

379  
N8/d  
NO.2745

A STUDY OF RELATIONSHIPS BETWEEN TEACHERS' KNOWLEDGE OF  
AND ATTITUDE TOWARD SELECTED TEACHING STRATEGIES AND  
THEIR IMPLEMENTATION IN THE ELEMENTARY CLASSROOM

DISSERTATION

Presented to the Graduate Council of the  
North Texas State University in Partial  
Fulfillment of the Requirements

For the Degree of

DOCTOR OF EDUCATION

By

Lynda Overton Speak, B.S.E., M.Ed.

Denton, Texas

August, 1987

Speak, Lynda O., A Study of Relationships Between Teachers' Knowledge of and Attitude Toward Selected Teaching Strategies and Their Implementation in the Elementary Classroom. Doctor of Education (Elementary Education), August, 1987, 107 pp., 10 tables, bibliography, 84 titles.

The purpose of this study was to explore the variables of content knowledge, individual attitude, and span of time from initial training with regard to implementation of selected teaching practices in the elementary classroom. The sample consisted of thirty-two elementary classroom teachers who teach reading or mathematics in a large suburban school district in the Dallas Metropolitan Area. After completion of the second day's training in an inservice program on teaching strategies, the teachers were given a test to measure content knowledge of and attitude toward the teaching strategies. The test results were used in determining four groups for follow-up classroom observations four weeks and eight weeks after the inservice sessions. Using three-way analysis of variance, the data were analyzed.

Results indicated that teachers with high content knowledge of the teaching strategies implemented these strategies to a greater degree than did teachers with low content knowledge. No significant relationship with regard

to implementation was found for the variables of attitude or span of time.

It can be concluded that teachers who know the content of inservice training are able to and do implement the training in their classrooms. Of equal significance is the conclusion that teachers who do not know the content do not demonstrate teaching skills which duplicate the training concepts. It can also be concluded that training of this type is beneficial to teachers regardless of their attitude, and that teachers who implement training will do so with knowledge of the content not affected by the factor of time.

It is suggested that additional studies be conducted using these and other variables and combinations of variables which may have a relationship to the teachers' use of inservice training in the classroom.

## TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	v
Chapter	
I. INTRODUCTION . . . . .	1
Statement of the Problem	
Purpose of the Study	
Hypotheses	
Significance of the Study	
Definition of Terms	
Limitation	
Assumptions	
II. SYNTHESIS OF RELATED LITERATURE . . . . .	13
Content Knowledge as a Factor in Inservice Education	
Attitude as a Factor in Inservice Education	
Implementation	
Summary	
III. METHODS AND PROCEDURES . . . . .	43
Description of Inservice Setting	
The Population	
Selection of the Sample	
Study Design	
Instrumentation	
Procedures for Analysis of Data	
IV. RESULTS OF THE STUDY . . . . .	52
Demographic Information	
Findings of the Research	
Summary	
V. DISCUSSION . . . . .	64
Findings	
Interpretations	
Conclusions	
Suggestions for Further Research	

	Page
APPENDICES . . . . .	77
BIBLIOGRAPHY . . . . .	100

## LIST OF TABLES

Table	Page
I. Scores on PETL II Test . . . . .	47
II. Test Score Strata . . . . .	47
III. Means and Standard Deviations of Implementation Scores for Teachers with Low and High Content Knowledge of the Teaching Strategies . . . . .	54
IV. ANOVA for Research on Effects of Content Knowledge, Attitude, and Span of Time on Implementation of Teaching Strategies .	54
V. Means and Standard Deviations of Implementation Scores for Teachers with Low and High Attitude Toward the Teaching Strategies . . . . .	55
VI. Means and Standard Deviations of Implementation Scores Comparing Teachers' Short-Term and Long-Term Implementation of the Teaching Strategies . . . . .	56
VII. Means and Standard Deviations of Implementation Scores Comparing Teachers with Low and High Content Knowledge and Low and High Attitude Toward the Teaching Strategies . . . . .	57
VIII. Means and Standard Deviations of Implementation Scores Comparing Teachers with Low and High Content Knowledge and Short-Term and Long-Term Implementation of the Teaching Strategies . . . . .	58
IX. Means and Standard Deviations of Implementation Scores Comparing Teachers with Low and High Attitude and Short-Term and Long-Term Implementation of the Teaching Strategies . . . . .	59

Table

Page

X. Means and Standard Deviations of Implementation Scores Comparing Teachers with Low and High Content Knowledge, Low and High Attitude, and Short-Term and Long-Term Implementation of the Teaching Strategies . . . . .	61
---	----

## CHAPTER I

### INTRODUCTION

Although inservice education has become an integral part of today's educational system, there is little solid evidence to provide clear directions for planning, presenting, and evaluating inservice or staff development programs. O'Neill describes the research on inservice as very narrow and states, "a lot is being written about inservice, but not being researched" (12, p. 1).

Since the 1950s, teachers have lived and taught through innovation after innovation. According to Fitch (5), these decades could be classified as the 1950's emphasis on equality, the 1960's emphasis on innovation, the 1970's emphasis on relevance, and the 1980's emphasis on excellence. Wood and Thompson predict "the 1980s will be the decade of staff development" (16, p. 374).

Extensive staff development will be required if the nation is to meet the challenge for school improvement as called for in such reports as A Nation at Risk (11) and to respond to changing the grim picture of America's schools in Goodlad's A Place Called School (6).

In Texas, the 1980s have been years of major educational reform with the enactment of House Bill 246 (now

Chapter 75 of the Texas Education Code) and House Bill 72. Chapter 75 is primarily directed toward curriculum and certain instructional processes, while House Bill 72 mandated changes in the finance system, transportation, compensation and appraisal, professional responsibilities, and instructional requirements (13). The appraisal component of House Bill 72 has resulted in, among other things, a state-wide appraisal system for all classroom teachers. The Texas Teacher Appraisal System (TTAS) could be generally described as instructionally focused with its seventy-one indicators of teacher competency, fifty-five of which are intended to be observable in the classroom.

Cuban points out that "few researchers or government officials have spent substantial time with teachers to determine to what degree (if any) they have altered the core practices" (3, p. 8). His core practices include large graded schools, self-contained classrooms, standardized tests, and fifty-minute periods. He concludes that "until that line of research is systematically pursued by academics and policy makers, we will continue to guess about the impact of the cascade of state reforms on teachers' behavior" (3, p. 8).

In Texas, teachers are required to participate in eight days of inservice training each school year (14). Inservice training is costly and time-consuming. School

districts need information to use in planning and in assessing staff development programs. Given the changing population of America's teachers, pictured as "staying, but greying" (4), programs must be available to help teachers adapt to changes and adjust their teaching behavior for maximum effectiveness and efficiency.

For years, teachers have participated in staff development activities. How much of an impact has this training had in the classroom? To answer this question, one must first look at teacher behavior after inservice or staff development training. Do teachers act on inservice training? If so, what are the factors that cause them to act?

Hunter has suggested that research is needed to answer the question "what does it take to cause 'ordinary' teachers to internalize practice so it is self-sustaining" (9)? Answers to questions such as these must precede the search for answers to the more critical question of the impact of inservice training on student learning. Researchers like Hall and Loucks conclude that "the only way to know for sure whether and how an innovation is being used is to assess each individual's use directly" (8).

This study focuses on observable teacher implementation of selected teaching practices in the elementary classroom. Determining whether or not inservice programs are actually implemented is essential in determining the effectiveness of

inservice programming and in making decisions about future programs. Some major corporations have found that "commitment, not authority produces results" (10). If research on teacher inservice training points toward the same or similar conclusions, those involved in planning and presenting such programs will have more clearly defined directions.

#### Statement of the Problem

The problem of this study was the identification of mediating factors related to implementation of teaching strategies presented in inservice training.

#### Purpose of the Study

The purpose of this study was to explore the variables of content knowledge, individual attitude, and span of time with regard to implementation of selected teaching practices in the elementary classroom.

#### Hypotheses

To carry out the purposes of the study, the following hypotheses were tested.

1. There will be no statistically significant difference at the .05 level between teachers with high content knowledge of the selected teaching strategies and those with low content knowledge of the teaching strategies in the teacher's implementation in the elementary classroom.

3. There will be no statistically significant difference at the .05 level between teachers with high attitude toward the selected teaching strategies and those with low attitude toward the teaching strategies in the teachers' implementation in the elementary classroom.

3. There will be no statistically significant difference at the .05 level between teachers' short-term and long-term implementation of the selected teaching strategies in the elementary classroom.

4. There will be no significant interaction between the variables of content knowledge and attitude.

5. There will be no significant interaction between the variables of content knowledge and implementation over time.

6. There will be no significant interaction between the variables of attitude and implementation over a span of time.

7. There will be no significant three-way interaction between content, attitude, and implementation over time.

#### Significance of the Study

Inservice education has become an integral component of the education profession. The costs of inservice training are extensive, in terms of both financial and human resources. The question of impact on teacher behavior and student learning is one that, although studied, has not

been researched in a substantial manner (3, 7, 12). According to a report of the American Association of School Administrators,

What most boards and administrators want is proof that what teachers and administrators learn in the workshops actually gets applied to the classroom or management of schools--that is, they want an assessment of the product (or results) of the experience (1, p. 75).

This study is significant in that it explores the variables of teachers' content knowledge of and attitude toward selected teaching strategies in the elementary classroom on both a short-term and a long-term basis. This information will be useful in determining content and format for teacher inservice.

#### Definition of Terms

Absent, below expectation.--For the purposes of this study, this term refers to the lack of or inappropriate use in the classroom of a specific teaching strategy as measured by performance indicators for that teaching strategy.

Active participation.--For the purposes of this study, this is a principle of learning which refers to the consistent engagement of all of the students' minds with the intended objective (2).

Anticipatory set.--For the purposes of this study, this is a principle of learning which refers to a mental process that allows the minds of the learners to link experiences with the present objective (2).

Attitude.--This refers to the mean score obtained on the evaluation portion of the PETL post-test.

Closure.--For the purposes of this study, this refers to a principle of learning defined as a mental process that allows the minds of the learners to summarize what they have just learned (2).

Congruency.--For the purposes of this study, this is defined as a high degree of agreement.

Content knowledge.--This refers to the raw score obtained on the content portion of the PETL post-test.

Exceptional quality.--For the purposes of this study, this is the teachers' consistently appropriate use in the classroom of a specific teaching strategy as measured by performance indicators for that teaching strategy.

High attitude.--For the purposes of this study, this is the process of putting into practice an idea or strategy new to the people attempting or expecting to change.

Inservice training.--For the purposes of this study, this refers to training courses intended to alter the practices, beliefs, and understanding of persons currently employed as teachers. This term is used synonymously with staff development.

Long-term implementation.--For the purposes of this study, this is a time period of forty-nine to fifty-six days following the completion of PETL training.

Low attitude.--For the purposes of this study, this is a mean score at or below the twenty-fifth percentile (local norms) on the PETL attitude measure.

Low content knowledge.--For the purposes of this study, this is a raw score at or below the twenty-fifth percentile (local norms) on the PETL test.

Motivation.--For the purposes of this study, this is a principle of learning defined as a mental state of need or desire that activates a person to do something that will satisfy that need or desire (2).

PETL.--This is an acronym for a staff development program, Principles of Effective Teaching and Learning. This program includes the teaching and learning strategies selected for this study.

Principles of learning.--For the purposes of this study, this refers to those concepts believed to directly enhance student learning (2).

Release time.--For the purposes of this study, this refers to a school day during which a teacher is released from classroom duties to attend inservice training.

Script-taping.--This is a process of taking notes which allows an observer to record teacher behaviors during a classroom teaching segment.

Selecting objectives at the correct level of difficulty.--For the purposes of this study, this refers to the

teacher's ability to select objectives that the student needs to learn and for which he or she has the prerequisites (15).

Short-term implementation.--For the purposes of this study, a time period of twenty-one to twenty-eight days following the completion of PETL training.

Staff development.--For the purposes of this study, this refers to training courses intended to alter the practices, beliefs, and understanding of persons currently employed as teachers. This term is used synonymously with inservice training.

Staff development specialist.--For the purposes of this study, this is a person designated as a teacher of inservice sessions.

Standard expectation.--For the purposes of this study, this refers to the teacher's appropriate use in the classroom of a specific teaching strategy as measured by performance indicators for that teaching strategy.

Task analysis.--For the purposes of this study, this is the systematic factoring out of the essential learnings that lead to a terminal objective (2).

Teaching to the objective.--For the purposes of this study, this is a specific teaching strategy, the ability of the teacher to maintain his or her actions congruent with the intended objective (2).

### Limitation

This study was limited to elementary teachers in one school district, which may limit generalizability.

### Assumptions

The following assumptions were made relative to this study.

1. Classroom observations were representative of the typical lesson taught by the teacher.
2. Instrumentation used was valid for this study.
3. Some subjective judgment will occur in any classroom observation.

## CHAPTER BIBLIOGRAPHY

1. American Association of School Administrators, Staff Development: Problems and Solutions, Arlington, Virginia, AASA, 1986.
2. Bates, Marilyn, "Clinical Supervision," unpublished notes from Instructional Leadership training, Administrators' Inservice, Dallas, Texas, January, 1985.
3. Cuban, Larry, "Persistent Instruction: Another Look at Constancy in the Classroom," Phi Delta Kappan, LXVIII (September, 1986), 7-11.
4. Ducharme, Edward R. and Mary M. Kluender, "Good Teachers in Good Schools: Some Reflections," Educational Leadership, XLIV (October, 1986), 43-46.
5. Fitch, Margaret, "Staff Development: A Means of Improving Schools," Paper presented before the National Council of States on Inservice Education, Nashville, Tennessee, November 23, 1986.
6. Goodlad, John, A Place Called School, New York, McGraw-Hill, 1983.
7. Guskey, Thomas R., "Staff Development and the Process of Teacher Change," Educational Researcher, XV (May, 1986), 5-12.
8. Hall, G. and S. Loucks, "A Developmental Model for Determining Whether the Treatment is Actually Implemented," American Educational Research Journal, XIV (Summer, 1977), 263-276.
9. Hunter, Madeline, personal letter, University of California, Los Angeles, California, 1986.
10. Naisbitt, John and Patricia Aburdene, Re-Inventing the Corporation, New York, Warner Books, 1985.
11. National Commission on Excellence in Education, A Nation at Risk: The Imperative for Educational Reform, Washington, United States Department of Education, 1983.

12. O'Neill, Alexis, "New Research on Inservice: Essential Factors of District-Wide Programs," Paper presented before the National Council of States on Inservice Education, Nashville, Tennessee, November 23, 1986.
13. Texas Education Agency, House Bill 72 and Subsequent Educational Legislation: Comprehensive References and Explanations, Austin, Texas Education Agency, 1985.
14. \_\_\_\_\_, Texas School Law Bulletin, Austin, Texas Education Agency, 1978.
15. Wells-Welsh, Melinda Sue, "Advanced Essential Skills of Instruction," unpublished workbooks from Advanced Essential Skills of Instruction Seminar, Phoenix, Arizona, June, 1986.
16. Wood, Fred and Steven R. Thompson, "Guidelines for Better Staff Development," Educational Leadership, XXXVII (February, 1980), 374-378.

