

THE RELATIONSHIP OF TEACHER EFFICACY TO TEACHER CONCERNS
AND JOB-EMBEDDED PROFESSIONAL DEVELOPMENT

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Dissertation Prepared for the Degree of
DOCTOR OF EDUCATION

UNIVERSITY OF NORTH TEXAS

August 2008

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Doughney, John F. The relationship of teacher efficacy to teacher concerns and job-embedded professional development. Doctor of Education (Curriculum and Instruction), August 2008, 170 pp., 11 tables, 5 figures, references, 143 titles.

As educators search for ways of improving student achievement, it is imperative that focus be placed on teacher learning and development. Currently, the trend in public schools throughout the country is to look directly at students and the deficits they bring to the learning environment when responding to those who find fault with the educational system. The current study directed attention to teachers' beliefs about their ability to affect change in student learning.

The study centered on seven research questions that sought to determine: (1) the effect of job-embedded staff development on teachers' sense of efficacy; (2) the effect of job-embedded staff development on teachers' stages of concern; (3) the relationship between teacher efficacy and stages of concern; (4) the status of teachers' level of use of an innovation; and (5) the dominance of teacher concerns prior to and after involvement in job-embedded professional development.

Through a mixed methodology approach, quantitative and qualitative analyses provided perspectives from 30 teachers in a suburban North Texas school district on the impact of job-embedded professional development on teacher efficacy, stages of concern, and resulting levels of use of an educational innovation. Quantitative results of two surveys: the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) and the Stages of Concern Questionnaire (Hall, George, & Rutherford, 1979) revealed a

strong focus on stage 0, awareness, concerns and no statistically significant gain in teacher efficacy as teachers engaged in job-embedded professional learning. Qualitative data were gathered through Levels of Use Focused Interviews (Loucks, Newlove, & Hall, 1975) and revealed more teacher involvement with the innovation than quantitative data suggested. Further investigation into the inconsistencies between dominance of teacher concerns and perceptions of levels of use is warranted.

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ACKNOWLEDGMENTS

My sincere thanks to Dr. James Laney, my major professor, for his consistently timely and helpful feedback, steady guidance, and encouragement. I asked you to be my committee chair because of your reputation of helping doctoral students stay on track and finish. You certainly did not disappoint in either regard. My goal was to complete the program before becoming eligible for retirement. You helped me accomplish this with four months to spare!

To Dr. Jane Huffman, little did I know that when we met years ago at TSDC, you would be instrumental in my achieving this degree. Your dedicated approach to your students does not go unnoticed. You provide a model of effective instruction while holding students to rigorous standards. Your work with professional learning communities resonates deeply with me, and the research you provide assists me daily with my work in the public schools. Dr. Wilhelm, I had the pleasure of learning about qualitative research and the concerns-based adoption model from you. Both have served me well as I pursued this research topic and study. Thank you for your guidance.

A great debt of gratitude is owed to the teachers who took part in this study. Not only did you provide me with the needed data for this dissertation; more importantly, you pushed yourself to learn something that would benefit the children you serve every day. You provided an exemplar for teacher collaboration and job-embedded professional learning. In addition to the teachers of GCISD, I want to acknowledge the ongoing support and encouragement for my learning from those with whom I work every day. In

particular, I want to thank Dr. Kay Waggoner, superintendent of GCISD; John Allison, superintendent of Mt. Lebanon Schools; and Jim Chadwell, Deputy Superintendent of GCISD. Especially, I would like to express my gratitude toward the incredible curriculum and instruction staff of GCISD. You have accompanied me every step along this amazing journey and endured my grumpiness, lack of sleep, and occasional pity party. There isn't a finer group of people with whom I could imagine spending my days. Lastly, I want to thank the technical support of Dr. Karen Vance who provided patient statistical guidance at the end of this process.

On a personal level, acknowledgements would be incredibly incomplete without thanking the people who are closest to me. To my parents, Joseph and Florence Doughney, thank you for always stressing the importance of education and allowing me the freedom to pursue my chosen path. To my children, Jared and Megan, who have understood why Dad has not been available for the past four years. I eagerly anticipate your graduations and watching you begin your adult lives. To Rosemary Sturgeon, my sister-in-law, thank you so much for your assistance with transcriptions. Finally, to my incredible wife, Dr. Nancy Rindone-Doughney, this journey would have not been possible without your understanding, support, unconditional love, and occasional kick in the seat of the pants! I appreciate you and what you have endured these past few years more than I can express. You have been instrumental in making this life-long goal a reality.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
LIST OF TABLES	ix
LIST OF FIGURES	x
 CHAPTERS	
1. THE RESEARCH PROBLEM	1
Introduction.....	1
Statement of the Problem	5
Research Questions	8
Significance of the Study	9
Rationale	10
Methodology	13
Delimitations	14
Assumptions	15
Operational Definitions.....	16
Organization of the Dissertation	18
 2. REVIEW OF THE LITERATURE	 19
Introduction.....	19
Organizational Theory	22
Open System Theory	23
Organizational Change	24
Change Theory	27
RPTIM (Readiness, Planning, Training, Implementation, Maintenance) Model.....	 30

	Concerns Theory	33
	Concerns-Based Adoption Model	35
	Stages of Concern	35
	Research Related to Stages of Concern	37
	Levels of Use	40
	Research Related to Levels of Use	42
	Teacher Efficacy	46
	Social Cognitive Theory	46
	Modes of Agency	46
	Self-Efficacy	47
	Cognitive Motivators	49
	Thought, Action, Affect	50
	Sources of Self-Efficacy	52
	Research Related to Current Study	54
	Job-Embedded Professional Development	58
3	METHODOLOGY	64
	Introduction	64
	General Perspective	65
	Research Questions	68
	Research Context	69
	Participant Selection	70
	Instruments Used in Data Collection	71
	The Teacher Sense of Efficacy Scale	71
	The Stages of Concern Questionnaire	72
	The Levels of Use Focused Interview	73
	Procedures	75
	Data Analysis	78
	Summary	79
4.	RESULTS	82

Introduction.....	82
Results of Quantitative Analysis.....	84
Research Question 1	84
Research Question 2	88
Stages of Concern Percentile Scores.....	89
Peak Stage Score Interpretation	92
First and Second High Score Interpretation.....	95
Profile Interpretation.....	97
Research Questions 3 and 4	105
Results of Qualitative Analysis	110
Research Question 5	110
Research Question 6	112
Themes from Levels of Use Focused Interviews.....	113
Designing Work	115
Collaboration.....	116
Student Engagement / Student Needs	117
Desired Results	119
Change in Thinking.....	121
Research Question 7	122
Summary of Data Analysis.....	127
5. SUMMARY AND DISCUSSION.....	131
Introduction.....	131
Statement of the Problem.....	131
Review of the Methodology.....	134
Summary of the Results	135
Discussion of the Results	136
Interpretation of the Findings.....	137
Research Question 1	138
Research Question 2	139
Research Questions 3 and 4	140

Research Questions 5 and 6	142
Research Question 7	143
Recommendations.....	144
Suggestions for Additional Research.....	148
APPENDICES	
A: INFORMED CONSENT FORM.....	152
B: TEACHER SENSE OF EFFICACY SCALE.....	156
C: TEACHER SENSE OF EFFICACY SCALE BY SUBSCALE.....	158
REFERENCES	160

LIST OF TABLES

	Page
4.1 Means and Standard Deviations for Current Study	86
4.2 Means and Standard Deviations for Past OSTES Studies	86
4.3 Paired Samples Statistics	87
4.4 Stages of Concern Peak Scores – Fall.....	90
4.5 Stages of Concern Peak Scores – Spring	91
4.6 Highest Stage of Concern – Fall.....	94
4.7 Highest Stage of Concern – Spring.....	94
4.8 Highest / Second Highest Scores Comparison – Fall	96
4.9 Highest / Second Highest Scores Comparison – Spring.....	96
4.10 Fall correlations between teacher efficacy subscales (student engagement – SE, instructional strategies – IS, and classroom management – CM) and (a) stages of concern (0-6), (b) participant teaching level, and (c) participant teaching experience	107
4.11 Spring correlations between teacher efficacy subscales (student engagement – SE, instructional strategies – IS, and classroom management – CM) and (a) stages of concern (0-6), (b) participant teaching level, and (c) participant teaching experience.....	108

LIST OF FIGURES

	Page
4.1 Stages of concern cumulative percentiles – fall 2007.	99
4.2 Stages of concern cumulative percentiles – spring 2008.	100
4.3 Stages of concern profile – fall 2007.	101
4.4 Stages of concern profile – spring 2008.	102
4.5 Typical non-user profile.....	103

CHAPTER 1

THE RESEARCH PROBLEM

Introduction

Teachers throughout the country live in a context of constant change and ever-increasing standards for student achievement. Since the launching of *Sputnik* in 1957, public schools have been under the microscope, and school reform has been at the center of education for the last half century. Educators have experienced wave after wave of innovation, and still we lament the lack of change or improvement in student achievement. The argument can be made that students have never achieved at such high levels and that public schools are working more effectively and efficiently than any other time in history. Of concern are the instructional approaches taken to improve student learning and the effects these choices have on student engagement and achievement.

Secada (2000) uses an ecosystem metaphorically to explain the lessons learned in the successful implementation of instructional innovations in public schools. He emphasizes the delicate, yet dynamic, balance in an ecosystem and how a change in one thing changes everything. He suggests five lessons learned: 1) start small and seed change; 2) complex relationships in a complex school ecosystem allow innovations to spread; 3) teachers need to study collaboratively and improve their own practice; 4) environmental support structures are critical; and 5) professional development disturbs

the balance of the ecosystem, but safe niches can be developed that allow innovations to flourish.

Years of research on school effectiveness have yielded information on just how those niches are created, how they develop, and how they sustain change initiatives. Sashkin and Ergermeier (1993) examined 30 years of educational change to identify differing perspectives, strategies, and useful principles of change. They identified strategies in implementing educational reform: “fix the parts, fix the people, and fix the school” (p. 3). These three have been demonstrated to be somewhat useful, but they suggest a fourth: “fix the system” (p. 3) as the method for conducting educational reform in the 21st century.

Teacher professional development set in the context of public school reform has been an intriguing topic for researchers for the past 30 years. Throughout this time, we have witnessed a change in the paradigm of teacher development. The 1960s and 70s were characterized by “teacher-proof” curriculum that was accompanied by didactic, event-driven “in-service” for teachers. This was the era of “fix the parts” (Sashkin & Ergermeier, 1993, p. 3). The 1980s witnessed an intense focus on “fixing the people.” This was a decade of intensification in American public education. High school students were the object of “more of the same” course work. Teacher qualifications were scrutinized, and the profession witnessed the beginning of teacher testing. This is not to be confused with the “highly qualified” mandates of No Child Left Behind (No Child Left Behind Act of 2001, 2002). Teachers’ basic competencies were called into question in the shadow of reports such as *A Nation at Risk* (Gardner et al., 1983). Professional

development for teachers often centered on the competencies necessary for passing a basic skills test that suggested a teacher's worthiness to remain in the profession.

The end of the 20th century ushered in a new era of reform in which the focus is on "fixing the schools" and "fixing the system." Achievement for all children is the mandate and the finger is no longer pointed squarely in the face of teachers.

Organizational reform becomes the center of research, and highly effective staff development is touted as research-based, job-embedded, and results-driven. Research has supported the idea of schools as complex systems which do not change easily.

Researchers such as Judith Warren Little (1993) and Ann Lieberman (1999) have noted the development of teachers within these systems and the change-resistant cultures developed therein. Yet one reality is clear – all children in U.S. public schools are to be achieving at a minimum standard by 2014 (NCLB, 2002). Schlechty (2005) states:

It may well be that schools can independently overcome the conditions of poverty and produce equivalent results for culturally diverse populations – indeed, I believe this is possible – but schools designed to ensure that all students take advantage of the opportunities provided must surely look and feel different from schools designed with the notion that all that is required is that they provide equal opportunities to learn. (p.4)

Fullan, Hill, and Crevola (2006) reports a new mission in public education – one in which all students meet high standards of achievement. He recommends that all students be provided with an education that serves them throughout their lives and does not have the built-in obsolescence of old-style curriculum. This new mission will require significant changes in daily instructional practices on the part of all teachers as well as commensurate changes within the systems that support them. Elmore (2004) proposes that reform strategies are "often not connected to fundamental changes in the way

knowledge is constructed, nor to the division of responsibility between teachers and students or the way teachers and students interact with each other around knowledge” (p.234). He suggests that schools that fail lack internal accountability. These schools seem to be deficient in agreement and coherence around expectations for student learning. They also appear to lack the means to influence instructional practice in ways that result in the desired levels of student achievement.

Scores of books and hundred of studies have examined the concept of change as it relates to public schools in this country. Authorities on change have attempted to guide those in charge of educational reform, yet the progress has not satisfied the American public or legislators at the state and national levels. Schlechty (2005) suggests that the types of innovations that will have a lasting impact on student achievement in the 21st century are “disruptive” (p. 65) innovations.

The successful employment of disruptive innovations requires dramatic alteration in both the structure and the culture of a school or school system. Most important, such innovations require changes in the ways vital functions are carried out: the way new members are recruited and inducted, the way knowledge is transmitted, the way power and authority are distributed, the way people and programs are evaluated, the way directions and goals are set, and the way boundaries that determine who is inside and who is outside the school are defined. Understanding these six critical systems is key to dramatically changing the way schools do their business. (p. 65)

While this study does not claim to be a disruptive innovation, it does investigate how teacher beliefs and perceptions change as a result of an intensive, collaborative, job-embedded professional learning experience. It is my belief that changes in teacher thinking lead to significant and more lasting changes in teacher behavior.

Statement of the Problem

Whether one looks at state assessments such as the Texas Assessment of Knowledge and Skills (TAKS), national assessments such as the National Assessment of Educational Progress (NAEP), or international comparisons such as the Trends in International Mathematics and Science Study (TIMSS), two realities are apparent: (1) children in this country's public schools are making improvements in academic achievement; and (2) the gains are not significant enough or rapid enough among Hispanic, African American, and economically disadvantaged student groups to meet the mandates of No Child Left Behind.

The problem of student achievement is a complex one that has been addressed by US educators for the past 50 years. Student achievement is a construct intricately connected to teacher achievement (Goddard, Goddard, & Tschannen-Moran, 2007). Central to a school's academic success is the academic success of every individual student, as well as the school's ability to motivate teachers to make meaningful contributions to student success rather than to some competing endeavor (Rosenholtz, 1989).

To confound the problem, teachers often work in isolated situations and autonomous contexts that are highly resistant to change (Darling-Hammond & Bransford, 2005). Cuban (1993) describes how the act of teaching has changed very little over a one hundred year period (1890-1990) despite the waves of reform that the profession has witnessed. One of the reasons for this lack of change is embedded in the fact that the cultures of teaching that have developed within the occupation have tilted toward stability

in classroom practice. The occupational norms are conservative, meaning that a preference for stability and a cautious attitude toward change are rooted in: the nature of the craft; the people recruited into the profession; how they are formally socialized; how they are evaluated; and the school and classroom cultures of which teaching itself is a primary ingredient.

The problem for educators nationwide is one of meeting high standards for children. In the state of Texas, the problem is confounded by structures that: require testing students who barely have command of their native language; provide for dwindling or static resources; and sanction change-resistant environments that foster contexts of teacher isolation. From these structures concerns arise.

The concerns-based adoption model (CBAM) (Hall & Hord, 1987) grew out of a concern over the value of educational innovations that had been introduced during the 1960s and 70s, and constitutes a significant contribution to change theory. Evaluators lamented the lack of significant change experienced as a result of the many innovations introduced, but mistakenly blamed the innovations. Hall and Hord contend that “the innovations were frequently not fully implemented, therefore, not fairly tested” (p. 7). The CBAM model measures, describes, and explains the process of change experienced by teachers involved in the implementation of new instructional materials and practices, as well as with how that process is affected by interventions from persons acting in change-facilitating roles (Anderson, 1997). Three of the most critical concepts involved in examining the effectiveness of change efforts are stages of concern (Hall, George, & Rutherford., 1979), levels of use (Loucks, Newlove, & Hall, 1975), and innovation

configuration maps (Heck, Stiegelbauer, Hall, & Loucks, 1981). Each has a tool that is useful in measuring change efforts. Two of these tools: Stages of Concern Questionnaire (Hall et al., 1979) and Levels of use focused interview (Loucks et al., 1975) were utilized in gathering data for this study.

The problems that lay the foundation for this study were born out of a desire to make connections between and among teacher collaboration, teacher efficacy, and job-embedded professional development. Although not a major focus of this study, the resultant student achievement is an ever-present reality for teachers, schools, and school districts. Based on social learning theory (Bandura, 1977), social cognitive theory (Bandura, 2001), the constructs of efficacy and human agency (Bandura, 1997), as well as the evidence from numerous research studies on teacher efficacy (Allinder, 1994; Gibson & Dembo, 1984; Midgley, Feldhauser & Eccles, 1989; Hoy & Woolfolk, 1993; and Tschannen-Moran & Barr, 2004), assumptions can be made that the correlation between teacher efficacy (individual and collective) and student achievement is highly positive. The question then is not whether high levels of teacher efficacy result in positive student behaviors and increased academic achievement. Rather, the focus is centered on the relationships between teacher collaboration, job-embedded professional development, and teacher efficacy. The problem of this study was addressed in three research formats: pre-experimental, correlational, and descriptive.

Pre-experimental – The problem of this study was to determine:

1. The effect of a job-embedded staff development program on K-12 teachers' teacher efficacy.

2. The effect of a job-embedded staff development program on K-12 teachers' stages of concern about the innovation.

Correlational – The problem of this study was to determine:

3. The relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development.
4. The relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development.

Descriptive – The problem of this study was to determine:

5. The status of K-12 teacher participants' perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development.
6. The current status of K-12 teacher participants' perceptions of their own levels of use of an educational innovation after participation in job-embedded staff development.
7. The dominant concern of K-12 teacher participants prior to and after participation in job-embedded staff development.

Research Questions

Specific questions that were addressed include:

Pre-experimental:

1. What is the effect of a job-embedded staff development program on K-12 teachers' teacher efficacy?
2. What is the effect of a job-embedded staff development program on K-12 teachers' stages of concerns about the innovation?

Correlational:

3. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development?
4. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development?

Descriptive:

5. What is the status of K-12 teacher participants' perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development?
6. What is the current status of K-12 teacher participants' perceptions of their own levels of use of an educational innovation after participation in a job-embedded staff development?
7. What are the dominant concerns of K-12 teacher participants prior to and after participation in job-embedded staff development?

Significance of the Study

As teachers and administrators struggle with the mandates of NCLB, address the expectations of state accountability systems, and attempt to fulfill the desires of local constituents, the literature is clear about one thing – continuing to provide our children with the same basic education, delivered through teacher-centered approaches, and in the same factory model that has dominated our schools for nearly a century will prove disastrous at worst or harmful to the development of all children at the very least.

It is the intent of this study to examine how the context in which professional development occurs impacts teacher implementation of an innovation. The research addressing teacher efficacy and its relation to significant outcomes such as student

achievement (Ross, 2001), student motivation (Midgley et al., 1989), and teachers' enthusiasm for teaching (Allinder, 1994) is clear: the stronger the teacher efficacy, the greater the student motivation and achievement and teacher satisfaction. The question becomes not so much how we raise student achievement, but how we impact teacher efficacy.

It is my contention that the roots of change lie with teacher beliefs and the resultant behaviors, not with students and their desire to learn. The literature is replete with information about programs that are targeted toward students and aimed at changing their attitudes toward school and their motivation to succeed. "More and more of our students lack the true prerequisites for learning - engagement and motivation — at least in terms of what we offer them in our schools" (Prensky, 2005, p. 11). Students are engaged in varied activities in their context sensitive digital surroundings outside of school. Addressing these realities requires a transformation of what occurs within the four walls of millions of classrooms to determine student motivation and engagement inside of school. Critical to this transformation are changes in teacher attitudes, motivations, and behaviors.

Rationale

In Texas, as in the rest of the nation, student success is measured by achievement on standardized tests. A cursory look at the scores on measurements such as TAKS and NAEP provides evidence that children in this nation are improving academically, albeit incrementally. In some content areas the growth is negligible.

This study explored critical factors that impact teachers' professional development, degree of self-reflection and collaboration, and ability to navigate a context of change in the pursuit of developing engaging work for students. Teachers participating in job-embedded professional development represent a change from the typical ways teachers learn. This change alone presents challenges before not faced. Instead of attending a workshop outside of contract time, collaborative learning was embedded into the daily structure of teachers' work. Teacher movement through stages of concern (Hall et al., 1979) and levels of use (Loucks et al., 1975) in the implementation of lesson design and lesson study was measured as they relate to changes in teacher efficacy.

It was anticipated that as teachers are successfully facilitated through the challenges of job-embedded professional learning and move into higher levels of concern and use, teachers' sense of efficacy would increase. Evidence suggesting that teacher efficacy directly impacts student achievement has been documented over the last 20 years. Little attention has been given to the relationship between change theory and the construct of teacher efficacy. It is the intent of this study to expand the body of research in this area.

Bandura (1997) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy beliefs influence teachers' thought patterns and emotions that enable actions in which they expend substantial effort in pursuit of educational goals, persist in the face of adversity, rebound from temporary setbacks, and exercise some control over events that affect their lives (Bandura, 1986, 1993, 1997).

In light of the waves of reform bombarding teachers, looking to social cognitive theory (Bandura, 1986) for guidance seems to be a prudent course of action. If teacher beliefs in their ability to influence the attainment of future goals have a direct impact on student achievement through instructional experimentation, willingness to try a variety of materials and approaches, and the desire to find better ways of teaching (Allinder, 1994), there is adequate reason to research teacher efficacy and its relationship to the process of change.

By correlating teacher efficacy with stages of concern and levels of use, attention is focused on the critical functions change facilitators play in assisting teachers through educational innovations. If levels of teacher efficacy increase while engaged in job-embedded professional learning, and this increase coincides with teacher movement through stages of concern and levels of use change facilitators can, with some degree of confidence, realize improvement in student performance through their efforts.

This study attempted to offer a significant contribution to the research base because of the correlations between teacher efficacy and involvement in job-embedded professional development being measured. Though some studies correlate teacher efficacy with staff development efforts (Dillard, 2004; Onafowora, 2004; Petherbridge, 2007, Rackley, 2004), few studies investigate how teachers' levels of efficacy change while involved in job-embedded professional learning. Understanding this correlation has important implications for the dedication of enormous resources currently geared toward a singular model of staff development – workshops.

Guskey (2000) suggests that although we may never empirically prove a causal relationship between teacher learning and student learning, it is imperative to collect evidence that continues to build a bridge between the two. He recommends continual evaluation of staff development efforts for four reasons:

1. Teachers have come to see professional development as an ongoing process, not an event. A new perspective is one in which professional development is seen as a series of extended, job-embedded learning experiences.
2. Professional development is now seen as a systematic effort to bring about change and improvement.
3. Better information is needed to guide reforms in professional development and educational programs.
4. Increased accountability is now the norm at all levels.

“Professional development is defined as those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students” (Guskey, 2000, p. 16). If we accept that high levels of teacher efficacy have a positive effect on student learning (Ashton & Webb, 1986; Gibson & Dembo, 1984; Ross, 2001; Tschannen-Moran, Hoy, & Hoy, 1998), it becomes imperative to influence the processes that improve teacher efficacy. Recent investigations have shown that efficacy influences teachers’ persistence when things go less than smoothly (Tschannen-Moran et al., 1998). In the often rocky context of school reform, it is critical to support the structures that enhance teacher efficacy. It was the intent of this researcher to shed light on how job-embedded professional learning can accomplish this goal.

Methodology

The stages of concern (Hall et al., 1979), levels of use (Loucks et al., 1975), and efficacy of two groups of teachers from a suburban school district in a large metropolitan area were measured as they engage in a job-embedded form of professional development. During the 2006-2007 school year, an original group of 23 teachers studied backward design (Wiggins & McTighe, 1998) and lesson study. They worked collaboratively in designing engaging work for students that centered on objectives least commonly mastered as measured by state achievement tests. Another group of teachers focused on this same process in the 2007-2008 school year. It is this group of teachers that provide the data for this study.

All teachers were administered the Stages of Concern Questionnaire (George, Hall, & Stiegelbauer, 2006) and the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) in September, 2007 and February, 2008. Levels of use focused interviews (Hall, Dirksen, & George, 2006) were conducted with 15 participants in February, 2008. All interviews were recorded, transcribed, and analyzed for common patterns and themes in relation to stages of concern (SoC), levels of use (LoU), and teacher efficacy.

Delimitations

This study was limited by the use of self-report measures (i.e. the SoC Questionnaire and the Teacher Self-Efficacy Scale). Gall, Borg, and Gall (1996) suggest that the major limitation of these measures is the truthfulness and diligence of the self-

report. Another factor that can result in invalid responses to these types of measures is a response set. This is described as a reflection of the individual's general predisposition to rather than a careful response to the content of each item.

In addition, correlations between successful navigation of a change process and growth in teacher efficacy were to be revealed in the current study. A number of studies have suggested that levels of teacher efficacy do not change significantly past the preservice years. Bandura (1977) postulated that efficacy would be most malleable early in learning, which has led a number of researchers to focus on preservice teachers. Among experienced teachers, efficacy beliefs appear to be quite stable, even when the teachers are exposed to workshops and new teaching methods (Ross, 2001). Although this study involved experienced teachers, the difference between this and previous studies is the manner in which teachers engage in professional learning.

The frequency and duration of teacher collaboration that was provided within the structure of this study as part of the job-embedded professional development model was limited to four occasions over the course of the school year, although teachers may have engaged in collaborative efforts outside of the contract day.

