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Billmeyer, Rachel Ann Klein, Ed.D.

The University of Nebraska - Lincoln, 1988

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THE RELATIONSHIP BETWEEN INSERVICE INTENSITY AND SKILL TRANSFER

by

Rachel Ann Klein Billmeyer

A DISSERTATION

Presented to the Faculty of

The Graduate School in the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Interdepartmental Area of Administration, Curriculum and Instruction

Under the Supervision of Professor Thomas A. Petrie

Lincoln, Nebraska

August, 1988

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TITLE

"The Relationship Between Inservice Intensity and Skill Transfer"

BY

Rachel Ann Klein Billmeyer

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THE RELATIONSHIP BETWEEN INSERVICE INTENSITY AND SKILL TRANSFER

Rachel Ann Billmeyer, Ed.D.

University of Nebraska, 1988

Advisor: Thomas A. Petrie

The purpose of this study was to test for differences among three levels of inservice intensity in the transfer of active participation into the teacher's instructional repertoire. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, practice with feedback

Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

The research design employed in this study was quasi-experimental in nature using three treatment groups and repeated measures of the teaching behavior. Twenty-four secondary teachers of three matched groups participated in the study. The researcher conducted the inservice training and provided the trainer coaching. Data for the study were gathered from videotapes of classroom lessons. Each pretest and posttest videotape was rated for for the presence or absence of the salient characteristics of active participation.

A two-factor design with repeated measures on the second factor was used in this study. The two factors were: (1) levels of inservice intensity and (2) active participation measured on the

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pretest and posttest videotaped scores. Analysis of variance was used to determine differences between and within the interaction effects between the tests and the levels of inservice intensity. The results showed the overall main effect for tests was significant but the overall main effect for groups was not significant. There was a significant interaction between the groups and the tests.

Tests of simple effects indicated a significant difference between the pretest and posttest scores for Level 3 inservice intensity, consisting of training, peer coaching, and trainer coaching. No significant differences were found for the other two levels of inservice intensity.

The accumulating knowledge about coaching can be used by school districts to develop policies and procedures for inservice training that promotes skill transfer. Further research could explore who can coach most effectively and how much support and technical feedback are necessary to ensure skill transfer.

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R.A.K.B.

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CHAPTER I

INTRODUCTION

In the era of school improvement recent attention has been focused on the vital importance of instructional process. Simply stated, the institutional process may be defined as a teacher-student relationship in which the teacher's use of effective teaching behaviors results in increased student learning (Bird & Little, 1983).

Inservice training for teachers is the approach most often used to help teachers improve their instructional techniques. The goal of the inservice education programs in local schools is to improve the achievement of learners by helping the instructional staff develop and utilize skills that will make them more effective. But do traditional inservice days, composed of presentation of theory and/or technique, enhance teachers' abilities to be more effective in their classrooms?

Staff development activities, also known as inservice training, are frequently handled like a visit to the doctor. After an injection or a few pills in the form of a one-day inservice, the patient is expected to improve. Enthusiasm runs high, some have a good time, and there is hope that things will get better. Unfortunately, the initial enthusiasm and commitment dissipate rapidly as the teachers re-enter the classroom, face the daily routine, and have little capacity or support for thinking about or practicing new skills or techniques (Hutchins, 1984-85).

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Approximately 200 studies on the effectiveness of various kinds of training methods have been reviewed by Joyce and Showers (1980). They found that the traditional inservices which consisted of theory presentation raised awareness and increased conceptual control of an area. For a few teachers, the inservice resulted in skill acquisition or the transfer of a skill into the classroom situation. While it was also noted that most studies addressed the issue of whether skills were acquired and demonstrated, the question of transfer, actually using the newly acquired skill at the classroom level, was addressed in relatively few studies.

Wood and Thompson (1980) identified several problems with traditional staff development programs. The first was the negative attitudes held by educators toward inservice education. Educators complain that inservice activities are unrelated to the day-to-day problems of participants. There is a lack of participant involvement in planning and implementation, inadequate needs assessment, unclear objectives, and lack of follow-up in the classroom after training. Secondly, inservice training has a district-wide focus and does not meet the actual needs of teachers and administrators in a particular school. There is increasing evidence that the appropriate unit for successful change in education is the individual school, not the district. Another weakness is that most inservice education has focused upon "information assimilation." Someone presents ideas, principles, and/or skills for use back on the job, and the participant is expected to transfer the new knowledge back to the work place.

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The fourth complaint mentioned was about modeling the pedagogy. Trainers often do not effectively model desired teaching behaviors, yet they hope teachers will use them in their classrooms. It appears that changes in delivery of inservice education are necessary if skills are to be acquired and transferred to the classroom.

Mazzarella (1980), synthesizing research on staff development, reported and discussed ingredients of various staff development programs. Those staff development programs which created a negative attitude toward staff development were: (1) Training that was not concrete, ongoing, and teacher specific. "Hands-on" training that allowed teachers to try out new techniques and training addressed to the specific needs of each individual teacher were needed. (2) One-shot preimplementation training was usually not helpful to the instructional staff. Staff members felt there needed to be a series of inservices on the topic to help them monitor and adjust their progress while implementing the skill. (3) Outside consultants were considered not as effective as local resource personnel who could provide "on-call" advice when needed. (4) Inservices in which the principals were not involved made it more difficult for the teachers within the building to transfer the skill back to their classroom. It appears that the principals need to gain knowledge that would enable them to help teachers with implementation of a newly acquired skill, as well as to show teachers their efforts are supported. In conclusion, the teachers demonstrated the ability to use new skills during training, but for reasons mentioned above regressed to pretraining norms after the training. As a result of this regression, the researcher concluded

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there was little transfer of training of newly learned skills. A review of current literature suggests that inservice programs for teachers can be effective, and positive change can be implemented and maintained. Successful programs flow from careful planning, presentation, practice, implementation, and maintenance. These programs are not one-day dog-and-pony shows masterfully presented by an outside expert, but programs carried out step-by-step over a longer period of time. Joyce and Showers (1981, 1982) presented recent studies on the effectiveness of inservice education. They stressed the idea that teachers develop mastery and application of new skills best when they are "coached."