## CHAPTER II

### SYNTHESIS OF RELATED LITERATURE

In 1983, the National Commission on Excellence in Education charged that the United States educational system is less productive today than it was in former years and that other industrialized nations have outstripped us in educational productivity. There were two important omissions from the commission's list of solutions, according to Ellson (16).

There was no recommendation concerning the how of teaching, i.e., the methods, techniques, or management of teaching, and there was scarcely any mention of the potential contribution of research and development to the improvement of teaching (16, p. 111).

It seems apparent that attention must be focused on ways and means of improving the quality of performance of professionals in the field. Inservice education, defined by O'Neill as "any individual or group experience intended to alter the practices, beliefs and understandings of practicing professional educators toward an articulated end" (38, p. 2), may be a means by which these improvements can be made.

Although staff development efforts in American schools can be traced to the initiation of the Teacher Institutes in the early nineteenth century (21), there are relatively

few research studies that address the study of inservice education with vigor (38). Porter states, "apparently, bridging the gap from research on teaching to effective staff development is more difficult than might be hoped" (39, p. 163). Conclusions such as these support the need to identify factors which contribute to teaching and learning effectiveness.

Joyce (27) forecasts that teachers in the future will be in a staff development mode for as much as twenty or thirty days a year. Can research provide documentation to increase the probability that the inservice provided for teachers will make a significant difference in teacher behaviors and ultimately in student learning? The foundations must be laid by examining current programs, their content, format, and presentation style, and by looking at the teacher as both learner and practitioner.

#### Content Knowledge as a Factor in Inservice Education

In studying the impact of inservice education, a measure of content knowledge seems essential. Researchers such as Wallace (51) report that this has not been generally true. Many reports are available which focus on the responses of participants to the content and to the delivery of workshops. The usual practice is to ask participants to respond to a questionnaire that probes the quality of the

presentation and the relevance of the content to one's current job. "There is generally no assessment of the content of inservice programs in terms of knowledge outcomes" (51, p. 6). Wallace continues, "a serious attempt to evaluate or research the impact of inservice training would require that measures of the effects of inservice programs on knowledge outcomes and/or skilled behavior would have to be conducted" (51, p. 6).

Lawrence (31), in a meta-analysis of fifty-nine different studies, outlines four categories of inservice workshop objectives with the first being cognitive. He defines cognitive objectives as "those dealing with the participant's store of information or concepts, typically measured by paper and pencil tests" (31, p. 4). Although included as a significant objective to be examined, Lawrence's study does not include specific findings of content knowledge on the part of the teacher, but rather provides information on contexts, materials, and procedures which have been found to be effective in enhancing the likelihood that teachers will increase in their knowledge of content.

Studies completed by Joyce and Showers (29, 30) and by McCormick (35) indicate that teachers can learn the concepts that they are taught. In an analysis of research into how teachers acquire skills and strategies and integrate these into their active repertoire, Joyce and Showers found that "most preservice and inservice teacher candidates could

acquire a number of models of teaching provided that intensive training was provided" (30, p. 3). They found little, if any, relationship between natural teaching styles and the acquisition of any particular model. To facilitate their analysis, they developed a matrix to categorize training outcomes. Their categories are knowledge about the skill or strategy, performance at a skill level, lateral or horizontal transfer of the skill in applied settings, and vertical transfer or integration of a new pattern of teaching (30). They state, "clearly, much more needs to be known about the impact of training components on knowledge acquisition and on the relationship between increase in cognition and increase of skills" (30, p. 13). Some studies (1, 6, 29, 50) support the critical nature of the training components including such factors as modeling, length and number of training sessions, and time intervals between sessions.

In a review of training studies, Joyce, Hersh, and McKibbin concluded that "teachers are wonderful learners" (28, p. 138). According to them, teachers need conditions for learning that are not common to most inservice settings. They list five components of training that research reveals as conditions which will help teachers to learn: "presentation of theory, modeling or demonstration, practice under simulated conditions, structured feedback, and coaching for application" (28, pp. 139-141).

If teacher knowledge of content is fundamental to implementation, certainly staff developers must recognize factors conducive to acquisition of content. One critical factor in teacher inservice training is an awareness of what is currently known about adult learning. Bents and Howey support the importance of "systematically including our knowledge of how adults grow and learn in plans for staff development programs" (4, p. 12). They found considerable evidence that this knowledge is ignored, and summarize, "we give insufficient attention to the distinctive qualities of adult learning--how adults learn, how they prefer to learn, and what they want to learn" (4, p. 12).

Bents and Howey (4), Wood and Thompson (52), and Arin-Krupp (2) suggest that there are differences in adult learners in the area of cognition as well as in interpersonal orientation. Bents and Howey (4) group adult development theorists into two basic categories: developmental age theorists and developmental stage theorists.

Age theorists are interested in determining if there are concerns, problems, and tasks which are common to most all adults at various times in their lives. Stage theorists focus on distinct or qualitative differences in the structure of thinking (modes of thinking) at various points in development that are necessarily age-related (4, p. 14).

The work of Wood and Thompson (52) represents the position of the stage theorists. According to them, adults learn best through concrete experiences when they apply

what is being learned in formal situations where social interaction takes place. They summarize findings of the last decade relative to adult learning with two significant statements.

Because it now appears that more adults appear to be operating at what Piaget calls the concrete operational stage rather than formal operations stage of intellectual development, it is imperative that direct and concrete experiences are essential, and adult preferences of learning suggest informal learning situations where social interaction can take place among the learners (52, p. 376).

Age is the major variable for some adult learning theorists. Arin-Krupp (2) suggests stages of adult learning in education and emphasizes the varying needs and desires of adult educators relative to their age and years of experience. She emphasizes the need for most adult learners to have direct experience where they can apply what is being learned.

The 1981 Lawrence report emphasizes the importance of involving participants both receptively and actively in promoting cognitive change. Both Lawrence (31) and the team of Joyce and Showers (29) emphasize the importance of modeling, practice, and feedback in teacher retention of content. Bents and Howey state:

Obviously, all learners will function in different environments, but the degree of effectiveness and satisfaction will differ. Therefore a staff development program must design appropriate, efficacious learning environments (4, p. 15).

Since seminar content is so diverse and any attempt to standardize content would be impractical, few studies address the actual content although an outline of topics may be found. Joslin's study (26) found that the programs which seemed to be the most effective were planned to achieve concrete objectives and which were planned around a treatment that had been field tested and used extensively.

With much of the current teaching on instructional strategies being based on the work of Madeline Hunter, it seems prudent to consider findings from her work. Of special interest in this study is her comment on the Napa County, California, four-year study. She concludes, "experience has shown task analysis and teaching to an objective to be the two most difficult concepts for teachers to master" (24, p. 177). In describing the same study, Robbins concurs and elaborates:

A few of the instructional skills which form the core of the Hunter model are relatively complex, and more theoretical in nature. They are essential to effective teaching, but are more often mental processes performed by the teacher before the actual teaching of the students begins. Task analysis is one example (43, p. 40).

#### Attitude as a Factor in Inservice Education

In contrast to the relatively small number of studies on content, there are a considerable number of studies which address the issue of attitude. The significance of

attitude in changing teacher behavior is one apparently that, although studied, remains unclear.

The impact of teacher attitude is emphasized by Purkey and Smith who state, "change will not take place without the support and commitment of teachers" (40, p. 64), and by Robbins who says, "perhaps most important to the implementation of training is the participant's attitude toward the program" (43, p. 40). McLaughlin and Marsh suggest the importance of attitude by noting "even the best educational practice is unlikely to fulfill its promise in the hands of an inadequately or unmotivated teacher" (36, p. 69).

In viewing the process of change, Crain (12) states that commitment strategies must be developed. A lot of time, energy, and money is usually devoted to making the right decision regarding what to change, but little investment is made in planning for commitment. He stresses the high risk factor of leaving commitment to chance.

Hall and Laucks (23) point out the affective, or personal, aspects of change and recognize the variety of concerns in any group. The work of Wood and Thompson suggests that adults will commit to learning something when the goals and objectives of the inservice program are considered realistic and important, "job related and perceived as immediately useful" (52, p. 376).

In their work focusing on individuals and change, Bents and Howey (4) found that adults are often

self-directing and engage in mutual inquiry, with teachers being inclined toward the pragmatic. Qualitative differences may be more fully understood by a consideration of adult developmental stages. Bents and Howey (4) offer some assumptions which, according to them, have broad-based endorsement and some empirical support.

1. Adults are motivated to learn as they experience needs and interests that learning will satisfy.
2. Adult orientation to learning is life-centered.
3. Experience is the richest resource for adult learning.
4. Adults have a deep need to be self-directing.
5. Individual differences among people increase with age (4, p. 33).

Other factors related to attitude are those of site, time, and choice. Some studies such as that of Robbins (42) indicate that training away from the school site during school hours so that teachers are released from the classroom responsibilities helps to create the feeling that they are valued as professionals. Lawrence (31) and Davidman (14) acknowledge the variable of choice in participation in a program. Berman and McLaughlin (6) found that extra pay to teachers for attending inservice actually had a negative effect. Joslin's study (26) supported inservice programs planned around highly structured formats which took place within the local district, either during the working day or after school. Bunday (9) investigated the value of one-day inservice training as it related to changes in teacher attitudes and behaviors, and concluded that one-day programs

were not effective in changing teacher attitude for the population studied.

Fullan (19) found that even though the research on teacher attitude was inconsistent in its findings, one teacher trait, efficacy, came through strongly. He defines a teacher's sense of efficacy as "a belief on the part of the teacher that he or she could help even the most difficult or unmotivated student" (19, p. 72). His study reinforces the idea that the individuals are the ones who have to develop new meaning in relation to new ideas involved in change.

Sparks (46) examined the relationship between training activities, teacher attitudes and classroom behavior change in a study of nineteen junior high school teachers. Her study indicates that peer observations enhance teacher improvement efforts, that teachers need to develop a belief in the importance of using recommended techniques, and that inservice programs should strive to develop a sense of self-efficacy in teachers. Using a post-training questionnaire, Sparks found that post-training perceptions of the importance of the recommended practices were strongly related to classroom use.

Davidman (14), in studying programs based on the Hunter model, found that the way individual teachers view a program, ultimately, has a lot to do with their decisions about implementation. Hall and Loucks (23) concluded that,

since change is highly personal, and since concerns overlap, the individual must be the primary target of interventions designed to facilitate change since "institutions cannot change until the individuals within them change" (23, p. 39). If teachers are to focus attention on how the new program or innovation might benefit their students, they must first resolve their concerns about how the new practices affect them personally. The very personal "why" must be answered.

McCarthy suggests that innovation, if properly done, moves teachers through beginning stages of awareness, information, and personal (31). This can be accomplished by "engaging their hearts and valuing their caring instincts" (31, p. 23). An approach such as this has important implications for staff developers who "must believe that they are doing something with teachers and not to them" (31, p. 24). According to McCarthy, the "left brain intellectual approach" comes into play after the teacher has information to enhance awareness and after the personal level when "teachers report that it feels right" (31, p. 23). She emphasizes that no change is effective or permanent without personal meaning since "we bring ourselves with us wherever we go" (31, p. 24). This position is reinforced by Crain (12) who notes that change is a function of both the intellect and the emotions with intellectual commitment usually exceeding emotional commitment.

Guskey (21) and Robbins (42) suggest the importance of getting a sense of commitment from teachers, perhaps by involving them in planning or in assessing needs. Robbins (43) indicates that teacher attitude toward a program and a commitment to the program often depend on the participant's involvement in the beginning stages of program development.

Guskey further suggests an alternative consideration in the teacher change process by saying, "significant change in teachers' beliefs and attitudes is likely to take place only after changes in student learning outcomes are evidenced" (21, p. 7). This, of course, implies that the changes in student learning result from specific changes teachers have made in their classroom practices. "Teachers' knowledge of teaching is validated very pragmatically, and without verification from the classroom, attitude change among teachers is unlikely" (21, p. 7).

The importance of the affective, or attitudinal, factor in teacher behavior is one addressed by Haigh and Katterns (22) and underscored by Robbins (43) with the conclusion that a teacher's beliefs about teaching will usually determine how teaching occurs. How and what teachers teach is a reflection of their own view of human nature as well as their view of the purposes of education. Haigh and Katterns suggest the vital role of the teacher as an individual in change.

Just as teaching is a process of learning and inquiring about the conditions of learning and about oneself as a facilitator of learning, similarly, the basic values underlying teaching behavior should be those of inquiry into one's own teaching behavior and self-directed change (22, p. 24).

According to Stallings and Krasavage (49), innovative practices teachers learn will not be maintained unless teachers and students remain interested and excited about their own learning. The need for continuing research in adult learning is emphasized by Bents and Howey who concluded that "learning is a function of the interaction of the person and the environment" (4, p. 33).

Although teachers' attitudes are influenced by a number of other factors, including the attitudes of district administrators, McLaughlin and Marsh (36) found that teacher commitment had the most consistently positive relationship to project outcomes. A teacher who has low commitment might consider the project a bother and resist the implementation of training. A critical question then becomes, "How do positive attitudes develop and what can be done to develop and encourage commitment?"

### Implementation

The ingredients of successful implementation are many, and they are complicated. Fullan defines implementation as "the process of putting into practice an idea, program, or set of activities which is new to the people attempting to

bring about a change" (18, p. 216). The emphasis is on what actually changes in practice. He suggests that the methodologies used to assess degree of implementation have included one or more of these: semistructured interviews with users, direct observation, questionnaires, self or external rating forms, and document analysis (18). He notes extensive resources and time as a major limitation of classroom observation. Related to implementation, Fullan lists four categories as being those most directly related to successful implementation: attributes of the program, implementation strategies, district and school factors, and extraneous factors such as changes in leadership or in funding (18).

Although numerous studies have examined the process of educational change in general, Wallace emphasizes "while there is much rhetoric about inservice teacher education programs, there is no substantial body of research knowledge with regard to its procedures or its outcomes" (51, p. 2). Hunter notes, "unfortunately, many projects have attempted to evaluate results from one short training or exposure without checking whether the propositions were translated into procedural and conditional teacher behavior in the classroom" (25, p. 59). After analyzing more than 200 studies, Joyce and Showers (29) found that transfer at the classroom level was addressed in few studies, although many

studies concluded with the observation that application of skills in the classroom should be the subject of future research. Berman states, "the best research and evaluation, whether qualitative or quantitative, suggests that how an innovation is implemented may be as important to outcomes as its initial technology" (5, p. 262).