Finally, this research was limited by the lack of experience in conducting the levels of use focused interview. Although the interview instrument has been validated, this was the first study I conducted utilizing this instrument. Pilot interviews were conducted in January, 2008. Peer checking of the audio tapes by a trained professional were employed to analyze the interview responses of the interviewees.

Assumptions

Several working assumptions underlie the implementation of this study. First, it is assumed that the teachers involved in job-embedded professional learning are seeking alternatives to the workshop approach that dominates staff development opportunities. It is also assumed that these teachers are seeking ways of improving their craft through collaborative efforts.

In addition, it is assumed that teachers involved in this study provided honest feedback concerning their stages of concern, levels of use, and efficacy beliefs. It is understood that responses may have been influenced by the timing of the surveys, questionnaires, and interviews; the predispositions teachers brought with them; and the teachers' diligence in self-reporting (Gall, Borg, & Gall, 1996).

Operational Definitions

- ✚ Change – Altering a product, process, service, or context of educational work toward the improvement of student performance.
- ✚ Concern - The composite representation of the feelings, preoccupations, thoughts, and considerations given to a particular issue or task (Hall et al., 1979).
- ✚ Concerns-based adoption model (CBAM) – A conceptual framework that describes, explains, and predicts probable behaviors throughout the change process, and it can assist educational leaders facilitate the process (George et al., 2006).
- ✚ Efficacy / self-efficacy – “Perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3). Teacher efficacy is used interchangeably with teacher self-efficacy in this study.

- ✚ Innovation - Refers to both radical and incremental changes to products, processes, or services in an educational setting.
- ✚ Inservice – The years of professional educator service beginning with teacher certification and ending with separation from the profession.
- ✚ Interventions – The various actions and events that innovation facilitators take to influence the process.
- ✚ Job-embedded professional development – Learning that occurs as educators engage in their daily work activities. It can be both formal and informal and includes, but is not limited to, professional dialog, peer coaching, mentoring, study groups, collaborative analysis of student work, and action research.
- ✚ Levels of use – A framework that focuses on general patterns of teacher behavior as teachers prepare to use, begin to use, and gain experience implementing a classroom change. Levels of use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user’s development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors (Hall et al., 2006).
- ✚ Models of staff development – These are defined by the five models of staff development: (a) individually guided staff development, (b) observation/assessment, (c) involvement in a development/improvement process, (d) training, and (e) inquiry (Sparks & Loucks-Horsley, 1989).
- ✚ NAEP – The National Assessment of Educational Progress, the nation’s report card, is a nationally representative and continuing assessment of what America’s students know and can do in various subject areas. For over thirty years, assessments have been conducted periodically in reading, mathematics, science, writing, history, geography, and other subjects (National Assessment of Educational Progress: The nation's report card, 2005).
- ✚ Preservice – The years spent in teacher preparation and study prior to certification and employment as teacher of record.
- ✚ Staff development / professional development / professional learning – These three terms are used interchangeably in this paper and are defined as those processes that improve the job-related knowledge, skills, or attitudes of school employees (Sparks & Loucks-Horsley, 1989).

- ✚ Stages of concern – A framework that describes the feelings and motivations a teacher might have about a change in curriculum and/or instructional practices at different points in its implementation (George et al., 2006).
- ✚ TAKS – Texas Assessment of Knowledge and Skills. This has been the primary measure of student achievement in the state of Texas since 2003.
- ✚ TIMSS - The Trends in International Mathematics and Science Study (TIMSS), 2003, is the third comparison of mathematics and science achievement carried out since 1995 by the International Association for the Evaluation of Educational Achievement (IEA), an international organization of national research institutions and governmental research agencies (Gonzales et al., 2004).

Organization of Dissertation

This dissertation is organized in a typical format. Chapter 1 provides an introduction; background information on the study; statement of the problem; the professional significance of the study; an overview of the methodology and delimitations of the study; and definitions of key terms.

Chapter 2 provides the knowledge base upon which this study is built. It includes a comprehensive review of the literature presenting the theoretical and empirical basis for engaging in this study.

Chapter 3 describes the methodology utilized in researching the topic under consideration. It includes selection of subjects, survey instruments, interview protocols, and methods for analyzing both quantitative and qualitative data.

Chapter 4 presents the results of the study. It includes statistical analysis of quantifiable data as well as a summary of qualitative data gathered from interviews.

Chapter 5 provides a summary and discussion of findings from the study. Future research questions that emanate from this study are presented as well.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

Student performance in public schools has been in the nation's cross hairs for decades. Wave after wave of educational reform has pounded against classroom doors with the promise of raising the performance of children in public schools in this country to a level that is competitive with other industrialized nations. In national and international comparative studies such as the National Assessment of Educational Progress (NAEP) and the Trends in International Mathematics and Science Study (TIMSS), students in the United States repeatedly trail behind their Asian and European counterparts in the areas of math, science, and language arts. Regardless of the debate that can be launched around such studies as the Coleman Report (Coleman et al., 1966), *A Nation at Risk* (Gardner et al., 1983), the Trends in International Mathematics and Science Study (TIMSS) (Gonzales et al., 2004), or the National Assessment of Educational Progress (NAEP) (US Department of Education, 2005), it is clear that student achievement in this country is a source of concern for public schools, universities, businesses, and the general public.

As the standards for desired student performance continue to increase at the state and federal levels, the conversations centering around capitalizing on human potential

and cognition have never been more critical. NCLB (US Department of Education, 2002) causes public schools to focus on every individual student's academic progress as never before in this nation's history. Each of the 50 states, in response to influential business leaders and public dissatisfaction with schools, has adopted some form of new standards, high stakes testing for students, or new accountability system. The goal is to increase student achievement to the point that all children are achieving at a prescribed level by 2014, allowing students to transition from school to work in a positive and productive manner and to be competitive in the global workplace. In light of this daunting task, policy makers and educators alike are searching for factors that positively influence student achievement (Tschannen-Moran & Barr, 2004).

The quest for improved student performance is embedded in a context of organizational change and educational reform. Burke (2002) suggests that organizational change is as old as organizations themselves, citing the "loosely-coupled systems" (p. 19) Moses was responsible for as he led his people out of Egypt. Fullan (1993) speaks of a post-modern society which is dynamically complex and highly political. He contends that educational reform will be "fraught with unpredictable and uncontrollable problems and opportunities" (p. 66) and that educational change is inevitably "non-linear and unending" (p. 67).

Within the context of school reform and organizational structures are the practitioners who faithfully attempt to implement one innovation after another. Educators have endured the teacher-proof curricula of the 1960s and 70s, the heightened teacher standards of the 1980s, and the accountability standards of the 1990s. The report card for

our nation's teachers and schools looms on the horizon. By the 2013-2014 school year, all children must be performing to a standard. Understanding the changes that must occur to meet this challenge is critical to the success of our educational system.

Hall, Hord and Huling (1984) offer assumptions about change that are part of their concerns-based adoption model (CBAM). One assumption involves understanding the point of view of the participants in the change process. There is a personal side to change that is often ignored. Another centers on the understanding that to change something, someone has to change first. For the change to be effective, teachers and their practice must change (1984).

The need to research organizational theory and organizational change is evident. In addition, it is critical to investigate teachers' involvement in the change process. Having an understanding of these constructs, however, provides only a partial view of the path toward 2014. If student progress toward this goal is the final piece of the puzzle, then understanding how teachers influence this progress is analogous to putting the final piece in place.

Bandura (1997) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy beliefs influence teachers' thought patterns and emotions that enable actions in which they expend substantial effort in pursuit of educational goals, persist in the face of adversity, rebound from temporary setbacks, and exercise some control over events that affect their lives (Bandura, 1986, 1993, 1997).

In light of the waves of reform bombarding teachers, looking to social cognitive theory for guidance seems to be a prudent course of action. Bandura (1986) suggests that individuals are producers of experiences and shapers of events, not just idle bystanders in life. He offers the construct of human agency - the means by which we accomplish desired outcomes, and in which efficacy beliefs play an influential, regulative function. Allinder (1994) proposes that teachers' beliefs in their ability to influence the attainment of future goals have a direct impact on student achievement through instructional experimentation, willingness to try a variety of materials and approaches, and the desire to find better ways of teaching. If student outcomes are impacted by teacher beliefs, and teachers find themselves in a constant state of change; there is adequate reason to research teacher efficacy and its relationship to the process of change.

This chapter reviews the literature on organizational theory, change theory, concerns theory, and the construct of teacher efficacy as related to social cognitive theory. It also provides a perspective of job-embedded professional learning as one model of staff development.

Organizational Theory

Organizational theory, as reviewed in this study, includes open system theory, organizational change, and change theory.

Open System Theory

Burke (2002) asserts: “A human organization is best understood as an open system. An organization is ‘open’ because of its dependency on and continual interaction with the environment in which it resides. Closed systems exist only in the nonliving world” (p. 43). Open systems are characterized by transformational transactions as they relate to the cycle of activities of input, throughput, and output. Katz and Kahn (1978) stated: “Open systems maintain themselves through constant commerce with their environment, that is, a continuous inflow and outflow of energy through permeable boundaries” (pp. 21-22).

Katz and Kahn (1978) paint a picture of open systems through the following characteristics:

1. Importation of energy – No human organization is self-contained or self-sufficient; thus, it must draw its energy from outside to ensure its survival.
2. Throughput – The processes in place that take raw materials and create a product.
3. Output – The product.
4. Systems are cycles of events – Events rather than things provide identity to an organization. Social structures, the chain of events between and among people, establish boundaries.
5. Negative entropy - The entropic process is a universal law of nature in which all forms of organization move toward disorganization or death, but by importing more energy from its environment than it expends, the open system can store energy and acquire negative entropy.
6. Information input, negative feedback, and the coding process – If an organization obtains feedback on how well its output is being received, it can respond to its customers or clients more effectively in the future.

7. Steady state and dynamic homeostasis – Organizations that survive are typically considered to be in a steady state, but this does not mean little activity is occurring. Steady state is not a motionless or true equilibrium. There is a continuous flow of energy from the external environment and a continuous export of the products of the system, but the character of the system, the ratio of the energy exchanges, and the relations between parts remains the same.
8. Differentiation – Specialization and division of labor evolve.
9. Integration and coordination – To maintain stability, too much differentiation can occur. A certain degree of unification and coordination is then necessary. Integration is accomplished through shared norms and values.
10. Equifinality – An organization can attain the same goal from different starting points and a variety of paths. (pp. 21-26)

Hanson (2003) suggests that organizations have not changed throughout time; social scientists have just become more sophisticated in how they describe open systems. In open system theory, organizations are characterized by an interconnected cycle of events with inputs, throughputs, and outputs being stages in the system's cycle of events. Open system theory suggests how organizations actually function rather than how they should function. "For survival, an organization takes its energy from its environment. Energy may be capital, raw materials, or the work of people. This energy is then transformed into a product or service and returned to the environment" (pp. 43-44).

Organizational Change

Critical to open system theory is an organization's success and effectiveness which depends on openness and selectivity. Obvious attention must be given to change as it occurs within an open system. According to Burke (2002), the objective for change is

systemic for three reasons. First, when some aspect of the system is changed, other aspects eventually are affected. Second, the target for change is the system, not the individual. This systemic target is often the organization's culture, especially the group and organizational norms to which the members conform. Third, for an organization to survive, energy must be taken into the organization in a variety of forms and transformed into products or services that add value to the consumer, and the entropic process must be reversed.

Covey (1989) provides an inside-out approach to improvement in which four levels of an organization interact: personal, interpersonal, managerial, and organizational. He attributes a guiding principle to each: personal – trustworthiness; interpersonal – trust; managerial – empowerment; and organizational – alignment. He suggests that when investigating an organization for possible improvements and change; you examine from the outside-in, but you improve an organization from the inside-out. This perspective supports the assertion that the system is the target of change, not the individual.

Lewin (1958) suggests that organizational change is embedded in group standards.

As long as group standards are unchanged, the individual will resist change more strongly the further he is expected to depart from group standards. If the group standard itself is changed, the resistance which is due to the relation between individual and group standards is eliminated. (p. 210)

Guskey (2000) discusses the movement of teachers in an open system and the order of change with regard to behaviors and attitudes. It is suggested that the typical pattern in public schools currently is to attempt to change the attitudes of practitioners in the hopes that this will lead to change in educational practices. Guskey reflects the opposite

viewpoint which parallels the thoughts of Lewin. Change in practice or behavior must first be facilitated. The resulting impact on student achievement will cause changes in teacher attitudes toward instructional practices.

Organizational change can be described in two distinct manners. Revolutionary change occurs in leaps, spurts, and disruptions. It does not occur in an incremental or linear fashion. It is disruptive and requires a change in the structure and culture of an organization (Schlechty, 2005). Evolutionary change is characteristic of most organizational change. This form of change is typically aimed at attempting to improve aspects of the organization that will lead to higher performance. The fundamental nature, or deep structure, of the organization, its culture, remains undisturbed. The primary mission of the organization remains the same, and the primary rationale for its strategy to implement the mission also remains intact (Burke, 2002).

Deep structure, as explained by Gersick (1991), is perhaps the key concept in understanding the nature of revolutionary change more fully. She defines it as:

a network of fundamental, interdependent “choices” of the basic configuration into which a system’s units are organized, and the activities that maintain both this configuration and the system’s resource exchange within the environment. Deep structure within human systems is largely implicit. (p. 15)

For individuals, it is embedded in the underlying patterns of their lives. For groups, it is the manner in which they are organized and the methods used in accomplishing their tasks. For organizations, it is the underlying culture – the structure itself, that is, organizational design for decision making, accountability, control, and distribution of power (Burke, 2002).

Schlechty (2005) states it this way:

The successful employment of disruptive innovations requires dramatic alteration in both the structure and the culture of a school or school system. Most important, such innovations require changes in the ways vital functions are carried out: the way new members are recruited and inducted, the way knowledge is transmitted, the way power and authority are distributed, the way people and programs are evaluated, the way directions and goals are set, and the way boundaries that determine who is inside and who is outside the school are defined. Understanding these six critical systems is key to dramatically changing the way schools do their business. (p. 65)

Change Theory

“The concerns-based adoption model (CBAM) is arguably the most robust and empirically grounded theoretical model for the implementation of educational innovations to come out of educational change research in the 1970s and 1980s” (Anderson, 1997, p.331). CBAM grew out of a concern over the value of educational innovations that had been introduced during the 1960s and 70s. Evaluators lamented the lack of significant change experienced as a result of the many innovations introduced, but mistakenly blamed the innovations. Hall and Hord (1987) contend that “the innovations were frequently not fully implemented, therefore, not fairly tested” (p. 7). The CBAM model measures, describes, and explains the process of change experienced by teachers involved in the implementation of new instructional materials and practices, as well as with how that process is affected by interventions from persons acting in change-facilitating roles (1987).

CBAM developed during the period of what Fullan (1985) has termed the innovation-focused approach to educational change. This period focused on “fixing the parts” (Sashkin & Ergermeier, 1993, p.3) when the dominant strategy for school improvement hinged on facilitating the implementation of discrete innovations in

curriculum and instruction, innovations that were intended to result in improved teaching and student learning.

Schlechty (2007) suggests that the reasons for the failure of the curriculum reforms of the 1960s are that those who led these reform efforts proceeded from faulty assumptions. Either:

1. They assumed that the innovation they wanted to install would not call for fundamental changes in the way power and authority was distributed, the way evaluation systems were organized, or the way the internal and external boundary systems operated. They assumed that all that was needed was to make the materials available and to provide proper training and leadership development for the teachers who would be called on to implement the innovations, or
2. They assumed that the directional system and the knowledge development and transmission system would serve as the leading systems in the organization and that the other systems would adapt to the conditions required by changes in direction and/or changes in knowledge development and transmission. Put differently, they assumed that the logic underlying their innovations would provide opportunities for a fair and sustained trial of their products and that the results produced would be sufficiently impressive to ensure that needed systemic changes in the power and authority system, the evaluation system and the boundary system would be forthcoming. (p. 21)

He suggests that as they are now organized, most schools are innovation prone, but change inept (Schlechty, 2001).

Throughout the 1980s and 1990s efforts to improve teaching and learning processes and outcomes shifted away from an emphasis on discrete innovations in curriculum and instruction to a variety of organizationally focused initiatives designed to “fix the people,” “fix the school,” and “fix the system” (Sashkin & Ergermeier, 1993, p. 3). More systemic views of change were adopted, but little research has been done on

these second order or disruptive changes as they relate to the concerns-based adoption model.

Several assumptions about change in curriculum and instruction underpin CBAM: (1) change is a process, not an event; (2) there are significant differences in what is entailed in development and implementation of an innovation; (3) an organization does not change until the individuals within it change; (4) innovations come in different sizes; (5) interventions are the actions and events that are key to the success of the change process; (6) there will be no change in outcomes until new practices are implemented; (7) administrator leadership is essential to long-term change success; (8) mandates can work; (9) the school is the primary unit for change; (10) facilitating change is a team effort; (11) appropriate interventions reduce resistance to change; and (12) the context of the school influences the process of change (Hall & Hord, 2006).

The research of Hall and Loucks (1977) reinforces the assertion that most changes in education take three to five years to be implemented at a high level. “If the assumption that change is an event, the plan for implementation will be tactical in nature” (Hall & Hord, 2006, p. 5). This event mentality has monopolized educational thought and behavior for much of the past 50 years. Large scale innovations which require changes in the rules, roles, and relationships of teachers, principals, and schools take five to eight years to implement (Van den Berg and Vandenberghe, 1986).

RPTIM (Readiness, Planning, Training, Implementation, Maintenance) Model

Although not a theory of change in the strictest sense, the RPTIM model (Wood, McQuarrie, & Thompson, 1982) is a researched-based process for designing systematic and comprehensive professional development. This model identifies what happens before, after, and during the planning and implementation of staff development services. It is a model that provides support for change as districts and campuses engage in educational reform.

The RPTIM model is based on ten basic beliefs or assumptions:

1. All school personnel need inservice throughout their careers.
2. Significant improvement in educational practice takes considerable time and long-term inservice programs.
3. Inservice education should focus on improving the quality of school programs.
4. Educators are motivated to learn new things when they have some control over their learning and are free from threat.
5. Educators vary widely in their competencies and readiness to learn.
6. Professional growth requires commitment to new performance norms.
7. School climate influences the success of professional development.
8. The school is the most appropriate unit or target of change in education.
9. School districts have the primary responsibility for providing the resources for inservice training.
10. The principal is the key element for adoption and continued use of new practices and programs in a school. (Wood et al., 1982, pp. 28-29)

Five stages grew out of these assumptions as well as from the research literature:

readiness, planning, training, implementation, and maintenance (RPTIM).

In the readiness stage, educators need to select, understand, and commit to new professional behavior once they become aware of the challenges facing them and the

students in their district. One specific behavior is the development of a positive school climate that leads to the collaborative generation of long-range school improvement goals. Once goals are set, current educational practices (both inside and outside the school) are examined to determine alignment with goals. With much of the leadership responsibility on district administration, a plan is developed to achieve the staff development goals generated.

In the planning stage, teachers and administrators collaboratively develop plans for conducting staff development activities to achieve the specified goals. Differences between existing and desired practices are examined and staff development needs determined. The planning of staff development activities is based on teacher and student needs, while staff development objectives identify changes sought in knowledge, skills, attitude, and behaviors of both students and teachers. Leadership is shared among teachers and administrators.

The training stage witnesses the plans being put into practice based on what we know about adult learners. Choice is provided while methods for staff development delivery are identified. Multiple models of staff development are adhered to and material, time, and personnel resources are provided. Both learning and leadership is shared in this stage.

Wood (in Caldwell, 1989) suggests that a “major challenge for staff development program is ensuring that what is learned in inservice finds its way into the day-to-day work activities of participants” (p. 32). The implementation stage is where teachers and administrators must make the transition from the controlled environment of a workshop

setting to the real-life environment of the classroom. In this stage, new behaviors, skills and knowledge are installed into the daily work practice of participants. For this to become a reality, participants must have access to support and resources after training as well as be noted for their attempts to implement the new learning. Learning is reviewed and/or refined with help of leadership through peer observation and coaching.

In the final stage, maintenance, behaviors in the classroom are monitored systematically to ensure their continuation. This monitoring includes supervision by administrators and consultation with colleagues. The purpose is not to evaluate, but to sustain the implementation of the innovation. Responsibility is shared by teachers and administrators.

Wood et al. (1982) conducted a national study of practitioners and college professors to determine whether experts with extensive experience in staff development would support the RPTIM approach to designing professional development programs. While the results showed that professor and practitioners strongly supported the 38 practices outlines in RPTIM, those practices that were perceived as most critical include:

- Developing a positive school climate
- Developing three- to five-year improvement goals
- Having the faculty adopt and support the school improvement goals
- Involving the faculty in selecting programs to achieve improvement goals
- Conducting needs assessments
- Knowing the available resources before planning staff development programs

- Sharing leadership for planning inservice training
- Having the principal participate in inservice training with teachers
- Selecting inservice trainers for their expertise
- Providing follow-up coaching
- Having the principal recognize and support those who implement change (Wood in Caldwell, 1989, p. 34)

It is clear how the practices of RPTIM support the tenets of the concerns-based adoption model (CBAM). Both deal with the constant of change and how practitioners need to be facilitated through the change process. Whereas CBAM focuses clearly on the emotional and behavioral aspects of change on the teacher, RPTIM provides a tool for studying, planning and implementing the change from beginning to end. Both models suggest the need to adopt different roles for teachers, principals, and district administrators as they negotiate change efforts. “Districts implementing school-based improvement have had difficulty moving from a centralized to a decentralized system of change. Such a move requires major modifications in the way staff developers and others in the district behave and think” (Wood in Caldwell, 1989, p. 35).

Concerns Theory

Concerns theory grew out of the research of Frances Fuller (1969). Stages of concern about an innovation emerged from this research conducted at the University of Texas. Fuller conducted a series of in-depth studies of the concerns of student teachers. She hypothesized that the concerns of these student teachers as they moved through the

teacher education program were different as a result of their individual experiences. With increasing experience in a teacher education program, the student teachers' concerns moved through different levels that Fuller identified as unrelated, self, task, and impact.

Unrelated concerns were typical of student teachers who had not yet had direct experience with children in the classroom. These students had concerns, but they were unrelated to the teaching and learning process.

Self concerns were described by Fuller as most prevalent when student teachers began their student teaching experience. The concern at that time is focused on teaching, but it is an egocentric concern that deals with them personally rather than on the act of teaching.

Task concerns become evident soon after student teaching has begun. Now the actual work of teaching becomes a central concern to the student teacher. Management of materials, student groups, lesson planning, and grading papers become important in this stage.

Impact concerns deal with what is happening to and with the student and what the teacher can do to be more effective with the student. Student outcomes are the focus in this stage.

Fuller (1969) suggested that over two-thirds of the concerns of preservice teachers centered on the self and task areas, whereas two-thirds of the concerns of experienced teachers were in the task and impact areas. She also observed that teachers could have concerns in multiple areas, but tended to focus on concerns that were the most strongly aroused in one particular area.

Concerns-Based Adoption Model (CBAM)

The concerns-based adoption model (CBAM) has three diagnostic dimensions for conceptualizing and measuring change in individuals: stages of concern (SoC), levels of use (LoU), and innovation configurations (IC). Stages of concern is a framework that describes the feelings and perceptions a teacher might have about an educational change and how these feelings and perceptions evolve as the change process unfolds (Hall & Hord, 2006).

Hall and Hord (2006) developed a comprehensive definition of the term *concern*:

The composite representation of the feelings, preoccupation, thought, and consideration given to a particular issue or task is called a concern. Depending on our personal make-up, knowledge, and experiences, each person perceives and mentally contends with a given issue differently; thus there are different kinds of concerns. All in all, the mental activity composed of questioning, analyzing, and re-analyzing, considering alternative actions and reactions, and anticipating consequences is concern. (p.138)

Hall et al. (1979) provide another perspective:

To be concerned means to be in a mentally aroused state about something. The intensity of the arousal will depend on the person's past experiences and associations with the subject of the arousal as well as on how close to the person and how immediate the issue is perceived as being. Close personal involvement is likely to mean more intense concern which will be reflected in greatly increased mental activity, thought, worry, analysis, and anticipation. Through all of this, it is the person's perceptions that stimulate concerns, not necessarily the reality of the situation. (p.5)

Stages of Concern (SoC)

Hall et al. (1979) identified seven stages of concern (SoC) that correlate with the unrelated, self, task, and impact concerns identified by Fuller (1969). The self and impact

areas have been clarified by establishing stages within each. Self concerns are divided into informational and personal, and impact concerns into three areas: consequence, collaboration and refocusing.

At Stage 0, awareness, the teachers have little or no concern about or involvement with the innovation. At Stage 1, informational, teachers are interested in learning more about the innovation and the implications of its implementation, but remain unworried about themselves in relation to the innovation. Teacher concerns at Stage 2, personal, typically reflect strong anxieties about the teacher's ability to implement the change, the demands of the innovation, and his/her role with the innovation. Stage 3, management, is reached when teachers begin to experiment with implementation. At this point teacher concerns intensify around the logistics and new behaviors associated with putting the change into practice. At Stage 4, consequence, teacher concerns focus predominantly on the impact of the innovation on students in their classrooms and on the possibilities for modifying the innovation or their use of it to improve its effects. At Stage 5, collaboration, teachers focus on coordination and cooperation with others regarding the use of the innovation and creating a greater impact on students. At some point in the change process, teachers may reach Stage 6, refocusing. At this stage, teachers are focusing on more universal benefits from the innovation and thinking about making major modifications in the use of the innovation, or perhaps replacing it with something else (Hall et al., 1979).

The question surrounding movement through the stages of concern is one worth investigating. "The research studies clearly document that there is a quasi-developmental

path to the concerns as a change process unfolds. However, the flow of concerns is not always guaranteed, nor does it always move in one direction” (Hall & Hord, 2006, p. 141). If participants in the change are facilitated appropriately through the stages, the movement is typically from early self concerns to task concerns in the first year of use, and ultimately to impact concerns after three to five years. Because too often support for the change is not present, progress through the stages gets arrested at Stage 3, management. If management concerns remain intense over time, teachers tend to revert back to self concerns (2006).