Coaching, a strategy for staff development, may be defined as classroom-based assistance in which a person skilled in the instructional process helps a teacher transfer a new skill or strategy into his or her classroom repertoire. In other words, it is "on-the-job" training. The coaching process follows inservice training which includes a theoretical presentation, demonstration, practice, and feedback. Coaching consists of intensive collaborative planning and sharing between a coach (usually the inservice trainer) and the participant (the classroom teacher). Both engage in an observation and feedback cycle as the classroom teacher implements and masters a new teaching skill discussed and demonstrated at an inservice session. Peer coaching is a labor-intensive approach to training in which teachers help each other transfer newly acquired skills into their active teaching repertoire by observing each other teach and providing each other with feedback. Training systems aimed at developing

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coaching skills for teachers and principals would create cadres of trained teacher coaches at school sites. Research data are accumulating to lend support to Joyce and Showers' hypothesis (Joyce & Showers, 1983).

The findings on coaching are less ambiguous than the findings concerning who should be the trainer in the staff development activities. Both the Rand and Lawrence studies (Mazzarella, 1980) indicated that local resource personnel make better trainers than outside consultants. Lieberman and Miller (1981) emphasized the importance of the principal as an instructional leader in bringing about improvements in teaching. The principal must assume the role as instructional leader and give on-site assistance in implementing an inservice program. However, due to the complexities of today's schools, principals, who are assigned the responsibility of being the instructional leaders, frequently find themselves faced with a multitude of unexpected situations. In the face of constant demand, many choose to function as educational managers no matter what their intentions or expertise (Jensen, 1986).

Moreover, Joyce and Showers (1980) and their research team found that teachers did not want to have their evaluators (i.e., principals) as their trainers. Perhaps other district staff members should be recruited for use as trainers, or evaluation procedures must be modified to make teachers feel less threatened by the idea of their principals being used as trainers. An unanswered question remains: If the principal is unable or unwilling to serve as the inservice trainer, who then can be an effective trainer? The efficacy

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of inservice training provided by a resident expert or in-house trainer rather than a principal has received little investigation (Joyce & Showers, 1981).

This study was designed to test trainer effects by investigating three levels of inservice intensity: (1) traditional, (2) peer coaching, and (3) peer coaching coupled with trainer coaching. A traditional inservice approach is the most commonly accepted and widely used approach. This level uses an inservice trainer to conduct a two- or three-hour presentation. The inservice program focuses on presentation of theory, demonstration of the teaching behavior, and practice with feedback in using the new behavior. Peer coaching, the second level of inservice intensity, focuses on the follow-up to a traditional inservice training program. Teachers are encouraged to help each other transfer the newly acquired skills into their active instructional repertoire by observing each other teach and giving feedback. In the third level of inservice intensity, peer coaching coupled with trainer coaching, the teachers attend a traditional inservice program and receive follow-up training. In addition they are trainer coached by the inservice trainer while using the skill in the classroom, as well as working with a peer. The comparative merits of the three selected inservice approaches have received little investigation (Joyce & Showers, 1981).

Statement of the Problem

The goal of inservice education programs is to help teachers develop and utilize skills that extend their instructional repertoire.

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Researchers have indicated that the inservice education programs are in need of assessment. The data related to the literature of educational change, studies of effective training, and research on skill transfer support the concept of coaching as a training device. The problem addressed in this study was: Is the level of inservice intensity related to teacher transfer of a skill to the classroom?

The purpose of this study was to test for differences among three levels of inservice intensity and transfer of a skill into the teacher's instructional repertoire in the classroom. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, practice with feedback

Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

Research Questions

In this study, three major research questions were asked:

1. Will there be a significant difference in teacher use of an instructional skill given the three levels of inservice intensity?

2. Will there be a significant difference in ratings between the pretest and posttest ratings?

3. Will there be a significant interaction between the three levels of inservice intensity and teacher use of an instructional skill on pretest and posttest ratings?

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Objectives of the Study

The objectives of the study were to:

1. gather baseline data through a pre-videotape of each instructor's teaching.

2. operationalize the teaching behavior of active participation for the secondary level selected from research on effective training.

3. identify the inservice education protocols for each of the three selected approaches.

4. develop two inservices on active participation. The first one was informative based on theory and modeling. The second one was to reinforce the learnings by providing practice under simulated conditions with feedback.

5. develop two inservices on peer coaching. The first one was informative based on theory and modeling. The second one was to reinforce the learnings by providing practice under simulated conditions with feedback.

6. conduct inservices according to the protocol of the three selected inservice approaches during weeks 1 and 2 of the study.

7. assess inservice participants' level of cognitive comprehension mastery of the teaching behavior, active participation.

8. reteach inservice participants if necessary for cognitive comprehension mastery of the teaching behavior, active participation.

9. develop an instrument to measure the effective teaching behavior of active participation which involved the following: (1) review the literature for a definition of active participation,

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(2) analyze salient characteristics of active participation, and (3) specify representative examples of each salient characteristic of active participation.

10. train professional evaluators in coding videotapes for use of active participation until the reliability of .75 was accomplished.

11. provide trainer assistance and feedback to Level 3 trainer coaching group once weekly during weeks 3, 5, 7, 9, and 11 of the study.

12. post-videotape all participants' teaching and code, analyze, and test for significant differences.

Definition of Terms

The following definitions of terms are presented to give clarity to their use and meaning to this study.

Traditional inservice workshop. A presenter from outside the district conducts a two- or three-hour presentation and demonstration to the entire faculty of a school, concentrating on discussion of the theory base of the selected effective teacher behavior; teachers participating in the workshop receive no follow-up assistance.