Fullan stresses that level of implementation as a related factor to outcomes is only a first-order explanation with the immediate next question being "what factors account for differences in implementation in the first place" (18, p. 221). Mohlman, Coladarci, and Gage support this view. In a study of comprehension and attitude as predictors of teacher implementation (37), they found that researchers are beginning to address the variance of implementation by studying the processes underlying teacher adoption of new practices. They state: "if our goal is to improve teaching, we need to discover not only which teacher behaviors are most effective, but also why teachers do or do not adopt recommended teaching practices" (37, p. 31).

In studying the ways that researchers view the process of implementation, Berman offers three models.

The managerial model sees implementation as a process whereby administrators attempt to overcome resistance to change and take actions that enable implementors to do their job. The learning model views implementation as a process whereby individuals, generally teachers, attempt to learn new behavior, and the organization tries to learn how to change its coordination, control, and information systems. The bargaining model views

implementation as a conflictual process in which the bargaining among various stakeholders defines what is done and how (5, p. 271).

He stresses that regardless of the model used, two activities, adaptation and clarification, are frequently identified as fundamental attributes of implementation (5).

In reviewing efforts to implement innovative practices in 146 districts nationwide, Crandall (13) found that throughout the country, teachers are experimenting with and implementing new practices with remarkable success. According to his findings, successful implementation is occurring at a high rate and is being sustained with some practices still in use after nine years. His list of factors contributing to implementation includes teachers' commitment, exemplary practices, training, and administrative leadership. He also found that emulation was a key factor since teachers are, in a sense, natural emulators.

The interactive roles of principals, external assisters, and teachers must be considered in any analysis of implementation. Cox points out that teachers are "on the front line" (11, p. 10) since they are most often the actual users of the new methods, but insists that they must have support. After examining the implementation of hundreds of programs, Berman and McLaughlin (6) concluded that administrative support was the major factor affecting program success. Cooley and Thompson (10) stress the necessity of school

districts holding both teachers and administrators responsible for implementing what is learned in staff development sessions. They indicate, "if staff development is to be effective, high expectations must be placed upon both teachers and administrators to use what they have learned" (10, p. 5). These reports address what might be termed the accountability component of staff development programs.

In reviewing the Napa project, Robbins (43) offers these variables in the implementation of training: previous training, educational experiences, how the project was introduced, attitude toward the project, complexity of the training concepts, emotional states, how in-danger teachers were in their own organizations, building site norms, educational beliefs, psychological types, cognitive styles, commitment to the classroom-organization, level of abstraction, and desire to change. Loucks (33) lists five factors as contributing to a successful program: commitment of teachers; carefully developed, well-defined and effective curricula or instructional practices; training by credible people, often former teachers; assistance and support by other teachers, principals, and district staff; and attention to factors contributing to institutionalism.

Fullan lists fifteen factors within four main categories which affect implementation, with one of those factors being that of staff development. He emphasizes

that the factors form a "system of variables which interact" (19, p. 57). In considering the role of staff development, he points out that

most forms of inservice training are not designed to provide the ongoing, interactive, cumulative learning necessary to develop new conceptions, skills, and behavior. Skill-specific training by itself has only a transient effect because the use of new materials and methods is often mechanical without the underlying ideas becoming assimilated (19, pp. 56-57).

The necessity of sustained participant interaction is further emphasized by Fullan since he concludes that implementation, whether voluntary or imposed, is actually a process of resocialization and interaction is a necessary component in resocialization.

In describing the 1977 Rand study of federal programs, McLaughlin and Marsh (36) listed a number of the process variables considered in inservice education. These include administrative support; specificity of goals; certain teacher characteristics such as experience, verbal ability, and sense of efficacy; organizational factors in the school site and in the district; and use of in-district personnel. Of special interest are the findings that the more experienced teachers are the less likely they are to make changes in their teaching and that the most powerful teacher attribute in the process of change is the teacher's sense of efficacy.

Doyle and Ponder (15) found a dichotomy in the literature on educational change between those strategies that

tell how to accomplish change and those descriptive studies that indicate that actual change is significantly below expectations. They conclude that teachers will incorporate changes which they view as practical and suggest that teachers "adapt, rather than merely adopt, innovative practices" (15, p. 4).

Red and Shainline (41) reported on a program which released teachers from the classroom to work in staff development. They found that individual teachers control the substance of change and concluded:

Although teachers politely considered and maybe even accepted our solutions, the results looked different in every classroom. We soon realized that, if we did not use the strengths and talents of individual teachers or acknowledge their control of classroom change, then our time and theirs would be wasted (41, p. 39).

This report suggests the benefits of support for teachers as professionals as they refine and build their skills, rather than relegating them to the role of classroom managers. Berman and McLaughlin (6) describe this as the concept of mutual adaptation where teachers try out new practices, adapt and modify them to fit their unique situations. They indicate that where mutual adaptation occurred over time, the likelihood of successful implementation was greater. Joyce, Hersh, and McKibbin (28) describe the process of adapting as that of developing executive control. "Essentially, this involves understanding an approach to

teaching--why it works, how it works, what it is good for, what its major elements are, and how to adapt it to varying kinds of content and students" (28, p. 146). Developing this type of teacher-decision making control involves forming a set of principles so that one can think about the approach and how to modify it for individual use.

In a study of teacher transfer of the training that they receive, Showers (45) concluded that the training in most teacher training programs is sufficient for the development of skills, but that the new behaviors are rarely transferred to classroom practice. She indicates that classroom conditions are so different from most of the training situations that most teachers cannot make this transition without some customizing to fit classroom conditions. This transfer is enormously complex and requires that newly acquired skills must be integrated into a teacher's existing repertoire of skills and knowledge. According to her, "transfer of training to the new learning environment requires skillful decision making by the classroom teachers, and redirection of behavior until the new skill is operating comfortably within the flow of activities in the classroom" (45, p. 3). Showers (45) describes two kinds of transfer or implementation of training: lateral transfer occurs when a person generalizes learning to a new task of the same complexity and vertical transfer occurs when the knowledge and abilities acquired facilitate the learning of higher-order tasks.

Guskey (21) stresses that learning to be proficient at something new and finding meaning in a new way of doing things requires time and effort. Teachers are reluctant to adopt new practices or procedures unless they feel sure that they can make them work, a decision influenced by their judgment of the magnitude of the change. He offers three attributes of staff development programs that encourage and sustain change: they are concrete and specific, they are personalized to teacher concerns, and they have a credible presenter. He stresses, however, "no new program or innovation will be implemented uniformly. Teaching and learning are influenced by a multitude of situational and contextual variables" (21, p. 9). The necessity of providing information useful and appropriate in the classroom is supported and stressed by Wood and Thompson (52), Guskey (21), and Crandall (13).

In studying behavior change among fourth-grade teachers, Good and Grouws (20) found that teachers focused on practices which were easier to implement and for which they had some previous experience or information. The work of Sparks (47) and of Bents and Howey (4) stresses the importance of the individual teacher's level of self-expectation in implementation. The successful implementors felt that they had more power and control over a situation while unsuccessful implementors had low expectations for themselves and felt

that their situations were unlikely to change. Inservice education is not generally characterized by planning for the individual teacher's personal professional perspectives and predispositions.

The Napa County project (42) provides information that the more complex a training concept, the more difficult it is for teachers to apply. Implementation of the instructional skills which form the core of the Hunter model did not occur equally across topic areas. Task analysis, a relatively complex skill, was used less by teachers than other skills.

Davidman cautions against linking teacher implementation of effective teaching practices like the Hunter model with evaluation of teacher use. He suggests that

professionals continue to improve their performance if they know what they do well and why, if they learn theory-based effective alternatives to less satisfactory decisions and actions, and if their performance continues to incorporate new regularities and cause-effect relationships as those emerge from research (14, p. 5).

Feedback is one form of support for teachers. The Rand Corporation Study of 1975 (17, p. 103) found that the most effective programs in terms of impact were programs that emphasized demonstrations, trials, and feedback. The work of Joyce and Showers (27, 45) emphasizes the critical role of feedback for the teacher. According to them, if training proceeds from theory to demonstration, then practice with feedback, then application with coaching,

curriculum adaptation and periodic review, there is high probability that teachers will use newly learned skills on a regular basis. Joyce, Hersh, and McKibbin (28) indicate that skill development by itself does not ensure transfer. They support study of theory, observing demonstrations, and practicing with feedback as enabling activities toward use of newly learned skills.

The importance of feedback and practice for adults is also stressed by Bents and Howey (4). School personnel need supportive feedback on their performance in new situations and often need a collaborative atmosphere in which they can practice new approaches and analyze their effectiveness. Little (32) found that where staff development had the greatest influence on teaching, teachers shared their ideas about instruction and about trying the new techniques in their classrooms. Stallings (48) adds one note of caution in reporting on a two-year staff development program during which teachers had an average of twelve released days a year with continuous observation, coaching, and feedback. She states, "if teachers do not accept or internalize a program in that amount of time, more coaching and feedback is unlikely to change their behavior" (48, p. 63). Considering the needs of adult learners, this report suggests that novices need a clear, direct approach to instruction while more experienced teachers would profit from a collaborative approach. Joyce, Hersh, and McKibbin report that "the

nature of training needed to ensure implementation is far more extensive and intricate than exists in most professional environments today" (28, p. 137).

Although no single variable could account for the marked decline in teacher use of learned strategies in the fourth year of the Napa County project (42), it was noted that there was less follow-up in the fourth year. Teachers indicated the need for outside pressure in order to continue to work toward program goals.

"Change is a process, not an event; change takes time and is achieved only in stages," according to Hall and Loucks (23, p. 263). Research can provide the information necessary to help ensure that the time and the stages are well directed and ultimately result in benefits to the learner recipient. The work of Brophy (7) and of Rosenshine (44) provide research support linking certain teacher actions and desirable student outcomes. Given this support, the need to assess the implementation of teacher behavior is clearly reinforced.

#### Summary

While there are studies which focus on content, on attitude, and on implementation, few, if any, studies have been reported that address both content and attitude as they relate to classroom implementation. This study explores the relationship between teachers' knowledge of

content and attitude toward the content as they relate to teachers' implementation of the content in the elementary classroom.

## CHAPTER BIBLIOGRAPHY

1. Anderson, L., C. Evertson, and J. Brophy, "An Experimental Study of Effective Teaching in First-Grade Reading Groups," Elementary School Journal, LXXXIX (November, 1979), 192-223.
2. Arin-Krupp, Judy, Adult Development, Manchester, Connecticut, RISE, 1981.
3. \_\_\_\_\_, The Adult Learner, Manchester, Connecticut, RISE, 1982.
4. Bents, R. H. and K. R. Howey, "Staff Development--Change in the Individual," Staff Development/Organization Development, Alexandria, Virginia, Association for Supervision and Curriculum Development, 1981, pp. 11-36.
5. Berman, Paul, "Educational Change: An Implementation Paradigm," Improving Schools: Using What We Know, edited by R. Lehming and Michael Kane, Beverly Hills, California, Sage Publications, 1981, pp. 253-286.
6. Berman, Paul and M. McLaughlin, Federal Programs Supporting Educational Change, Volume VIII: Implementing and Sustaining Innovations, Santa Monica, California, Rand Corporation, 1978.
7. Brophy, J., "Classroom Organization and Management," The Elementary School Journal, LXXXIII (November, 1983), 265-285.
8. Bryant, D. T., "A Study of the Relationship of Inservice Education to Teachers' Attitudes and Pupil Achievement," (Doctoral Dissertation, George Peabody College for Teachers of Vanderbilt University, 1981), Dissertation Abstracts International, XLII (1982), 4659-A.
9. Bunday, S. Y., "Teacher Attitudes and Behaviors as Related to One-Day In-Service Education," (Doctoral Dissertation, University of Northern Colorado, 1978), Dissertation Abstracts International, XXXIX (1979), 4876.

10. Cooley, V. E. and J. C. Thompson, Jr., "A Comparison of Outstanding and Randomly Selected District Staff Development Practices in Fifty States," The Developer, National Staff Development Council, March, 1987, pp. 3-5.
11. Cox, Pat L., "Complementary Role in Successful Change," Educational Leadership, XLI (November, 1983), 10-13.
12. Crain, Ron, "The Change Process: A View from the Private Sector," Paper presented before the Dallas Metro North Chapter Phi Delta Kappa, Richardson, Texas, April, 1987.
13. Crandall, David P., "The Teacher's Role in School Improvement," Educational Leadership, XLI (November, 1983), 6-9.
14. Davidman, Leonard, The Hunter Staff Development Model: Why Is It Working? How Can It Be Improved?, Evaluative Report #142, Education Department, California Polytechnic State University, San Louis OBISPO, 1984.
15. Doyle, Walter and Gerald A. Ponder, "The Practicality Ethnic in Teacher Decision-Making," Interchange, VIII (1977-1978), 1-12.
16. Ellson, Douglas, "Improving Productivity in Teaching," Phi Delta Kappan, LXVIII (October, 1986), 111.
17. ERIC Clearinghouse on Educational Management, "Synthesis of Research on Educational Management," Educational Leadership, XXXVIII (November, 1980), 182-185.
18. Fullan, Michael, "Evaluation Program Implementation: What Can Be Learned from Follow Through," Curriculum Inquiry, edited by F. Michael Connelly, XIII (Summer, 1983), 215-227.
19. \_\_\_\_\_, The Meaning of Educational Change, New York, Teachers College Press, Columbia University, 1982.
20. Good, T. L. and D. Grouws, "The Missouri Mathematics Effectiveness Project: An Experimental Study in Fourth-Grade Classrooms," Journal of Educational Psychology, LXXI (February, 1979), 335-362.

21. Guskey, Thomas R., "Staff Development and the Process of Teacher Change," Educational Researcher, XV (May, 1986), 5-12.
22. Haigh, N. and B. Katterns, "Teacher Effectiveness: Problem or Goal for Teacher Education," Journal of Teacher Education, XXV (September-October, 1984), 23-37.
23. Hall, G. and S. Loucks, "A Developmental Model for Determining Whether the Treatment is Actually Implemented," American Educational Research Journal, XIV (Summer, 1977), 263-276.
24. Hunter, Madeline, "Comments on the Napa County California, Follow-Through Project," The Elementary School Journal, LXXXVII (November, 1986), 173-179.
25. \_\_\_\_\_, "What's Wrong with Madeline Hunter?," Educational Leadership, XLII (February, 1985), 57-60.
26. Joslin, P. A., "Inservice Teacher Education: A Meta-Analysis of the Research," (Doctoral Dissertation, University of Minnesota, 1980), Dissertation Abstracts International, XLI (1981), 3058-A.
27. Joyce, Bruce, "Comprehensive Staff Development Systems," Paper presented before the National Staff Development Council, Atlanta, Georgia, December, 1986.
28. Joyce, B., R. H. Hersh, and M. K. McKibbin, The Structure of School Improvement, New York, Longman, Inc., 1983.
29. Joyce, Bruce and Beverly Showers, "Improving Inservice Training: The Messages of Research," Educational Leadership, XXXVII (February, 1980), 379-385.
30. \_\_\_\_\_, "Teacher Training Research: Working Hypotheses for Program Design and Directions for Further Study," Paper presented before the American Educational Research Association, Los Angeles, California, April, 1981.
31. Lawrence, Gordon, "A Synthesis on the Effectiveness of Staff Development Programs," Paper presented before the State of Ohio Department of Education Annual Conference on Inservice Education, Columbus, Ohio, May, 1981.