Research Related to Stages of Concern

Early studies (George & Rutherford, 1978; Hall, 1978; Hall, Hord & Griffin, 1980; Hall & Hord, 1987, 2006; Loucks & Melle, 1980; Rutherford & Loucks, 1979) present evidence of the reliability of the stages of concern in describing and predicting teacher progress through educational change. More recent studies reflect use of the stages of concern as a tool to assist researchers in evaluating and understanding change as well as a means to develop, focus, and support professional learning (Hall & Hord, 2006).

Yuliang and Wang (2005) used the Stages of Concern Questionnaire (SoCQ) to examine teachers’ use of technology. The study supported the research of Hall et al. (1979) with its findings of teachers’ concerns grouping in three subcategories. Inexperienced teachers had personal or informational concerns. Experienced teachers had consequence concerns, and renewing teachers had collaboration or refocusing concerns.

Rakes and Casey (2002) also investigated teacher concerns through the use of technology in the classroom. This study looked at the concerns of 659 preK-12 teachers who integrated technology into their classrooms across the country. Regardless of the years of experience or number of years with a computer in their classrooms, these teachers overwhelmingly demonstrated intense concerns in the areas of informational, personal, and collaboration. Low consequence concerns were reported, suggesting that most of these teachers were in the early stages of innovation implementation.

Gershner and Snider (2001) utilized pretest and posttest SoCQ data in addition to LoU and IC data to examine the integration of technology into curriculum delivery in a Texas school district. Some significant findings were obtained, and the researchers learned that the CBAM measures used in combination were of great promise in assessing innovations and determining levels of support.

Hargreaves, Moyles, Merry, Paterson, and Esarte-Sarries (2002) used concerns data to assess teachers' understanding and use of interactive teaching as a characteristic of successful teaching in the national literacy strategy. Fifteen teachers of children aged 5-11 years became focus teachers and participated in a process of video simulated reflective dialogue (VSRD) with a higher education based research partner. Fifteen comparison teachers were videotaped doing interactive teaching in the literacy hour but did not participate in the VSRDs. Semi-structured interviews, held with every teacher before and after a six- to eight-month fieldwork period, were analyzed to show teachers' changing conceptions of interactive teaching. The concerns-based adoption model was used to measure teachers' concerns about interactive teaching. Systematic observations

were made on the video data. Results revealed few differences between the focus and comparison groups. Results provide significant evidence that while teachers have increased levels of interactivity by increasing the frequency of their questions, they still spend over half of their time giving information and telling children what to do.

Several dissertation studies (Dell, 2004; King, 2003; Kresge, 2006; Stauffer, 2003; St. Rain, 2005; & Watkins, 2006) investigated teacher change with respect to online courses, integrated learning systems, and new instructional programs. All suggest the need for careful facilitation of teacher concerns as they implement an innovation or are involved in new technologies.

Van den berg (1993) explored the development and use of the concerns-based adoption model and its instruments in the Netherlands, Belgium, and the United Kingdom, emphasizing the validity of the developmental theory behind it. Van der Vegt and Vandenberghe (1992) utilized CBAM to investigate the comprehensive reform of primary education in the Netherlands and Belgium and teachers' reaction to this wide-scale change. Both studies demonstrate that CBAM appears to make it possible to offer schools assistance in dealing with change in European countries as well as it does in American schools.

Dobbs (2004) measured the importance of training for higher education faculty and administrators in adapting to and implementing distance education courses in an interactive television (ITV) environment. Data gathered through the Stages of Concern Questionnaire (SoCQ) demonstrated significant differences in four of the seven stages of

concern between the classroom and laboratory group and the control group, signifying the importance of training.

Ward, West, and Isaak (2002) describe a mentoring program for preservice teachers that focused on the use of the Internet for teaching and learning. The SoCQ was used as both a pre- and post-assessment of the participants' concerns. Concerns assessment also includes a brief survey of open-ended questions at the end of the project. Findings indicated a clear development of movement through the stages of concern that was consistent with Fuller's (1969) self-task-impact concerns model.

Levels of Use (LoU)

Hall et al. (2006) state: "A component of research methodology that has been somewhat neglected is understanding and systematically addressing the importance of documenting the extent of implementation" (p. 3). Most educational innovations have been viewed in a dichotomous manner: either the change has been implemented, or it has not. The levels of use (LoU) construct is valuable in educational research because it provides the conceptual tool for examining the use/nonuse question as well as because it does not have to be redefined for each and every innovation. In addition, it can be used in any organization and with first-order as well as second-order changes.

Levels of use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These Levels characterize a user's development in acquiring new skills and varying use of the innovation. Each Level encompasses a range of behaviors. (Hall et al., 2006, p. 6)

Eight distinct levels have been identified by CBAM researchers to help explain behaviors exhibited by participants involved in a change. Each level is independent of the others, and although they appear to be sequential, each level should be treated as discrete and unique. Progression from one level to the next is marked by key decision points and corresponding behaviors in several domains: acquiring information, assessing, sharing, planning, status reporting, performance, and knowledge (Anderson, 1997).

Level 0, nonuse, reflects a state in which the innovation user has little or no knowledge of the change, has no involvement with the innovation, and has no plans for its implementation. A user enters Level I, orientation, when he or she decides to seek more information about the innovation but has not made a decision to implement it. At Level II, preparation, a user is actively preparing to put the change into practice and has a start date in mind, but has not actually begun to implement it. At Level III, mechanical, the user begins change implementation. It is here that the user focuses on short-term, day-to-day use of the innovation. Now the user is struggling with the logistics of implementation and modifies use for his or her own benefit, not for the purpose of benefiting the clients.

A user who establishes a pattern of regular use, and who makes few changes and adaptations in use of the innovation, is said to have attained Level IVA, routine, use. Here use of the innovation is stabilized. Few, if any, changes are being made either by user or client. Most users settle in at a routine level of use. Some, however, may actively assess the impact of the innovation on their students and initiate changes in the innovation or their use of it. They have now reached Level IVB, refinement. Users now

vary the use of the innovation to increase the impact on clients. Level V, integration, describes a state in which users combine their efforts with the related activities of colleagues to achieve a collective effect on their clients. Now user actions extend to the impact of implementation beyond their own individual sphere of influence. Eventually, some users reach Level VI, renewal. Here users reevaluate the quality of the innovation, seek major modifications to the innovation with the intent of achieving increased impact on clients. New opportunities are explored as well as new goals for individual users set (Hall et al., 2006).

Research Related to LoU

Early studies served to verify that levels of use actually existed (Cantor, 1982; Dominguez, Tunmer, & Jackson, 1980; Marsh, 1987, Mitchell, 1988; Stedman, 1984). These studies covered a wide variety of settings in which the application of LoU was documented: bilingual education, adult basic education, vocational education, curriculum development, program development, and professional development.

Consistent with the research of Rutherford (1981) and Rutherford and Loucks (1979) is the premise that no matter the context in which an innovation is being implemented, in order to determine how the innovation is being used, one must go to the individual level. In this regard, LoU is closely related to and intertwined with SoC (Stedman, 1984). Change in LoU is anticipated by changes in SoC, having almost a predictive relationship (George & Rutherford, 1978). Personal concerns tend to align with a lower LoU of the innovation (Mitchell, 1988; Savage, 1992). In general, those who

are involved in the implementation of an innovation (users) tend to have lower personal concerns and higher impact concerns than non-users. Those who implement an innovation at high LoU with impact concerns tend to be involved with the innovation at a configuration most closely resembling the ideal (Steele, 1995).

Geijsel, vanden Berg, and Slegers (1999) conducted a series of studies in which the innovative capacity of primary schools in the Netherlands was examined. These researchers examined the possible relationship between the innovative capacity of schools and intensity of concern among the teachers and school leaders. They found the following to be true in schools that were more innovation-adept as compared to those who were innovation-inept:

1. Teachers know and share the leader's vision
2. Leaders facilitate goals and stimulate collaboration
3. Leaders radiate dedication
4. Personal feelings are accounted for
5. Teacher participation in decision making is fostered
6. A collective desire for professional growth is evident

As evidenced by these findings, Hall et al. (2006) suggest that the change process is impacted by at least four variables: "the institution, leadership within the institution, the individual teacher, and how evaluation data are used to support the change process" (p. 32).

In other studies, the process of change was found to be influenced by prevailing school climate and the nature of the individual teacher. More democratic, open schools

with teachers operating at higher psychological levels promoted the greatest use of educational innovations (Evans & Hopkins, 1988; Hopkins, 1990).

One of the most significant characteristics of schools that successfully implemented educational changes is having a principal as a proactive facilitator of the innovation (Evan & Hopkins, 1988; Hopkins, 1990; Loucks & Hall, 1979). Principals who provide high levels of facilitation witness higher levels of use by their teachers (Schiller, 2000). Early research by Hall et al. (1984) suggests that a principal who is an innovator and who facilitates innovation is more successful than those who are managers or responders. And as those who are facilitating the change process gain in skill, they become more effective in helping teachers reach LoU IVA, routine (Loucks & Melle, 1980).

Individual teachers with higher levels of use demonstrate extensive knowledge and expertise, a greater sense of responsibility for student success, integrated lesson design and assessment, and a greater need to teach students pro-social skills (Krasner, 2000). Those teachers with greatest control of the components of an innovation implemented the innovation more successfully than those with little control (Loucks & Melle, 1980). No matter the innovation, teachers operate at different levels of use and stages of concern and require differentiated facilitation through these levels and stages if educational innovations are to be successfully implemented (Schiller, 2000).

Numerous studies have investigated the effects of various interventions on the implementation and institutionalization of an innovation. Some examined the use of professional development as a way to support the implementation of an innovation

(Basinger, 2000; Dudderar, 1997; Richmond-Cullen, 1999). In these studies, first-time users of an innovation were facilitated to levels of use III, mechanical, and IVA, routine, through staff development. This result supports the notion that teachers involved in a change process need not only have principal support and facilitation through the implementation of the innovation, but are even more successful when they are buttressed by effective professional learning (Bouchelle, 2002).

More recent research on levels of use focuses on assessing the implementation of an innovation in the context of whole school improvement rather than just the implementation of a single innovation. Within this context, levels of use was utilized to determine the extent of implementation of a variety of innovations ranging from fine arts curriculum (Doering, 2002), to math initiatives (Gilbert, 2000; Thornton & West, 1999), to technology applications (Newhouse, 2001). A critical finding in a number of these studies is that most teachers need two to three years of experience with an innovation to progress beyond LoU III, mechanical (Alquist et al., 1999; Dirksen & Tharp, 2000; Newhouse, 2001).

Few large-scale studies have been conducted in the past ten years in the area of stages of concern or levels of use. Most of the literature available is from local school district reports and dissertations. Although the findings provide assistance to those launching educational innovations, the fact remains that each independent initiative needs to be assessed and users of the innovation supported if goals are to be attained. Findings also suggests a need for more research in the area of stages of concern and levels of use.

Teacher Efficacy

Social Cognitive Theory

The conceptual framework of the exercise of human agency addresses many of the issues needed to be explored in determining the greatest contributions to cognitive functioning as we address the mandates of NCLB (Bandura, 1993).

Social cognitive theory (Bandura, 1986) adopts an *agentic* perspective in which individuals are producers of experiences and shapers of events. Among the mechanisms of human agency, none is more focal or pervading than the belief of personal efficacy. This core belief is the foundation of human agency (Bandura, 1993). Schlechty (2002) suggests that if students are to be successful at the levels mandated by NCLB, then teachers will have to be producers of experiences and shaper of events. Teachers must become inventors of work to which children will want to volunteer their time and effort.

Modes of Agency

Bandura (2001) suggests the capacity to exercise control over the nature and quality of one's life is the essence of humanness. Social cognitive theory distinguishes among three modes of agency: direct personal agency, proxy agency that relies on others to act on one's behest to secure desired outcomes, and collective agency exercised through socially coordinated and interdependent effort. In social cognitive theory,

personal agency operates within a broad network of sociostructural and psychosocial influences in which efficacy beliefs play an influential, regulative function (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996).

Social cognitive theory asserts that teachers' perceptions of both self and organization influence their actions (Bandura, 1993, 1997). A person's living and working environment is created individually and collectively. Efficacy beliefs impact how people feel, think, act, and motivate themselves. Efficacy beliefs emerging from interaction among constituents in schools influence both participants' individual well-being and what they can accomplish as a group (1993, 1997).

In these agentic transactions, people are producers as well as products of social systems. People are partly the products of their environments, but by selecting, creating, and transforming their environmental circumstances they are producers of environments as well. This capability enables them to influence the course of events and to take a hand in shaping their lives (Bandura, 2000). Through positive self-efficacy beliefs, human beings can take part in shaping their own futures, rather than being idle by-standers.

Self-Efficacy

Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1997). Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these effects through four major processes: cognitive, motivational, affective and selection processes (Bandura, 1986).

A major function of thought is to enable people to predict events and develop ways of controlling those events that affect their lives (Bandura, 1977). Such skills require accurate processing of ambiguous and vague information. Pattern detection is critical as is the development of short- and long-term memory banks which become useful when similar or disparate experiences present themselves. Courses of action are first shaped in thought and then serve as guides for action. Efficacy beliefs affect how people construe situations, anticipate specific scenarios, and visualize future scenarios. People with high efficacy beliefs view situations with high degrees of realizable opportunities. Those with low efficacy dwell on personal deficiencies caused by cognitive negativity which ultimately undermines self-motivation (Bandura, 1997).

Some consider ability an acquirable skill while others view it as an inherent aptitude. The former set functional learning goals that challenge their capabilities. These people seek challenges that provide opportunities to develop new skills and understandings. The latter measure their ability much more by social comparison and shy away from challenging goals because they do not possess internal voice that suggests that their environment is alterable or controllable (Bandura, 1997).

Marzano, Gaddy, and Dean (2000) provide a synthesis of research that demonstrates the instructional power of student goal setting. Citing three different studies, the researchers report average effect sizes ranging from -0.20 to 1.37 and percentile gains from -8 to 41. “Goal setting and providing feedback are activities that engage what many researchers and theorists refer to as the metacognitive system of thinking. Both strategies have been found to greatly enhance students’ progress”

(Marzano, Gaddy, & Dean, p. 98). Those who maintain a resilient sense of efficacy set themselves challenging goals and use analytical thinking to create positive performances (Bandura in Ramachaudran, 1994).

Cognitive Motivators

Present cognitive state enables people to conceive future states. These future states generate self-motivation and self-regulated behavior similar to the goal setting previously described. There are three different forms of cognitive motivators around which different theories have been built: causal attributions (attribution theory), outcome expectancies (expectancy-value theory), and cognized goals (goal theory) (Bandura in Ramachaudran, 1994).

Self-efficacy beliefs operate in each of these types of cognitive motivation. Self-efficacy beliefs influence causal attributions. People who are highly efficacious attribute their successes to hard work and their failures to lack of effort on their part. Those who lack efficacy attribute their successes to luck and their failures to lack of ability (Bandura, 1997).

In expectancy-value theory, motivation is regulated by the expectation that a given course of behavior will produce certain outcomes. People motivate themselves and guide their actions by the outcomes they expect to get from certain performances. In other words, people act on their beliefs of what they can do as well as the likely effects of their behavior. The motivating influence of outcome expectancies is partly governed by self-beliefs of efficacy. Efficacy beliefs determine the types of outcomes that are anticipated. There are countless attractive options people do not pursue because they

judge they lack the capabilities for them. The predictiveness of expectancy-value theory is enhanced by including the influence of perceived self-efficacy (Bandura, 1997).

According to Bandura (1997), behavior is motivated and directed by cognized goals rather than pulled by an unrealized future state. Research shows that explicit, challenging goals enhance motivation and therefore achievement in students (Marzano, Pickering, & Pollock, 2001). Motivation based on goals is regulated by three types of influences: self-satisfying and self-dissatisfying reactions to one's performance, perceived efficacy for goal attainment, and readjustment of personal goals based on one's progress toward a specific performance (Bandura in Ramachaudran, 1994). Self-efficacy beliefs influence motivation by determining the goals people will set for themselves, how much effort they are willing to expend toward the attainment of those goals, and how they persevere when faced with challenges. People with strong self-efficacy beliefs set challenging goals, are willing to work hard toward the attainment of the goals, and will persevere in difficult situations.

When faced with obstacles or failures, people who distrust their capabilities slacken their efforts or abort their attempts prematurely. Those who have strong belief in their capabilities intensify their efforts when they fail to achieve what they seek and persist until they succeed. Strong perseverance usually pays off in performance accomplishments. (Bandura, 1997, p. 129)

Thought, Action, Affect

There are three ways in which self-efficacy beliefs affect the nature and intensity of emotional experiences. These include the exercise of personal control over thought, action, and affect. Perceived self-efficacy to control thought processes is a key factor in regulating thought-produced stress and anxiety. Anxiety is defined as a state of

nervousness, agitation, or apprehension over possible harmful experiences. Those who believe they cannot manage threats experience high anxiety arousal and dwell on their coping deficiencies rather than on ways of dealing with adversities and problem-solving solutions. Self-efficacy beliefs have not only an impact on the affective domain but on the physical domain as well. Stress has been implicated as an important contributing factor to debilitating physical conditions. In *Man's Search for Meaning*, Austrian psychiatrist Viktor Frankl (1992) describes the horrors of life in several Nazi concentration camps during World War II. He speaks of the freedom to choose one's response to a given situation as the last human freedom as well as the need to create a possible future.

The prisoner who had lost faith in the future - his future - was doomed. With his loss of belief in the future, he also lost his spiritual hold; he let himself decline and became subject to mental and physical decay. As we said before, any attempt to restore a man's inner strength in the camp had first to succeed in showing him some future goal. Nietzsche's words, 'He who has a why to live for can bear almost any how,' could be the guiding motto for all psychotherapeutic and psychohygienic efforts regarding prisoners. Whenever there was an opportunity for it, one had to give them a why - an aim - for their lives, in order to strengthen them to bear the terrible how of their existence. Woe to him who saw no more sense in his life, no aim, no purpose, and therefore no point in carrying on. He was soon lost. (pp. 82-85)

Environments create stress, and people are partly the products of their environments (Bandura, 1997). By selecting their environments or choosing their responses to their environments, people can have a hand in what they eventually become. Any factor that influences choice of behavior can affect the direction of personal development. Beliefs of personal efficacy can shape the course lives take by influencing

the decisions people make, challenges they attempt, and situations they either avoid or embrace.

Sources of Self-Efficacy

People form their self-efficacy perceptions by interpreting information from four sources: personal mastery, vicarious experiences observing others perform tasks, verbal messages and social persuasions received from others, and physiological states such as anxiety and stress (Bandura, 1997). Of these, authentic mastery experiences provide the most influential source of efficacy information. Successes build a robust sense of efficacy while failures undermine it, especially if failures occur before a sense of efficacy is firmly established (1997). A resilient sense of efficacy requires experience in overcoming obstacles through perseverant effort.

The extent to which people alter their sense of self-efficacy beliefs through performance experiences depends on their preconception of their capability, the perceived task difficulty, the effort required, the amount of external assistance needed, the circumstances under which they perform, and the manner in which experiences are cognized and reconstructed in memory (Bandura, 1997). Some setbacks and disappointments in human pursuits serve a useful purpose in teaching that success usually requires sustained effort.

The second way of creating and strengthening self-efficacy beliefs is through vicarious experiences. Through social comparisons people can appraise their capabilities in relation to the attainment of others. Social modeling is an effective way to raise self-

efficacy beliefs. Of course, the converse can also be true. Witnessing the continued failures of others can lower self-efficacy beliefs. Similarity of circumstance is critical for either result. If people see the models as very different from themselves, their perceived self-efficacy is not much influenced by the models' behavior and the results produced. "Persons who are similar or slightly higher in ability provide the most informative comparative information for gauging ones own capabilities" (Bandura, 1997, p. 96).

Social persuasion is a third way of strengthening people's beliefs that they can have an impact on future events. Persuasive efficacy data are often communicated through evaluative feedback. Information that highlights personal capabilities raises self-efficacy beliefs. This is the case especially when information is communicated early in the process. According to Bandura (1997) it is more difficult to instill high beliefs of personal efficacy by social persuasion alone than to undermine it. Unrealistic boosts in self-efficacy are quickly disconfirmed by disappointing results of one's efforts. Bandura suggests that successful efficacy builders structure situations that will yield positive results for others and avoid circumstances in which they will often fail. They encourage people to measure their success in terms of self-improvement rather than triumphs over others.

Labone (2004) provides guidance for the development of positive efficacy beliefs in three of the four efficacy sources identified by Bandura (1997). Bandura suggests that pre-existing self-schemata, task and contextual factors, effort expenditure, and self-monitoring are all influences on the attention given to efficacy information. As we

consider ways in which teacher efficacy can be improved, certain implications for the development of positive efficacy beliefs become more apparent.

Research Related to Current Study

Hipp (1995) examined the relationship of teacher efficacy and principal leadership behaviors using both quantitative and qualitative measures. The current study utilized a similar approach – quantitative scales for measuring teacher efficacy and stages of concern, and a qualitative measure (Levels of use focused interview) to determine participants' perceptions of their levels of use of backward design and lesson study. Hipp used qualitative data to confirm the quantitative results in her study as well as to suggest additional leadership behaviors that reinforce and sustain teacher efficacy. The current study utilizes information from the levels of use interviews to support quantitative results as well as to report themes that correspond to stages of concern and changes in teacher efficacy.

It is acknowledged that each participant brings with him/her individual beliefs that are shaped by many factors. Each has a mental pattern or schema that influences his/her behavior. If self-schema impacts feelings of efficacy, and if these perceptions are negative, feedback on teacher performance must convincingly dispute the pre-existing efficacy beliefs (Labone, 2004). The study at hand recognized this phenomenon and provided a continual feedback loop throughout the job-embedded staff development process. In her research, Rosenholtz (1989) reinforces the idea that receiving positive feedback on teacher performance as well as collaboration with other teachers is significantly associated with teachers' sense of efficacy.

Contextual factors and difficulty of tasks were monitored as well. As teachers in this study engaged in the backward design process and lesson study, release time, training, coaching, and instructional materials were provided so that difficult tasks could be successfully managed under a diverse range of conditions. Tschannen-Moran and Woolfolk Hoy (2007) explored the contextual elements of availability of teaching materials and various forms of verbal persuasion and their impact on efficacy beliefs for novice and experienced teachers. Both were found to have influence on perceptions of efficacy, especially for novice teachers.

Labone (2004) suggests that self-monitoring and self-evaluation must focus attention on successful experiences if positive efficacy beliefs are to be cultivated. Participants in the current study had opportunity to reflect on the process informally with other teachers and central office staff throughout the process. Formally, participants evaluated their progress through the job-embedded professional learning experience by completing the Stages of Concern Questionnaire (Hall et al., 1979) and the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) both pre- and post-experience. In addition, 15 participants engaged in levels of use interviews (Loucks et al., 1975) at the end of the experience.

Bandura (1997) suggests several mediating factors that influence attention to, and use of efficacy information with, vicarious experiences. These include modes of modeling influence, performance similarity, attribute similarity, model competence, coping versus mastery modeling, and multiplicity and diversity of modeling.

Although modeling may have the greatest impact on the efficacy beliefs of those with limited experiences (Bandura, 1997), it was the intent of the current study to provide experiences for all participants to observe others teach as well as have others observe them teach and provide feedback. Included in this process was structured analysis of observations and dialog concerning the improvement of instruction. “The inclusion of cognitive modeling in which the model verbalizes thought processes and strategy value information is particularly useful for the development of cognitive skills, and therefore may be particularly important in the development of teachers’ efficacy beliefs” (Labone, 2004, p. 347).

As to performance and attribute similarity, the modeled performances in this study were identical lessons or complementary lessons developed by teams of teachers. These teams were self-selected, and the lesson topics were centered around conceptual or skill difficulties of students in specific subjects or grade levels. Because the lessons were guided by content area experts, competent models were highly probable.

A third source of efficacy is verbal persuasion (Bandura, 1997). “The most beneficial use of verbal persuasion is when it is associated with the analysis of enactive mastery experiences” (Labone, 2004, p.348). Labone suggests that this source is influenced through the framing of performance feedback and the expertise and credibility of those providing feedback. Bandura (1997) indicates that verbal persuasion is only effective in raising efficacy beliefs when the person doing the persuading is considered to have expertise and credibility. In this study, the expertise and knowledge of the teacher

participants as well as the central office mentors had to be respected for performance feedback to be effective in enhancing personal efficacy beliefs.

A final source of efficacy beliefs is that of physiological and affective states (Bandura, 1997). Bandura recommends enhancing physical status, reducing stress levels and negative emotional tendencies, and correcting misinterpretation of bodily states as means toward altering efficacy beliefs. Espinoza (2006) and Loyd (2006), in separate studies, investigated the benefits of structured collaboration through professional learning communities on both teachers and students. Findings demonstrate that participation in structured collaboration enhanced teacher certainty, causing them to be more resourceful in the application of their instructional and assessment skills to promote learning for all students. Louis and Marks (1998), in a study of 24 schools nationwide, suggest that professional community may be a condition worth striving for at all levels. Their study “is grounded in the assumption that how teachers interact when they are not in their classrooms may be critical to the future of school restructuring and to the effects of restructuring on students” (p. 758).

Although teacher efficacy was not measured, these studies lend credence to the idea that collaborative learning units enhance physical status, reduce stress levels, and provide a more positive outlook for teachers as they confront the many challenges of reaching the 2014 goal of No Child Left Behind. The current study capitalizes on teacher collaboration as a means toward increasing efficacy beliefs of teachers and, ultimately, performance of students.