Coaching. Classroom-based assistance in which an inservice training proficient in the protocols of the selected instructional skills helps a teacher transfer the skill into his or her active teaching repertoire by providing on-the-job assistance followed with feedback.

Peer coaching. Teachers training each other about selected instructional practices and helping each other transfer newly acquired

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skills into their active teaching repertoire by observing each other teach and giving feedback.

Transfer of training and transfer of learning. "The influence of what has been previously learned and retained on subsequent learning or application" (Ripple & Drinkwater, 1982, p. 1948).

Active participation. Active responding by the student in activities congruent with the learning. It may be thinking (covert) behavior or observable (overt) behavior (Cummings, 1985).

Assumptions

The study was predicated on the following assumptions:

1. Teachers need inservice education and/or retraining throughout their careers.

2. Inservice education should focus on improving the quality of school programs and instruction.

Delimitations of the Study

1. The amount of information about effective teaching and effective inservice education is considerable. The focus of this study was to test for differences between three levels of inservice intensity and transfer of a skill into the teacher's instructional repertoire in the classroom.

2. From the wide range of teaching techniques, active participation was chosen as the content of the inservice workshop.

3. The scope of the study was limited to one Nebraska secondary school.

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4. The design for the study was quasi-experimental.

Limitations of the Study

1. Conclusions of the study were only applicable to the Westside High School staff.

2. Teachers were chosen on a voluntary basis.

3. The study was subject to those weaknesses inherent in a quasi-experimental pretest-posttest control group design.

4. The study was subject to variations in participants' ability and behavior.

5. The study was subject to variations of teachers' different styles of teaching.

Significance of the Study

The history of staff development in American schools is characterized primarily by disorder, conflict, and criticism. In recent years, advances in research on effective schools and the variables that contribute to instructional effectiveness have increased attention on the need for high quality staff development/inservice programs. It is hoped that through effective inservice programs new knowledge can be transferred to the classroom setting which would ultimately enhance student learning outcomes (Guskey, 1986).

If trainer-provided coaching and/or peer coaching positively affect the transfer of skills learned during inservice programs, the impact should significantly affect teachers and, therefore, pupils. As more research studies determine the impact of coaching and peer

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coaching on teacher behavior, the results may influence future in-service programming and policies.

Specifically, coaching and/or peer coaching could affect a school district in three ways: (1) by increasing the probability that dollars spent on inservice will improve instruction and affect student outcomes, (2) by providing an effective inservice model to ensure that skills learned at an inservice will actually be transferred and used in the classroom, and (3) by developing positive attitudes toward inservice training, collegial relationships between staff members, and teachers working together and discussing teaching practices to assist in successful implementation of new methods.

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CHAPTER II

REVIEW OF LITERATURE

Three levels of inservice intensity and transfer of a skill, active participation, into the teacher's instructional repertoire in the classroom were investigated in this study. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, and practice with feedback

Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

The ultimate goal of inservice training is to improve a teacher's ability to become more effective in the classroom. Specifically, inservice training programs are a systematic attempt to bring about change: change in the classroom practices of teachers, change in their attitudes and beliefs, and, in so doing, hopefully change in the learning outcomes of students (Guskey, 1986). If the goal of inservice training is reached, transfer of training has taken place. Transfer of training assumes knowledge and skills have been learned and remembered (Ripple & Drinkwater, 1982). Joyce and Showers (1981) added, that to be effective, knowledge and skills must be used. One way that school districts can provide teachers with knowledge and skills is through inservice training. While it is clear that successful inservice training is not easily accomplished, an important assumption of this study is that a carefully designed and structured

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inservice program can help teachers improve their effectiveness, as well as develop positive attitudes toward inservice training. While the literature was replete with references to inservice education and effective teaching behaviors, it was necessary to limit the literature review to two principal categories with several subtopics essential to the essence of the study. They were: (1) inservice training for teachers, and (2) active participation.

Inservice Training for Teachers

This section of the literature review is limited to: (1) definitions of inservice training, (2) the process of teacher inservice programs, (3) trends and issues in teacher inservice programs, and (4) coaching and peer coaching inservice programs.

Definition of Inservice Training

Researchers and practitioners have used a variety of closely related terms in referring to the inservice education of staff members. The most commonly used terms mentioned by Harris (1980) included: staff development, inservice training, inservice education, professional growth, on-the-job training, and continuing education. Continuing education refers to those educational endeavors beyond the usual sequences of schools and colleges. Professional growth is likewise a term that may be useful in making reference to a very broad unspecified set of events. Harris (1980) offered the following definitions of inservice education and staff development.

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> Inservice education is a part of staff development which means any planned program of learning opportunities afforded staff members of schools, colleges, or other educational agencies for purposes of improving the performance of the individual in already assigned positions. (p. 21)
>
> Staff development has two distinct aspects: staffing--having the best person in the appropriate assignment at the right time, and training--inservice (described above) and advanced preparation for new, advanced, or different job assignments. (p. 24)

Regardless of the special meaning attached to the various terms to describe inservice education, each of these learning conditions constitutes change in staff knowledge, attitude, and behavior.

Throughout this study, both the terms "inservice training" and "inservice education" are used to denote a structured program of learning activities designed to improve on-the-job performance. Both are also used interchangeably during the review of the literature.

The Process of Teacher Inservice Programs

In this subsection, the research on the process of inservice training is described. This research focuses on the impact, components, and effectiveness of inservice training for changing teacher classroom behavior. While researchers have generally found inservice programs that achieve a balance between knowledge (theory) and performance (practice) show a high degree of success, they have taken different approaches to identify those factors which contribute to an effective inservice program.