32. Little, J. W., School Success and Staff Development: The Role of Staff Development in Urban Desegregated Schools, Executive Summary, Washington, National Institute of Education, 1981.
33. Loucks, Susan, "At Last: Some Good News from a Study of School Improvement," Educational Leadership, XLI (November, 1983), 4-5.
34. McCarthy, Bernice, "Improving Staff Development Through CBAM and 4MAT," Educational Leadership, LV (October, 1982), 20-25.
35. McCormick, William J., "Teachers Can Learn to Teach More Effectively," Educational Leadership, XXXVII (October, 1979), 59-60.
36. McLaughlin, M. W. and D. D. Marsh, "Staff Development and School Change," Teachers College Record, LXXX (September, 1978), 69-94.
37. Mohlman, G., T. Coladarci, and N. L. Gage, "Comprehension and Attitude as Predictors of Implementation of Teacher Training," Journal of Teacher Education, XXIII (January-February, 1982), 31-36.
38. O'Neill, Alexis, "New Research on Inservice: Essential Factors of District-Wide Programs," Paper presented before the National Council of States on Inservice Education, Nashville, Tennessee, November 23, 1986.
39. Porter, Andrew C., "From Research on Teaching to Staff Development: A Difficult Step," The Elementary School Journal, LXXXVII (November, 1986), 160-165.
40. Purkey, S. C. and M. S. Smith, "Too Soon to Cheer? Synthesized Research on Effective Schools and Educational Leadership," The Elementary School Journal, LX (December, 1982), 64-69.
41. Red, Carol and Ellen Shainline, "Teachers Reflect on Change," Educational Leadership, XLIV (February, 1987), 38-40.
42. Robbins, Pamela, "Changing Attitudes of Teachers, Principals and Students: What We Didn't Measure," Paper presented before the American Educational Research Association, San Francisco, California, April, 1986.

43. Robbins, Pamela, "The Napa-Vacaville Follow-Through Project: Qualitative Outcomes, Related Procedures, and Implications for Practice," The Elementary School Journal, LXXXVII (November, 1986), 139-157.
44. Rosenshine, B., "Teaching Functions and Instructional Programs," The Elementary School Journal, LXXXIII (November, 1983), 335-352.
45. Showers, Beverly, "Transfer of Training," Paper presented before the American Educational Research Association, Montreal, Canada, April 11-15, 1983.
46. Sparks, G. M., "Inservice Education: Training Activities, Teacher Attitudes, and Behavior Change," (Doctoral Dissertation, Stanford University, 1983), Dissertation Abstracts International, XLIV (1983), 1427.
47. \_\_\_\_\_, "Synthesis of Research on Staff Development for Effective Teachers," Educational Leadership, XLI (November, 1983), 65-72.
48. Stallings, Jane, "For Whom and How Long is the Hunter-Based Model Appropriate? Response to Robbins and Wolfe," Educational Leadership, XLIV (February, 1987), 62-63.
49. Stallings, Jane and Eileen M. Krasavage, "Program Implementation and Student Achievement in a Four-Year Madeline Hunter Follow-Through Project," The Elementary School Journal, LXXXVII (November, 1986), 118-138.
50. Stallings, J., M. Needels, and N. Stayrook, How to Change the Process of Teaching Basic Reading Skills in Secondary Schools: Phase II and III Final Report, Menlo Park, California, SRI International, 1978.
51. Wallace, Richard C., Jr., "Post Certification Development of Teachers and Administrators," Paper presented before the National Commission on Excellence in Teacher Education," Austin, Texas, October 4-5, 1984.
52. Wood, Fred and Steven R. Thompson, "Guidelines for Better Staff Development," Educational Leadership, XXXVII (February, 1980), 374-378.

## CHAPTER III

### METHODS AND PROCEDURES

This study was designed to explore the relationship of the teachers' knowledge of content and the teachers' attitude toward selected teaching strategies, and the teachers' use of those strategies in the elementary classroom on both a short-term and a long-term basis. Permission was obtained from a large suburban school district in the Dallas Metropolitan Area to include thirty-two elementary teachers who teach reading or mathematics in grades one through six. All teachers in this district are required to complete two days of training in Principles of Effective Teaching and Learning (PETL), a staff development program which presents teaching strategies adapted from the work of Madeline Hunter.

Most teachers earn this credit in courses taught by district personnel. Teachers can earn credit for PETL I, the first day's training, on district inservice days, in summer seminars, or by having been a teacher in a special pilot program. During the 1986-1987 school year, teachers could choose to complete the second day's training during a release day from regular teaching duties. The release day courses were taught by two district staff development

specialists. Teachers who earned this credit on a release day took a post-test which included thirty-four content questions and seventeen attitudinal responses. The responses were computer scored by Region X Education Service Center.

#### Description of Inservice Setting

The PETL seminars are based on what is commonly known as the Hunter model.

This model is a model of teacher decision making based on three categories: (1) content--what to teach, (2) learner behavior--what the students will do to learn and to let the teacher know they have learned, and (3) teacher behavior--the teacher's use of research-based principles of learning that accelerate achievement (3, p. 174).

The content for the PETL I seminar includes an Overview, Teaching to the Objective, Active Participation, and Anticipatory Set. The PETL II seminar includes an indepth review of PETL I content, Selecting Objectives at the Correct Level of Difficulty with emphasis on Task Analysis, Motivation Theory, and Closure. The primary focus of the PETL program is that of redirection of teaching styles. The staff development specialists who teach the seminars are committed to "model the model" including comprehensive lesson plans which are congruent with seminar objectives and which follow a lesson design model. The importance of providing a model during inservice training is addressed in research on staff development (1, 2, 4, 6).

Seminar format includes direct experience where learners can learn what is being taught and a variety of activities with examples congruent to the content. Every effort is made to create an atmosphere of respect, trust, and concern for the learner. Hospitality is provided and the professional status of the participants is emphasized--they are worthy individuals, competent, capable, and committed to improvement. The focus is to build on present practices, not to attack.

Intrinsic motivation of the participants is assumed. The seminar format is designed to encourage and to create conditions to allow for growth and refinement. At the beginning of the PETL II seminars, teachers are asked to set a goal for themselves with regard to the day's learning. At the conclusion of the day, each teacher is asked to complete a self-commitment sheet with specific actions for follow-up. The choices range from self-follow-up to a requested classroom observation by one of the staff development specialists. Teachers receive a copy of the self-commitment and a copy is sent to the building principal.

#### The Population

The population considered in this study was comprised of 148 elementary classroom teachers in a large suburban school district in North Central Texas. The teachers in the population group all teach reading or mathematics in

grades one through six and completed their PETL II training on a release day within a four-week time frame. Teachers in this group varied in gender, ethnicity, age, years of teaching experience, and level of attained education. Their training sessions were heterogenous and included elementary and secondary classroom teachers, elementary and secondary special area teachers, and administrators.

#### Selection of the Sample

All teachers in the study population were given a PETL II post-test which included thirty-four items designed to measure knowledge of seminar content and seventeen items designed to measure attitude toward the seminar content. The range of raw scores on the content portion of the tests was from 20 to 32. The range of mean scores on the attitude part of the test was from 3.82 to 5.00.

The scores were arranged from highest to lowest for ease in determining the upper 25 percent and the lower 25 percent (7, pp. 34-38). The results of this calculation are reported in Table I.

Using the Upper Quartile ( $Q_3$ ) scores and the Lower Quartile ( $Q_1$ ) scores, four strata were determined as reported in Table II.

Scores were then arranged into the four strata illustrated in Table II. Since both content knowledge and attitude were variables considered in this study, this

TABLE I  
SCORES ON PETL II TEST

Percentile Range	Content Range	Attitude Range
75% (N = 37)	29-32	4.94-5.00
26-74% (N = 74)	25-28	4.60-4.93
-25% (N = 37)	20-24	3.83-4.59

TABLE II  
TEST SCORE STRATA

Group	Content Raw Score Range	Attitude Mean Score Range
High Content Knowledge High Positive Attitude	29-32	4.94-5.00
High Content Knowledge Low Positive Attitude	29-32	3.82-4.59
Low Content Knowledge High Positive Attitude	20-24	4.94-5.00
Low Content Knowledge Low Positive Attitude	20-24	3.83-4.59

arrangement of the scores eliminated 108 teachers in the population group whose scores did not fall into one of the four groups illustrated in Table II. Using a table of random numbers (5, p. 130), eight teachers were then selected from each stratum to form the study sample.

### Study Design

The eight teachers in each of the four sample strata were observed two times following the completion of the PETL II seminar. The scheduled observations were in the teacher's own reading or mathematics classroom and lasted from thirty minutes to one hour. The observation concluded when the lesson ended.

The first observations were completed within a time period of twenty-one to twenty-eight days and the second observations were completed within a time period of forty-nine to fifty-six days. One of the two staff development specialists observed each teacher and recorded findings using a script-taping procedure. At the conclusion of the observation, the staff development specialist studied the script-tape and recorded data on a PETL Classroom Observation Form. Inter-rater reliability of the two staff development specialists was established by computing a Pearson Product Moment correlation on scores obtained by the two observers in viewing video tapes and live lessons of five classroom teachers. Each observer completed the PETL Classroom Observation Form independently for each of the teachers observed. A correlation of .90 was found.

### Instrumentation

A criterion-referenced test was used to determine knowledge of content. The test, which covers the seminar

objectives of the PETL program, was constructed by the staff development specialists. Content validity and congruency were validated by a panel of experts. Internal consistency reliability (coefficient alpha) of .53 was found in a pilot testing (N = 116) of the instrument. Raw scores were used in determining the stratified groups for sampling purposes and in analyzing the data.

Attitude was measured by participants' responses to seventeen items presented on a Likert-type scale. The items addressed presentation and format of the seminar, value and utility, and anticipated degree of implementation. The scale was constructed by the staff development specialists. Content validity was validated by a panel of experts. Internal consistency reliability (coefficient alpha) of .88 was found in a pilot testing (N = 116) of the instrument. Mean scores were used in determining the stratified groups for sampling purposes and in analyzing the data.

The instrument used to record classroom implementation was the PETL Classroom Observation Form. This form, patterned after the Texas Teacher Appraisal System form, lists the observable indicators for each of the major content objectives taught in the PETL seminars. Content validity and congruency have been validated by a panel of experts. As previously noted, inter-rated reliability of the observers has been established at .90. The observers made notes in a script-taping manner during the actual

observations. Following the observation, the observers completed the PETL Classroom Observation Form indicating whether the competency indicator was absent or below standard, was of standard expectation, or was of exceptional quality. A total raw score was used for data analysis. The highest raw score possible on this form is forty.

#### Procedures for Analysis of Data

After the second classroom observation was completed for all teachers in the study sample, the data were entered into a computer for analysis using three-way analysis of variance with repeated measures (8, pp. 319-349). Independent variables were content, attitude, and span of time with the classroom observation scores as the dependent variable.

The hypotheses of the study were restated in the null form. An alpha level of .05 was used to determine if an hypothesis was to be rejected.

When all computations were completed, the resulting data were entered into tables in order to simplify reporting and interpretation.

## CHAPTER BIBLIOGRAPHY

1. ERIC Clearinghouse on Educational Management, "Synthesis of Research on Educational Management," Educational Leadership, XXXVIII (November, 1980), 182-185.
2. Guskey, Thomas R., "Staff Development and the Process of Teacher Change," Educational Researcher, XV (May, 1986), 5-12.
3. Hunter, Madeline, "Comments on the Napa County California Follow-Through Project," The Elementary School Journal, LXXXVII (November, 1986), 173-179.
4. Joyce, Bruce and Beverly Showers, "Teacher Training Research: Working Hypotheses for Program Design and Directions for Further Study," Paper presented before the American Educational Research Association, Los Angeles, California, April, 1981.
5. Kerlinger, Fred, Foundations of Behavioral Research, New York, Holt, Rinehart and Winston, Inc., 1973.
6. McLaughlin, M. W. and D. Marsh, "Staff Development and School Change," Teachers College Record, LXXX (September, 1978), 69-94.
7. Roscoe, John T., Fundamental Research Statistics for the Behavioral Sciences, 2nd ed., New York, Holt, Rinehart and Winston, 1975.
8. Winer, B. J., Statistical Principles in Experimental Design, New York, McGraw-Hill Book Company, 1962.

## CHAPTER IV

### RESULTS OF THE STUDY

The purpose of this study was to explore the relationship of content knowledge, attitude, and span of time from initial teaching with regard to implementation of selected teaching practices in the elementary classroom. The data collected for this statistical analysis included (1) teacher raw scores on the content portion of the PETL II test, (2) teacher mean scores on the attitude portion of the PETL II test, (3) teacher classroom implementation score twenty-one to twenty-eight days after completing the PETL II seminar, and (4) teacher classroom implementation score forty-nine to fifty-six days after completing the PETL II seminar. The findings of the research are presented immediately after the demographic information.

#### Demographic Information

Although the demographic data collected were not part of the design of this study, the data are presented as additional information of interest. The thirty-two teachers in the sample are teachers in twenty-one different elementary schools in a large suburban school district in North Central Texas. All grade levels, one through six, were represented by the three male and twenty-nine female teachers.

The range of total years teaching experience was from two to thirty-one years with an average of twelve years. The range of years experience in the district was from two to twenty-seven years with an average of nine years. Seventeen of the thirty-two teachers hold bachelor's degrees with the remaining fifteen holding master's degrees.

### Findings of the Research

The findings of the research are organized around the seven hypotheses stated in Chapter I.

#### Hypothesis One

Hypothesis one stated that there will be no statistically significant difference at the .05 level between teachers with high content knowledge of the selected teaching strategies and those with low content knowledge of the teaching strategies in the teacher's implementation in the elementary classroom. Table III presents the means and standard deviations of the implementation scores for teachers with low and high content knowledge of the teaching strategies.

As Table III indicates, teachers with high knowledge of the teaching strategies had higher implementation scores than those teachers with low content knowledge. ANOVA was used to determine if this difference was statistically significant. The results of the ANOVA for the entire experiment are presented in Table IV.