The extent to which people will alter their perceived efficacy through performance experiences depends upon, among other factors, their preconceptions

of their capabilities, the perceived difficulty of the tasks, the amount of effort they expend, the amount of external aid they receive, the circumstances under which they perform, the temporal pattern of their success and failures, and the way these enactive experiences are cognitively organized and reconstructed in memory. (Bandura, 1997, p. 81)

The current study acknowledged these factors and structured teacher interactions with the intent of minimizing the factors that negatively impact efficacy beliefs while supporting those factors that enhance teacher efficacy.

Job-Embedded Professional Development

Job-embedded professional development is a concept that has been discussed in educational circles for nearly 20 years; yet there remains little evidence that this structure is widely embraced or practiced. Wood and McQuarrie (1999) assert that “job-embedded learning is learning by doing, reflecting on the experience, and then generating and sharing new insights and learning with oneself and others” (p.10). Lowden (2003) discovered that teachers demonstrated the least amount of participation in the very models that embodied job-embedded professional development: inquiry, action research, reflection, collaboration, and mentoring. Lieberman (1995) claims that:

The current effort to reform the nation's schools seeks to develop not only new (or reframed) conceptions of teaching, learning, and schooling, but also a wide variety of practices that support teacher learning. These practices run counter to some deeply held notions about staff development and inservice education that have long influenced educators' and the public's views of teachers. (p. 591)

These beliefs about what professional development is, what it looks like, and how it is carried out appear to be as deeply engrained today as they were 12 years ago.

Although we as educators have become more sophisticated in how we connect

professional teacher learning to student learning, it is still widely accepted that learning takes place in workshop settings away from the site of student learning. What is valued and supported are training sessions conducted outside the school; authentic learning opportunities between and among professional colleagues inside the school are not.

Sparks and Hirsh (1997) suggest “three powerful ideas” (p. 4) that alter the way in which teachers engage in professional learning: results-driven education, systems thinking, and constructivism. Results-driven education for students requires results-driven staff development for educators. Just as we are moving away from the seat-time mentality of education for our students, a similar approach is encompassing staff development for teachers. No longer is it about how many hours one spends in a workshop learning from an expert from outside the system. A radically different view of professional learning is offered – one in which the success of staff development is judged by the ultimate impact on student achievement rather than by the number of teachers and administrators participating in staff development programs.

Two critical features of systems thinking are that change within the system is continuous and that change in one part of the system has an impact on other parts of the system; even if these ripple effects are not apparent for months down the road (Sparks & Hirsh, 1997). Schlechty (2007) suggests that school systems are “innovation prone and change inept” (p.21). Because educational organizations have not adopted a systems perspective in their reform efforts; change has been haphazard with one innovation following another, each of which has neglected the impact on the rest of the system. Sparks and Hirsh propose two implications of systems thinking for staff development.

First, staff developers must be at the forefront of establishing systems thinking at every level of their organizations; and staff development efforts that neglect systems thinking will be limited at best.

The third powerful idea is that of constructivism. Vygotsky (1997) creates a powerful metaphor when he states:

Though the teacher is powerless to produce immediate effects on the student, he is all-powerful when it comes to producing direct effects on him through the social environment. The social environment is the true lever of the educational process, and the teacher's overall role is reduced to adjusting this lever. Just as a gardener would be acting foolishly if he were to try to affect the growth of a plant by directly tugging at its roots with his hands from underneath the plant, so the teacher is in contradiction with the essential nature of education if he bends all his efforts at directly influencing the student. But the gardener affects the germination of his flowers by increasing the temperature, regulating the moisture, varying the relative position of neighboring plants, and selecting and mixing soils and fertilizers, i.e., once again, indirectly, by making appropriate changes to the environment. Thus, the teacher educates the student by varying the environment. (p.49)

Just as students create their own understandings based on their interaction with their environment, so too, do adults construct reality when they are confronted with environments that are slightly discrepant from what their cognitive structures suggest is the norm. This cannot always be achieved in workshop settings.

Sparks and Hirsh (1997) offer 11 major shifts that represent a change in focus in the nature of professional development:

1. From individual development to individual development and organization development.
2. From fragmented, piecemeal efforts to staff development driven by a clear, coherent strategic plan for the school district, each school, and the departments they serve.

3. From district-focused to school focused approaches to staff development.
4. From a focus on adult needs and satisfaction to a focus on student needs and learning outcomes, and changes in on-the-job behaviors.
5. From training conducted away from the job as the primary delivery system for staff development to multiple forms of job-embedded learning.
6. From an orientation toward the transmission of knowledge and skills by “experts” to the study by teachers of the teaching and learning processes.
7. From a focus on generic instructional skills to a combination of generic and content-specific skills.
8. From staff developers who function primarily as trainers to those who provide consultation, planning, and facilitation services as well as training.
9. From staff development provided by one or two departments to staff development as a critical function and major responsibility performed by all administrators and teacher leaders.
10. From staff development directed toward teachers as the primary recipients to continuous improvement in performance for everyone who affects student learning.
11. From staff development as a “frill” that can be cut during difficult financial times to staff development as an indispensable process without which schools cannot hope to prepare young people for citizenship and productive employment. (pp. 12-16)

The literature provides increasingly more numerous examples of schools and school districts that have adopted the shifts outlined above. Tienken and Stonaker (2007) describe a school district in the East that witnessed a transformation in staff development from workshops that provided “no cohesion of topics, no follow-up, limited use, and limited purpose” (p. 25) to a comprehensive staff development plan that includes action research, lesson study, peer coaching, and teacher created projects.

Sever and Bowgren (2007) describe how budget reductions in their New York school district created conditions in which the district's leadership view of job-embedded staff development was put to the test. Student needs increased while opportunities for after-school, Saturday, and summer workshops decreased. Over the course of several years, the district used conference days, early-release days, and release time to provide teachers time to learn collaboratively. Outcomes attained include increased teacher knowledge, increased collaboration and sharing, increased positive student/teacher relationships, and increased student achievement.

Johnston, Knight, and Miller (2007) report significant student achievement gains over a four year period in a Nebraska school district and attribute the increases to monthly staff development for teachers. Teachers meet in teams one day each month and use protocols for examining student work and teacher created assessments. Similar gains are realized in districts throughout the country who find time for collaborative teacher work. More and more districts are studying the tenets of professional learning communities and realizing their benefits when properly implemented. According to Huffman, Hipp, Pankake, and Moller (2001), job-embedded professional development is one of the characteristics that account for high levels of readiness in development of professional learning communities.

Although not practiced on a wide-scale basis, job-embedded professional learning holds great promise for the development of teacher knowledge and skills as districts throughout the country search for methods of overcoming student achievement disparities. As Lieberman (1995) reminds us:

If reform plans are to be made operational - thus enabling teachers to really change the way they work - then teachers must have opportunities to discuss, think about, try out, and hone new practices. This means that they must be involved in learning about, developing, and using new ideas with their students. (p. 593)

High quality professional development has been described by Darling-Hammond and Bransford (2005), Joyce and Showers (2002), and Sparks and Hirsh (1997) as activities that are sustained over time, embedded in educators' every day work, incorporate the best available research and practice in teaching and learning, and foster collaboration and reflective practice among teachers and administrators. "Rather than receiving knowledge from experts in training sessions, teachers and administrators will collaborate with peers, researchers, and their own students to make sense of the teaching/learning process in their own contexts" (Sparks & Hirsh, 1997, p. 11).

Although this model is not widely practiced throughout public schools in this state, it is critical to the success of and provides the foundation for the study at hand. The current study reflected activities that were embedded in teachers' every day work, incorporated best practices supported by research, and fostered collaboration and reflection among its participants. It is through the adherence to these tenets that this study proposed to realize increases in teacher efficacy.

CHAPTER 3

METHODOLOGY

Introduction

Chapter 1 discusses the complex milieu in which public schools find themselves in the 21st century. Not only are educators faced with the challenges of No Child Left Behind (2002) (NCLB), but they are also presented with students who come from increasingly diverse backgrounds with fewer educational opportunities and greater barriers to learning. Teachers and administrators also realize the context of reform that has gripped this nation for the past 50 years. Answers are being sought to the very difficult questions being presented. Becoming well-versed in and facilitators of change is critical.

Fullan and Stiegelbauer (1991) and Fullan (1993, 2001) reminds us of the importance of involving the individuals most affected by change in the change process. He also recommends a simultaneous top-down and bottom-up process of reform (1991). Teacher beliefs and attitudes are as critical to any improvement effort as the administrative aspirations and purposes for the change. Teachers not only have to believe in the change effort, but they also have to believe in their own capacities to accomplish the change. It is my opinion that teachers' beliefs and perceptions of their own effectiveness change as a result of intensive, collaborative, job-embedded professional learning experiences. It is also my belief that changes in teacher thinking lead to

significant and long-lasting changes in teacher behavior. When teachers believe they can make a difference with students in general as well as with specific students, they, in turn, have a positive effect on student learning.

Chapter 2 presents a review of existing literature around the topics of organizational theory, change theory, concern theory, teacher efficacy, and job-embedded professional development to provide a theoretical basis for exploring the linkages between (a) movement through a change process, (b) job-embedded professional development, and (c) levels of teacher efficacy.

Chapter 3 details the methods to be utilized in the investigation of the theorized connections between job-embedded professional learning, stages of concern and levels of use, and teachers' feelings of efficacy. The research questions being investigated are detailed along with the context of the research, participant selection, instruments to be used in data collection, procedures to be followed, and the projected analysis of data.

General Perspective

This study combined elements of quantitative and qualitative research. It featured pre-experimental, correlational, and descriptive research designs. It utilized the Stages of Concern Questionnaire (Hall, George, & Rutherford, 1979) and Teachers Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) to determine the effect of participation in job-embedded staff development on K-12 teachers' levels of concern and teacher efficacy. This portion of the study utilized pre-experimental methodology in the form of a one-group pretest-posttest design.

The one-group pretest-posttest design involved three steps: (1) administration of a pretest measuring the dependent variables (teacher efficacy and stages of concern); (2) implementation of a treatment (job-embedded staff development experience for participants); and (3) administration of a posttest that measures the dependent variables again (Gall, Borg, & Gall, 1996). The effects of the experimental treatment were determined by comparing the results of the Teacher Sense of Efficacy Scale pretest with its posttest as well as comparing the Stages of Concern Questionnaire pretest results with its posttest results.

In this study, it was assumed that no extraneous factors accounted for changes in teacher efficacy or movement through stages of concern during the time the dependent variables were being measured. Although the experimental treatment could account for changes in other variables that were not measured, the assumption was that extraneous factors were minimal or nonexistent as they relate to the dependent variables. “The one-group pretest-posttest design is especially appropriate when you are attempting to change a characteristic that is very stable or resistant to change” (Gall, Borg, & Gall, 1996, p. 492). Since research suggests that teacher efficacy is rather stable in experienced teachers (Bandura, 1977; Woolfolk & Hoy, 1990), we can assume that efficacy is a characteristic that is resistant to change. This study hopes to shed light on its potential for change.

Two correlational research questions were posed and answered through the current study. The relationship between teacher efficacy and stages of concern prior to (correlation 1) and after (correlation 2) an experimental treatment was measured. The intent of this study was to explore the degree of relationship between teacher efficacy and

stages of concern and levels of use of an innovation before and after teachers engaged in a job-embedded professional development experience. Scores on the subscales of the Teacher Sense of Efficacy Scale (the phenomenon of primary interest) were correlated with scores on the Stages of Concern Questionnaire (variables thought to be related to teacher efficacy). The product-moment correlation coefficient (r) was used to express the relationships between subscales of teacher efficacy and stages of concern. Qualitative data collected through the levels of use interviews were analyzed for specific themes that reinforce the relationship between levels of teacher efficacy and teachers' stages of concern.

In addition, with respect to the descriptive part of the study, interviews were conducted with 15 participants utilizing the Levels of use focused interview (Loucks et al., 1975). The Levels of use focused interview utilizes a branching technique that does not permit a great deal of adaptability; one of the major advantages of the interview method. This fact overcomes one of the shortcomings of the interview method – its lack of standardization (Gall, Borg, and Gall, 1996). The purpose of this descriptive measure is to describe the current status of participants' use of the backward design and lesson study processes.

The innovation employed in this study is that of teachers designing lessons utilizing the backward design method and then implementing these lessons utilizing the lesson study method in a job-embedded format. The levels of use interviews helped to describe teacher behaviors as they implemented backward design and lesson study. The qualitative data collected provided a more defined picture of teachers' involvement in

job-embedded professional learning. In addition to a numerical value (O – VI), the levels of use interviews yielded themes which were coded, categorized, analyzed (Glesne, 1999), and are reported in Chapter 4.

Research Questions

The research questions that lay the foundation for this study are:

Pre-experimental:

1. What is the effect of a job-embedded staff development program on K-12 teachers' teacher efficacy?
2. What is the effect of a job-embedded staff development program on K-12 teachers' stages of concerns about the innovation?

Correlational:

3. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development?
4. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development?

Descriptive:

5. What is the status of K-12 teacher participants' perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development?
6. What is the current status of K-12 teacher participants' perceptions of their own levels of use of an educational innovation after participation in a job-embedded staff development?
7. What are the dominant concerns of K-12 teacher participants prior to and after job-embedded staff development?

For the purpose of analyzing data and calculating inferential statistics, the following hypotheses shaped this research:

Pre-Experimental:

1. Participation in a job-embedded staff development program has a significant positive effect on K-12 teachers' teacher efficacy.
2. Participation in a job-embedded staff development program has a significant positive effect on K-12 teachers' movement through stages of concern.

Correlational:

3. There exists a significant positive relationship between subscales of teacher efficacy and stage of concern of K-12 teachers prior to participation in job-embedded staff development.
4. There exists a significant positive relationship between subscales of teacher efficacy and stage of concern of K-12 teachers after participation in job-embedded staff development.

Descriptive:

5. Teachers' perceptions of their levels of use of an educational innovation are greater after involvement in job-embedded staff development.

Research Context

This study examined K-12 teachers' participation in a change initiative and hypothesized growth in sense of efficacy in a suburban district in north central Texas. Teacher participants were involved in a year-long study and implementation of lesson design and lesson study modeled after Wiggins and McTighe's (1998) backward design.

Initial data gathering was centered on all participants completing the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). This scale was an online version which participants accessed via the Internet. Teacher efficacy was measured prior to the treatment (i.e. job-embedded professional development on backward design and lesson study) and then again after four months of involvement with the treatment. Teachers' stages of concern were measured immediately after their introduction to backward design and lesson study using an online version of the Stages of Concern Questionnaire (Hall et al., 1979).

Participant Selection

Participants included 30 teachers who represent the kindergarten through high school span of a suburban school district in north central Texas. Teachers were self-selected as they demonstrated interest in participation in this study and the job-embedded professional learning opportunity. Teachers worked collaboratively with members of the curriculum and instruction staff throughout this process.

Teachers in this school district embrace the expectation of continuous learning and improvement. Two paid contract days each year are dedicated to teachers' individual professional learning that is outlined in an agreement between teacher and supervisor for how professional learning days will be spent. The participants in this study tended to be veteran teachers who have experienced a variety of workshops and other training opportunities in their careers. They all tend to seek out alternatives to the conventional models of staff development for their professional learning.

Instruments Used in Data Collection

Two data collection instruments and one branching interview technique were used in this study. The Teachers Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) was utilized along with the Stages of Concern Questionnaire (Hall et al., 1979) and the Levels of Concern Focused Interview (Loucks et al., 1975).

The Teacher Sense of Efficacy Scale (TSES)

Tschannen-Moran and Woolfolk Hoy (2001) developed the Teacher Sense of Efficacy Scale (TSES) as “an instrument that possessed correspondence to tasks teachers face in schools” (Roberts & Henson, 2001, pp. 7-8). It was originally entitled the Ohio State Teacher Efficacy Scale (OSTES) but was later renamed the Teacher Sense of Efficacy Scale (TSES). The TSES was developed in response to a variety of perceived problems with existing measures of teacher efficacy. Reliability and validity of these measures were questioned in addition to a recurrent concern with a two-factor structure that was revealed when the scales were subjected to factor analysis (Tschannen-Moran & Woolfolk Hoy, 2001). Questions about teacher efficacy being specific contextually added to the issues related to the measurement of efficacy. “In order to be useful and generalizable, measures of teacher efficacy need to tap teachers’ assessments of their competence across the wide range of activities and tasks they are asked to perform” (Tschannen-Moran & Woolfolk Hoy, 2001, p. 34). The TSES assesses both personal competence and an analysis of the teaching task in specific contexts.

This new measure was examined in three separate studies. The original 52 items were reduced to 32 in the first study, and then it was reduced to 18 items made up of three subscales in the second study. In the third study, 18 additional items were developed and tested. The factor structure, reliability, and validity of the TSES were examined, as was the appropriateness of the scale for both preservice and inservice teacher populations. Factor analysis has consistently produced three moderately correlated factors: (1) efficacy in student engagement, (2) efficacy in instructional practices, and (3) efficacy in classroom management. A confirmatory factor analysis by Roberts and Henson (2001) supports the factorial validity of the TSES, but only for the efficacy in student engagement and efficacy in instructional practices factors. The resulting instrument has two forms - a long form with 24 items and a short form with 12 items. The current study utilized the long form in an electronic format.

The Stages of Concern Questionnaire (SoCQ)

The Stages of Concern Questionnaire (SoCQ) was developed to provide an easy way to measure stages of concern of an innovation. Ten years of development begun by Frances Fuller (1969) gave way to three years of validation by the concerns-based adoption model (CBAM) researchers. The SoCQ was tested for estimates of reliability, internal consistency, and validity with several different samples and eleven different innovations (George et al., 2006).

The SoCQ is a 35-item questionnaire that consists of three parts: (1) an introduction and explanation, (2) the actual items, and (3) a demographics page. The first

part, an introductory page, provides an explanation of the purpose of the questionnaire, directions for completion, sample items, and the name of the specific innovation. The questionnaire remains intact regardless of the innovation it is measuring.

The second part of the SoCQ represents the 35 items – five items for each of the seven stages of concern. These items are responded to utilizing a 0 to 7 Likert scale. A score of seven indicates that the statement being scored describes a concern felt by the respondent at the present time. A zero represents a statement that is completely irrelevant to the respondent. (Sample item - I am concerned about how the innovation affects students.) The third part of the SoCQ captures useful demographic information about the respondents. This instrument was provided to participants in an electronic format and data was collected and analyzed electronically.

The Levels of Use Focused Interview

The Levels of use focused interview (Loucks et al., 1975) is organized around decision points and is conducted in a branching format. It is structured in that all questions must be asked as originally developed and tested. It is not considered a structured interview because “the LoU concept is too complex to expect that probes and follow-up questions can be completely standardized and still be appropriate for every situation” (Loucks et al., 1977, p. 2). “The LoU interview procedure is generic, that is, it can be used with different innovations simply by changing the frame of reference” (Hall & Loucks, 1977, p. 265).

The interview begins with the question, “Are you using the innovation” (Loucks et al., 1977, p. 2)? The interviewer must have a basic innovation configuration defined around the concept of user so he/she knows how to proceed. The first decision point in the interview is determining whether or not the person being interviewed is a user of the innovation. A negative answer initiates one branch and series of questions; a positive answer initiates another. The interviews were tape recorded and analyzed. Interviews were peer-checked by another rater. The LoU interview was tested in the 1970s when a more positivist approach to research was dominant. Concerns existed that interviewees’ bias in their reporting would result in less than objective data. Hall and Loucks (1977) describe the process followed in validating the Levels of use focused interview as ethnographic in nature so as to provide a broad base of qualitative data. Forty-five junior high school teachers in two school systems were interviewed in relation to their use or nonuse of the Intermediate Science Curriculum Improvement Study (ISCS). Seventeen teachers representing a stratified sample including all LoU levels were selected for ethnographic observation. Ethnographers spent one full day with each teacher, from the time the teacher arrived at school to the time s/he departed. Based on extensive notes taken throughout the day, the ethnographers assigned an LoU rating to the teachers and developed a set of written protocols. When observations were compared to interview results, the correlation coefficient was 0.98, clearly indicating that, for this sample, the focused interview rating was consistent with a full day's direct observation of the teacher's use/nonuse of the innovation of ISCS.

Procedures

Thirty teachers new to the lesson design and lesson study process began using these innovations in September, 2007. All completed the Teacher Sense of Efficacy Scale (TSES) prior to initial training and again after four months of implementation. Responses were gathered electronically and anonymously. Teachers provided an eight digit identifier which was utilized to connect stages of concern with teacher efficacy information. Initial training was provided by me and my curriculum and instruction team in mid-September. Immediately after receiving training in lesson design and lesson study, all participants were administered the Stages of Concern Questionnaire (SoCQ). This measure was again administered after four months of implementation.

Participants were involved in a job-embedded professional learning experience that included creating meaningful student work through backward design as well as studying collaboratively developed lessons. Both of these innovations were introduced and developed in a job-embedded setting with members of the curriculum and instruction staff. The SoCQ was administered after initial training because the questions address the participants' respective levels of concern about their involvement in the job-embedded professional development experience. Participants must have attained a vantage point (knowledge about the innovation) before responding to the questionnaire.

Teachers were grouped according to similar grade levels and/or content as well as by interdisciplinary desire for exploration. Each group was provided a curriculum specialist who guided their continued learning and facilitated their lesson design and lesson study throughout the school year.

All participants attended a general overview of the process which included their roles in the study, informed consent, the study timeline, and expectations of their participation and collaboration with other teachers and curriculum and instruction staff.

The second step in the process was to group teachers according to areas of interest or student need and assign a curriculum specialist as a facilitator. This facilitator met with the group to provide background in backward design and lesson study. He/she also provided continued support in the following areas: expertise in the process; release time for teachers to meet; liaison between principal investigator and teachers; and material support as needed to implement specific lessons.

After initial consultation and introduction to backward design and lesson study, teachers completed a Stages of Concern Questionnaire (SoCQ) (Hall et al., 1979). It was critical to provide guidance in the innovations prior to completing the SoCQ because teachers were responding to their concerns about the implementation of the innovations when completing the questionnaire. Teachers' sense of efficacy was measured prior to involvement with the innovations because participants responding to general statements that reflect their current state of efficacy which had no relation to the innovations. This pretest data enabled correlations to be drawn between teacher efficacy and stages of concern before teachers participated in a job-embedded staff development experience. The product-moment correlation coefficient (r) was used to express the relationships between teacher efficacy and stages of concern.

During the four months of implementation, each group developed a unit of study or lesson according to the backward design protocol. The lessons were taught and

critiqued according to the lesson study guidelines. Participants met as a large group only twice during this process: 1) once at the beginning for an overview and 2) once at the end of the process when teachers report to the large group about their experience in the process. In between they were provided release time to meet together and/or with their facilitator.

After four months of implementation of the innovations (backward design and lesson study), 15 participants were interviewed utilizing the Levels of use focused interview (Loucks et al., 1975) to determine each individual's level of use of backward design and lesson study as well as to allow comparison to their individual stage of concern.

In addition, after four months of implementation all participants completed the Stages of Concern Questionnaire and Teachers Sense of Efficacy Scale for a second time. This enabled correlations to be drawn between: 1) subscales of teacher efficacy and stages of concern before teachers participated in a job-embedded staff development experience and 2) subscales of teacher efficacy and stages of concern after teachers participated in a job-embedded staff development experience. The product-moment correlation coefficient (r) was used to express the relationships between the subscales of teacher efficacy and stages of concern.

The pretest-posttest design also enabled the determination of statistically significant effects of job-embedded professional learning on teacher efficacy and stages of concern about the innovation. The t test for non-independent samples was used to determine the level of statistical significance of the observed difference between the

mean scores from the efficacy measures. Statistical significance was set at a level of $p \leq .05$.

Levels of use interviews were conducted with all participants during the spring semester of 2008. All interviews were tape recorded and peer-checked using the constant comparison method for reliability.

Throughout the school year, members of the curriculum and instruction staff facilitated participants as they implemented lesson design and lesson study. Four release days (or partial days) were provided to each of the study groups that form. The focus of this time was for collaborative planning, peer observation, lesson critique, and teacher reflection. Stages of concern were correlated with subscale levels of self-efficacy for each participant in the study.

Data Analysis

Data from the TSES and the SoCQ were collected electronically via an online survey instrument. Responses were gathered anonymously. Teachers provided an eight digit identifier which was utilized to connect stages of concern with teacher efficacy information. The data were then downloaded into a spreadsheet and statistical program (SPSS) for analysis. To determine the efficacy in student engagement, efficacy in instructional practices, and efficacy in classroom management subscale scores on the TSES, unweighted means of the items that load on each factor were computed. Generally these groupings are:

Efficacy in Student Engagement: Items 1, 2, 4, 6, 9, 12, 14, 22

Efficacy in Instructional Strategies: Items 7, 10, 11, 17, 18, 20, 23, 24

Efficacy in Classroom Management: Items 3, 5, 8, 13, 15, 16, 19, 21

Paired sample *t*-tests (i.e. *t*-tests for non-independent samples) were used for statistical analysis of the first and second occasions of the TSES – to compare pretest and posttest scores. The *t*-test for non-independent samples was used to determine the level of statistical significance of the observed difference between the mean scores from the efficacy measures. Statistical significance was set at a level of $p \leq .05$.

Levels of use interviews were analyzed to determine and describe end-of-study levels of use of the innovation among 15 participants representing elementary, middle, and high school teachers. Themes were produced which were coded, categorized, and analyzed (Glesne, 1999).

Summary

To summarize, 30 teachers from a suburban school district in north central Texas engaged in an initiative that requires significant changes in the way they approach designing work for students. These teachers were trained in lesson design and lesson study; they worked in collaborative teams on lessons that reflected academic trouble spots for the district; and they observed and critiqued these lessons as their colleagues taught them.