For example, in 1980, Joyce and Showers reviewed over 200 studies of teacher training. They inspected the training processes used and the teacher-change outcomes in the studies. These outcomes

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ranged from knowledge of training content to transfer of the skills to the teachers' classrooms. According to Joyce and Showers, the major activities of inservice training are:

1. Presentation of theory - the rational, theoretical base approach to instructional technique and potential use.
2. Demonstration or modeling - enactment of the teaching skill or strategy through live demonstration or media.
3. Practice in simulated and classroom settings - trying out a new skill or strategy.
4. Feedback, open-ended or structured - information about performance following an observation.
5. Coaching for application - hands-on, in-classroom assistance with the transfer of skills and strategies to the classroom.

On the basis of their review, Joyce and Showers developed the following working hypotheses and made recommendations about the effectiveness of the different components of training:

1. Training consisting of presentation, demonstration, and classroom practice with feedback is sufficient for many teachers to show transfer or "fine-tuning" of familiar practices to the classroom.

2. If any of the first four components is excluded, fewer teachers use the practices in their classrooms. (Demonstration was thought to be especially critical.)

3. Many other teachers require the four components plus coaching in order to achieve transfer.

4. For transfer of new, unfamiliar practices to occur, all five training components are necessary for most teachers.

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Joyce and Showers (1980) reported that no single study used all training components and measured effects of all levels of impact. However, programs used various combinations of the five components described above. Although the researchers found few studies focused on the "coaching to application" component, several treatments included lengthy follow-up feedback after initial training, and these methods seemed to result in greater transfer at the classroom level.

Joyce and Showers (1982) concluded that the result may depend upon the goals of the inservice training. The goals of inservice training could be (1) awareness, (2) fine tuning, or (3) the addition of a new teaching strategy. If awareness is the focus, an overview of the new skill would be sufficient. If fine tuning is the focus, "modeling, practice under stimulated conditions, and practice in the classroom, combined with feedback will probably result in considerable changes" (Joyce & Showers, 1980, p. 384). If mastery is the focus, coaching must be added to inservice presentations that give the theoretical background, model the new skill, and provide opportunities for practice and feedback.

Bush (1984) concurred with the five levels of training mentioned above. In his five-year longitudinal study on teacher inservice in California schools, he noted the following results. Only 10 percent of the teachers who went through the best possible presentation of the theoretical base for a new procedure transferred that new teaching behavior back into classroom use. The group that received modeling/presentation as well as the theoretical base resulted in

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12 to 13 percent of the teachers using the new skill. For teachers who had the opportunity to practice the new procedure in a controlled situation, as well as receive the modeling and theoretical base, 15 to 16 percent transferred the newly learned skill into their classroom. If feedback were included as well as the previous three levels, still only 15 to 16 percent actually used the new procedure. However, for those teachers involved in all five levels of training, actually given on-the-job assistance through coaching, 95 percent transferred the newly learned instructional behavior into their active teaching repertoire. Bush concluded that most inservice training programs concentrated only on levels one and two, with a few at levels three and four, and almost none at level five.

Stallings (1982) proposed a slightly different delivery system for inservice training. Her model is a mastery learning staff development model. The steps are presented as follows:

1. Pretest
    a. Observe teachers.
    b. Assess what is needed from teacher observation profiles.
    c. Start where they are.
2. Inform
    a. Make specific recommendations for change based on profiles.
    b. Link theory, practice, and teacher experience.
    c. Provide practical examples from classroom situations.
    d. Share teachers' expertise in problem-solving discussions.
3. Organize and guide practice
    a. Provide conceptual units of behavior to change.
    b. Support and encourage behavior change.

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c. Assess and provide feedback.
d. Help integrate into scheme.

4. Posttest

a. Observe teachers.
b. Provide feedback to teachers.
c. Provide feedback to trainers.

The key steps of Stallings' model are: (1) state the objectives of the staff development program, (2) select or develop instruments that will measure the behaviors of interest, (3) observe or test teachers to see how well they are using the instructional strategies before the intervention, (4) provide the intervention, (5) observe the teachers after the intervention, and (6) assess the behavior change. Stallings' model differs from that of Joyce and Showers (1980) in that it (1) includes diagnosis and prescription and (2) uses pre- and post-training observation data to guide the teacher's change efforts.

Sparks (1983b) combined the models of Joyce and Showers (1980) and Stallings (1982) to form a list of the major types of training activities that may occur during inservice workshops. They are:

1. Conduct diagnosis - through observation, self-report, or interview.

2. Establish objectives of training - as trainer alone or in collaboration with teachers.

3. Prescribe change - based on comparison of diagnostic data with objectives of training.

4. Present information - in a written manual, a lecture, or both.

5. Demonstrate practices - through live demonstration, anecdotes, videotapes, films, audiotapes.

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6. Discuss implementation problems and solutions - with trainer and other teachers.

7. Practice implementation - in simulated situation or in classroom.

8. Give feedback based on observation or information - from teachers themselves, students, peers, or trainer.

9. Provide coaching based on observation and discussion - by peer, trainer, or administrator.

Clearly, the type of training activities chosen for inservice training (as listed above) is not the only factor affecting teacher use of recommended practices. Johnson and Sloat (1981) stated, "Inspection of results for individual teachers suggests that teacher training should be individualized as much as possible" (p. 114). For maximum results it is necessary to involve the teacher in the inservice planning process. This can occur through diagnosis of an individual teacher's needs followed by a goal-setting process. Cruickshank and Kennedy (1978) suggested a system that includes feedback, goal setting, and goal setting combined with feedback, coupled with systematic observation and inservice training of teachers, does promise instructional behavior change of those teachers who choose for themselves the nature and direction of the changes. Sparks (1983a) concluded that recommendations seen by teachers as "practical" are likely to be incorporated into teacher plans.