TABLE III

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
FOR TEACHERS WITH LOW AND HIGH CONTENT KNOWLEDGE  
OF THE TEACHING STRATEGIES

Low Knowledge		High Knowledge	
Mean	S.D.	Mean	S.D.
23.62	4.28	27.03	4.41

TABLE IV

ANOVA FOR RESEARCH ON EFFECTS OF CONTENT KNOWLEDGE,  
ATTITUDE, AND SPAN OF TIME ON IMPLEMENTATION OF  
TEACHING STRATEGIES

Source of Variation	SS	DF	MS	F	P
Between-subjects effects					
Content knowledge	186.15	1	186.16	6.08	.020
Attitude	15.16	1	15.16	.49	.488
Content by attitude	5.55	1	5.55	.18	.674
Within cells (error)	857.70	28	30.63	. . .	. . . .
Within-subjects effects					
Time	7.76	1	7.76	.78	.385
Content knowledge by time	.22	1	.22	.02	.884
Attitude by time	.62	1	.62	.06	.805
Content knowledge by attitude by time	3.86	1	3.86	.39	.539
Within cells (error)	279.19	28	9.97	. . .	. . . .

As shown in Table IV, the F ratio of 6.08 for content knowledge effects was statistically significant at the .02 level; therefore, the null hypothesis was rejected.

Hypothesis Two

Hypothesis two stated that there will be no statistically significant difference at the .05 level between teachers with high attitude toward the selected teaching strategies and those with low attitude toward the teaching strategies in the teachers' implementation of the strategies in the elementary classroom. Table V presents the means and standard deviations of the implementation scores for teachers with low and high attitude toward the instruction they received on the teaching strategies.

TABLE V  
MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
FOR TEACHERS WITH LOW AND HIGH ATTITUDE TOWARD  
THE TEACHING STRATEGIES

Low Attitude		High Attitude	
Mean	S.D.	Mean	S.D.
24.84	4.52	25.81	4.78

As Table V indicates, there was a small (less than one full point) difference in implementation between teachers with low and high attitude toward the teaching strategies. Reference to Table IV under the between-subjects effects, attitude, indicates that this small difference was not statistically significant at the .05 level; thus, the null for hypothesis two was retained.

Hypothesis Three

Hypothesis three stated that there will be no statistically significant difference at the .05 level between teachers' short-term and long-term implementation of the selected teaching strategies in the elementary classroom. Table VI presents the means and standard deviations of the implementation scores for teachers comparing short-term and long-term implementation of the teaching strategies.

TABLE VI

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
COMPARING TEACHERS' SHORT-TERM AND LONG-TERM  
IMPLEMENTATION OF THE TEACHING STRATEGIES

Short-Term		Long-Term	
Mean	S.D.	Mean	S.D.
24.98	4.96	25.67	4.34

As Table VI indicates, there was a small (less than one full point) difference in implementation between short-term and long-term implementation of the teaching strategies. Reference to Table IV under the within-subjects effects, time, indicates that this small difference was not statistically significant at the .05 level; thus, the null for hypothesis three was retained.

Hypothesis Four

Hypothesis four stated that there will be no significant interaction between the variables of content knowledge and attitude. Table VII presents the means and standard deviations comparing implementation scores of teachers by content knowledge and attitude categories.

TABLE VII

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
COMPARING TEACHERS WITH LOW AND HIGH CONTENT  
KNOWLEDGE AND LOW AND HIGH ATTITUDE  
TOWARD THE TEACHING STRATEGIES

Content Category	Attitude Category					
	Low		High		Combined	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Low	23.43	4.84	23.81	3.78	23.62	4.28
High	26.25	3.80	27.81	4.94	27.03	4.41
Combined	24.84	4.52	25.81	4.78	25.33	4.64

The data of Table VII indicate that difference in implementation of teaching strategies between teachers with low and high content knowledge of the teaching strategies was about the same regardless of the teachers' attitude toward the teaching strategies. Reference in Table IV to the between-subjects interaction term, content by attitude, confirms the observation that there was not a significant

interaction between content and attitude. Thus the null was retained for hypothesis four.

#### Hypothesis Five

Hypothesis five stated that there will be no significant interaction between the variables of content and knowledge and implementation over time. Table VIII presents the means and standard deviations comparing implementation scores of teachers by content knowledge and time of implementation.

TABLE VIII

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
COMPARING TEACHERS WITH LOW AND HIGH CONTENT  
KNOWLEDGE AND SHORT-TERM AND LONG-TERM  
IMPLEMENTATION OF THE TEACHING  
STRATEGIES

Content Category	Time of Observation					
	Short-Term		Long-Term		Combined	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Low	23.33	5.12	23.91	3.38	23.62	4.28
High	26.63	4.35	27.44	4.57	27.03	4.41
Combined	24.98	4.96	25.67	4.34	25.33	4.64

The data of Table VIII indicate that difference in implementation of teaching strategies between teachers with low and high content knowledge of the teaching strategies

was about the same for both the short-term and the long-term implementation of the teaching strategies. Reference in Table IV to the within-subjects interaction term, content knowledge by time, confirms the observation that there was not a significant interaction between content and time. Thus the null was retained for hypothesis five.

#### Hypothesis Six

Hypothesis six stated that there will be no significant interaction between the variables of attitude and implementation over time. Table IX presents the means and standard deviations comparing implementation scores of teachers by attitude and implementation over a span of time.

TABLE IX

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
COMPARING TEACHERS WITH LOW AND HIGH ATTITUDE AND  
SHORT-TERM AND LONG-TERM IMPLEMENTATION  
OF THE TEACHING STRATEGIES

Attitude Category	Time of Observation					
	Short-Term		Long-Term		Combined	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Low	24.39	4.29	25.29	4.19	24.84	4.52
High	25.56	5.10	26.06	4.60	25.81	4.78
Combined	24.98	4.96	25.67	4.34	25.33	4.64

Tests of hypotheses two and three indicated that there was not a significant main effect for attitude or for span of time. Hypothesis six considered the interaction between attitude and span of time, i.e., is there a difference in implementation between low attitude and high attitude teachers in the short-term implementation or long-range implementation taken separately, or is there a difference in implementation between the short-term and long-term for low attitude teachers or high attitude teachers taken separately? A significant interaction would indicate that one or more of these questions should be answered affirmatively. Inspection of Table IX seems to indicate that none of the above comparisons would reveal significant differences. This observation is confirmed by the ANOVA results in Table IV under the within-subjects effect, attitude by time, which shows a probability greater than .05. Thus the null was retained for hypothesis six.

#### Hypothesis Seven

Hypothesis seven stated that there will be no significant three-way interaction between content knowledge, attitude, and implementation over time. Table X presents the means and standard deviations of the implementation scores broken down by content knowledge, attitude and span of time.

TABLE X

MEANS AND STANDARD DEVIATIONS OF IMPLEMENTATION SCORES  
 COMPARING TEACHERS WITH LOW AND HIGH CONTENT  
 KNOWLEDGE, LOW AND HIGH ATTITUDE, AND  
 SHORT-TERM AND LONG-TERM  
 IMPLEMENTATION OF THE  
 TEACHING STRATEGIES

Content Category	Attitude Category					
	Low		High		Combined	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Short-Term (21-28 days)						
Low	23.29	6.11	23.38	4.34	23.33	5.12
High	25.50	3.42	27.75	5.09	26.63	4.35
Combined	24.39	4.92	25.56	5.10	24.98	4.96
Long-Term (49-56 days)						
Low	23.57	3.58	24.25	3.37	23.91	3.38
High	27.00	4.24	27.88	5.14	27.44	4.57
Combined	25.29	4.19	26.06	4.50	25.67	4.34
Combined						
Low	23.43	4.84	23.81	3.78	23.62	4.28
High	26.25	3.80	27.81	4.94	27.03	4.41
Combined	24.84	4.52	25.81	4.78	25.33	4.64

Tests of previously stated hypotheses indicated the presence of a statistically significant main effect for content knowledge and no statistically significant main

effects for attitude or span of time. The presence of a three-way interaction would be indicated in Table X by a difference in the magnitude or direction of the difference in implementation between teachers with low and high content knowledge or the teaching strategies in one or more of the combinations of categories of attitude and span of time. The data of Table X suggest that no such differences exist. This observation is confirmed by examination of the test of the three-way interaction in the ANOVA table (Table IV). Thus the null was retained for hypothesis seven.

#### Summary

A three-way ANOVA was performed on the experimental data. Of the seven hypotheses, only null hypothesis one regarding the main effect for content knowledge was rejected. All other null hypotheses were retained.

## CHAPTER V

### DISCUSSION

The purpose of this study was to explore the variables of teacher knowledge of content, teacher attitude toward the content, and span of time with regard to implementation of selected teaching practices in the elementary classroom. Thirty-two elementary classroom teachers from a large suburban school district in North Central Texas comprised the sample. All teachers in the study sample had completed two days of inservice in selected teaching strategies. At the end of the second day's training, completed during release time from classroom duties, the teachers were given a test designed to measure content knowledge and attitude.

Based on the test scores, teachers were grouped into four strata. A sample for study was drawn from each of the four strata and each teacher selected was then observed two times in his or her own reading or mathematics classroom. The observations were completed within twenty-one to twenty-eight days and again within forty-nine to fifty-six days after the completion of the training. An implementation score was determined for each of the two classroom observations. Three-way analysis of variance was the statistical technique applied to the data.

The results of the study are discussed in terms of findings, interpretations, and conclusions. Suggestions for further research can be found at the conclusion of the chapter.

### Findings

This study examined whether teacher content knowledge of selected teaching strategies and teacher attitude toward the teaching strategies had a significant relationship to the teachers' implementation of those strategies in the elementary classroom on a short-term and a long-term basis.

#### Content Knowledge

Results of the three-way analysis of variance for content knowledge indicated that high knowledge of content had a significant relationship to classroom implementation. Differences between the implementation means for teachers with high content knowledge and for teachers with low content knowledge were found to be significant at less than the .05 level. Teachers with high content knowledge implemented the selected teaching strategies to a greater degree than did teachers with low content knowledge. When the interaction of the other variables was calculated, the significance of content knowledge did not change.

### Attitude

No significance was found for attitude in terms of its relationship to classroom implementation. Attitude was not found to be significant when the interaction of the other variables was calculated.

### Span of Time from Training

The relationship of span of time to implementation was not found to be significant. No significance was found for span of time when the interaction of the other variables was calculated.

### Interpretations

Researchers such as Fullan (8), Wallace (23), Hunter (14), and Mohlman (20) have found that implementation is very complicated and that there is a need to look at many factors. Robbins (21) and Hunter (13) stress the complexity of assessing implementation, a view supported by Cox (6), Berman and McLaughlin (4), and by Cooley and Thompson (5). The results of this study indicate that classroom implementation of selected teaching strategies does occur and has a significant relationship to the teachers' content knowledge of those teaching strategies. Evans reached a similar conclusion in a study of implementation of a program similar to the PETL program of this study. She notes, "PET translated theories into behaviors that are easily

observed in efficient and effective teachers" (7, p. 44). The findings of this study indicate that the teachers' attitude and span of time have no significant relationship to the teachers' classroom implementation of selected teaching strategies.

#### Content Knowledge

This study is significant in that it provides a measure of content knowledge, a factor not widely practiced in inservice education (18, 23). The findings of this study support the notion that teachers can learn content, a view supported by Joyce and Showers (16, 17) and by McCormick (19). The findings indicate that this content knowledge is a significant factor in classroom implementation. These findings help to answer questions about the impact of training on knowledge acquisition (16, 17) and about conditions for adults to learn (1, 2, 3, 9, 15, 24). Given these findings and the significance of content knowledge, educators involved in inservice training for teachers may want to place renewed emphasis on acquisition of content and on the impact of cognitive activities in inservice sessions (9, 12).

#### Attitude

This study yielded information which would indicate that teachers who have high content knowledge have a

greater degree of implementation than those with low content knowledge regardless of their attitude. The findings of this study do not support the position of researchers such as Robbins (21), who concluded that the most important factor in teacher implementation is attitude. Based on the results of this current study, it could be concluded that the benefits of inservice training, such as that described in this study, are equally beneficial to those with a high positive attitude and to those with a low positive attitude.

This study differs from the Robbins study in several ways, two of which are particularly relevant to the consideration of attitude as a variable in implementation. The Robbins study was conducted over a four-year period of time during which time attitude was measured both formally and informally several times. Teachers who participated in the study described by Robbins also received interim training and feedback from knowledgeable sources, factors which may have a direct impact on attitude.

It may be that an immediate measure of attitude at the end of an inservice session yields a different quality of assessment from a measure of attitude which is on-going and is assessed not only at the end of a training session, but extends into the follow-through part of the program over a longer period of time. Given the findings of this study, in which no significant difference was found in classroom

implementation between teachers with low attitude and teachers with high attitude, it may be that an assessment of teacher commitment rather than teacher attitude would yield data significant for inservice education.

#### Span of Time

Findings of this current study support the position that transfer of training, or implementation, does occur with teachers who have high knowledge of content and that this implementation does not vary significantly when observed on a short-term basis and a long-term basis. The work of Hall and Loucks (11) and Guskey (10) indicates that change takes time. Robbins (21) found that degree of implementation actually declined in the fourth year of her study, but this decline was attributed to factors other than time. The findings of this study do not support the idea that implementation may increase or decrease over time. It appears that teachers who have knowledge of concepts such as those presented in the inservice sessions of this study which are based on "sound psychological principles of learning and correlational research" (22, p. 165) will use those strategies in the classroom within a short time after the completion of their training and that this usage will continue over a longer period of time. It may also be that variables not measured in this study could help to account for this finding.

## Conclusions

Based on the findings of this study, several conclusions have been reached.

1. According to the findings of this study, knowledge of content had a significant relationship to the elementary classroom teachers' implementation of the selected teaching strategies. The findings suggest that teachers who have learned the content of an inservice session are able to and do implement that training.

2. Of equal significance, based on the findings of this study, is the conclusion that teachers who do not know the content are not able to implement the teaching strategies. This lends support to the view of teaching as both a science and an art. Teachers who do not possess the specific skills, the science, of teaching are not able to demonstrate those skills in the classroom in the presence of a trained observer.

3. Teacher attitude toward specific teaching strategies has no significant relationship to the teachers' use of those strategies in the elementary classroom. It may be that the intellect overrides the emotions, and that teachers who possess knowledge of the strategies will use those strategies regardless of their attitude about them. The findings of this study would support the position that the training was of benefit to both the low and the high

attitude teachers.

4. The data analyzed in this study indicate that teachers who have high content knowledge of the selected teaching strategies use those strategies to a greater degree than teachers with low content knowledge and that this implementation does not vary significantly over a span of time. This finding suggests that teachers who have the cognitive knowledge of teaching strategies will use them within a short span of time and will continue to use them. This is in contrast to views that would suggest that teachers need time after training to assimilate the concepts before using them or that teachers who have the skills will use them for a short period of time and then discontinue their use, perhaps reverting to former teaching techniques.

