIX G

TECHNOLOGY PARENT SURVEY

Technology Parent Survey

This year your child has been involved in Technology Integration Project (TIP), in the kindergarten. They have used a variety of technology such as laptop computers to enhance their learning. We would appreciate your response to help us evaluate this project by filling out and returning this survey.

Circle one choice for each.

My child is curious and interested in learning.	Agree	Somewhat Agree	Disagree	Don't Know
My child's confidence and self-esteem has increased.	Agree	Somewhat Agree	Disagree	Don't Know
My child has a greater knowledge of reading, writing, and problem solving.	Agree	Somewhat Agree	Disagree	Don't Know
My child is excited about using computer technology.	Agree	Somewhat Agree	Disagree	Don't Know
Computer technology has enriched my child's experiences.	Agree	Somewhat Agree	Disagree	Don't Know
My child has grown in knowledge of computer skills.	Agree	Somewhat Agree	Disagree	Don't Know
Knowing what you know now, if you had the choice, would you have chosen to place your child in a technology rich classroom this year.	Yes		No	

Comments:
(Please feel free to continue comments on the back of this page.)

VITA

ROBIN A. RACKLEY

PERMANT ADDRESS

6201 London Circle
Bryan, TX 77802
979-774-7313

EDUCATION

2004	Ph.D.	Texas A&M University, College Station, TX
2000	M. Ed.	Texas A&M University, College Station, TX Emphasis: Child Development/Gifted and Talented Education
1991	B.S.	Texas A&M University, College Station, TX Major: Curriculum and Instruction

PROFESSIONAL EXPERIENCE

2000-Present	*Teaching Assistant*, Department of Educational Psychology, College of Education, Texas A&M University
2000-2001	*Research Team Member*, Innovative Alternatives, Inc. Peer Mediation Program Evaluation for Alvin and Pasadena Independent School District , Center for Collaborative Learning Communities, Texas A&M University
1999-2000	*Teaching Assistant*, Department of Curriculum and Instruction, College of Education, Texas A&M University
1999-1993	*Teacher*, North Zulch Independent School District, North Zulch, TX. Kindergarten
1997-1999	*Gifted and Talented Elementary Coordinator*, North Zulch Independent School District, North Zulch, TX.
1993- 1992	*Teacher*, North Zulch Independent School District, North Zulch, TX. First Grade
1992-1991	*Teacher*, North Zulch Independent School District, North Zulch, TX. First Grade