Lawrence, Baker, Elzie, and Hansen (1974) reviewed and evaluated 97 studies and reports of teacher inservice education and generalized about the characteristics of successful programs. They categorized the inservice theories as the "seven dichotomous approaches" to the management of inservice activities. These approaches are:

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1. Individualized versus common activities
2. Active teacher role versus receptive role in inservice design
3. Supervised trials and feedback versus storing up information and behavior prescriptions for a future time
4. Teacher mutual assistance and sharing versus separate individualized work
5. Emergent design versus preplanned design
6. Self-directed and initiated versus other-directed and initiated activities
7. Programmatic or common approach versus a single-shot design, not linked to a general effort of the school

Lawrence et al. (1974) concluded that findings supported the "seven dichotomous approaches" listed above. Inservice education programs in which significant positive changes in teacher behavior have been reported incorporated more of the seven desirable features than do programs reporting no significant changes. School-based inservice programs incorporated more of the features than did college-based preservice programs.

No matter what the approach taken for inservice training, the real question concerns the level of impact. Joyce and Showers (1980) classified the outcome of training into four levels of impact:

1. Awareness--understanding of a concept or area.
2. Concepts and organized knowledge--intellectual control over relevant content.
3. Principles and skills--tools for action. Teachers learn the skills to help them adapt to differences in students.
4. Application and problem-solving--transfer of concepts, principles, and skills to the classroom. (p. 380)

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The above process must be understood in terms of the dependence of each level on the others before it. It is only after an awareness of the area to be learned that one can think effectively about it, possess the skills to teach, and finally transfer that new knowledge in the classroom. Only after the fourth level has been reached can there be an impact on the education of children. In assessing the impact of inservice training, Joyce and Showers (1980) concluded:

> If the theory of a new approach is well presented, the approach is demonstrated, practice is provided under simulated conditions with careful and consistent feedback, and that practice is followed by application in the classroom with coaching and further feedback, it is likely that the vast majority of teachers will be able to expand their repertoire to the point where they can utilize a wide variety of approaches to teaching and curriculum. If any of these components are left out, the impact of training will be weakened in the sense that fewer numbers of people will progress to the transfer level which is the only level that has significant meaning for school improvement. (p. 384)

Little is known about which combination of the training activities described is necessary for satisfactory implementation of teaching practices recommended in inservice training. Most programs include objectives, presentation, and demonstration. Discussion groups, practice, feedback, and coaching are included less often. Practice and feedback are often provided in simulated or role-playing situations. Providing feedback to teachers in their own classrooms can be threatening, logistically complicated, and expensive (Sparks, 1983a). One simple way to provide feedback is through peer coaching, where teachers observe each other. Another way is to provide classroom coaching by a trainer. Although such coaching is probably the most

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expensive training activity, Joyce and Showers (1980) suggested that it is the most powerful one. The subsection on coaching and peer coaching examines the literature in more detail.

Trends and Issues in Teacher Inservice Programs

Historically, inservice education has been reactive rather than proactive. In the earlier times of education, the late 1880's to the early 1900's, the basic concern was to remedy gross deficiencies in the pre-service preparation of teachers. Due to the continuous expansion of the nation's school systems and colleges, a teacher shortage prevailed. Thus, any available person was hired to teach with the promise of providing additional training later. The teacher shortage problem continued with the constant loss of well-trained staff to industry and family rearing. The Great Depression of the 30's provided the first opportunity for the teacher supply to catch up to the demand. Certification standards for teachers changed by requiring all teachers to have a bachelor's degree. Hence, inservice programs were not aimed primarily at helping teachers meet new programs but rather at filling gaps in college degree requirements. Teachers' attitudes toward inservice training were not to gain new insight, understanding, and competence, but rather for the purpose of getting certificates renewed by patching up their backgrounds (Tyler, 1971). Another factor which affected the teacher supply was that during the depression many college graduates felt fortunate to have teaching positions in the absence of other forms of professional employment.

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In the 1950's, student enrollment increased tremendously. Again, many teachers were thrust into teaching with partial degrees and provisionary certificates. Inservice programs of the early 1950's were once more designed to help teachers complete degree and certification requirements quickly. In the late 1950's and early 1960's, teacher training programs shifted from preservice to inservice programs. They were designed to assist teachers in developing the skills necessary for implementing team teaching, packaged programs in math, science, English, and social studies, and individualized programs such as IGE, (Individually Guided Education) (Harris, 1980).

In the late 1960's and 1970's, attention turned to providing curriculum and instruction for categorical groups, i.e., handicapped, gifted, and preschool. Content and pedagogy were combined to formulate a developmental approach to inservice training. Developmental inservice training was concerned with significant behavior changes. Behavior changes in teachers occurred when inservice training became goal-oriented and long-term as opposed to one-day sessions. Teachers' behaviors also changed when inservice training was coupled with incentives, appropriate follow-up, and readily available materials (Inservice Education, 1983).

Cruickshank, Lorish, and Thompson (1979) discussed four major trends of inservice education. The first was a movement from a compensatory to a complementary view of inservice teacher education. Inservice education no longer needed to serve as a preservice program which helped teachers fill gaps in college degree requirements. Today's teachers have been better schooled when they enter the

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classroom. Also, there has been a progression from a discrete to a continuous view of inservice teacher education, and there is no longer a distinct line between preservice and inservice education. Thirdly, there has been a trend away from a relatively simple to more complex inservice teacher education program. When compared with earlier practices, today's teacher inservice programs address a wider range of topics and problems. The final trend has been from a narrow control of inservice education programs by school administrators, consultants, and/or university professors to collaborative planning, including teachers. Thus, inservice programs are becoming more school-based.