5. Given the complexity of assessing transfer or implementation of inservice training, as described in the literature, it may be that there are other significant variables with regard to classroom implementation of training that have not been measured. These might include the teachers' own level of educational attainment; the teachers' placement on the career ladder; age; teaching experience; the teachers' assignment as to grade and subject; principals' leadership, support, and expectations; pre-training knowledge and attitude; and how in-danger a teacher is professionally.

### Suggestions for Further Research

The following suggestions are based on the findings and conclusions of this study and the review of related literature.

1. The data from this study should be preserved for consideration with regard to student outcomes. This might be accomplished by analyzing student achievement data from the school year prior to the teachers' treatment and for the school year following the teachers' participation in this study.

2. This study should be replicated with the following changes: (a) change the procedure for assessing teacher attitude, and (b) change the time parameters for short-term and long-term implementation. It would be desirable to determine if a different measure of attitude, perhaps a different type of assessment at the end of the training or a personal interview following the training, would yield a different relationship to teacher implementation. Observing the classroom for degree of implementation at times other than the short-term and long-term parameters set for this study would provide additional information about the relationship of time to implementation.

3. Since this study examined the relationship of content knowledge, attitude, and span of time with regard to the classroom implementation by elementary teachers, it

is suggested that this study be replicated with secondary teachers to determine whether the effects vary with the different levels of teaching assignments.

4. This study found that knowledge of content had a significant relationship to teacher implementation of the teaching strategies. Since content knowledge was measured only at the completion of the training, it is suggested that knowledge of content be assessed prior to training and at a designated period of time following the training to investigate the influences of prior knowledge and long-term memory.

5. This study was conducted with teachers who were randomly selected for two classroom observations. Given the current appraisal processes in the State of Texas and the anxiety accompanying the process, it would be desirable to repeat this study using teachers who choose to participate by requesting a classroom observation. It is possible that the factor of voluntary versus selected participation may yield different findings.

6. Given the current research regarding the critical nature of feedback, it is suggested that a study be conducted using the variables of this study (content knowledge, attitude, and span of time) and adding feedback. This feedback could be provided by the trained observers between the first and the second observations. Results could provide

information to validate the benefits of feedback.

7. This study provided information regarding the individual teacher's use of the selected strategies. Much of the current research emphasizes the role of the building principal as a factor in classroom teaching effectiveness. It would be desirable to study the role of the building principal as a factor in teacher implementation of effective teaching strategies.

8. This study analyzed data regarding the variables of content knowledge, attitude, and span of time with regard to their relationship to the teachers' implementation of teaching strategies in the elementary classroom. Research provides information about numerous variables believed to be related to teacher implementation of inservice training. Studies should be conducted which include these and other variables and combinations of variables to help to answer the very complex questions regarding teacher implementation or transfer of training.

## CHAPTER BIBLIOGRAPHY

1. Arin-Krupp, Judy, Adult Development, Manchester, Connecticut, RISE, 1981.
2. \_\_\_\_\_, The Adult Learner, Manchester, Connecticut, RISE, 1982.
3. Bents, R. H. and K. R. Howey, "Staff Development-- Change in the Individual," Improving Schools: Using What We Know, edited by R. Lehming and Michael Kane, Beverly Hills, California, Sage Publications, 1981, pp. 11-36.
4. Berman, P. and M. McLaughlin, Federal Programs Supporting Educational Change, Volume VIII: Implementing and Sustaining Innovations, Santa Monica, California, Rand Corporation, 1978.
5. Cooley, V. C. and J. C. Thompson, Jr., "A Comparison of Outstanding and Randomly Selected District Staff Development Practices in Fifty States," The Developer, National Staff Development Council, March, 1987, pp. 3-5.
6. Cox, Pat L., "Complementary Role in Successful Change," Educational Leadership, XLI (November, 1983), 10-13.
7. Evans, Pamela R., "Improving Instruction Through PET," Educational Leadership, XL (October, 1982), 44-45.
8. Fullan, Michael, The Meaning of Educational Change, New York, Teachers College Press, Columbia University, 1982.
9. Glickman, Carl, Supervision of Instruction, A Developmental Approach, Boston, Allyn and Bacon, 1985.
10. Guskey, Thomas R., "Staff Development and the Process of Teacher Change," Educational Researcher, XV (May, 1986), 5-12.
11. Hall, G. and S. Loucks, "A Developmental Model for Determining Whether the Treatment is Actually Implemented," American Educational Research Journal, XIV (Summer, 1977), 263-276.

12. Harris, B. M., Improving Staff Performance Through In-Service Education, Boston, Allyn and Bacon, 1975.
13. Hunter, Madeline, personal letter, University of California, Los Angeles, California, 1986.
14. \_\_\_\_\_, "What's Wrong with Madeline Hunter?," Educational Leadership, XLII (February, 1985), 57-60.
15. Joyce, B., R. H. Hersh, and M. K. McKibbin, The Structure of School Improvement, New York, Longman, Inc., 1983.
16. Joyce, Bruce and Beverly Showers, "Improving Inservice Training: The Messages of Research," Educational Leadership, XXXVII (February, 1980), 379-385.
17. \_\_\_\_\_, "Teacher Training Research: Working Hypotheses for Program Design and Directions for Further Study," Paper presented before the American Educational Research Association, Los Angeles, California, April, 1981.
18. Lawrence, Gordon, "A Synthesis on the Effectiveness of Staff Development Programs," Paper presented before the State of Ohio Department of Education Annual Conference on Inservice Education, Columbus, Ohio, May, 1981.
19. McCormick, William J., "Teachers Can Learn to Teach More Effectively," Educational Leadership, XXXVII (October, 1979), 59-60.
20. Mohlman, G., T. Coladarci, and N. L. Gage, "Comprehension and Attitude as Predictors of Implementation of Teacher Training," Journal of Teacher Education, XXXIII (January-February, 1982), 31-36.
21. Robbins, Pamela, "The Napa-Vacaville Follow-Through Project: Qualitative Outcomes, Related Procedures, and Implications for Practice," The Elementary School Journal, LXXXVII (November, 1986), 139-157.
22. Slavin, Robert E., "The Napa Evaluation of Madeline Hunter's ITIP: Lessons Learned," The Elementary School Journal, LXXXVII (November, 1986), 165-172.

23. Wallace, Richard C., Jr., "Post-Certification Development of Teachers and Administrators," Paper presented before the National Commission on Excellence in Teacher Education, Austin, Texas, October 4-5, 1984.
24. Wood, Fred and Steven R. Thompson, "Guidelines for Better Staff Development," Educational Leadership, XXXVII (February, 1980), 374-378.

## APPENDICES

Appendix A  
Seminar Content Objectives

PETL I

TOPIC: Teaching to the Objective

Terminal Objective(s) The participant will be able to formulate and use teacher actions that are congruent with a lesson's objective(s)

Sub Objectives	Content
*Identify where Teaching to the Objective occurs in the Essential Elements of Instruction	Teaching to the Objective is one of the four major topics of the Essential Elements of Instruction
*Explain the definition of Teaching to the Objective	Definition - the ability of the teacher to control his/her actions so that they match what he/she is teaching
*Name and explain the four teacher actions	<ol style="list-style-type: none"> <li>1. Providing information <ul style="list-style-type: none"> <li>.the explanation of the academic content</li> <li>.may be teacher lecture, textbook, films, drawing information from the students, demonstration</li> <li>.must be a match for the objective</li> <li>.includes definitions, critical attributes, generalizations</li> </ul> </li> <li>2. Asking questions <ul style="list-style-type: none"> <li>.questions to focus the student on the objective and learn the objective</li> <li>.questions should cause reprocessing of information that matches the learning</li> </ul> </li> <li>3. Selecting (or designing) activities <ul style="list-style-type: none"> <li>.must lead to student understanding of the objective</li> <li>.appropriate for age, ability, and interests of students</li> <li>.use activities that actively engage students in learning</li> </ul> </li> <li>4. Responding to the efforts of the learner <ul style="list-style-type: none"> <li>.congruent with the objective</li> <li>.should tell student why he is right or why he is wrong</li> </ul> </li> </ol>

Sub Objectives	Content
*Explain the concept of congruency in Teaching to the Objective	There should be a high degree of match between teacher actions and the critical attributes of the learning
*Explain why congruency is important	<ol style="list-style-type: none"><li data-bbox="771 571 1279 651">1. Congruency is important because of the way the mind takes in information, processes it, and stores it</li><li data-bbox="771 667 1279 747">2. Congruency makes it easier for the mind to group information, form generalizations, and see relationships</li><li data-bbox="771 764 1279 846">3. If teacher is congruent with the objective then student time-on-task is increased</li></ol>

## PETL I

TOPIC: Active Participation

Terminal Objective(s) the participant will design examples of covert and overt participation he/she can use in the classroom.

Sub Objectives	Content
<ul style="list-style-type: none"> <li>state where Active Participation occurs in the Essential Elements of Instruction</li> </ul>	<p>Active Participation is one of the Principles of Learning.</p>
<ul style="list-style-type: none"> <li>state the definition of Active Participation</li> </ul>	<p>definition: the consistent engagement of all the students' minds with the objective</p>
<ul style="list-style-type: none"> <li>explain the difference between consistent and eventual participation</li> </ul>	<p>consistent - the teacher involves all the students most of time, either covertly or overtly</p> <p>eventual - the teacher will call on students one at a time; sooner or later she has every student participate</p>
<ul style="list-style-type: none"> <li>name, define and give an example of the two forms of Active Participation</li> </ul>	<ol style="list-style-type: none"> <li>covert - mental behavior by the student (think about, recall in your mind, imagine)</li> <li>overt - observable behavior by the student (write, explain to a partner, demonstrate)</li> </ol>
<ul style="list-style-type: none"> <li>define "wait time" and explain why it should be used</li> </ul>	<p>definition - the amount of time that should be allowed after asking a question</p> <ul style="list-style-type: none"> <li>-should be 3-5 seconds or more</li> <li>-allows the student "thinking" time, thus improves quality of answer and allows more students to recall the answer</li> </ul>
<ul style="list-style-type: none"> <li>explain how to combine covert and overt participation</li> </ul>	<p>Patterns</p> <ol style="list-style-type: none"> <li>all covert, all overt</li> <li>all covert, one overt/all overt</li> </ol>

Sub Objectives	Content
• explain when Active Participation should be used	1. when you need to check the progress of learning
• explain why Active Participation is used	1. decreases "off task behaviors" by the students 2. helps the teacher monitor the students' learning and then adjust teaching

## PETL I

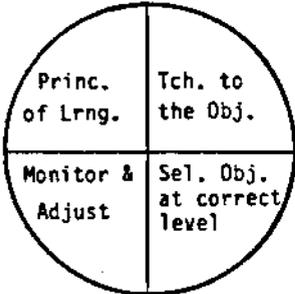
TOPIC: Anticipatory SetTerminal Objective(s) The participants will be able to write an effective set for an objective in their content areas

Sub Objectives	Content
<ul style="list-style-type: none"> <li>• state where Anticipatory Set occurs in the Essential Elements</li> <li>• explain the definition of Anticipatory Set</li> </ul>	<p>Anticipatory Set is one of the Principles of Learning.</p> <p>definition - a mental process that allows the minds of the learners to link past experiences to the present objective</p> <p>it is a stimulus that gets students focused on the present objective and ready to learn</p>
<ul style="list-style-type: none"> <li>• name and explain the 3 elements of Anticipatory Set</li> </ul>	<ol style="list-style-type: none"> <li>1. active participation - involvement               <ul style="list-style-type: none"> <li>•covert</li> <li>•overt</li> <li>•combination</li> </ul> </li> <li>2. congruency with the objective</li> <li>3. transfer of past experiences to this learning</li> </ol>
<ul style="list-style-type: none"> <li>• explain why Anticipatory Set is used</li> </ul>	<p>For the student:</p> <ol style="list-style-type: none"> <li>1. speeds up the rate of learning (because of transfer)</li> </ol> <p>For the teacher:</p> <ol style="list-style-type: none"> <li>1. results in student <u>focus</u> on the objective</li> <li>2. can provide <u>practice</u> with pre-requisite objectives</li> <li>3. can provide <u>diagnostic</u> information</li> </ol>
<ul style="list-style-type: none"> <li>• explain when Anticipatory Set is used</li> </ul>	<ol style="list-style-type: none"> <li>1. at the beginning of the lesson</li> <li>2. when there is a major change in objective during the class period</li> <li>3. after lengthy interruptions</li> </ol>

## PETL II

TOPIC: Selecting Objectives at the Correct Level of Difficulty

Terminal Objective(s) The participants will be able to list the parts and explain what Selecting Objectives at Correct Level of Difficulty means.

Sub Objectives	Content
*Identify where the topic occurs in the essential elements of learning	
*Explain what is meant by "Selecting Objectives at the Correct Level of Difficulty"	Definition - the ability of the teacher to select objectives (learnings) the student needs to learn and for which he/she has the prerequisites
*List the 3 parts of "Selecting Objectives at the Correct Level of Difficulty"	<ol style="list-style-type: none"> <li>1. Formulate a task analysis</li> <li>2. Design a diagnostic procedure</li> <li>3. Develop a plan for teaching</li> </ol>

## PETL II

## Selecting Objectives at the Correct Level of Difficulty -

TOPIC: Task Analysis

Terminal Objective(s) The participants will be able to write a task analysis for an objective in their content areas.

Sub Objectives	Content
*State and explain the definition of task analysis	Task analysis is the systematic factoring out of the essential learnings that lead to a terminal objective
*List and explain the 5 steps in formulating a task analysis	<ol style="list-style-type: none"> <li>1. Select the topic <ul style="list-style-type: none"> <li>.focus on a topic within a content area</li> </ul> </li> <li>2. Define the learning <ul style="list-style-type: none"> <li>.objective stated in terms of what the student is to learn and what he will do to show he has learned (content and performance)</li> </ul> </li> <li>3. List the essential learnings <ul style="list-style-type: none"> <li>.determine a baseline for learning</li> <li>.brainstorm for possible enroute learnings for the objective</li> <li>.weed out non-essentials</li> </ul> </li> <li>4. Consider the sequence of learnings <ul style="list-style-type: none"> <li>.dependent-independent sequence</li> </ul> </li> <li>5. Pose the essential learnings in terms of diagnostic questions <ul style="list-style-type: none"> <li>.think of a congruent overt behavior for each learning</li> <li>.then annex words "can they"</li> <li>.example: can students identify where map symbols are found on a map by pointing to the location</li> <li>.this is a way to determine if they've learned it or not</li> <li>.can infer if students know it or can give informal pretest</li> </ul> </li> </ol>

Sub Objectives	Content
°Explain the purposes of task analysis	<ol style="list-style-type: none"><li data-bbox="771 556 1233 609">1. Helps a teacher select objectives at the correct level of difficulty</li><li data-bbox="771 630 1233 682">2. Helps a teacher plan for given lessons</li><li data-bbox="771 703 1233 758">3. Helps a teacher monitor the students and adjust the teaching</li></ol>

## PETL II

TOPIC: Motivation

Terminal Objective(s) The participant will be able to identify and use the principles of motivation effectively in his/her classroom.