All participants completed a Teacher Sense of Efficacy Scale and a Stages of Concern Questionnaire at the beginning and end of this study. Levels of use interviews were conducted with 15 of the participants at the end of the study. The data from LoU

interviews were not able to be linked to stages of concern data because these data were gathered anonymously. Teachers were provided training, facilitation by staff experienced in the innovation, and release time to fully implement the innovation.

Stages of concern were correlated with subscales of teacher efficacy prior to teachers' involvement in job-embedded staff development. This correlational analysis was repeated after the job-embedded professional development experience. It was hypothesized that there would be a significant positive relationship between teacher efficacy and stages of concern both before and after job-embedded professional learning.

The gain scores of teacher efficacy and stages of concern were measured at the conclusion of this study. It was hypothesized that there would be a significant positive relationship between the increase in levels of teacher efficacy and the increase in teachers' stages of concern.

This study also investigated the impact of an experimental treatment (job-embedded staff development on backward design and lesson study) on both teacher efficacy and teachers' movement through stages of concern. It was hypothesized that participation in a job-embedded staff development program would have a significant positive effect on subscales of teachers' sense of efficacy as well on teachers' movement through stages of concern.

Because research suggests a strong correlation between levels of teacher self-efficacy and student academic success, this study hopes to make a significant contribution to the research base by connecting efficacy changes in teachers to

involvement in job-embedded professional learning and the resulting movement to impact (Fuller, 1969) concerns that ultimately benefit the achievement of students.

Chapter 4 presents the results from the current study including a review of research questions, quantitative data, and qualitative data. Descriptive and inferential statistics describe the gains in teacher efficacy. Individual and group stages of concern data are presented through peak stage score interpretation, highest and second highest stage score interpretation, and profile interpretation. Correlations between teacher efficacy subscales, stages of concern, teaching levels, and teaching experience are presented through the Pearson product moment correlation. Qualitative data are provided through Levels of use focused interviews.

CHAPTER 4
RESULTS AND ANALYSIS

Introduction

As described in Chapter 1, the purpose of this study was to investigate the relationships between and among teacher collaboration, teacher efficacy, and job-embedded professional development. Seven research questions guide this study; two pre-experimental, two correlational, and three descriptive. Data are presented by category and question.

Pre-experimental:

1. What is the effect of a job-embedded staff development program on K-12 teachers' teacher efficacy?
2. What is the effect of a job-embedded staff development program on K-12 teachers' stages of concern about the innovation?

Correlational:

3. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development?
4. What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development?

Descriptive:

5. What is the status of K-12 teacher participants' perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development?
6. What is the current status of K-12 teacher participants' perceptions of their own levels of use of an educational innovation after participation in a job-embedded staff development?
7. What are the dominant concerns of K-12 teacher participants prior to and after participation in job-embedded staff development?

Thirty-five K-12 teachers took part in a job-embedded professional development experience during the 2007-2008 school year in which backward design and lesson study were investigated and implemented. This study was designed as a mixed methodology approach. Four limitations that possibly impacted the results in this study are: (1) the short time frame (four months) of implementation of the instructional innovation, (2) the variance in the number of job-embedded opportunities teacher experienced, (3) the relatively high levels of teacher efficacy among participants prior to involvement in the study, and (4) the inability to connect the stages of concern to levels of use responses since Stages of Concern Questionnaire data were gathered anonymously. The data in this study were collected and analyzed for the purpose of answering specific research questions, not as one would from the perspective of a staff developer. The former methodology utilizes aggregate data; the latter would investigate stages of concern and levels of use on an individual level for the purposes of facilitating individuals to higher stages of concern and levels of use. Aggregate data were utilized for most of the analyses presented in this chapter.

The quantitative data were gathered through two surveys: the Stages of Concern Questionnaire (Hall et al., 1979) and the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). Both were administered prior to and after teachers were involved in a job-embedded professional development experience. Teachers completed the surveys online; the results of the surveys were downloaded into spreadsheets, and the resulting data were analyzed utilizing SPSS statistical software. Of the 35 participants, 30 completed all four surveys, and these data that are presented in this chapter.

The qualitative data were gathered through 15 Levels of use focused interviews (Hall, Loucks, Rutherford, & Newlove, 1975) conducted with a random sampling of participants. These interviews were conducted to provide additional support and insight to the quantitative data.

The subjects in this study ranged from zero to over 20 years of teaching experience. Seven had 0-4 years experience; five had 5 to 9 years; four had 10 to 14 years; six had 15-19 years; and eight had 20 or more years experience in the teaching profession. Thirteen taught at the elementary level (PK-5), while 17 taught secondary students (6-12). All were teachers in a PK-12 suburban school district of approximately 14,000 students in north central Texas.

Results of Quantitative Analysis

Research Question 1

Question 1 asked “What is the effect of a job-embedded staff development program on K-12 teachers’ teacher efficacy?” Thirty participants completed a Teachers

Sense of Efficacy Scale prior to and after their involvement in backward design. This 24-item scale had participants respond to questions on a 9-point Likert scale, with anchors at 1 – *Nothing*, 3 – *Very Little*, 5 – *Some Influence*, 7 – *Quite a Bit*, and 9 – *A Great Deal*. Participants were asked about how much they could do in relation to each of the specific questions. Past studies consistently revealed three moderately correlated factors: efficacy in student engagement, efficacy in instructional practices, and efficacy in classroom management (Tschannen-Moran & Woolfolk Hoy, 2001). In the current study, these three subscales were analyzed across instrument administrations and by teaching level and experience.

In analyzing the differences in mean ratings between fall and spring administrations of the Teacher Sense of Efficacy Scale, mean ratings and standard deviations were initially computed. These ratings for each of the teacher efficacy subscales for fall and spring of the current study appear in Table 4.1 below. Tschannen-Moran and Woolfolk Hoy (2001) conducted three studies of the Ohio State Teacher Efficacy Scale (OSTES) utilizing a total of 851 participants. The OSTES has since been renamed the Teacher Sense of Efficacy Scale. Table 4.2 provides the mean ratings and standard deviations for these past studies.

Table 4.1

Means and Standard Deviations for Current Study

Teacher Efficacy – Fall 2007			Teacher Efficacy – Spring 2008		
	Mean	Standard Deviation		Mean	Standard Deviation
Student Engagement	6.9	0.77	Student Engagement	7.0	0.81
Instructional Strategies	7.1	0.94	Instructional Strategies	7.4	0.82
Classroom Management	7.5	0.71	Classroom Management	7.4	0.79

Table 4.2

Means and Standard Deviations for Past OSTES Studies

OSTES		
	Mean	Standard Deviation
Student Engagement	7.3	1.1
Instructional Strategies	7.3	0.94
Classroom Management	6.7	1.1

As the data show, in the current study there is little difference in mean ratings from fall to spring, with teacher responses to the questions concerning student engagement having a mean rating of 6.9 and a standard deviation of 0.77 prior to the treatment and a mean rating of 7.0 with a standard deviation of 0.81 after the treatment. Instructional strategies responses showed a slight increase in mean ratings from fall to spring (7.1 to 7.4), with a slight decrease in standard deviation (.94 to .82); yet, these appear to be small changes/differences. Classroom management mean ratings dropped

slightly (7.5 to 7.4) and showed an increase in standard deviation (.71 to .79), but again, these are not large changes.

In comparing the mean ratings and standard deviations of the responses for this study with the studies conducted by Tschannen-Moran and Woolfolk Hoy (2001), it is evident that very similar mean ratings were attained in the areas of student engagement and instructional strategies. Classroom management mean ratings in the current study are significantly higher than those in the OSTES studies. The standard deviations for all mean ratings in the current study are smaller, indicating more tightly grouped responses around the mean.

Paired samples *t*-tests were then run for each of the efficacy subscales. Pre- and posttest means were compared for student engagement in the fall (SEF) and spring (SES), instructional strategies in the fall (ISF) and spring (ISS), and classroom management in the fall (CMF) and spring (CMS). Table 4.3 provides mean differences ratings, standard deviations, and levels of significance for teacher efficacy subscale ratings.

Table 4.3

Paired Samples Statistics

	Subscales	Mean	Std. Deviation	Std. Error Mean	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Pair 1	SES - SEF	0.04583	0.86570	0.15806	0.290	29	0.774
Pair 2	ISS - ISF	0.28750	0.95714	0.17474	1.645	29	0.111
Pair 3	CMF – CMS	0.07917	0.76246	0.13920	0.569	29	0.574

The results indicate no statistically significant differences between the means of the fall and spring administrations of the Teacher Sense of Efficacy Scale among the 30 participants of this study. Mean ratings on each of the subscales for both fall and spring

align with the results of Tschannen-Moran and Woolfolk Hoy (2001). No significant differences were apparent in the levels of teacher efficacy in student engagement, instructional strategies, or classroom management after teachers participated in a job-embedded professional development experience.

Research Question 2

Research Question 2 asked, “What is the effect of a job-embedded staff development program on K-12 teachers’ stages of concern about the innovation?” The innovation referred to here was that of designing lessons using backward design and engaging in lesson study. Thirty participants completed a Stages of Concern Questionnaire (Hall et al., 1979) at the beginning and end of this process (in the fall and spring of the current school year). These were the same 30 participants who completed the Teacher Sense of Efficacy Scale. Results were matched through an identifier number provided by the respondents.

The Stages of Concern Questionnaire is comprised of 35 statements to which the participants responded on a 0-7 Likert scale according to how true the statement seemed to them at the time (from *Irrelevant* – 0, to *Very True of the Respondent at That Time* - 7). Each stage of concern was represented by five questions on the survey. Raw scores were converted to percentiles for each stage, indicating the relative intensity of participants’ concerns at each stage. George et al., (2006) remind us that these percentile scores are relative to other stage scores for each individual respondent and not absolute scores.

Individual and group data were considered and presented below. Individual data are presented by listing individual stages of concern percentile scores and peak stage score interpretation. Group data are presented through 1st and 2nd high stage score interpretation and profile interpretation.

Stages of Concern Percentile Scores

The simplest form of interpretation of stages of concern data, according to George et al. (2006), is to identify the highest stage score for each participant. The individual percentile scores for stages of concern for fall and spring appear in Tables 4.4 and 4.5 below. Individual high scores are highlighted in gray. Where the second highest score is within two percentile points of the highest score, developers recommend considering both as high scores.

Table 4.4

Stages of Concern Peak Scores – Fall 2007

Stages of Concern Percentile Scores							
Teacher	0	1	2	3	4	5	6
1	48	57	28	52	33	84	30
2	4	88	90	27	86	76	73
3	48	63	83	39	59	72	42
4	97	90	85	90	8	44	14
5	14	88	99	23	33	68	73
6	99	84	83	90	43	44	69
7	96	43	39	60	9	48	11
8	99	60	57	85	27	31	57
9	96	43	39	60	9	48	11
10	75	60	59	43	11	10	17
11	69	57	57	60	24	52	38
12	99	84	85	94	9	14	30
13	94	80	85	85	86	91	87
14	99	84	67	77	8	44	26
15	81	60	59	56	38	80	30
16	99	69	83	52	11	19	17
17	55	93	94	43	66	91	73
18	97	88	76	85	48	59	69
19	14	69	48	15	19	98	57
20	96	69	39	52	30	91	26
21	94	69	39	52	30	88	30
22	69	88	67	30	96	88	84
23	94	99	99	99	90	98	81
24	99	88	72	80	71	48	73
25	94	91	91	60	90	98	42
26	96	75	83	73	33	88	73
27	99	60	57	85	27	31	57
28	81	51	48	23	48	72	73
29	81	90	83	60	59	76	11
30	81	51	48	23	48	72	73
Average	0	1	2	3	4	5	6
	79	73	68	59	42	64	48

Table 4.5

Stages of Concern Peak Scores – Spring 2008

Stages of Concern Percentile Scores							
Teacher	0	1	2	3	4	5	6
1	40	63	39	27	27	59	38
2	97	90	89	83	33	93	52
3	91	57	83	69	21	31	34
4	99	45	52	83	3	25	9
5	14	90	48	18	8	52	38
6	99	45	52	83	3	25	9
7	99	37	52	60	27	80	69
8	61	48	23	56	16	16	30
9	40	63	55	39	59	93	30
10	91	63	83	69	27	31	42
11	69	57	48	69	16	64	26
12	99	57	48	94	9	10	30
13	75	84	83	80	66	91	73
14	94	63	41	52	27	36	26
15	40	63	39	27	27	52	38
16	99	43	45	27	3	5	9
17	40	93	91	18	19	95	60
18	40	45	35	34	27	36	34
19	94	34	31	30	63	98	34
20	2	66	94	73	54	72	5
21	97	90	89	83	33	93	52
22	61	57	28	5	11	98	17
23	5	84	89	94	43	80	52
24	5	90	48	18	11	52	38
25	61	45	21	30	3	28	9
26	96	60	48	52	8	95	42
27	61	48	31	56	16	16	30
28	87	63	85	52	30	59	65
29	91	66	83	65	33	31	30
30	99	43	45	27	3	5	9
Average	0	1	2	3	4	5	6
	68	62	57	52	24	54	34

Peak Stage Score Interpretation

The two profiles above do not demonstrate a great deal of difference when looking at peak percentile scores. In the fall, 20 teachers indicated Stage 0, awareness, as the area of most intense concern. In the spring, 18 teachers indicated Stage 0 as the area of greatest concern. Stage 0 scores provide an indication of the degree of priority the participant is placing on the innovation and the relative intensity of concern about the innovation (Hall et al., 2006). It does not necessarily reveal whether or not a respondent is a user or non-user of the innovation. The higher the Stage 0 score, the more the respondent is indicating that there are other initiatives that are occupying his/her thoughts and energies, and are of concern to him/her. Data from levels of use interviews are reported later in this study and provide information about user and non-user status of the participants.

Two participants indicated Stage 1, informational, as their highest (or one of their highest) areas of concern in the fall. Five participants indicated such in the spring. A high score in this stage indicates that the participant would like more information about the innovation. “Stage 1 concerns are substantive in nature, focusing on the structure and function of the innovation” (Hall et al., 2006, p. 33). Participants are not indicating how much knowledge they have about the innovation; rather, they are indicating how much they want to know more about the innovation.

Four participants indicated Stage 2 as one of their highest areas of concern in the fall. Only one did so in the spring. Stage 2 concerns deal with what Frances Fuller (1969) referred to as self concerns. Stage 2, personal, concerns are evidenced through ego-

oriented questions about the innovation and uncertainty about how it affects them personally. A participant with high Stage 2 concerns may, in effect, ignore more substantive concerns about the innovation. “Respondents are most concerned about status, rewards, and what effects the innovation might have on them” (Hall et al., p. 33).

Very few of the participants indicated Stage 3, management, concerns as being high (zero in the fall and one in the spring). High Stage 3 scores indicate intense concerns about time, logistics, and general management of the innovation. These teachers tend to feel that a disproportionate amount of time is being spent managing the innovation in the classroom. Management is the only task related concern. In this stage, participants are focused on the processes and tasks of using the innovation. Instead of feeling comfortable with the implementation of the innovation, teachers focus on the organization of the innovation and how to manage it in the classroom with regard to the other initiatives in which they are engaged.

Impact concerns (consequence, collaboration, and refocusing) are represented in stages 4 through 6. In the current study, one participant in the fall indicated Stage 4 as a high area of concern. Three respondents had high scores in Stage 5 in the fall and five in the spring. Not one participant demonstrated high Stage 6 concerns in either the fall or spring.

Stage 4 concerns center around impact on students rather than preoccupation with the self or task as in earlier stages. Student outcomes are now front and center, as are possible changes needed to improve student achievement. Stage 5 sees participants coordinating and collaborating with others in regard to the implementation of the

innovation. Stage 6 focuses on exploring ways in which the innovation can be modified, changed, or completely replaced in attempts to gain the greatest benefit for students.

Tables 4.6 and 4.7 provide highest stages of concern percentages for both fall and spring.

Table 4.6

Highest Stage of Concern – Fall 2007

	Highest Stage of Concern							Total
	0	1	2	3	4	5	6	
Number of Teachers	20	2	4	0	1	3	0	30
Percentage of Teacher	67%	7%	13%	0%	3%	10%	0%	100%

Table 4.7

Highest Stage of Concern – Spring 2008

	Highest Stage of Concern							Total
	0	1	2	3	4	5	6	
Number of Teachers	18	5	1	1	0	5	0	30
Percentage of Teacher	60%	17%	3%	3%	0%	17%	0%	100%

Participants resolve concerns at one level and allow concerns at a higher level to become more intense. Hall et al. (2006) suggest that this developmental nature holds true for most process-and-product innovations, although the pattern is not a certainty. Just because concerns are resolved at one level does not mean that attention will be focused on higher levels. “Whether and with what speed higher-level concerns develop will depend on individuals and their perceptions as well as on the innovation and the environmental context” (p. 9). The current study investigated job-embedded professional

development and the possible changes in teacher efficacy as critical factors in the environmental context.

When analyzing the peak stage scores for the 20 teachers for whom Stage 0 concerns were the most intense in the fall, there are several trends that merit attention. For nine of these participants, spring Stage 0 percentiles were lower than the fall. The differences ranged from a decrease of five to 94 percentile points with an average of 39 percentile points. Although the aggregate profiles for fall and spring represent typical nonuser profiles, these individual differences indicate resolution of lower stage concerns. Another significant trend is the decrease in intensity of Stage 2, personal, scores. Twenty-one of the 30 participants showed a decrease in intensity of Stage 2 concerns from fall to spring, with an average decrease of 29 percentile points. Finally, one-third of the participants demonstrated an average 16 percentile point increase in Stage 5, collaboration, from fall to spring.

First and Second High Score Interpretation

First and second high score interpretation provides for a more detailed analysis of stages of concern data. Because of the developmental nature of this instrument, the first and second highest scores are often adjacent to each other. There also exist some common nonadjacent combinations that will be explored through these data. Tables 4.8 and 4.9 provide matrices that compare highest and second highest stages of concern as percentages for all participants.

Table 4.8

Highest / Second Highest Scores Comparison – Fall 2007

Highest Stage of Concern	Second Highest Stage of Concern								Row #
	0	1	2	3	4	5	6	Row %age	
0 Unconcerned	0%	30%	5%	30%	0%	25%	10%	67%	20
1 Informational	0%	0%	100%	0%	0%	0%	0%	7%	2
2 Personal	0%	75%	0%	0%	0%	25%	0%	13%	4
3 Management	0%	0%	0%	0%	0%	0%	0%	0%	0
4 Consequence	0%	0%	0%	0%	0%	100%	0%	3%	1
5 Collaboration	33%	67%	0%	0%	0%	0%	0%	10%	3
6 Refocusing	0%	0%	0%	0%	0%	0%	0%	0%	0
								Total	30

Table 4.9

Highest / Second Highest Scores Comparison – Spring 2008

Highest Stage of Concern	Second Highest Stage of Concern ring								Row #
	0	1	2	3	4	5	6	Row %age	
0 Unconcerned	0%	11%	33%	33%	0%	22%	0%	60%	18
1 Informational	20%	0%	0%	0%	0%	80%	0%	17%	5
2 Personal	0%	0%	0%	100%	0%	0%	0%	3%	1
3 Management	0%	0%	100%	0%	0%	0%	0%	3%	1
4 Consequence	0%	0%	0%	0%	0%	0%	0%	0%	0
5 Collaboration	40%	40%	0%	0%	20%	0%	0%	17%	5
6 Refocusing	0%	0%	0%	0%	0%	0%	0%	0%	0
								Total	30

In the fall, the common pattern of highest / second highest score was in adjacent scores except in a few circumstances. Thirty percent of those with highest Stage 0 scores also had the second highest Stage 1 concerns. One hundred percent of those with highest Stage 1 scores also had the second highest Stage 2 concerns. Seventy-five percent of those with highest Stage 2 scores also had the second highest Stage 1 concerns. The spring scores were less adjacent than the fall scores.

Of interest are the nonadjacent scores of Stage 0 with stages 2, 3, 5, and 6. These participants have the most intense concerns at Stage 0 which suggests being unconcerned about the innovation, yet had second highest scores in self (Stage 2), task (Stage 3), and impact (stages 5 and 6) concerns. High Stage 5 scores suggest a high degree of collaboration, while Stage 6 suggests a refocusing on a better way to do the innovation. Those with high concerns at both Stage 0 and Stage 6 might not fully understand the current innovation yet they have ideas of how to do things better. Although the aggregate profile does not indicate a negative upward turn in Stage 6 concerns, certain individuals may have this view and need to be facilitated appropriately if they are to implement the innovation in its current form. The data do not suggest that the phenomenon of a negative upward turn in Stage 6, refocusing, is significantly correlated to teaching experience; although when comparing the pre- and posttest correlations between teaching experience and Stage 6 concerns, there exists a stronger positive correlation between Stage 6 and teaching experience in the spring - from 0.170 in the fall to 0.312 in the spring (see Table 4.10 and Table 4.11). These coefficients suggest little to no correlation in the fall and low positive correlation in the spring.

Profile Interpretation

“The profile analysis is the richest and most frequently used method for interpreting data from the SoCQ” (Hall et al., 2006, p. 37). As participants move from non-user to experienced user to renewing user, they pass through developmental stages, shift concerns, and ultimately register their highest levels of concern at the impact stages

of 4, 5, and 6. Figure 4.1 provides a graphical display of cumulative percentages for each stage of concern in the fall. The bars represent the cumulative percentages for 30 respondents prior to their involvement in job-embedded professional development. The percentages indicate the level of intensity of concerns in Stage 0 – awareness, Stage 1 – information, Stage 2 – personal, Stage 3 – management, Stage 4 – consequence, Stage 5 – collaboration, and Stage 6 – refocusing. It is clear from this display that the most intense concerns were focused on self (stages 0, 1, and 2). Consequence concerns (stages 4, 5 and 6) were among the lowest in intensity. Stage 3, consequence, was the least intense concern among respondents. This is a typical response pattern among non-users of an innovation (George et al., 2006).

Figure 4.2 provides the identical graphical display for cumulative percentiles for the same 30 respondents in the spring, after their involvement in job-embedded professional development. Intense concerns remain focused on self (stages 0, 1, and 2). These concerns in addition to task concerns (Stage 3) and impact concerns (stages 4, 5 and 6) all decreased in intensity from fall to spring. Even though the cumulative percentiles for each stage decreased from fall to spring, the pattern of response remains that of a typical non-user.

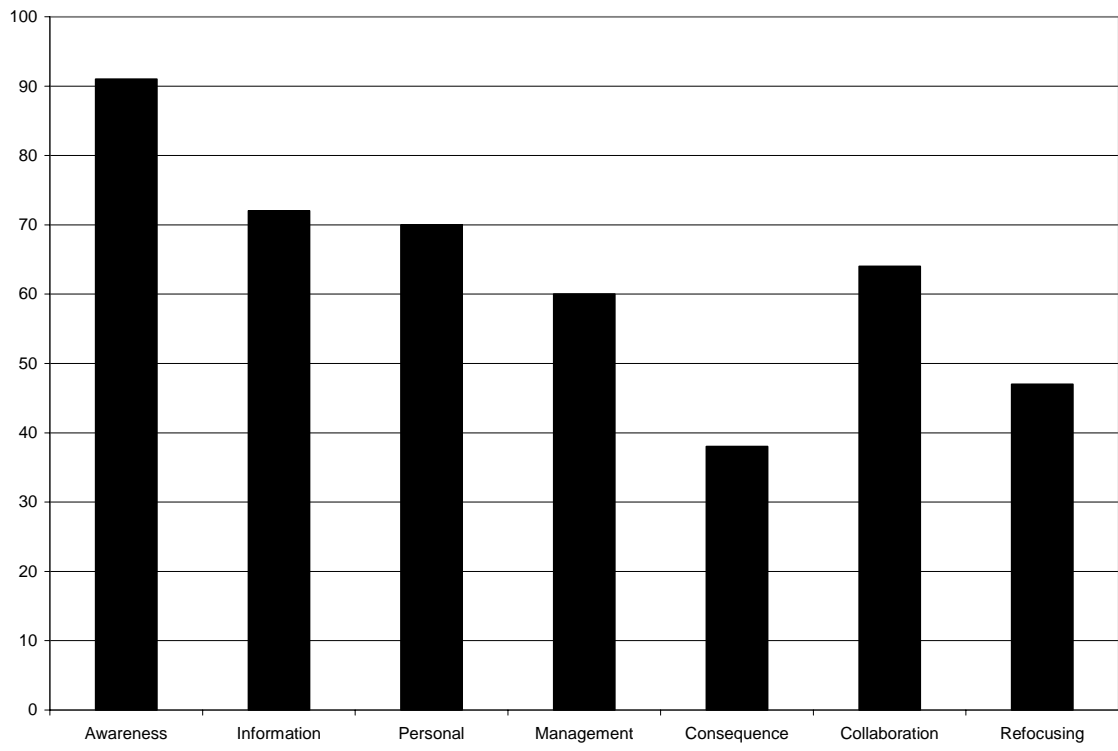


Figure 4.1. Stages of concern cumulative percentiles – fall 2007.