With the changes in inservice education progressing from more general to more specific, the emphasis seems to be on the needs of the teacher and the effects of his or her teaching. Cruickshank et al. (1979) reviewed the research literature on inservice education for teachers and concluded that little scientifically acceptable research has been conducted on inservice training effects. They suggested that "A Model for Research on Teaching" by Dunkin and Biddle (1974) be applied to research on inservice training for teachers. The model, as the reviewers explained it, is shown in Figure 1. The model is based on the premise that teachers are adults, professionally accredited and experienced, and inservice occurs in the sociopolitical context of a school system. The research model speaks to four classes of variables: presage, context, process, and product. Presage variables include characteristics of the inservice trainer,

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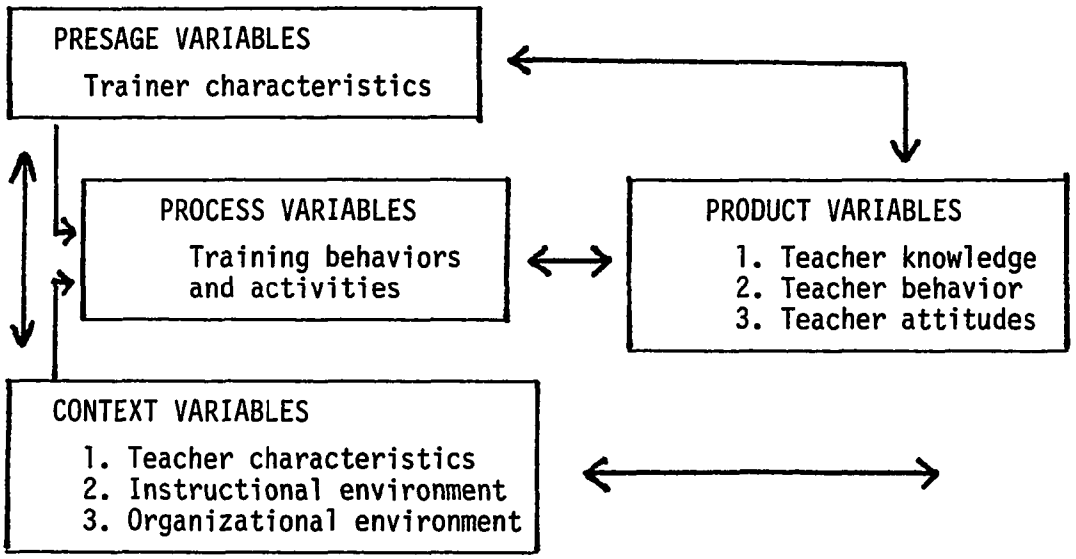

FIGURE 1

A Model for Research on Inservice Education

Source: Cruickshank, D. R., Lorish, C., & Thompson, L. (1979). What we think we know about inservice education. Journal of Teacher Education, 30(1), 27-31.

for example age, status, or training. Context variables are "those conditions to which program leaders and participating teachers must adjust" (Cruickshank et al., 1979, p. 30). There are three types of context variables: (1) teacher participant characteristics (age, experience, attitudes), (2) school or community setting (social and political climate, geographic location), and (3) instructional context (socio-emotional climate of the group and type and availability of time and material resources). Process variables include the actual instructional activities in which the participants engage. Finally, product variables are the short- and long-term effects of the

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presage, context, and process variables on the knowledge, performance skills, and attitudes of the teacher participants. The model hypothesizes that the presage and context variables directly affect the process variables which, in turn, affect the product variables. Recently, with growing national concern over the effectiveness of basic skills instruction at both the elementary and secondary school levels, the improvement of teaching skills has been emphasized in many inservice programs. For this to occur, equal emphasis needs to be placed on all four variables of the research model. If the goal of inservice training is to improve student achievement, teachers need to acquire and implement effective techniques for doing so.

In another study, Collins (1979) indicated the following trends that were changing inservice education:

1. A shift to local responsibility. Schools had begun defining their own needs rather than leaving this task to the universities. Teachers were becoming more actively involved in planning and conducting inservice programs.

2. More school-based staff development. More inservice was going on while persons were performing their usual jobs, in their usual places.

3. Definition of the school building as the "critical mass." The school building had become the meaningful unit for effective and efficient delivery of inservice education.

Thus, school-based inservice programs became widely supported. Donlan (1983) found that internal locus of control is most beneficial

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for change in the instructional behaviors of teachers to occur. Internal locus of control purports to be teacher-focused in the sense that teacher participants, not university instructors, are perceived as the principal resource. Teachers involved with in-service training at the building level appear to perceive the in-service training as more beneficial.

Liebes (1983) found that teachers experiencing teaching problems should receive immediate on-the-job support. Local administrators and/or supervisors should offer several forms of assistance to teachers, including a school-based staff development approach and a comprehensive district-wide response to the problem. Liebes also supported the idea of involving teachers in the planning of their inservice experiences. The Rand Studies (Berman & McLaughlin, 1978) found that teacher age and experience were related negatively to change; teachers who had more years of experience tended to change less. Low teacher morale can be treated through the use of intrinsic and extrinsic reinforcement that results when a teacher, through planning training activities, perceives the opportunity for continued personal and professional growth (Rubin, 1973).

Additional support for school-based inservice education was found in separate reviews of the literature on inservice education (Eubanks & Levine, 1983; Lawrence et al., 1974). As a result of their reviews, the researchers concluded that the school seems to be a better place for inservice teacher education than the higher education institutions. For example, Lawrence et al. (1974) noted

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that although both school-based and college-based programs affected teacher behavior, attitudes were influenced more by school-based programs. The researchers found that 23 of 27 school-based programs reported significant changes in attitudes. Eubanks and Levine (1983) concluded that while school-based programs are of extreme importance the program needs to be in conjunction with district-wide planning. For the optimum staff development program to be effective, both local and district planning and implementation need to be included.

Wade (1984), in a recent meta-analysis of research on inservice education, reached conclusions that varied from earlier reported trends. She contended that no "magic formula" for inservice programs exists and offered six suggestions for staff developers who wish to plan programs for maximum effectiveness:

1. Plan programs in which elementary and secondary teachers can participate in training together whenever appropriate.

2. Encourage teachers to become involved in state, federal, or university-initiated programs.

3. Offer incentives for participation, such as enhanced status or college credit, whenever possible.

4. Encourage independent study and self-instruction as alternatives to the traditional workshop format.

5. Suggest that instructors set clear goals and take major responsibility for the design and teaching of the class rather than encouraging participants to assume these roles.