Sub Objectives	Content
<ul style="list-style-type: none"> <li>● Identify where motivation occurs in the Elements of Instruction.</li> </ul>	<p>Motivation is one of the Principles of Learning.</p>
<ul style="list-style-type: none"> <li>● State the definition of motivation.</li> </ul>	<p>definition--a mental state of need or desire that activates a person to do something that will satisfy that need or desire.</p>
<ul style="list-style-type: none"> <li>● Explain the difference between intrinsic and extrinsic motivation.</li> </ul>	<ol style="list-style-type: none"> <li>1. Intrinsic motivation comes from within the person or the task. The teacher does not have control over this.</li> <li>2. Extrinsic motivation comes from outside the person. The teacher can control these factors.</li> </ol>
<ul style="list-style-type: none"> <li>● Name and explain the five variables of motivation.</li> </ul>	<p>Anxiety (Level of Concern)</p> <ol style="list-style-type: none"> <li>1. definition--an internal sense of expectation (anticipation) about what will happen next.</li> <li>2. can raise or lower by               <ol style="list-style-type: none"> <li>a. changing the time frame for completing an activity</li> <li>b. adjusting the amount of the material</li> <li>c. competition                   <ul style="list-style-type: none"> <li>--with someone else</li> <li>--with yourself</li> </ul> </li> <li>d. public display</li> </ol> </li> <li>3. should be at right level               <ol style="list-style-type: none"> <li>a. too high--quit, balk, cry, brain shuts down</li> <li>b. too low--apathy, inattention</li> </ol> </li> </ol>

Sub Objectives	Content
	<p><u>Success</u></p> <ol style="list-style-type: none"> <li>1. definition--a feeling of achievement</li> <li>2. must be a sense of challenge and accomplishment</li> <li>3. must see progress through either:               <ol style="list-style-type: none"> <li>a. new information</li> <li>b. better accuracy</li> <li>c. greater speed</li> </ol> </li> <li>4. success of students based on teacher's ability to accurately select objectives at the correct level of difficulty               <ol style="list-style-type: none"> <li>a. can't feel challenged if not taught anything new</li> <li>b. can't feel accomplishment if don't have the prerequisites</li> </ol> </li> </ol> <p><u>Knowledge of Results</u></p> <ol style="list-style-type: none"> <li>1. definition--the internal knowledge about what is right or wrong with the task you are doing</li> <li>2. critical attributes--must be specific and immediate</li> </ol> <p><u>Interest</u></p> <ol style="list-style-type: none"> <li>1. ways to create interest               <ol style="list-style-type: none"> <li>a. novelty--how it is unique or different</li> <li>b. vividness--appeal to the senses</li> <li>c. meaning--importance to the learner</li> </ol> </li> </ol> <p><u>Feeling Tone</u></p> <p>definition--the internal reaction of the learner to the environment</p> <p>an atmosphere the teacher tries to produce that students will associate with learning</p> <p>forms of:</p> <ul style="list-style-type: none"> <li>● pleasant--most effective</li> <li>● unpleasant--second most effective</li> <li>● neutral</li> </ul>

Sub Objectives	Content
<ul style="list-style-type: none"><li>● Explain why a teacher should be able to use all five extrinsic variables of motivation.</li></ul>	<p>The importance of each variable varies with the individual and the situation.</p> <p>Using the variables helps a teacher keep the students' attention.</p>

## PETL II

TOPIC: ClosureTerminal Objective(s) The participant will be able to formulate an effective closure for a lesson.

Sub Objectives	Content
<ul style="list-style-type: none"> <li>● Identify where closure occurs in Essential Elements of Instruction</li> <li>● State the definition of closure.</li> <li>● Name and explain the three critical attributes of closure.</li> <li>● Explain when to use closure.</li> </ul>	<p>Closure is one of the Principles of Learning</p> <p>definition--a mental process that allows the minds of the learners to summarize what they have just learned.</p> <ol style="list-style-type: none"> <li>1. Active Participation <ul style="list-style-type: none"> <li>● covert</li> <li>● overt</li> <li>● covert/overt</li> </ul> </li> <li>2. Congruency with the objective</li> <li>3. Summarization</li> </ol> <p>Use:</p> <ol style="list-style-type: none"> <li>1. At the end of the lesson</li> <li>2. At the end of a sub-objective that is very different from the next objective</li> <li>3. When you see the student's need to summarize because ideas/skills are running together.</li> </ol> <p>Don't use:</p> <ol style="list-style-type: none"> <li>1. When students have not had time to practice the objective.</li> </ol>

## Appendix B

## PETL Pre/Post Test

1. The four teacher actions that occur in each lesson are
  - a. planning the lesson, providing information, asking questions, and selecting activities.
  - b. providing information, asking questions, selecting activities, and diagnosing the learners.
  - c. providing information, asking questions, selecting activities, and responding to the learners.
  - d. providing information, asking questions, stating the objective and responding to the learners.
2. The crucial aspect of responding to the efforts of the learner is that the response be
  - a. congruent with the objective
  - b. positive
  - c. immediate
  - d. acceptable to the student
3. Which one of the following is true?
  - a. In order for the four teacher actions to assist a student in learning the objective, the actions must be congruent with the objective.
  - b. Congruency is an aid to learning because it enables the mind of the learner to receive, process and store information more easily.
  - c. Congruent teacher actions will increase the time students are on task.
  - d. All of the above.
4. The teacher's objective is to have students explain how earthquake waves are recorded. Which of the following teacher actions would be congruent with the objective?
  - a. The teacher says, "John, you gave us a good explanation."
  - b. The teacher has the students read a page in the textbook that explains how plate movements cause earthquakes.
  - c. The teacher asks, "What ways do we have of predicting earthquakes?"
  - d. The teacher says, "Earthquake waves can be recorded by a seismograph. This instrument also helps scientists measure the strength of an earthquake."
5. Which statement is an example of giving a congruent response to a student? The teacher's objective is to have the students name the five important products of Africa.
  - a. "John, your answer is correct."
  - b. "Fred, you have given us three of the important products of Africa--- gold, diamonds, and cacao. There are two more. Do you remember them?"
  - c. "Class, you seem to be having some difficulty with this. Look in your book."
  - d. "Super answer!"

6. The teacher action, Providing Information
  - a. is the explanation of the academic content
  - b. may be in the form of a teacher lecture, a film or filmstrip, a demonstration, an experiment, or a textbook.
  - c. may include definitions, critical attributes and generalizations.
  - d. may include all of the above.
7. The definition of anticipatory set is
  - a. a mental process that allows the minds of the learners to summarize what they have learned about the objective.
  - b. a mental process that allows the minds of the learners to link past experiences to the present objective.
  - c. a mental process that allows the students to predict what the objective for the lesson will be.
  - d. a mental process that allows the minds of the students to identify the critical attributes of the objective.
8. The three elements of an anticipatory set are
  - a. statement of the objective, congruency, active participation.
  - b. statement of the objective, focus, diagnosis.
  - c. congruency, active participation, transfer of past experiences.
  - d. focus, congruency, active participation.
9. The teacher might use an anticipatory set to
  - a. focus the students on the objective.
  - b. provide practice in a skill needed for learning the objective.
  - c. determine the students' skills level for the objective.
  - d. all of the above.
10. The following anticipatory set is missing which of the three elements of a set?

The teacher's objective is to have students identify some acids and bases by testing unlabeled liquids with litmus paper. Her set is, "Yesterday we talked about two groups of compounds -- acids and bases. We learned that scientists use an indicator to determine if a compound is an acid or a base. The blue litmus paper turns red in an acid while the red litmus paper turns blue in a base."

  - a. congruency and involvement
  - b. transfer and active participation
  - c. congruency
  - d. no elements of set are missing
11. A teacher would usually use an Anticipatory Set
  - a. to summarize yesterday's lesson
  - b. to diagnose students' skills
  - c. at the beginning of a lesson
  - d. at the end of a lesson

12. An example of the use of overt active participation is
- "Class, please write down five plural nouns."
  - "John, please be thinking of some plural nouns. I'll call on you in a few minutes."
  - "Boys and girls, listen as I read this list of words. Decide in your mind if you think they are examples of plural nouns."
  - "May, you are right. The word 'dogs' is a good example of plural nouns."
13. Active Participation means that
- most of the students are involved in the learning most of the time.
  - most of the students respond to teacher-stated questions.
  - some of the students are participating while the class is in session.
  - most of the students complete the assignments.
14. Teachers should use the principle of Active Participation
- because students like to be involved.
  - to decrease classroom management problems.
  - because it helps students to see a purpose for learning.
  - when there is a need for students to practice and for the teacher to monitor their learning.
15. Teachers use the idea of "wait time" to
- be sure that all students are ready to learn.
  - allow time for students to think.
  - take advantage of extra time at the end of the lesson.
  - implement a sound lesson design.
16. Which one of the following statements is not true?
- consistent, not eventual, active participation should be a teacher's goal.
  - consistent active participation means that the learner is involved most of the time.
  - eventual active participation is as effective as consistent active participation.
  - consistent and eventual active participation can be both covert and overt.
17. Mrs. Jones says to a group of students, "See if you can recall in your mind the steps for making a bill into a law that we discussed yesterday." This is an example of
- level of concern.
  - overt active participation.
  - teaching to the objective.
  - covert active participation.

18. A definition of task analysis is
- the ability of the teacher to control his/her actions so they are a match for the objective.
  - a mental process that allows the minds' of the learners to transfer past learning experiences to the present.
  - the systematic factoring out of the essential learnings that lead to a terminal objective.
  - the analysis of the content, the teacher behaviors and the learning behaviors of the student.
19. Which one of the following is not a part of the task analysis process?
- sequencing enroute learning
  - defining the learning
  - listing the essential enroute learnings
  - writing a lesson plan
20. Which of the following are purposes of a task analysis?
- makes it possible for the teacher to monitor the students' progress and adjust the teaching.
  - makes it possible for the teacher to plan clear, sequential lessons.
  - makes it possible for a teacher to select objectives at the correct level of difficulty for the students.
  - all of the above.
21. Mr. Roberts is eliminating any learnings he does not consider essential to master his math objective for today. This is part of which step of a task analysis?
- list the essential learnings.
  - sequence the essential learnings if needed.
  - define the learning.
  - form teaching clusters.
22. The four parts of an instructional objective are
- content, behavior, focus, transfer
  - content, behavior, conditions, performance level
  - content, conditions, focus, performance level
  - none of the above
23. In the last step of the Task Analysis process, the teacher
- adds a congruent overt student behavior for each essential learning
  - writes a lesson plan for the class.
  - sequences the essential learnings.
  - all of the above.

24. Motivation is
- a state of need or desire that activates the person to do something that will satisfy that need or desire.
  - a process of creating a climate whereby a person will do his/her best.
  - an activity that increases the desire to learn.
  - all of the above.
25. Students who are not motivated should keep records of their progress so that they will be influenced by
- success.
  - relation of goal to activity.
  - interest.
  - knowledge of results.
26. If each student is required to give an oral answer in class before being dismissed, the teacher is manipulating the motivational variable of
- success
  - knowledge of results.
  - level of concern.
  - level of difficulty.
27. When a teacher allows students to choose partners to work with, she is using
- feeling tone.
  - success.
  - knowledge of results.
  - all of the above.
28. When a teacher begins a new science unit with a field trip, he is trying to increase motivation to learn by
- manipulation.
  - interest.
  - success.
  - feeling tone.
29. Many educators list the development of a zest for learning as an important outcome of schooling. This objective is based on the motivation variable of
- feeling tone
  - intrinsic motivation
  - knowledge of results
  - tension

30. A teacher who wished to increase the accuracy of students' computation should find most effective
- telling each child how many problems he has done correctly.
  - telling each child how many problems he has done incorrectly.
  - children correcting each other's papers.
  - children correcting their own papers.
31. Use of the principle of closure gives students the opportunity to
- summarize what has been learned.
  - retain the lesson's objectives.
  - process information.
  - all of the above.
32. In order for closure to be beneficial for the teacher, the students must
- complete the guided practice activity.
  - be actively involved overtly.
  - be actively involved covertly.
  - respond to both administrative and instructional closure.
33. When would be an appropriate time for closure?
- at the end of a sub-objective that differs markedly from the next sub-objective.
  - at the end of a lesson.
  - when you just know you should, to help students pull the learning together.
  - all of the above.
34. The following closure is missing which of the three elements of closure?
- The teacher's objective was to have students describe the main characteristics of mammals. He says, "We have discussed the characteristics of mammals today. Recall in your mind the main characteristics of mammals. Turn to your partner and each of you share one of these characteristics."
- congruency
  - active participation
  - summarization
  - no elements are missing

EVALUATION

Directions: Please circle the response which best represents your reaction to each of the items below.

	Very Much So			Not At All	
	←				→
	5	4	3	2	1
35. The seminar objectives were clearly established.	5	4	3	2	1
36. The seminar objectives were met.	5	4	3	2	1
37. The amount of time allowed for interaction was satisfactory.	5	4	3	2	1
38. The leader/s was/were knowledgeable with respect to materials and concepts presented.	5	4	3	2	1
39. The seminar leaders effectively modeled PETL strategies.	5	4	3	2	1
40. The seminar was interesting and held my attention.	5	4	3	2	1
41. The seminar increased my knowledge of the subjects covered.	5	4	3	2	1
42. The information presented in the seminar is immediately applicable to my current assignment.	5	4	3	2	1
43. The seminar introduced concepts or skills for increasing the level of my competence as an educator.	5	4	3	2	1
44. The seminar has stimulated my enthusiasm to try different ideas and approaches.	5	4	3	2	1
45. The seminar met my objectives as a participant.	5	4	3	2	1
To what degree do you see yourself incorporating these topics in your teaching?					
46. Anticipatory Set	5	4	3	2	1
47. Active Participation	5	4	3	2	1

48. Teaching to the Objective	5	4	3	2	1
49. Selecting Objectives at the Correct Level of Difficulty	5	4	3	2	1
50. Principles of Motivation	5	4	3	2	1
51. Closure	5	4	3	2	1

---

PLEASE COMMENT ON ANY ASPECT OF THE INSERVICE AND LIST NEEDS FOR FUTURE  
INSERVICE SEMINARS.