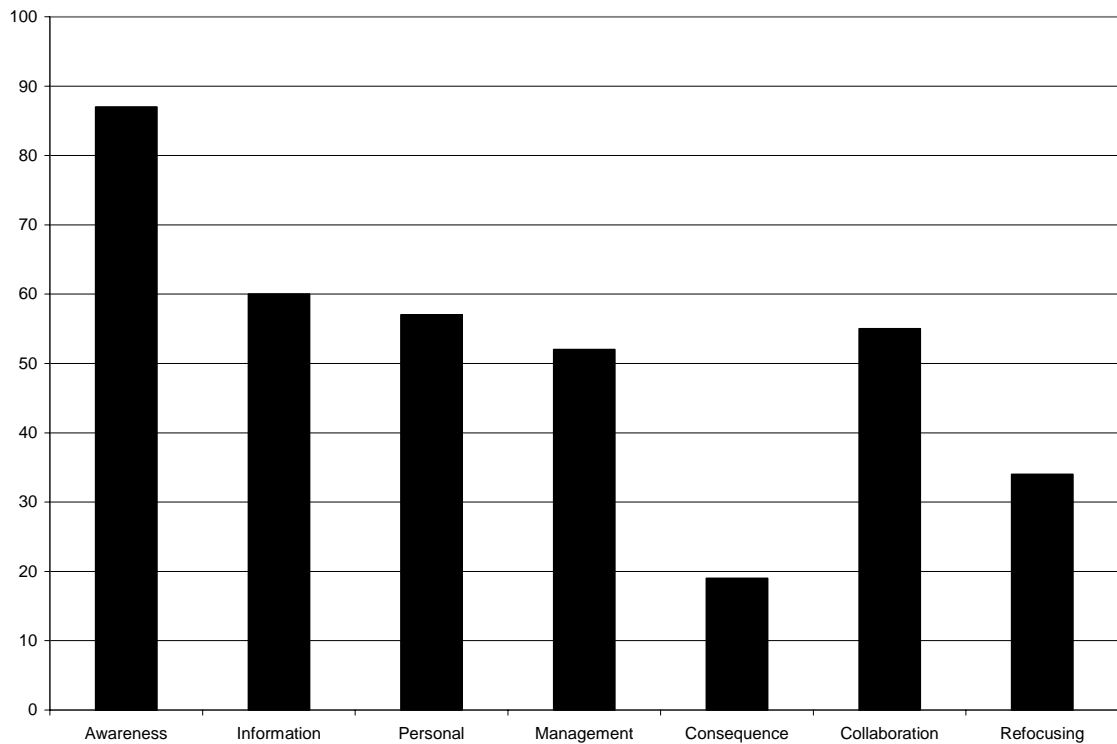


Figure 4.2. Stages of concern cumulative percentiles – spring 2008.

Figure 4.3 provides an aggregate profile for stages of concern in the fall, prior to teachers’ involvement in job-embedded professional development. The profile is simply a line graph representation of the cumulative percentiles provided above. CBAM researchers cite the profile analysis as the “richest and most frequently used method for interpreting data from the SoCQ” (George et al., 2006, p. 37). As was described above, Figure 4.3 provides a typical non-user profile with the most intense concerns registering in stages 0, 1, and 2 and least intense in stages 4, 5, and 6.

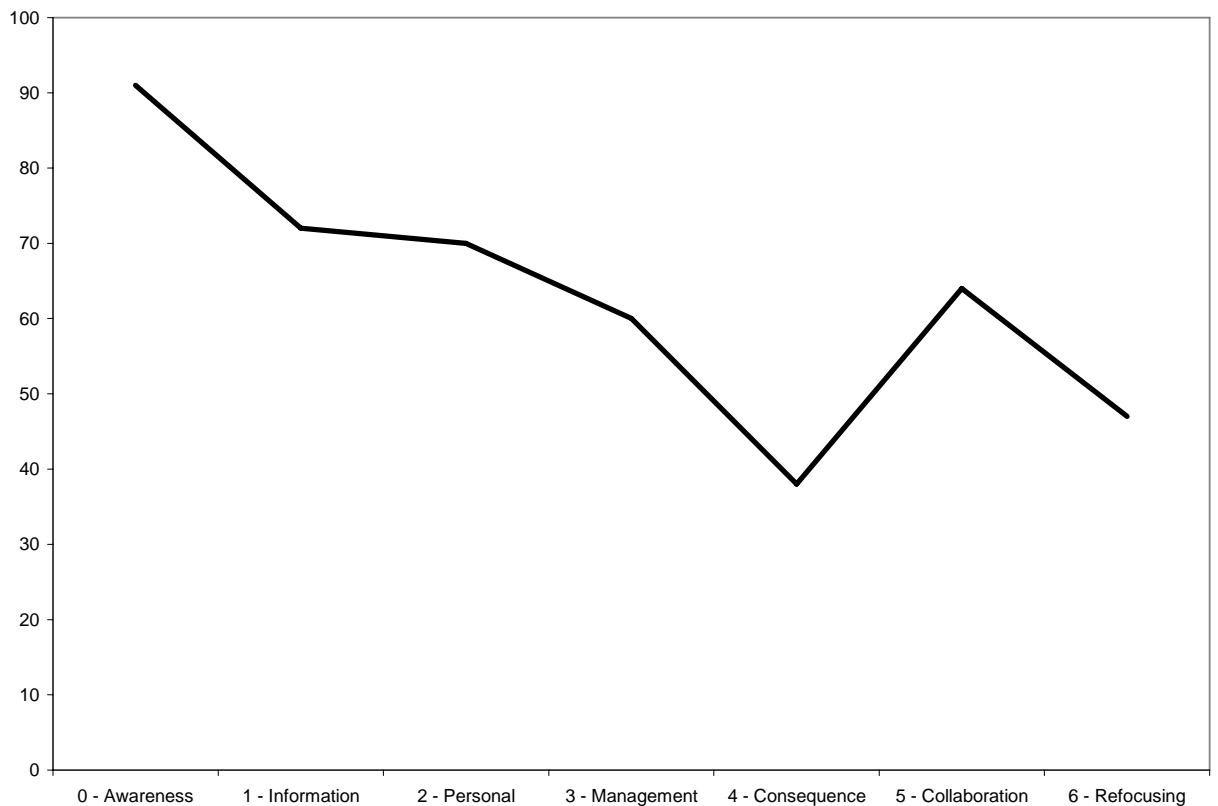


Figure 4.3. Stages of concern profile – fall 2007.

Figure 4.3 provides an aggregate profile for stages of concern in the spring, after teachers' involvement in job-embedded professional development. As with the profile displayed in Figure 4.2, this profile illustrates individuals who are not fully aware of the innovation and are more concerned about other things (as indicated by high Stage 0 concerns). However, since concerns in stages 1 and 2 are also intense, it can be inferred that these teachers are also interested in learning more about the innovation. Management concerns are considered medium in intensity, and the impact concerns represented by stages 4, 5, and 6 are low in intensity.

Low intensity in Stage 4 suggests teachers are not intensely concerned about the innovation’s impact on students. Medium intensity in Stage 5 suggests an interest in working through the innovation with other teachers; while the low, tailing-off intensity in Stage 6 suggests teachers do not have other ideas that would potentially conflict with the innovation. “The overall profile suggests and reflects the interested, not terribly over-concerned, positively disposed non-user” (George et al., 2006, p. 39). Figure 4.5 represents the CBAM researchers’ typical non-user profile as a means of comparison to the current study’s profiles.

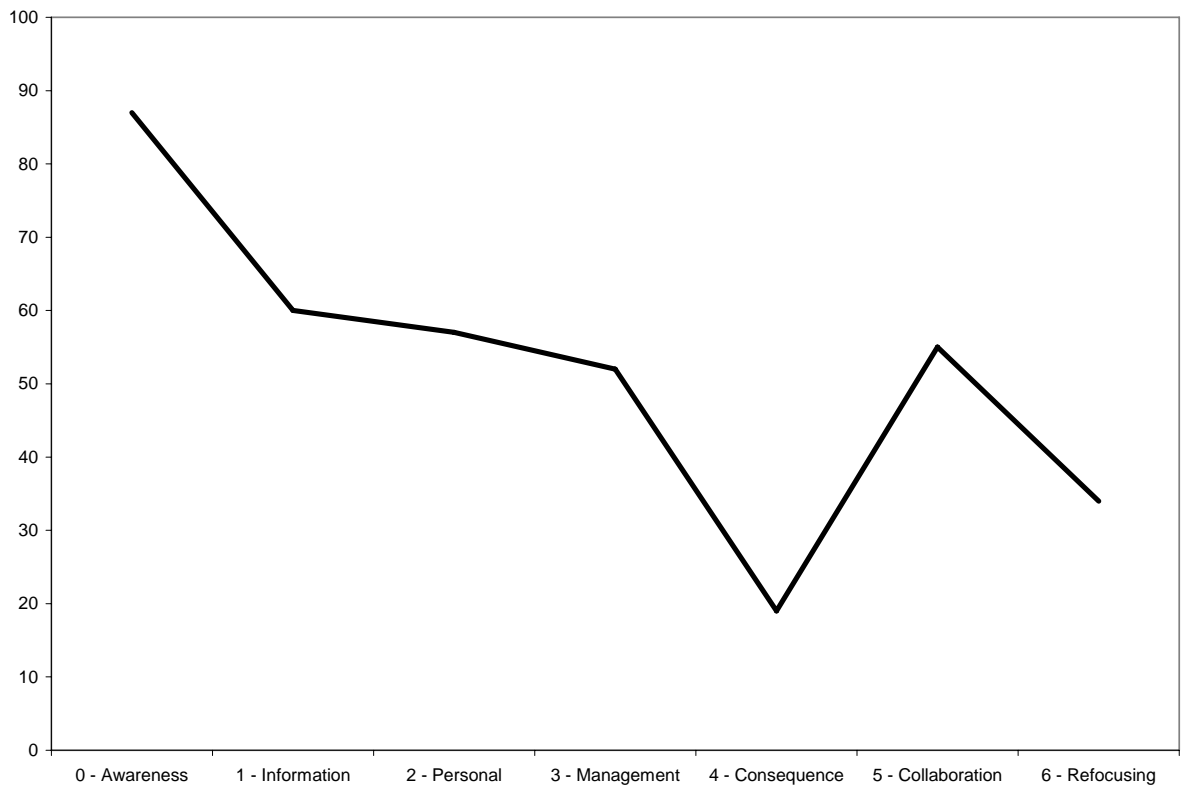


Figure 4.4. Stages of concern profile – spring 2008.

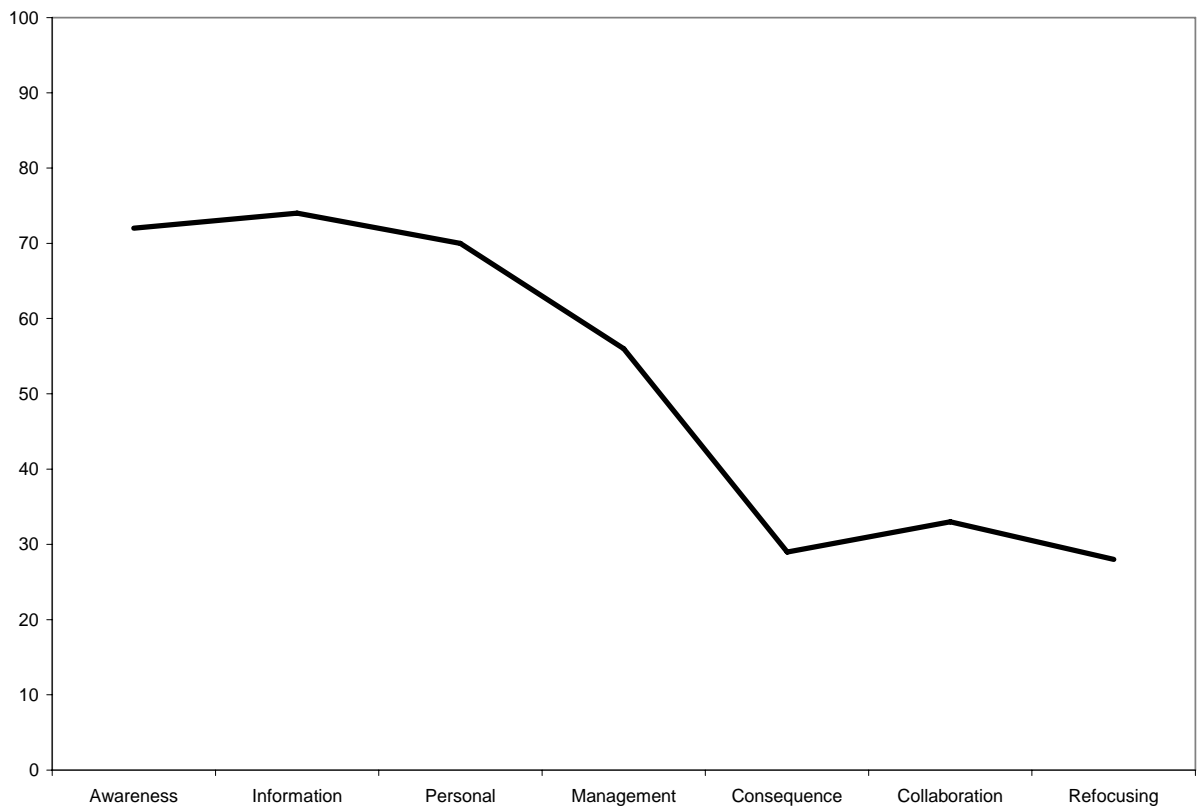


Figure 4.5. Typical non-user profile.

Both fall and spring stages of concern profiles reflect the typical non-user profile described by Hall et al. (2006). In all of the research conducted on stages of concern, it is the most common and easily identified profile because of the characteristic high intensity of concerns in stages 0,1, and 2 and low concerns in stages 4, 5, and 6. The profiles characterizing the teachers in this study fit that description fairly well. The one discrepant portion of the non-user profiles depicting the current study is the moderate intensity in Stage 5 concerns. Whereas the typical non-user profile shows an upturn in Stage 5 concerns, it is not as dramatic as those illustrated in Tables 4.3 and 4.4. The teachers in

the current study demonstrated moderately intense concerns in Stage 5, collaboration, in both pre- and posttests (64% in the fall and 55% in the spring).

Because the scores can be interpreted for both individuals and groups in the same manner, this aptly describes the current profile of the 30 teachers involved in this innovation. The one anomalous feature of the current study profiles is the more dramatic upturn in Stage 5, collaboration, in both fall and spring. One plausible explanation of this is that the innovation itself requires a great deal of teacher collaboration. It seems to make sense that as teachers understand the expectations of designing, teaching, and critiquing lessons with colleagues, they would internalize a moderate sense of concern in Stage 5, collaboration. The relatively high percentiles in self concerns (stages 0, 1, and 2) suggest that there needs to be resolution of these concerns before Stage 5 concerns will be fully focused on impact on student achievement.

Another discrepancy between the typical non-user profile and those representing the current study is variations in Stage 0, awareness, concerns. The typical non-user profile shows these are being less intense than Stage 1 concerns, and just slightly more intense than Stage 2 concerns. The current study profiles both display Stage 0 concerns are being significantly more intense than Stage 1 concerns. According to George et al. (2006), variations in Stage 0 are not as important as those in stages 1 and 2 among non-users. The relative position of stages 1 and 2 are more critical in understanding the typical non-user.

In all three profiles depicted above, Stage 1 concerns are slightly greater than Stage 2 concerns. This means that among current study participants as with CBAM

research respondents, there existed more intense concerns about gaining more information about the innovation than on the personal effects of the innovation on participants. CBAM researchers suggest an important relationship between Stage 1 and Stage 2 concerns. They describe a “one-two split” (George et al., 2006, p. 40) if the scores are very different. If the Stage 1 score is notably higher than the Stage 2 score, the profile suggests a positive, proactive perspective where participants are placing the acquisition of new knowledge over any fears they may have for personal effects of the innovation.

When Stage 2 concerns are more intense than Stage 1 concerns, CBAM researchers describe this as a negative one-two split where personal concerns override the need for more information. This type of profile depicts individuals or groups with degrees of doubt about an innovation and possible resistance to the innovation. When innovations are discussed, Stage 2 concerns tend to intensify and Stage 1 concerns decrease in intensity, indicating a need to facilitate the resolution of personal concerns before the proposed innovation can be considered objectively. Neither profile of the current study indicates a negative one-two split, suggesting that participants in this study are open to and interested in learning more about the innovation.

Research Questions 3 and 4

Research question 3 asked “What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development?” Research question 4 asked “What is the relationship between

subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development?” Correlation is one of the most widely used analytic procedures in providing insight into the relationships between different variables. The correlation between two variables reflects the degree to which the variables are related. The most common measure of correlation is the Pearson product moment correlation or Pearson’s r . Pearson’s r reflects the degree of linear relationship between two variables.

In this study, correlations were run between teacher efficacy subscales (student engagement, instructional strategies, and classroom management) and (a) stages of concern (0-6), (b) teaching levels of participants (elementary vs. secondary), and (c) teaching experience (# of years in the profession) of participants. Teaching level and experience are demographic data collected in the surveys, and their correlations to efficacy and stages of concern were included to provide an additional level of analysis and insight into the relationships between teacher efficacy and stages of concern. Tables 4.10 and 4.11 provide the correlations for teacher efficacy, stages of concern, teaching experience and teaching level for both fall and spring. Shaded portions of the table represent the correlations between teacher efficacy subscales and stages of concern.

Table 4.10

Fall Correlations Between Teacher Efficacy Subscales (Student Engagement – SE, Instructional Strategies – IS, and Classroom Management – CM) and (a) Stages of Concern (0-6), (b) Participant Teaching Level, and (c) Participant Teaching Experience

	Exp.	Level	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Student Engagement	0.029	-0.439*	-0.290	0.071	0.105	-0.221	0.163	0.248	0.150
Instructional Strategies	0.321	-0.175	-0.311	0.272	0.296	-0.193	0.266	-0.337	-0.253
Classroom Management	0.214	-0.475**	-0.319	0.152	0.213	-0.181	0.165	0.184	-0.007
Experience	1	-0.027	-0.044	-0.109	-0.008	-0.315	0.122	0.239	0.170
Level	-0.027	1	-0.301	-0.129	-0.145	-0.311	0.147	0.091	0.152
Stage 0	-0.044	-0.301	1	-0.115	-0.119	0.670**	-0.200	-0.337	-0.253
Stage 1	-0.109	-0.129	-0.115	1	0.803**	0.290	0.519**	0.243	0.366**
Stage 2	-0.008	-0.145	-0.119	0.803**	1	0.251	0.461*	0.051	0.388*
Stage 3	-0.315	-0.311	0.670**	0.290	0.251	1	-0.091	-0.347	-0.079
Stage 4	0.122	0.147	-0.200	0.519**	.0461*	-0.091	1	0.618**	0.668**
Stage 5	0.239	0.091	-0.337	0.243	0.051	-0.347	0.618**	1	0.403*
Stage 6	0.170	0.152	-0.253	0.366**	.0388*	-0.079	0.668**	0.403*	1

* = statistically significant at $p \leq .05$ (2-tailed)

** = statistically significant at $p \leq .01$ (2-tailed)

Table 4.11

Spring Correlations Between Teacher Efficacy Subscales (Student Engagement – SE, Instructional Strategies – IS, and Classroom Management – CM) and (a) Stages of Concern (0-6), (b) Participant Teaching Level, and (c) Participant Teaching Experience

	Exp.	Level	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Student Engagement	0.228	-0.418*	-0.078	0.007	0.030	-0.124	0.004	0.316	-0.056
Instructional Strategies	0.221	-0.297	-0.071	0.016	-0.160	-0.005	0.102	0.279	-0.003
Classroom Management	0.105	-0.123	0.063	0.100	0.336	0.261	0.239	0.415*	0.137
Experience	1	-0.027	-0.125	0.106	-0.157	-0.576**	0.100	0.270	0.262
Level	-0.027	1	-0.169	0.284	0.370*	0.062	0.284	-0.123	0.184
Stage 0	-0.125	-0.169	1	-0.438*	-0.152	0.243	-0.258	-0.282	0.045
Stage 1	0.106	0.284	-0.438*	1	0.634**	0.060	0.237	0.589**	0.511**
Stage 2	-0.157	0.370*	-0.152	0.634**	1	0.510**	0.433*	0.440*	0.482*
Stage 3	-0.576**	0.062	0.243	0.060	0.510**	1	0.186	-0.038	0.121
Stage 4	0.100	0.284	-0.258	0.237	0.433*	0.186	1	0.543**	0.438*
Stage 5	0.270	-0.123	-0.282	0.589**	0.440*	-0.038	0.543**	1	0.567**
Stage 6	0.262	0.184	0.045	0.511**	0.482*	0.121	0.438*	0.567**	1

* = statistically significant at $p \leq .05$ (2-tailed)

** = statistically significant at $p \leq .01$ (2-tailed)

Hinkle, Wiersma, and Jurs (1994) suggest a rule of thumb for interpreting the size of a correlation coefficient:

0.90-1.00 – very high correlation

0.70-0.90 – high correlation

0.50-0.70 – moderate correlation

0.30-0.50 – low correlation
0.00-0.30 – little if any correlation.

A number of correlations which would be described as very high, high, or moderate can be found in the analysis above however, all but one of these significant correlations are among, not between, the efficacy subscales and the stages of concern. This one correlation significant at the .05 level is between Stage of Concern 5, collaboration, and efficacy subscale classroom management in the posttest data. These data suggest teachers who demonstrate a high level of collaboration would also demonstrate a high degree of efficacy in the area of classroom management.

The correlation analysis suggests a great deal of relationship among the subscales for each instrument, but very little significant relationship between the subscales. Moderate correlation exists between years of teaching experience and teachers' Stage 3, management, concerns ($r=-0.576$) as well as teaching level and teachers' Stage 2, personal, concerns ($r=0.370$) after being involved in the job-embedded professional development. The relationship between teaching level and Stage 2, personal, concerns ($r=0.370$) is moderately positive, which indicates the more intense concerns would be associated with teachers at higher (secondary) levels. The relationship between teaching experience and Stage 3, management, concerns ($r=-0.576$) is moderately negative, suggesting that teachers with less experience would experience more intense concerns in this area.

Results of Qualitative Analysis

Research Question 5

Research question 5 asked “What is the status of K-12 teacher participants’ perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development?”

Thirty five teachers engaged in this process throughout the 2008-2009 school year. Thirty provided quantitative data through their responses to the Stages of Concern Questionnaire and Teacher Sense of Efficacy Scale. All 35 teachers were asked to provide a somewhat subjective self-assessment of their level of use of the innovation of backward design prior to engaging in the job-embedded professional development. They were asked to indicate their understanding and level of use of backward design with one of the following responses: none, partial, adequate, or extensive. After teachers engaged in the job-embedded professional learning, they were asked to partake in levels of use interviews.

Levels of use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user’s development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors. (Hall et al., 2006, p. 6)

The Levels of use focused interview utilizes a branching technique to first determine whether a participant is a user or non-user of the innovation. If a non-user, the participant is asked if there is intent to use the innovation, and if a date to begin as been determined. Finally, the non-user is asked if he/she is looking for information about the innovation. These questions determine levels of use 0, I, or II. If the participant is a user,

questions focus on changes that the user is making in his/her use of the innovation, whether or not he/she is coordinating efforts with others, and whether or not he/she is planning or making major modifications to the innovation. This branch of questions differentiates between levels of use III (mechanical), IVA (routine), IVB (refinement), V (integrating), and VI (renewal).

Of the 35 teachers who responded to the initial question, 13 indicated none, 11 indicated partial, 8 indicated adequate, and 3 indicated extensive use of backward design. Thirty teachers provided quantitative data, and because that data were collected anonymously, it is impossible to make specific correlations or pre-posttest inferences with levels of use data. However, general trends in collective levels of use can be discerned from the initial responses and interview transcripts.

Sixty-nine percent of the participants had little to no previous involvement with or knowledge of backward design. Twenty-three percent had adequate, and nine percent had extensive involvement with or knowledge of backward design. The three teachers who indicated extensive background had been involved in previous years, and their data were not included in this study. Taking these three responses out, a large majority of participants had little to no previous experience with this innovation. In terms of levels of use, they would all be considered in one of the first three categories: LoU 0, nonuse; LoU I, orientation; and LoU II, preparation.

Hall et al. (2006) describe LoU 0, nonuse, as a state in which the participant has little or no knowledge of the innovation, is not involved with the innovation, and is doing nothing to become involved with the innovation. When a person makes the decision to

learn more about the innovation, he/she moves to LoU I, orientation. In this level, the participant is learning more about the innovation and determining the impact its use has on him/her personally. Once a time to begin has been established, the user moves to LoU II, preparation. At this level, the user is simply making preparations to use the innovation. Participants who indicate little to none or even partial involvement with an innovation would generally be considered LoU 0, I, or II.

Research Question 6

Research question 6 asked “What is the current status of K-12 teacher participants’ perceptions of their own levels of use of an educational innovation after participation in a job-embedded staff development?” Fifteen levels of use interviews were conducted after teachers engaged in the backward design process. Of these, eleven had indicated little or no previous knowledge or use of backward design. Four had some knowledge and/or experience through college course work or individual study. The interviews were recorded, transcribed, and analyzed for levels of use and recurring themes that could be useful in supporting the quantitative data presented. Once levels of use were determined, interviews were peer-checked by a private consultant who regularly conducts and analyzes focus groups.

All but one of the participants interviewed were determined to be at LoU III, mechanical, or higher. Levels of use for the 15 interviewees are as follows:

Level of Use II	Preparation – 1 Participant
Level of Use III	Mechanical – 4 Participants
Level of Use IVA	Routine – 2 Participants
Level of Use IVB	Refinement – 2 Participants

Level of Use V	Integration – 5 Participants
Level of Use VI	Renewal – 1 Participant

One-third of the participants were at LoU V (Integration) after approximately five months of working with the innovation.

Although this might appear to be accelerated, it does support the findings from the stages of concern data in which 17% of respondents reported SoC 5, collaboration, as their highest score and 26% indicated SoC 5 as their second highest score. In the correlation analysis, Stage of Concern 5 showed a correlation that was statistically significant at the .01 level, with SoC 1 ($r=0.589, p=0.001$), SoC 4 ($r=0.543, p=0.002$), and SoC 6 ($r=0.567, p=0.002$). Stage of Concern 5 was also correlated at the .05 significance level with SoC 2 ($r=0.440, p=0.017$). It would appear that as participants' level of intensity with gaining more information, making personal meaning, and creating greater student impact increase, so do the amount and intensity of collaboration. The nature of the treatment (job-embedded professional development in a highly collaborative context) provides additional evidence and explanation for the quantitative and qualitative findings presented here.