6. Use instructional techniques such as observation, micro-teaching, video/audio feedback, and practice these techniques as

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alternatives to lecture, discussion, games/simulations, and guided field trips.

Some diversion from trends reported in earlier reviews was also shown by Wade's (1984) findings. Her suggestions seemed to point toward district-wide rather than school-based inservice, outside agency initiation rather than school-based responsibility, less participant involvement in planning, and more independent study and self-instruction rather than collegiality.

However, recent researchers seem to disagree with some of Wade's suggestions. In cautioning about discouraging teachers from becoming involved in school- or district-initiated programs, Sparks (1984-85) cited the success of effective schools and school improvement programs as examined by Eubanks and Levine (1983). Wood, McQuarrie, and Thompson (1982) suggested that not only is the school the most appropriate unit or target of change in education, but also that school districts have the primary responsibility for providing the resources for inservice training. Lawrence et al. (1974) noted that school-based programs conducted by local supervisors and administrators appeared more effective than those run by outside personnel. Sparks (1984-85) also cautioned against Wade's suggestion that leaders rather than the participants take on the role of designing and teaching the class. She hoped the recommendation would not be interpreted to mean "that teachers should never get together in small groups to perform highly structured tasks or that group discussions are never a good idea" (p. 58). Sparks agreed with the inservice strategies recommended by Wade (observation, micro-teaching, feedback, and practice).

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Sparks (1983a) provided the following recommendations for improving staff development from her review of the research on staff development for effective teaching:

1. Select content that has been verified by research to improve student achievement.

2. Create a context of acceptance by involving teachers in decision making and providing both logistical and psychological administrative support.

3. Conduct training sessions (more than one) two or three weeks apart.

4. Include presentation, demonstration, practice, and feedback as workshop activities.

5. Provide opportunities for small group discussions of the application of new practices and sharing of ideas and concerns about effective instruction during training sessions.

6. Encourage teachers to visit each other's classrooms, preferably with a simple, objective, student-oriented observation instrument between workshops. Provide opportunities for discussions of the observations.

7. Develop in teachers a philosophical acceptance of the new practices by presenting research and a rationale for the effectiveness of the techniques.

Most researchers tended to agree with Sparks (1983a) that inservices should be conducted over a several-week period. For example, Stallings, Needels, and Stayrook (1978) recommended a series

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of four to six three-hour workshops spaced one or two weeks apart. Larence et al. (1974) found that "single shot" inservices are largely ineffective. Most researchers also seemed to agree with the trend toward incorporating presentation, demonstration, practice, and feedback in inservice training programs (Bush, 1984; Joyce & Showers, 1980, 1982; McCarthy, 1982; Mohlman, Kierstad, & Gundlach, 1982; Showers, 1985; Wood, McQuarrie, & Thompson, 1982).

However, the decision as to who should be the person(s) to conduct the educational inservice training programs lacks some clarity. Studies seem to support the idea that district and school-based programs conducted by local supervisors or administrators appeared to be more effective than those presented by outside personnel (Lawrence et al., 1974; Liebes, 1983).

The role of the principal in inservice education is not as clear. Wood et al. (1982) concluded that the principal is the key element for adoption and continued use of new inservice practices and programs in the school. Corbett (1982), in his examination of the role of the principal in maintaining classroom changes, found that innovations will not be maintained unless some sort of incentive is provided. He concluded that it is the job of the principal to offer these incentives. While the principal has an important role in maintaining change and improving instruction in his or her building, there is some question as to whether he or she can be held responsible for providing all the necessary facets for an effective building inservice program. Bush (1984) described the principal's roles to

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be those of manager, harmonizer, and motivator. The principal is responsible for operating the school according to the policies and procedures of the district, for making everyone happy about the operation of the school, and for providing staff development leadership. Despite their many roles, many principals spend most of their time managing. The second largest amount of time is devoted to harmonizing, and the least amount of time is spent in the role of motivator. Acting as a manager of a school has been the expected role of the principal for most of the history of education. It is the nature of the middle management task to perform the managerial things or the school does not keep running (Bush, 1984; Jensen, 1986).

Mazarella (1980) reported that principals should be a part of staff development programs and show their knowledge and support of the programs; however, they should not have full responsibility for planning programs. If the principal does not assume full responsibility for building staff development programs, and, as indicated in the literature, outside personnel are not as effective, who then is held responsible for conducting inservice education programs and maintaining classroom change? Mazarella investigated the use of an in-house facilitator or trainer to conduct inservice education programs and, jointly with the principal, help maintain classroom change.

Another issue in teacher inservice education appears to be the use of coaching and/or peer coaching as a part of inservice education. Since the concept of coaching and peer coaching is a focus of this study, it will be dealt with as a separate subsection of the

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section concerning inservice education in the review of literature.

In summary, it appeared the strongest trend in teacher inservice education focused upon the implementation strategies involved. There was general agreement that the most effective inservice programs included: (1) presentation of theory, (2) demonstration, (3) practice, and (4) feedback. Although there was not total agreement, contentions of many researchers also included the following:

1. Inservice programs should be based on research.
2. There should be local responsibility for inservice.
3. Inservice should be conducted over a period of time rather than in a single session.
4. Programs should be school-based.
5. Participants should be involved in planning services.
6. Principals play an important role in the success of teacher inservice training.

The primary issues in teacher inservice education appeared to be: (1) who should conduct the training, (2) what is the role of the principal, (3) and what is the role of trainer coaching and peer coaching in teacher inservice education?