Prepared by Lynda Speak and Nancy Britton  
Richardson Independent School District, 1986-87  
Questions 26,28, and 29 adapted with permission from Motivation Theory for  
Teachers by Dr. Madeline Hunter

## Appendix C

## PETL Classroom Observation Form

PETL CLASSROOM OBSERVATION - 1986

(Prepared by Lynda Speak and Nancy Britton - Richardson ISD)

Teacher's Name \_\_\_\_\_ Date of Observation \_\_\_\_\_

Observer \_\_\_\_\_ Subject \_\_\_\_\_ School \_\_\_\_\_

A/BE = Absent or Below Expectation; SE = Standard Expectation; EQ = Exceptional Quality

	A/BE	SE	EQ
--	------	----	----

ANTICIPATORY SET

Teacher demonstrates the ability to use an anticipatory set that:

--is congruent to the objective	0	1	1
--uses active student participation	0	1	1
--transfers past experience/previous knowledge	0	1	1

TEACHING TO THE OBJECTIVE

Information and/or explanation was congruent to the lesson objective	0	1	1
Questions asked of the students were congruent to the lesson objective	0	1	1
Activities were congruent to the lesson objective	0	1	1
Responses to the learners' behavior were congruent to the lesson objective	0	1	1

ACTIVE PARTICIPATION

Teacher demonstrates the ability to:

--use covert active participation	0	1	1
--use overt active participation	0	1	1

	A/BE	SE	EQ
<u>TASK ANALYSIS</u>			
Teacher demonstrates the ability to:			
--formulate a task analysis	0	1	1
--use a task analysis to plan for instruction	0	1	1
--teach essential sub-objectives leading to the terminal objective	0	1	1
<u>MOTIVATION</u>			
Teacher demonstrates the ability to use the variables of motivation:			
--anxiety (level of concern)	0	1	1
--success	0	1	1
--knowledge of results	0	1	1
--interest	0	1	1
--feeling tone	0	1	1
<u>CLOSURE</u>			
Teacher demonstrates the ability to use the principle of closure.			
--closure is congruent to the lesson objective	0	1	1
--closure has student active participation	0	1	1
--closure has students summarize the learning	0	1	1

## BIBLIOGRAPHY

### Books

- Arin-Krupp, Judy, Adult Development, Manchester, Connecticut, RISE, 1981.
- \_\_\_\_\_, The Adult Learner, Manchester, Connecticut, RISE, 1982.
- Corbett, H. D., J. W. Dawson, and William A. Firestone, School Content and School Change, New York, Teachers College Press, Columbia University, 1985.
- Fullan, Michael, The Meaning of Educational Change, New York, Teachers College Press, Columbia University, 1982.
- Glickman, Carl, Supervision of Instruction: A Developmental Approach, Boston, Allyn and Bacon, 1985.
- Goodlad, John, A Place Called School, New York, McGraw-Hill, 1983.
- Harris, B. M., Improving Staff Performance Through In-Service Education, Boston, Allyn and Bacon, 1975.
- Hunter, Madeline, Mastery Teaching, El Segundo, TIP Publications, 1982.
- Joyce, B., R. H. Hersh, and M. K. McKibbin, The Structure of School Improvement, New York, Longman, Inc., 1983.
- Kerlinger, Fred N., Foundations of Behavioral Research, New York, Holt, Rinehart and Winston, Inc., 1973.
- Naisbitt, John and Patricia Aburdene, Re-Inventing the Corporation, New York, Warner Books, 1985.
- Roscoe, John T., Fundamental Research Statistics for the Behavioral Sciences, New York, Holt, Rinehart and Winston, 1975.
- Winer, B. J., Statistical Principles in Experimental Design, New York, McGraw-Hill Book Company, 1962.

## Articles

- Anderson, L., C. Evertson, and J. Brophy, "An Experimental Study of Effective Teaching in First-Grade Reading Groups," The Elementary School Journal, LXXIX (November, 1979), 192-223.
- Berman, Paul, "Educational Change: An Implementation Paradigm," Improving Schools: Using What We Know, edited by R. Lehming and Michael Kane, Beverly Hills, California, Sage Publications, 1981.
- Berman, P. and M. McLaughlin, Federal Programs Supporting Educational Change, Volume VIII: Implementing and Sustaining Innovations, Santa Monica, California, Rand Corporation, 1978.
- Boyer, Ernest, "In the Aftermath of Excellence," Educational Leadership, XLII (March, 1985), 10-13.
- Brand, Ronald S., "On the Expert Teacher: A Conversation with David Berliner," Educational Leadership, XLIV (October, 1986), 4-9.
- Brophy, J., "Classroom Organization and Management," The Elementary School Journal, LXXXIII (November, 1983), 265-285.
- Cooley, V. E. and J. C. Thompson, Jr., "A Comparison of Outstanding and Randomly Selected District Staff Development Practices in Fifty States," The Developer, Dearborn, Michigan, National Staff Development Council, March, 1987, pp. 3-5.
- Cox, Pat L., "Complementary Roles in Successful Change," Educational Leadership, XLI (November, 1983), 10-13.
- Crandall, David P., "The Teacher's Role in School Improvement," Educational Leadership, XLI (November, 1983), 6-9.
- Cuban, Larry, "Persistent Instruction: Another Look at Constancy in the Classroom," Phi Delta Kappan, LXVIII (September, 1986), 7-11.
- Davis, Alan and Allan Odden, "How State Instructional Improvement Programs Affect Teachers and Principals," Phi Delta Kappan, LXVII (April, 1986), 590-593.

- Doyle, Walter and Gerald A. Ponder, "The Practicality Ethic in Teacher Decision-Making," Interchange, VIII (1977-1978), 1-12.
- Durcharme, Edward and Mary M. Kluender, "Good Teachers in Good Schools: Some Reflections," Educational Leadership, XLIV (October, 1986), 43-46.
- Ellson, Douglas, "Improving Productivity in Teaching," Phi Delta Kappan, LXVIII (October, 1986), 111.
- ERIC Clearinghouse on Educational Management, "Synthesis of Research on Educational Management," Educational Leadership, XXXVIII (November, 1980), 182-185.
- Evans, Pamela R., "Improving Instruction Through PET," Educational Leadership, XL (October, 1982), 44-45.
- Fullan, Michael, "Evaluation Program Implementation: What Can Be Learned from Follow Through," Curriculum Inquiry, XIII (Summer, 1983), 215-227.
- Good, T. L. and D. Grouws, "The Missouri Mathematics Effectiveness Project: An Experimental Study in Fourth-Grade Classrooms," Journal of Educational Psychology, LXXI (February, 1979), 335-362.
- Guskey, Thomas R., "Staff Development and the Process of Teacher Change," Educational Researcher, XV (May, 1986), 5-12.
- Haigh, N. and B. Katterns, "Teacher Effectiveness: Problem or Goal for Teacher education," Journal of Teacher Education, XXV (September-October, 1984), 23-27.
- Hall, G. and S. Loucks, "A Developmental Model for Determining Whether the Treatment is Actually Implemented," American Educational Research Journal, XIV (Summer, 1977), 263-276.
- Hunter, Madeline, "Comments on the Napa County, California, Follow-Through Project," The Elementary School Journal, LXXXVII (November, 1986), 173-179.
- \_\_\_\_\_, "Teaching Competency: Problem, Theory, and Practice," Theory into Practice, XV (April, 1976), 164.
- \_\_\_\_\_, "What's Wrong with Madeline Hunter?," Educational Leadership, XLII (February, 1985), 57-60.

- Joyce, Bruce and Beverly Showers, "Improving Inservice Training: The Messages of Research," Educational Leadership, XXXVII (February, 1980), 379-385.
- Loucks, Susan, "At Last: Some Good News from a Study of School Improvement," Educational Leadership, XLI (November, 1983), 4-5.
- Loucks, Susan F. and David A. Zacceni, "Applying Our Findings to Today's Innovations," Educational Leadership, XLI (November, 1983), 28-31.
- McCarthy, Bernice, "Improving Staff Development Through CBAM and 4MAT," Educational Leadership, LV (October, 1982), 20-25.
- McCormick, William J., "Teachers Can Learn to Teach More Effectively," Educational Leadership, XXXVII (October, 1979), 59-60.
- McLaughlin, M. W. and D. D. Marsh, "Staff Development and School Change," Teachers College Report, LXX (September, 1978), 69-94.
- Mohlman, G., T. Coladarci, and N. L. Gage, "Comprehension and Attitude as Predictors of Implementation of Teacher Training," Journal of Teacher Education, XXXIII (January-February, 1982), 31-36.
- Odden, Allan and Beverly Anderson, "How Successful State Educational Improvement Programs Work," Phi Delta Kappan, LXVII (April, 1986), 582-585.
- Porter, Andrew C., "From Research on Teaching to Staff Development: A Difficult Step," Elementary School Journal, LXXVII (November, 1986), 160-165.
- Purkey, S. C. and M. S. Smith, "Too Soon to Cheer? Synthesized Research on Effective Schools and Educational Leadership," Elementary School Journal, XL (December, 1982), 64-69.
- Quinby, Nelson, "Improving the Place Called School: A Conversation with John Goodlad," Educational Leadership, XLII (February, 1985), 16-19.
- Red, Carol and Ellen Shainline, "Teachers Reflect on Change," Educational Leadership, XLIV (February, 1987), 38-40.

- Robbins, Pamela, "The Napa-Vacaville Follow-Through Project: Qualitative Outcomes, Related Procedures, and Implications for Practice," Elementary School Journal, LXXXVII (November, 1986), 139-157.
- Rosenshine, B., "Teaching Functions and Instructional Programs," Elementary School Journal, LXXXVIII (November, 1983), 335-352.
- Slavin, Robert E., "The Napa Evaluation of Madeline Hunter's ITIP: Lessons Learned," The Elementary School Journal, LXXXVII (November, 1986), 165-172.
- Sparks, Georgia M., "Synthesis of Research on Staff Development for Effective Teachers," Educational Leadership, XLI (November, 1983), 65-72.
- Stallings, Jane, "For Whom and How Long is the Hunter-Based Model Appropriate? Response to Robbins and Wolfe," Educational Leadership, XLIV (February, 1987), 62-63.
- Stallings, Jane and Eileen M. Krasavage, "Program Implementation and Student Achievement in a Four-Year Madeline Hunter Follow-Through Project," Elementary School Journal, LXXXVII (November, 1986), 118-138.
- Wood, Fred and Steven R. Thompson, "Guidelines for Better Staff Development," Educational Leadership, XXXVII (February, 1980), 374-378.

#### Reports

- Davidman, Leonard, The Hunter Staff Development Model: Why Is It Working? How Can It Be Improved?, Evaluative Report #142, Education Department, California Polytechnic State University, San Louis OBISPO, 1984.
- Little, J. W., School Success and Staff Development: The Role of Staff Development in Urban Desegregated Schools, Executive Summary, Washington, National Institute of Education, 1981.
- Stallings, J., M. Needels, and N. Stayrook, How to Change the Process of Teaching Basic Reading Skills in Secondary Schools: Phase II and III Final Report, Menlo Park, California, SRI International, 1978.

## Publications of Learned Organizations

- American Association of School Administrators, Staff Development: Problems and Solutions, Arlington, Virginia, 1986.
- Bents, R. H. and K. R. Howey, "Staff Development--Change in the Individual," Staff Development/Organization Development, Association for Supervision and Curriculum Development, Alexandria, Virginia, 1981, pp. 11-36.
- Hall, G. E., R. C. Wallace, and W. D. Dossett, A Developmental Conceptualization of the Adoption Process Within Educational Institutions, Austin, Research and Development Center for Teacher Education, The University of Texas at Austin, 1973.
- National Association of Elementary School Principals, Standards for Quality Elementary Schools: Kindergarten Through Eighth Grade, Reston, Virginia, 1984.
- Sparks, Dennis, editor, The Developer, Dearborn, Michigan, National Staff Development Council, January, 1987.

## Public Documents

- National Commission on Excellence in Education, A Nation at Risk: The Imperative for Educational Reform, Washington, United States Department of Education, 1983.
- Texas Educational Agency, House Bill 72 and Subsequent Educational Legislation: Comprehensive References and Explanations, Austin, Texas Education Agency, 1985.
- \_\_\_\_\_, Texas School Law Bulletin, Austin, Texas Education Agency, 1987.

## Dissertation Abstracts

- Bryant, D. T., "A Study of the Relationship of Inservice Education to Teachers' Attitudes and Pupil Achievement," (Doctoral Dissertation, George Peabody College for Teachers of Vanderbilt University, 1981), Dissertation Abstracts International, XLII (1982), 4659-A.

Bunday, S. Y., "Teacher attitudes and Behaviors as Related to One-Day In-Service Education," (Doctoral Dissertation, University of Northern Colorado, 1978), Dissertation Abstracts International, XXXIX (1979), 4876.

Joslin, P. E., "Inservice Teacher Education: A Meta-Analysis of the Research," (Doctoral Dissertation, University of Minnesota, 1980), Dissertation Abstracts International, XLI (1981), 3058-A.

Sparks, G. M., "Inservice Education: Training Activities, Teacher Attitudes, and Behavior Change," (Doctoral Dissertation, Stanford University, 1983), Dissertation Abstracts International, XLIV (1983), 1427.

#### Unpublished Materials

Bates, Marilyn, "Clinical Supervision," unpublished notes from Instructional Leadership Training, Administrator's Inservice, Dallas, January, 1985.

Crain, Ron, "The Change Process: A View from the Private Sector," Paper presented before the Dallas Metro North Chapter Phi Delta Kappa, Richardson, Texas, April, 1987.

Fitch, Margaret, "Staff Development: A Means of Improving Schools," Paper presented before the National Council of States on Inservice Education, Nashville, Tennessee, November 23, 1986.

Hunter, Madeline, personal letter, University of California, Los Angeles, California, 1986.

Joyce, Bruce, "Comprehensive Staff Development Systems," Paper presented before the National Staff Development Council, Atlanta, Georgia, December, 1986.

Joyce, Bruce and Beverly Showers, "Teacher Training Research: Working Hypotheses for Program Design and Directions for Further Study," Paper presented before the American Educational Research Association, Los Angeles, California, April, 1981.

Lawrence, Gordon, "A Synthesis on the Effectiveness of Staff Development Programs," Paper presented before the State of Ohio Department of Education Annual Conference on Inservice Education, Columbus, Ohio, May, 1981.

O'Neill, Alexis, "New Research on Inservice: Essential Factors of District-Wide Programs," Paper presented before the National Council of States on Inservice Education, Nashville, Tennessee, November 23, 1986.

Robbins, Pamela, "Changing Attitudes of Teachers, Principals, and Students: What We Didn't Measure," Paper presented before the American Educational Research Association, San Francisco, California, April, 1986.

Showers, Beverly, "Transfer of Training," Paper presented before the American educational Research Association, Montreal, Canada, April 11-15, 1983.

Wallace, Richard C., Jr., "Post-Certification Development of Teachers and Administrators," Paper presented before the National Commission on Excellence in Teacher Education, Austin, Texas, October 4-5, 1984.

Wells-Welsh, Melinda Sue, "Advanced Essential Skills of Instruction," unpublished workbooks from Advanced Essential Skills of Instruction Seminar, Phoenix, Arizona, March, 1986.

---

\_\_\_\_\_, "Staff Development," unpublished workbook from Staff Development Seminar, Phoenix, Arizona, June, 1986.