Themes from Levels of Use Focused Interviews

The 15 LoU interviews were recorded, transcribed, and analyzed to determine participants' levels of use as well as recurring themes. Two raters who had experience in backward design and who understood the process being undertaken by the participants of this study utilized the transcripts of these interviews to extract critical terms and determine recurring themes. A constant comparison method was utilized to uncover

common themes, categorize and code data, and make meaning of teachers' responses.

Dye, Shatz, Rosenberg, and Coleman (2000) describe the act of categorizing as one that “enables us to reduce the complexity of our environment, give direction for activity, identify the objects of the world, reduce the need for constant learning, and allow for ordering and relating classes of events” (p. 2). The purpose of the qualitative data of this study was to reduce the complexity of and provide clarity to the numbers.

Glaser (1965) describes the constant comparison method in four stages: (1) comparing incidents applicable to each category, (2) integrating categories and their properties, (3) delimiting the theory, and (4) writing the theory. Dye et al. (2000) interpret this process as (1) categorizing data bits, (2) comparing data, and (3) refining categories as researchers generate theory. In the current study, two raters independently read the interview transcripts, highlighted critical pieces of data, categorized the data, compared categories, and came to consensus on refined categories for the data. The following categories emerged:

- ✚ Designing work (DW)
- ✚ Collaboration (C)
- ✚ Desired results (DR)
- ✚ Student engagement (SE) / student needs (SN)
- ✚ Change in thinking (CIT)

Transcripts of the levels of use interviews are available in Appendix G. A discussion of each theme follows.

Designing Work

Designing work had by far the greatest number of codes throughout the interviews (38). This is not surprising because the job-embedded professional development was aimed at how teachers approach the design of units and lessons for students. Through a collaborative approach, teachers learned how to utilize the backward design process in designing engaging work for students. Wiggins and McTighe (1998) explain what they mean by teachers as designers:

An essential act of our profession is the design of curriculum and learning experiences to meet specified purposes. We are also designers of assessments to diagnose student needs to guide our teaching and to enable us, our students, and others (parents and administrators) to determine whether our goals have been achieved; that is, did the students learn and understand the desired knowledge? (p. 7)

Designing work in this study refers to the most critical element of the backward design process. Instead of teachers viewing themselves as planners, they begin to adopt the paradigm of “inventors of engaging work” for students. This is a subtle, yet powerful, difference. Planners spend their efforts sequencing previously constructed activities. Designers create a blueprint for learning including acceptable evidence that the learning has taken place; and then they invent work to which students would want to give their time and attention.

In the interviews, teachers repeatedly talked about the standards that inform and shape their work. They spoke of designing lessons, units, assessments, and learning activities with excitement and commitment to what students need to know and be able to

do. Backward design was cited often as a simple, yet powerful concept that not only yielded incredible results, but also made the teachers' lives just a bit easier. As one middle school teacher put it, "We're at the first street, so we have a few miles to go. Yeah, that's where we're at. Planning is easier because you start out there and things fall into place instead of you getting lost in all the trying to make it come together."

Teachers repeatedly pointed to the "essential questions," "big ideas," "connections to other areas," and being able to see the "whole picture" when planning collaboratively. One high school teacher reflected on the ease of slipping into old habits and less effective ways of teaching when under stress. She came to the realization that students in classrooms today are not the same students who were in high school classrooms alongside her. Early in her career she had recognized the need to approach her students differently than her high school teachers approached her. "So the place of pen and paper and notes on an overhead has kinda' gone out the window, and you either sink or swim. So, I find myself trying to swim."

Collaboration

Twenty-nine times collaboration was coded in the interviews. Although not the most coded theme, collaboration is the linchpin of this job-embedded professional experience. Collaboration refers to the reliance on other professionals in identifying student needs, learning expectations, and learning outcomes; as well as in the designing of learning experiences and acceptable evidence of mastery. It suggests a level of collegiality in which teachers view collaboration as a means of achieving greater

outcomes than what one could achieve alone. It is not surprising that this theme was so powerful in each interview. These data supports the stages of concern findings as well as the percent of participants who were at level of use V and VI. Teachers had the opportunity to work, not only with teachers on their own campus in the same grade level or content area, but they also had the opportunity to work with teachers from other schools as well as with content specialists from the central office. Through collaboration teachers realized the benefits of this process.

The following remark from an elementary teacher demonstrates how the collaboration with teachers from other campuses created the need and desire to replicate the process with teachers from their own campuses. “Right, _____(teacher from another campus) and I are doing it together but I have plans in the future to begin to incorporate it with my 5th grade team here at my campus.” A sense of understanding of the power of collaborative planning emits from these interviews. Although the statistical analysis did not provide significant results when looking at the growth of teacher efficacy, it is difficult to read any of these transcripts without sensing empowerment, achievement, and productivity on the part of the participants. Rosenholtz (1991) offers this argument about collaborative workplaces:

Although various explanations have been offered for differential productivity, we argue here that when collaborative norms undergird achievement-oriented groups, they bring new ideas, fresh ways of looking at things, and a stock of collective knowledge that is more fruitful than any one person's working alone. (p. 41)

Student Engagement / Student Needs

A powerful by-product of this professional development experience was the focus on student needs and student engagement. Student engagement refers to more than students remaining busy as they learn. The concept encompasses even repetitive, trivial work that students see as necessary for mastery of a more important concept or skill. A student in band class will practice a note or section of music repeatedly toward mastery of a challenging piece that might earn accolades at a state competition. Student needs refers to the identification of specific learning structures and/or concepts and skills students need in order to be successful in the learning experience being designed.

Combined, these two accounted for 14% of the coded information from the 15 interviews. A focus on students is a natural result of backward design. It is impossible to focus on the end in mind without also focusing on students and their needs. A simple but eloquent example is provided by a middle school teacher, “I just started as I approached the unit, we had a day where I asked the kids what do they want to know about the topic. And what I’ve done over there is I’ve got a whole big banner of their questions. Our goal now is to answer all those questions for the unit.” The same goals can be achieved and standards met through a traditional approach to planning a unit, but by involving students in the development of the learning, this teacher’s chances for achieving those results just skyrocketed.

Phrases such as “kids have ownership,” “kids grow,” “kids are really interested now,” and “kids help plan” all point to the incredible need to keep student needs and designing work that will engage them at the forefront. A high school teacher said it best. “From my first two years of teaching, it was make it – make it through and I reverted

back to the way I was taught. You know, I was taught growing up in the public school system. This is how it is – note taking, examples, homework, note taking, examples, homework; and yes, I got it because I’m mathematically-minded but in turn, I am teaching kids who are a totally different set than I was. I’m teaching kids who are very different from myself. And so for my first two years, I taught the way I was taught which was semi-effective. My kids got it for the most part, but the results on things like TAKS test and final exams didn’t quite make it. It wasn’t that my instruction was bad. It’s that it wasn’t meeting their needs.”

Desired Results

A dominant and recurring theme in the interviews centered on the idea of beginning with the end in mind. Stephen Covey (1989) suggests:

to begin with the end in mind means to start with a clear understanding of your destination. It means to know where you’re going so that you better understand where you are now and so that the steps you take are always in the right direction. (p. 98)

Desired results (DR) refers to understanding the knowledge and skills (enduring understandings) teachers wish students to possess at the end of a learning experience. This was coded 13 times by interview transcript raters. As teachers engaged in this professional development experience, it became evident that a very clear focus was on determining desired results of the lesson or unit before plunging into instructional activities. Teachers embraced and internalized the concept of beginning with the final product and working backward instructionally to specific activities in which students would engage. This runs counter to the typical and predominant method of stringing

together a series of learning activities which are somewhat aligned with the standards for a specific grade level or subject. In many cases, alignment to standards is an afterthought.

As a high school participant put it, “I don’t want to just run through the novel and make sure we are just covering it drill and kill – names, places – because in 20 years you know they are not going to remember that. I don’t even remember some things, and I teach English. But I really want them to get the concepts and how it’s going to apply to their lives in the future.” This is the essence of backward design. An often-used phrase in the *Understanding by Design* (Wiggins & McTighe, 1998) training is 40-40-40. There are things we want students to know for 40 days, for 40 weeks, and for 40 years. We often focus on the first two and neglect the third because the planning of instruction is typically textbook-driven or activity-based.

Desired results includes the ideas of thinking about the “end product,” the “final outcome,” and instructional activities that “apply to their lives in the future.” These are all ideas expressed by participants in this process. Through the interviews, it was easy to see a change in teachers’ paradigms; from covering the content to being “focused on what needs to be taught,” “meeting students’ needs,” and being clear on “what we want them to know.” An elementary teacher added the following remark, “It’s like my thinking has changed starting with the end product and working your way back, so just the whole process when you’re lesson planning and you’re thinking about the final outcome - starting with that.” Starting at the end and working back to assessment and activity does require a change in thinking on the parts of teachers – a huge paradigm shift that this research suggests teachers are willing to take.

Change in Thinking

The previous quote indicates how closely related this theme of change in thinking is to that of desired results. Stephen Covey (1989) suggests that organizations are perfectly aligned to get the results they are getting. To change the results, you have to change the alignment within the system. The same is true for the traditional activity of planning lessons. Teachers repeatedly reported a change in thinking as they engaged in this process. Change in thinking in this context refers to teachers' perspectives as they engage in the planning of lessons. Teachers' paradigms changed from sequencing learning activities to determining end results and then designing work in which students would want to engage their time and effort. They changed from plowing through content to "rethinking the planning process." "I can't wait for next year so I know here we are just practicing it and next year we are getting better and better by just getting into the habit of thinking really." The anticipation and excitement expressed in this quote from a high school teacher epitomizes this theme. Teachers are "looking at things differently," reflecting about the thinking that has become "ingrained" in them, and talking about becoming "enlightened."

Thomas Guskey (2000) poses the chicken-and-egg scenario centered on teacher attitude and teacher behavior. Most would suggest that you change attitudes in order to change behavior. Guskey suggests that you change behaviors first; and changes in attitude will follow. Through the backward design process, we are witnessing teacher

attitudes and beliefs change as a result of changes in behavior aimed at lesson design and engaging student work.

Research Question 7

Research question 7 asked, “What are the dominant concerns of K-12 teacher participants prior to and after participation in job-embedded staff development?” Because stages of concern are fluid and do not lend themselves to analysis of gain or loss, it is appropriate to discuss them in terms of dominance of concerns. George et al. (2006) cite Frances Fuller’s (1969) work on arousal and resolution of concerns. As Fuller points out, the arousal, or emergence, and resolution of concerns stem from different sources. “Arousal seems to occur during affective experiences – for example, during confrontation with one’s own videotape. . . Resolution seems to occur through more cognitive experiences: acquisition of information, practice, evaluation, synthesis and so on” (p.9).

As we look for patterns of concern arousal and resolution, it is important to point out that the emergence of higher-stage concerns is not guaranteed from the resolution of lower stage concerns. The development of higher-stage concerns depends on individuals and their acuity of the context in which the innovation is taking place (Hall et al., 2006). As we analyze the dominance of concerns prior to and after engaging in job-embedded professional development, it is critical to consider as well the affective and cognitive contexts that might have an impact on arousal and/or resolution of concerns.

In the fall, 20 teachers indicated Stage 0, awareness, as the area of most intense concern. In the spring, 18 teachers indicated Stage 0 as the area of greatest concern. It is

obvious that the intensity in Stage 0 concerns changed little from fall to spring. Stage 0 scores provide an indication of the degree of priority a participant is placing on the innovation and the relative intensity of concern about that innovation (Hall et al., 2006). It does not necessarily reveal whether a respondent is a user or non-user of the innovation.

The higher the Stage 0 score, the more the respondent is indicating that there are other initiatives which are occupying his/her thoughts and energies, and are of concern to him/her. If resolution of these concerns requires a cognitive shift and practice of the innovation, more time may be required before this can occur.

Two participants indicated Stage 1, informational, as their highest area (or one of their highest areas) of concern in the fall. Five participants indicated such in the spring. A high score in this stage indicates that the participant would like more information about the innovation. "Stage 1 concerns are substantive in nature, focusing on the structure and function of the innovation" (Hall et al., 2006, p. 33). Participants are not indicating how much knowledge they have about the innovation; rather, they are indicating how much they want to know more about the innovation. The slight increase in this stage suggests that some participants are gathering more information as they meet with their central office contact and planning their first lesson.

Four participants indicated Stage 2 as their highest area (or one of their highest areas) of concern in the fall. Only one did so in the spring. Stage 2 concerns deal with what Frances Fuller (1969) referred to as self concerns. Stage 2, personal, concerns are evidenced through ego-oriented questions about the innovation and uncertainty about

how it affects them personally. A participant with high Stage 2 concerns may, in effect, ignore more substantive concerns about the innovation. “Respondents are most concerned about status, rewards, and what effects the innovation might have on them” (Hall et al., 2006, p. 33). As participants learn more about the innovation and gain more experience in a collaborative setting, it follows that personal concerns would be resolved.

Very few of the participants (zero in the fall and one in the spring) indicated Stage 3, management, concerns as being high. High Stage 3 scores indicate intense concerns about time, logistics, and general management of the innovation. Teachers tend to feel that a disproportionate amount of time is being spent managing the innovation in the classroom. Management is the only task related concern. In this stage, participants are focused on the processes and tasks of using the innovation. Instead of feeling comfortable with the implementation of the innovation, teachers focus on the organization of the innovation and how to manage it in the classroom with regard to the other initiatives they are engaged in.

Impact concerns (consequence, collaboration, and refocusing) are represented by stages 4 through 6. In the current study, one participant indicated Stage 4 as a high area of concern. Three respondents had high scores in Stage 5 in the fall and five in the spring. Not one participant demonstrated high Stage 6 concerns in either the fall or spring.

Stage 4 concerns center around impact on students rather than preoccupation with the self or task as in earlier stages. Student outcomes are now front and center, as are possible changes needed to improve student achievement. Stage 5 sees participants coordinating and collaborating with others in regard to the implementation of the

innovation. Stage 6 focuses on exploring ways in which the innovation can be modified, changed, or completely replaced in attempts to gain the greatest benefit for students.

Given the analysis of the levels of use interviews, it becomes apparent how the highly collaborative context surrounding this innovation would contribute to the number of participants demonstrating high levels of Stage 5 concerns. The logical progression of this phenomenon would be for participants to gain more confidence as well as develop deeper levels of understanding of the innovation as they meet with colleagues to design lessons and study backward design. Over time, it would be expected that Stage 0, 1, and 2 concerns would diminish in intensity, while stages 4, 5, and 6 would increase in intensity.

Transcripts from levels of use interviews were analyzed to identify specific examples of comments that might correlate to stages of concern. Although Stage 0 concerns were the most dominant, not one comment could be found that exemplified awareness concerns.

Stage 0 Awareness – None

Stage 1 Informational

“..I’m going through the study with (fellow teacher), and it has really enlightened me. As a first year teacher, I think the backward design is a great idea.”

Stage 2 Personal

I am the only teacher teaching Pre-AP and GT at my own school and the other teachers are first year teachers and right now it is a little bit overwhelming...”

Stage 3 Management

“It’s when you are struggling for that time when it’s so much easier to go and grab what you have done in years past. So that has been the biggest change to block out time to actually do prep work that it is easier just not to do.”

“I think this year for us it’s so new and especially to me who is fairly new at this profession. I am not so good at it yet so I can’t wait for next year so I know here we are just practicing it and next year we are getting better and better by just getting into the habit of thinking really.”

Stage 4 Consequence

“I’m teaching kids who are very different from myself. And so for my first two years, I taught the way I was taught which was semi-effective. My kids got it for the most part, but the results on things like TAKS test and final exams didn’t quite make it. It wasn’t that my instruction was bad. It’s that it wasn’t meeting their needs. From my perspective, kids have dramatically changed. We have so many more visual learners now than obviously 50 years ago, or even 10 years ago. You know, how kids think, how kids learn – we’re very visually driven in our society today. So the place of pen and paper and notes on an overhead has kinda gone out the window, and you either sink or swim. So, I find myself trying to swim.”

“We are seeing the results of that even if we’re not seeing them quite yet through grades received on tests and all the summative assessments, we’re seeing the change in our classrooms, and especially with formative assessments and how we’re taking the time to make sure that they understand it. We know where we need them to go, and that effects how we get there. So, this is a great innovation. We’re sold.”

Stage 5 Collaboration

“Definitely (fellow teacher) and I are using it together. We plan together. And the two grade levels that (the principal) has assigned us to work with; when we send things to them we wrote them up on that plan and shared it with them. So we’re trying to expose them to the same idea – the plan and how we’re finding it useful.

“Right, (teacher from another campus) and I doing it together but I have plans in the future to begin to incorporate it with my 5th grade team here at my campus.

Stage 6 Refocusing

“I’m planning on taking what I think is the good stuff out of it and putting it together with the CGI and putting it together with the 4E model and all the different things that we’ve learned before.”

Summary of Data Analysis

The results from the statistical analysis do not indicate statistically significant differences between levels of teacher efficacy and stages of concern about an innovation prior to or after involvement in job-embedded professional development. Qualitative data provided a richer understanding of the levels of use of the participants as well as the dominance of concerns both before and after treatment.

Research question 1 investigated changes in teacher efficacy before and after teacher involvement in job-embedded professional development. Changes in teacher efficacy were negligible from fall to spring. Mean ratings for efficacy subscale of student engagement increased from 6.9 to 7.0. Instructional strategies mean ratings increased from 7.1 to 7.4. Classroom management mean ratings decreased from 7.5 to 7.4. Paired samples *t*-tests resulted in no significant difference from pretest to posttest.

Research question 2 examined changes in stages of concern among teacher participants. Peak score interpretation, first and second high score interpretation, and profile interpretation were utilized to investigate these changes. Peak scores varied little from fall to spring, with the majority of intense concerns centering on Stage 0, awareness. Both profiles did exhibit curious degrees of intensity around Stage 5, collaboration. As was discussed in the qualitative review, this can be explained by the nature of the innovation and the context of learning for teachers.

First and second highest scores analysis suggests an adjacent score pattern in the fall. Most of the highest scores had second highest scores in stages that were adjacent to the highest scores. The spring scores were less adjacent than the fall scores, indicating movement from some of the lowest stages to self and impact stages.

The fall and spring profiles were nearly identical revealing typical non-user patterns. The one discrepant portion of the non-user profiles depicting the current study is the moderate intensity in Stage 5 concerns. Whereas the typical non-user profile shows an upturn in Stage 5 concerns, it is not as dramatic as those witnessed in the current study. The teachers in the current study demonstrated moderately intense concerns in Stage 5 collaboration in both pre- and posttests (64% in the fall and 55% in the spring). Qualitative data suggest that there is much more use of the innovation than what the stages of concern profiles indicate.

The third and fourth research questions investigate the relationships between stages of concern and teacher efficacy before and after participation in job-embedded professional development. Correlation coefficients were used to analyze the relationships between subscales of teacher efficacy and stages of concern. Although efficacy subscales showed strong correlation to each other, as did the stages of concern, there existed only one statistically significant relationship between an efficacy subscale and a stage of concern. This occurred in the posttest data between the classroom management subscale of teacher efficacy and stage 5, collaboration. The significance value was 0.025.

Research questions 5 and 6 investigated teachers' perceptions of their levels of use of the innovation before and after job-embedded professional development. Of the

teachers who responded prior to treatment, 69% indicated little to no previous involvement with or knowledge of backward design. Twenty-three had adequate knowledge, and nine percent had extensive knowledge of or involvement with backward design. Levels of use interviews were utilized to answer research question 6. Of the 15 teachers interviewed, all but one were at level III, mechanical, or above, indicating a general high user level among these participants.

A constant comparison approach was utilized to analyze the levels of use interviews, and from this analysis five different themes emerged: designing work, collaboration, desired results, student engagement/student needs, and change in thinking. These themes directly reflected the nature of the work teachers engaged in as well as helped to provide clarity to the quantitative data collected.

Research question 7 investigated the dominance of concerns of teachers prior to and after participation in job-embedded professional development. The dominance of concerns centered on Stage 0, awareness, in both the fall and spring, indicating a need for additional training, practice, and information about the innovation. Approximately one-fifth of the participants demonstrated intense concerns in Stage 5, collaboration, in both fall and spring. Levels of use data suggest this response is due to the collaborative nature of the innovation and the support provided by central office staff.

The results of this study appear to support the CBAM research that suggests that successful facilitation of teachers through an educational innovation might take three to five years. Studies also suggest the importance of ongoing training and support (Hope, 1997) and focusing on teacher support as the main way to improve student achievement

(Bennett & Fullan, 2006). Little relationship between teacher efficacy and stages of concern was discovered, although efficacy levels remained relatively high throughout the study. This finding runs counter to the study by Hargreaves, Moyles, Merry, Paterson, and Esarte-Sarries (2003), in which some changes in teacher efficacy were noted, but only in certain areas and with few differences between groups.

Levels of use data were a bit more promising although the small sample size provides a certain degree of caution. The findings appear to counter studies that indicate that most teachers need two to three years' experience with an innovation to progress beyond LoU III, mechanical (Dirksen & Tharp, 2000; Marsh, 1987; Newhouse, 2001). Hall et al. (2006) reinforce the need for long-term facilitation of innovations and the need for them to represent best practice linked to student achievement. "Unless educational programs are implemented (LoU III-VI) with a focus on student learning (LoU IVA, IVB, V, or VI) and encompass both individual and organizational change, positive results cannot be sustained" (p.44).

Chapter 5 presents a summary of the methodology utilized in the current study, a summary and discussion of the results attained, interpretations of the findings by research question, and recommendations for future research.

CHAPTER 5

SUMMARY AND DISCUSSION

Introduction

This chapter restates the research problem, summarizes the methodology used in the study, and provides a summary and discussion of the results. In addition, an interpretation of the findings is provided for each research question. Finally, recommendations and suggestions for future research are discussed.

Statement of the Problem

The problem of student achievement is a complex one that has been addressed by US educators for the past 50 years. Student achievement is a construct intricately connected to teacher achievement (Goddard, Goddard, & Tschannen-Moran, 2007). Central to a school's academic success is the academic success of every individual student, as well as the school's ability to motivate teachers to make meaningful contributions to student success rather than to some competing endeavor (Rosenholtz, 1989).

To confound the problem, teachers often work in isolated environments and autonomous contexts that are highly resistant to change (Darling-Hammond & Bransford, 2005). Cuban (1993) describes how the act of teaching has changed very little over a one hundred year period (1890-1990) despite the waves of reform that the profession has

witnessed. One of the reasons for this lack of change is embedded in the fact that the cultures of teaching that have developed within the occupation have tilted toward stability in classroom practice. The occupational norms are conservative, meaning that a preference for stability and a cautious attitude toward change are rooted in: the nature of the craft; the people recruited into the profession; how they are formally socialized; how they are evaluated; and the school and classroom cultures of which teaching itself is a primary ingredient.

The problem for educators nationwide is one of meeting high standards for children. In the state of Texas, the problem is confounded by structures that: require testing students who barely have command of their native language; provide for dwindling or static resources; and sanction change-resistant environments that foster contexts of teacher isolation. From these structures concerns arise.

The concerns-based adoption model (CBAM) (Hall & Hord, 1987) grew out of a concern over the value of educational innovations that had been introduced during the 1960s and 70s and constitutes a significant contribution to change theory. Evaluators lamented the lack of significant change experienced as a result of the many innovations introduced, but they mistakenly blamed the innovations. Hall and Hord (1987) contend that “the innovations were frequently not fully implemented, therefore, not fairly tested” (p. 7). The CBAM model measures, describes, and explains the process of change experienced by teachers involved in the implementation of new instructional materials and practices, as well as with how that process is affected by interventions from persons acting in change-facilitating roles (Anderson, 1997). Three of the most critical concepts

involved in examining the effectiveness of change efforts are stages of concern (Hall et al., 1979), levels of use (Loucks et al., 1975), and innovation configuration maps (Heck, Stiegelbauer, Hall, & Loucks, 1981). Each has a tool that is useful in measuring change efforts. Two of these tools, Stages of Concern Questionnaire (Hall et al., 1979) and levels of use interview (Loucks et al., 1975), were utilized in gathering data for this study.

The problems that lay the foundation for this study are born out of a desire to make connections between and among teacher collaboration, teacher efficacy, and job-embedded professional development. Although not a major focus of this study, the resultant student achievement is an ever-present reality for teachers, schools, and school districts. Based on social learning theory (Bandura, 1977), social cognitive theory (Bandura, 2001), the constructs of efficacy and human agency (Bandura, 1997), as well as the evidence from numerous research studies on teacher efficacy (Allinder, 1994; Gibson & Dembo, 1984; Midgley, Feldhauser & Eccles, 1989; Hoy & Woolfolk, 1993; and Tschannen-Moran & Barr, 2004), this researcher assumes that the correlation between teacher efficacy (individual and collective) and student achievement is highly positive. The question then is not whether high levels of teacher efficacy result in positive student behaviors and increased academic achievement. Rather, the focus is centered on the relationships between teacher collaboration, job-embedded professional development, and teacher efficacy. The problem of this study was addressed in three research formats: pre-experimental, correlational, and descriptive.

Pre-experimental – The problem of this study was to determine:

1. the effect of a job-embedded staff development program on K-12 teachers' teacher efficacy.
2. the effect of a job-embedded staff development program on K-12 teachers' stages of concern about the innovation.

Correlational – The problem of this study was to determine:

3. the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development.
4. the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development.

Descriptive – The problem of this study was to determine:

5. the status of K-12 teacher participants' perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development.
6. the current status of K-12 teacher participants' perceptions of their own levels of use of an educational innovation after participation in job-embedded staff development.
7. the dominant concerns of K-12 teacher participants prior to and after participation in job-embedded staff development.

Review of the Methodology

The stages of concern (Hall et al., 1979), levels of use (Loucks et al., 1975), and efficacy of 30 teachers from a suburban school district in north Texas were measured as they engaged in a job-embedded form of professional development. All teachers were paired with other teachers and central office staff who facilitated the six month professional development experience.

All teachers were administered the Stages of Concern Questionnaire (George et al., 2006) and the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) in September, 2007 and February, 2008. Levels of use branching interviews (Hall et al., 2006) were conducted with 15 participants in February, 2008. All interviews were recorded, transcribed, and analyzed through the constant comparison method for common patterns and themes in relation to stages of concern (SoC), levels of use (LoU), and teacher efficacy.

Summary of the Results

In comparing teacher efficacy gains, there was little difference in mean ratings from fall to spring for any of the subscales of the teacher efficacy survey. Paired samples *t*-tests showed no statistically significant changes in mean scores from fall to spring.

In comparing pre- and post-treatment stages of concerns scores, little change was evident. Three methods of analyzing these scores were utilized: peak stage score interpretation, first and second high score interpretation, and profile interpretation. Peak scores for fall and spring varied little, with greatest intensity of concerns being evident at the Stage 0, awareness, level for both administrations of the questionnaire. First and second high score analysis showed more adjacent score trends in the fall than the spring. Spring scores demonstrated a bit more nonadjacent tendency suggesting intensity of concerns at some of the higher levels (such as Stage 5, collaboration). Profiles for both fall and spring follow typical non-user profiles with the exception of a greater degree of upturn in Stage 5, collaboration.

Investigation of the relationships between teacher efficacy and stages of concern both prior to and after participation in job-embedded professional development resulted in one significant correlation. This occurred in the posttest data between Stage 5, collaboration; and efficacy subscale, classroom management. Although significant correlations were discovered between individual stages of concerns as well as between efficacy subscales, only one significant correlation was discovered when comparing data between the two instruments.

Descriptive data provided a little different view of this process. Whereas most participants viewed themselves as non-users in the fall, most viewed themselves as users in the spring and provided evidence of use of backward design as well as a focus on students, and a great deal of collaboration. The dominance of concerns continued to center on Stage 0, awareness. This appears contradictory to levels of use data, but it suggests that participants, while using the innovation, are still learning about it and refining its use.

Discussion of the Results

The results from the statistical analysis do not indicate statistically significant differences between teacher efficacy subscale levels and stages of concern about an innovation prior to or after involvement in job-embedded professional development. One statistically significant correlation between the classroom management efficacy subscale and Stage 5, collaboration, was obtained in the analysis of the posttest data. The data did not demonstrate statistically significant changes in the teacher efficacy subscale levels

after participation in job-embedded professional development. Qualitative data provided a richer understanding of the Levels of use of the participants as well as the dominance of concerns both before and after treatment.

Qualitative analysis provided a different perspective into this process and suggests growth in teacher use of the innovation. It also uncovered deeply held beliefs about focusing on student needs, designing engaging work for students, and working in a collaborative environment. Further investigation would have to be conducted to determine if those beliefs developed or intensified as a result of the process or existed prior to involvement in the process.

Interpretation of the Findings

When investigating human behavior, it is difficult to distinguish between beliefs, behaviors, and attitudes that existed before involvement in a change process and those that develop because of the process. This study considered the relationship of teacher efficacy and how participants move through stages of concern about an innovation they are experiencing. The premise was that as teachers move to higher stages of concern and levels of use, their feelings of efficacy would also increase.

Bandura (1997) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy beliefs influence teachers' thought patterns and emotions that enable actions in which they expend substantial effort in pursuit of educational goals, persist in the face of adversity, rebound from temporary setbacks, and exercise some control over events that

affect their lives (Bandura, 1986, 1993, 1997). It seems logical to assume that as impact concerns intensify, teachers would also experience a greater sense of ability to impact student outcomes. What was lacking in this study is the amount of time needed for the development of knowledge and skills toward mastery of the innovation and the pursuant growth in the belief that teachers can impact and influence student outcomes through the use of this innovation.

Research Question 1

Research question 1 asked “What is the effect of a job-embedded staff development program on K-12 teachers’ teacher efficacy?” Although the quantitative results did not provide evidence to support a positive impact on teachers’ efficacy, the 15 interviews provide descriptive data to support teachers’ sense that their involvement in backward design can have an impact on student outcomes. As one teacher expressed, “But I really want them to get the concepts and how it’s going to apply to their lives in the future.”

The Teacher Sense of Efficacy Scale asks teachers to respond to 24 items on a 1-9 Likert scale. Mean posttest ratings for each of the subscales ranged from 7.0 to 7.4. This suggests a rather high level of efficacy among participants in this study. Pretest means ratings ranged from 6.9 to 7.5. Although there was no significant growth in efficacy ratings, this researcher can be confident in these 30 teachers’ beliefs about their ability to impact student outcomes. A response of 7 on the scale indicates that teachers can do “quite a bit” to influence student engagement, instructional strategies, and classroom

management. The possibility of obtaining statistical significance obviously increases when one begins with a sample of teachers whose efficacy beliefs are already low. This was simply not the case in this study.

Research Question 2

Research question 2 asked “What is the effect of a job-embedded staff development program on K-12 teachers’ stages of concern about the innovation? Intensity of concerns centered on Stage 0, awareness in both pretest and posttest data. This finding should provide no surprises since change initiatives could take two to five years for teachers to truly move from initiation to implementation to institutionalization (Fullan 1991). It makes sense that teachers would continue to be focused on gaining more information about the innovation after five to six months. The lack of movement from lower stages to higher stages points to the issue of change facilitation and change interventions.

Hall and Hord (2006) define an intervention as “an action or event that is typically planned or unplanned, and that influences individuals (either positively or negatively) in the process of change” (p. 187). They suggest six functions of interventions: developing, articulating, and communicating a shared vision of change; planning and providing for resources; providing continuous assistance; investing in professional learning; checking on progress; and creating a context supportive of change. Quite a few variables not measured in the current study could be taken into consideration when investigating movement through stages of concern.

Each of the functions of interventions mentioned above could account for the lack of movement through the stages. Although a common vision of change was articulated from the researcher to change facilitators, it is impossible to know whether this vision was articulated consistently to each group of teachers undergoing this process. Because it was a job-embedded professional development process, the 30 teachers who took part never met as a large group. The same can be said for the other intervention functions. Time and material resources were provided, professional learning was focused on, progress was checked, and a positive context was established. Because these were being provided by ten different central office facilitators, consistency and continuity were difficult to control.

Research Questions 3 and 4

Research question 3 asked “What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers prior to participation in job-embedded staff development?” Research question 4 asked “What is the relationship between subscales of teacher efficacy and stages of concern of K-12 teachers after participation in job-embedded staff development?” Statistical analysis uncovered one significant correlation between the efficacy classroom management subscale and Stage 5, collaboration. This is an interesting relationship, especially because it was the only one found to be statistically significant.

Questions from the classroom management subscale focus on topics such as establishing rules and classroom guidelines and the ability to deal with disruptive

behavior and defiant students. As intensity of Stage 5 concerns increased among participants, so did the belief that they could influence classroom management issues. Descriptive data suggested that the highly collaborative nature of this process provided many opportunities for teachers to dialog not only about lesson design, but also about how to design engaging work for students, based on the assumption that engaged students are not defiant, disruptive, or general problems in the classroom.

Schlechty (2005) provides an insightful explanation of what it means for a student to be engaged.

To say that a student is engaged, first, means that the task in which the student is involved commands the student's attention. Because the task commands attention, the student focuses his or her energy on completing the task at a level that will satisfy the requirements specified in the task. Second, it means that the student is committed to the task or activity to the point that he or she is willing to allocate scarce resources (for example, time and psychic energy) to completing the task or participating in the activity *and* that he or she is willing to persist with the task even when difficulties are confronted and even when no promise of extrinsic reward is attached to continuing with the task or activity. To measure engagement, then, it is necessary first to measure attention and commitment. Students who are high in attention and high in commitment are engaged. Students who are high in attention but low in commitment are simply compliant. (p. 8)

Schlechty (2002) describes classroom profiles describing engagement, strategic compliance, ritual compliance, retreatism and rebellion. It is through designing engaging work for students that classrooms avoid compliance, retreatism, and rebellion. The process of backward design provides teachers the collaborative context in which to design engaging lessons and thereby increase their sense of classroom management efficacy.

Research Questions 5 and 6

Research questions 5 asked “What is the status of K-12 teacher participants’ perceptions of their levels of use of an educational innovation prior to participation in job-embedded staff development?” Research question 6 asked “What is the current status of K-12 teacher participants’ perceptions of their own levels of use of an educational innovation after participation in a job-embedded staff development?” It is within these two questions that I believe the greatest insight can be gained about the growth of teachers in this process.

When pretest data were culled to just those whose responses were utilized in the surveys, 77% of the participants indicated little to no previous involvement with or knowledge of backward design. Twenty-three percent had adequate involvement with or knowledge of backward design. In terms of levels of use, they would all be considered in one of the first three categories: LoU 0, nonuse; LoU I, orientation; or LoU II, preparation.

After levels of use interviews were conducted, only one respondent was operating at LoU II or lower. The other 14 were at LoU III or higher. This finding demonstrates a dramatic shift in how teachers were interacting with the innovation. Influencing these levels is the fact that the context for this innovation is one of collaboration. Nobody involved in backward design experienced the process alone. The highly collaborative context would certainly have influenced teachers’ perceptions of their levels of use. More time would be needed to determine whether the levels of use were artificially impacted

by the nature of the innovation or whether teachers naturally moved to higher levels of use such as integration and renewal.

Research Question 7

Research question 7 asked “What is the dominance of concerns of K-12 teacher participants prior to and after participation in job-embedded staff development?” The dominance of concerns prior to and after participation in job-embedded staff development remained centered on Stage 0, awareness. This does not necessarily reveal whether or not a participant is a user or non-user of the innovation. As was discussed previously, levels of use interviews suggest a high level of use among most participants. This begs the question, “Why are so many participants demonstrating intense concerns at Stage 0?”

Participants at Stage 0 are not indicating how much knowledge they have concerning the innovation or even that they desire more information; but, rather, they are indicating “the degree of interest in and engagement with the innovation in comparison to other tasks, activities, and efforts” (George, et al., 2006, p. 33). Higher Stage 0 concerns indicate a number of other tasks or initiatives that are of concern to the participants. If participants resolve these intense concerns through acquisition of information, practice, and more cognitive experiences (Fuller, 1969), the data would suggest that time to complete these activities would be needed to move to higher stages of concern. This causes the data to appear promising rather than flat. With more time to gain information and experience with backward design, participants might naturally move to higher levels

of concern. This certainly has implications for change facilitators and the interventions utilized to assist participants in their resolution of concerns.

Recommendations

Change initiatives are a constant part of public education in the 21st century. Most are implemented in response to demands of the federal and state governments for ever-increasing standards that must be met by all children. Principles of change are violated by those who work in public schools as often as change initiatives occur. How do we know these principles are being violated? More times than not, if an innovation has been launched, principles of change have been violated. If those who fault public schools have one area of firm ground from which to cast stones, it would be the ground of one innovation following another, with no consideration of the change process or the long-term implications of initiating change.

Michael Fullan (1991) provides an explanation for why this may be so.

One of the most fundamental problems in education today is that people do not have a clear, coherent sense of meaning about what educational change is for, what it is, and how it proceeds. Thus, there is much faddism, superficiality, confusion, failure of change programs, unwarranted and misdirected resistance, and misunderstood reform. (p. 4)

Fullan (1991) suggests three phases of change: initiation, implementation, and institutionalization. Adherence to the principles of these three phases would yield results far greater than anything we have experienced in public education.

Inherent in this recommendation is taking the time to look at the practicality and need of an innovation, the capacity of the system to embrace the change, and the

availability of resources to sustain the change initiative. Whether the change is initiated at the district or campus level, attention needs to be paid to initiating structures and activities. With the process under investigation, a recommendation would be to examine participants' readiness and conceptual capacity to adopt the innovation. Intense Stage 0 concerns may be indicative of initiating activities that were not carried out with fidelity with each of the learning groups.

The implementation phase of any innovation is fraught with the possibility for failure simply because of all the factors that influence successful implementation. Fullan (1991) suggests nine different interacting factors that affect implementation. These are grouped into characteristics of change, local characteristics, and external factors. One of the most critical of the local characteristics is the teachers involved in the change process. "The quality of working relationships among teachers is strongly related to implementation" (p. 77). A second recommendation is careful consideration of the collegial context developed around any change initiative. The descriptive data from the current study reinforce the need for a collaborative culture.

Whether an initiative is developed from within or imposed from without, the problem of institutionalization is the same. Fullan (1991) suggests that the continuation of an innovation depends on whether the change (a) is embedded into the structure of the school or district; (b) has a critical mass of teachers and administrators who are skilled in and committed to the change; and (c) has structures in place that will support the initiative for years to come. Attention to the factors related to institutionalization is critical if change initiatives are to have any chance of actualizing results for students.

The concerns-based adoption model provides one structure for understanding the change process, facilitating educators through change, and providing tools to measure progress toward higher levels of use and stages of concern. It is certainly not the only structure available to educators who strive to adhere to the three I's of change: initiation, implementation, and institutionalization.

Those who work in the field of education embrace the fact that change is a constant and often reference “the change process” when talking about change initiatives. It has been my experience that often we never get past the talking phase, partly because most do not truly understand “the change process” and partly because paying attention to the tenets of effective change is time consuming, laborious, and carries with it a certain level of accountability. If we are to carry out successful change initiatives toward the goal of improving learning for all children, we must first become students of change and heed the words of the experts. We must understand and learn to use the tools developed, field-tested, and validated by these experts.

Teacher learning and development is critical to the process of change. Fullan, Hill and Crevola (2006) suggest that teacher learning is fragmented and not linked to the classroom. Sparks and Hirsh (1997) call for standards-based, results-driven, and job-embedded professional learning for teachers that is accomplished through systems thinking. A one-size-fits-all approach to staff development will not carry public schools through all of the challenges they face. If teachers are not learning and developing, there is no hope that students will be doing the same. Teachers must learn at the point of delivery. A new paradigm for teacher learning must be embraced -- one that encourages

collaboration and features teachers coaching teachers, collective learning, and shared practice. When teacher learning is focused on what students need to know and be able to do and when it becomes a daily part of the fabric of public school life, then it will have the impact on student learning that we all desire and that state and federal guidelines call for.

Schlechty (2005) suggests that teachers must be designers of work to which students want to give their attention and commitment. “For teachers to accept the fact that they must earn the attention and commitment of students requires, first, that they understand that our schools currently operate on the assumption that students ought to provide only attendance and compliance” (p. 103). If we are to rise up to the challenges facing public schools, we will have to change the way in which we look at schools, the students therein, the governing boards, administration, parents, teachers, and the overall purpose for providing public education. If teachers view their students as raw materials, their roles become that of a skilled worker who tries to mold the raw material into a finished product. However, if teachers view students as volunteers who have time and attention to commit, their roles change to instructional leaders and curriculum designers. Fullan, Hill and Crevola (2006) indicate that “the only way classroom instruction can become all the things we want it to be is through attention to design and the creation of expert instructional systems” (p.6).

The change initiative investigated through this study encompasses the recommendations provided above. Although the data would suggest that close attention needs to be paid to the continued development of this innovation, the facilitators of this

change initiative have strived to take into consideration the tenets of change. The results of this study suggest that the vision for backward design requires stronger articulation; teachers need continued facilitation through stages of concern, and further training and development of the backward design process needs to be provided. Teachers must be provided the time and opportunity to work in collaborative groups, analyze student needs, and design work to which students will volunteer their attention and commitment.

Plans have already been developed to provide participants collaborative time to reflect on this process and present lessons developed. In addition, four days of intensive training and development will be provided in the summer of 2008 for members of this study as well as for a group of teachers who will begin the process next school year. Consistent follow up provided by central office staff and a national understanding by design consultant will enhance this process and further the levels of use of current study participants. By providing a comprehensive study and examples of backward design, future (as well as current) participants should have the background needed to address some of the self concerns current participants demonstrate. Through the implementation of lessons developed by previous cadres and summer participants, all teachers involved should experience the benefit of this innovation and experience arousal of higher stage concerns.

Suggestions for Additional Research

The current study provides evidence that the initiation phase of change efforts requires careful attention. Access to information is but one of the critical elements for

teachers embarking on an instructional initiative. Therefore, additional investigation into initiating structures and their influence on stages of concern and teacher efficacy might be warranted.

Acknowledging that change efforts can take two to five years before full implementation is achieved, a longitudinal study of teachers' stages of concern and levels of use is recommended. In the job-embedded staff development initiative described in this study, intensive training that includes practice with coaching by experts is scheduled for the summer. The evidence yielded by this study suggests that this training initiative should provide the needed information to resolve teachers' concerns focused on Stage 0, awareness.

The relationship between teachers' stages of concern, involvement in job-embedded professional development, and teacher efficacy is still unclear. In future studies, it is recommended to design a method of connecting respondents' stages of concern data with levels of use interview data. The current study provided anonymity to respondents with the Stages of Concern Questionnaire which made it impossible to compare individual SoC and LoU responses. The inconsistencies between the dominance of concerns with levels of use in the current study were difficult to explain without the ability to connect the two data sources on an individual level.

The research on teacher efficacy suggests that, among the sources of teachers' self-efficacy beliefs, mastery experiences appear to be the most potent (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2007). If mastery experiences are the best indicators

of increased efficacy, additional data must be collected once the teachers in the current study have had time to develop mastery of backward design.

Additional research would be warranted in the area of novice versus experienced teachers and self-efficacy. If novice teachers have greater capacity for efficacy growth than experienced teachers (Bandura, 2001), what influences would contribute to this growth if fewer mastery experiences are available to novice teachers? Tschannen-Moran and Woolfolk Hoy (2007) found contextual factors, such as availability of teacher resources and interpersonal support, to be more salient in the self-efficacy beliefs of novice teachers than mastery experiences.

Finally, the relationship of implementation factors to success of change initiatives merits further study. Particularly of interest is the role of teachers in the change process. In regards to teacher involvement in school improvement efforts, Judith Warren Little (1982) found that school improvement occurred when (a) teachers engaged in frequent, continuous, and increasingly concrete talk about teaching practice; (b) teachers and administrators frequently observed and provided feedback to each other, developing a shared language for teaching strategies and needs; and (c) teachers and administrators planned, designed, and evaluated teaching materials and practices together. The current study suggests that teacher collaboration is imperative to mastery of change initiatives as well as to the on-going refinement of the teaching and learning process. The amount of teacher collaboration and administrative support as factors in a successful change effort warrants further investigation.

This study sought to demonstrate the relationship of teacher efficacy to teacher concerns and job-embedded professional development. Research was provided that demonstrated the relationship between the constructs of teacher achievement and student achievement. Because teacher efficacy has a strong correlation to student motivation and achievement, it became the primary avenue of investigation for improvement of student outcomes.

Both quantitative and qualitative data were collected and analyzed. Quantitative data exhibited little to no change in teachers' sense of efficacy or resolution of lower stage concerns as they engaged in job-embedded professional learning. Qualitative data suggest higher levels of use of the innovation among participants than quantitative data indicate. Because of limitations of the study, stages of concern data and levels of use data could not be correlated on an individual level. Questions remain as to the disparate quantitative and qualitative findings. Teacher efficacy levels remained constant, although consistently high from pretest to posttest. Gathering of additional longitudinal data from current participants is recommended.

APPENDIX A
INORMED CONSENT FORM

University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study: Teacher Efficacy, CBAM, and Job-Embedded Professional Learning

Principal Investigator: John Doughney, University of North Texas (UNT) Department of Education.

Purpose of the Study:

You are being asked to participate in a research study which involves the investigation of the correlation between teacher self-efficacy and stages in the change process. The study hopes to identify the common correlational characteristics of Stages of Concern, Levels of Use and teacher self-efficacy in successfully implemented educational initiatives.

Study Procedures:

As part of the GCISD Lesson Design Cadre, you will be asked to respond to a teacher efficacy survey and a Stages of Concern Questionnaire at two points in this study (beginning and end of school year). You will also be asked to engage in a Levels of Use interview with the principal investigator once during this process. The teacher efficacy survey will take approximately 10-15 minutes to complete. The Stages of Concern Questionnaire will take approximately 15-20 minutes to complete. The Levels of Use interview takes approximately 10-15 minutes to complete.

Foreseeable Risks:

The potential risks involved in this study are feelings of discomfort as you respond to questions about the effectiveness of change initiatives at your campus and/or the concerns you have in implementing a new change initiative. As a participant, you may withdraw from the study at any time with no negative impact on your employment status.

Benefits to the Subjects or Others:

We expect the project to benefit you by providing feedback to your principal concerning the stages of concern and levels of use of the innovation at your campus. With this information, your campus will be better able to take steps to support the people involved in the change and can better monitor the effective implementation of the initiative. This study will benefit others by identifying the correlation of teacher efficacy and stages of the change process.

Compensation for Participants:

Although no financial incentives are offered for participation in this study, teachers involved will receive FLEX credit according to their individual FLEX plans.

Procedures for Maintaining Confidentiality of Research Records:

Signed consent forms and coded survey results will be maintained in separate locations. Surveys will be taken electronically, with no ability to identify respondents. Observation field notes will be transcribed and kept in a locked filing cabinet in the principal investigator's home. Levels of Use interviews will be audio-recorded. The recordings will be maintained in a secure location for the duration of the study and completion of the dissertation. Transcripts of the tapes and field notes will be read by the principal investigator and a colleague for the purpose of peer checking. Names will not be divulged to the peer checker. The audiotapes will be disassembled and the recording tape will be shredded at the conclusion of the study. Also, the confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

Questions about the Study

If you have any questions about the study, you may contact John Doughney at telephone number (xxx) xxx-xxxx or Dr. James D. Laney, UNT College of Education, at (940) 565-2602.

Review for the Protection of Participants:

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- John Doughney has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

Printed Name of Participant

Signature of Participant

Date

For the Principal Investigator or Designee:

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

Signature of Principal Investigator or Designee

Date

APPENDIX B

TEACHER SENSE OF EFFICACY SCALE

Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1. How much can you do to get through to the most difficult students?	1	2	3	4	5	6	7	8	9
2. How much can you do to help your students think critically?	1	2	3	4	5	6	7	8	9
3. How much can you do to control disruptive behavior in the classroom?	1	2	3	4	5	6	7	8	9
4. How much can you do to motivate students who show low interest in school work?	1	2	3	4	5	6	7	8	9
5. To what extent can you make your expectations clear about student behavior?	1	2	3	4	5	6	7	8	9
6. How much can you do to get students to believe they can do well in school work?	1	2	3	4	5	6	7	8	9
7. How well can you respond to difficult questions from your students?	1	2	3	4	5	6	7	8	9
8. How well can you establish routines to keep activities running smoothly?	1	2	3	4	5	6	7	8	9
9. How much can you do to help your students value learning?	1	2	3	4	5	6	7	8	9
10. How much can you gauge student comprehension of what you have taught?	1	2	3	4	5	6	7	8	9
11. To what extent can you craft good questions for your students?	1	2	3	4	5	6	7	8	9
12. How much can you do to foster student creativity?	1	2	3	4	5	6	7	8	9
13. How much can you do to get children to follow classroom rules?	1	2	3	4	5	6	7	8	9
14. How much can you do to improve the understanding of a student who is failing?	1	2	3	4	5	6	7	8	9
15. How much can you do to calm a student who is disruptive or noisy?	1	2	3	4	5	6	7	8	9
16. How well can you establish a classroom management system with each group of students?	1	2	3	4	5	6	7	8	9
17. How much can you do to adjust your lessons to the proper level for individual students?	1	2	3	4	5	6	7	8	9
18. How much can you use a variety of assessment strategies?	1	2	3	4	5	6	7	8	9
19. How well can you keep a few problem students from ruining an entire lesson?	1	2	3	4	5	6	7	8	9
20. To what extent can you provide an alternative explanation or example when students are confused?	1	2	3	4	5	6	7	8	9
21. How well can you respond to defiant students?	1	2	3	4	5	6	7	8	9
22. How much can you assist families in helping their children do well in school?	1	2	3	4	5	6	7	8	9
23. How well can you implement alternative strategies in your classroom?	1	2	3	4	5	6	7	8	9
24. How well can you provide appropriate challenges for very capable students?	1	2	3	4	5	6	7	8	9

APPENDIX C

TEACHER SENSE OF EFFICACY SCALE BY SUBSCALE

Efficacy in Student Engagement

1. How much can you do to get through to the most difficult students?
2. How much can you do to help your students think critically?
4. How much can you do to motivate students who show low interest in school work?
6. How much can you do to get students to believe they can do well in school work?
9. How much can you do to help your students value learning?
12. How much can you do to foster student creativity?
14. How much can you do to improve the understanding of a student who is failing?
22. How much can you assist families in helping their children do well in school?

Efficacy in Instructional Strategies

7. How well can you respond to difficult questions from your students?
10. How much can you gauge student comprehension of what you have taught?
11. To what extent can you craft good questions for your students?
17. How much can you do to adjust your lessons to the proper level for individual students?
18. How much can you use a variety of assessment strategies?
20. To what extent can you provide an alternative explanation or example when students are confused?
23. How well can you implement alternative strategies in your classroom?
24. How well can you provide appropriate challenges for very capable students?

Efficacy in Classroom Management

3. How much can you do to control disruptive behavior in the classroom?
5. To what extent can you make your expectations clear about student behavior?
8. How well can you establish routines to keep activities running smoothly?
13. How much can you do to get children to follow classroom rules?
15. How much can you do to calm a student who is disruptive or noisy?
16. How well can you establish a classroom management system with each group of students?
19. How well can you keep a few problem students from ruining an entire lesson?
21. How well can you respond to defiant students?

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