Coaching and Peer Coaching Inservice Programs

Joyce and Showers (1980) suggested that "coaching" increases, to a considerable degree, the potential of attempts to alter teacher behavior. They defined coaching as "hands-on, in-classroom assistance" (p. 380) with the transfer of skills and strategies to the classroom. "Coaching for application involves helping teachers analyze the

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context to be taught and the approach to be taken, and making very specific plans to help the student adapt to the new teaching approach" (p. 384). According to Joyce and Showers, coaching can be provided by peers, supervisors, trainers, or anyone thoroughly familiar with the recommended teaching practices.

For the purposes of this study, coaching was defined as being either trainer coaching or peer coaching. Trainer coaching may be defined as classroom-based assistance in which an inservice trainer, highly skilled in the instructional process, conducts inservice training and helps a teacher transfer the newly acquired skill into his or her active teaching repertoire by providing on-the-job assistance. Peer coaching may be defined as teachers teaching each other about successful instructional practices learned at an inservice training session and helping each other transfer the newly acquired skills into their active teaching repertoire by observing each other teach.

The primary function of peer coaching and trainer coaching is to assist the implementation of new elements into the curriculum. The process of coaching involves five major functions (Joyce & Showers, 1983):

1. Provision of companionship. The first function of coaching is to provide interchange with another human being over a difficult process. Teaching is a lonely enterprise and teachers have sorely lacked the companionship coaching could provide (Joyce & Showers, 1982; Little, 1982). The process includes two people working together, observing each other, and communicating about their success or

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frustrations. Companionship provides reassurance that problems are normal. New teaching techniques develop over much time and practice, as expressed by Joyce and Showers (1983) who stated it takes 15 to 20 trials for teachers to feel comfortable with a new approach.

2. Giving technical feedback. Feedback is a critical step in coaching. Technical feedback should not be confused with general evaluation. Feedback implies no judgment about the overall quality of teaching but is confined to information about the execution of relevant skills or strategies. Feedback should follow any observation or demonstration and should be provided on the day of the observation. Bird and Little (1983) added that the teacher who was observed should start the discussion of the lesson. "This leaves the observer something else to talk about" (p. 161). The researchers also advised the coach to pick at least one thing to reinforce, one discrete part of the lesson which might be improved, and to give feedback only on the topic previously agreed upon for the coaching observation.

3. Analysis of application. Deciding when to apply the model or strategy of learning and what to expect as outcomes can be assisted by the coaching process. When something is new, it is helpful to share the anxiety with another qualified person.

4. Adaptation to the students. Successful teaching requires successful student response. As new teaching models are incorporated into the classroom, the students may resist or have problems in accepting them. One of the major functions of the coach is to help teachers read the responses of the students to make decisions about skills training and how to adopt the model.

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5. Personal facilitation. The successful use of a new teaching method requires practice. Early trials will not be close to the normal standard of adequacy. Therefore, a major job of the coaching team is to help its members feel good about themselves during the early trials. Coaching reduces teacher isolation and increases support.

A certain atmosphere must exist if coaching is going to be successful. Hutchins (1984-85) explained three essential conditions that must be met for coaching to be successful. Initially, there must be a general perception on the part of the people involved that they are good but can always get better; they can continually improve what they are doing. Secondly, the teachers, trainers, and principals involved must develop a reasonable level of trust with the teachers. Teachers must feel confident that no one is going to distort the situation into a punishing one. Bird and Little (1983) stated:

> There is a way of talking and acting which separates the question of practice and its consequences from the question of people and their competence, and which separates habits from self-esteem. Then, the practices and habits can be put on the table and dissected while the person who uses them remains intact. (p. 15)

The last condition is the need for an interpersonal climate in the building that conveys the sense people care about each other and are willing to help each other. If these three preconditions do not exist, they must be the initial focus of an improvement effort. Coaching can be used to build such conditions if it is approached slowly, voluntarily, and in a non-threatening manner.

Showers (1983a, 1983b, 1985) reported that coaching effects fall into two broad categories: facilitation of transfer of training

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and development of norms of collegiality and experimentation. Coaching contributes to transfer of training in five ways. Coached teachers:

1. generally practice new strategies more frequently and develop greater skill in implementing a new teaching strategy than do uncoached teachers who have experienced the same inservice training.

2. use the new strategies more appropriately in terms of their own instructional objectives and the theories of specific models of teaching.

3. exhibit greater long-term retention of knowledge about and skills with strategies in which they have been coached.

4. are much more likely than uncoached teachers to teach the new strategies to their students, ensuring that the students understand the purpose of the strategy and the behavior expected of them when using the strategy.

5. exhibit a clearer understanding with regard to the purposes and uses of the new strategies, as revealed through interviews, lesson plans, and classroom performance than do uncoached teachers.

Peer coaching. Showers (1985) identified the following purposes of peer coaching: (1) to build communities of teachers who continuously engage in the study of their craft; (2) to develop the shared language and set of common understandings necessary for the collegial study of new knowledge and skills; and (3) to provide a structure for the follow-up training that is essential for acquiring new teaching skills and strategies.

In a study by Showers (1983b), the effects of peer coaching

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on teachers' ability to transfer new models of teaching into their instructional repertoires were investigated. Specifically, the researcher sought to discover if peer coaches could be trained to provide consistent coaching to a new group of trainees and to determine the degree of teacher collegiality developed by a peer-coaching approach to training. Showers found the mean transfer scores of the peer-coached teachers to be higher than those of the uncoached teachers. Furthermore, coached teachers reported unanimously that the peer coaching had been a positive experience both professionally and personally.

Little (1982) concluded from her study of six urban, desegregated schools that teachers valued and participated in norms of collegiality and continuous improvement (experimentation) more in successful schools than in unsuccessful ones. Teachers pursued a greater range of professional interactions with peers, including talk about instruction and structured observation, and shared planning or preparation. Teachers served as change agents in their schools. Yarger and Broadbent (1982) found that teachers were capable predictors of change and that their enthusiasm, availability, materials, ideas, and students' success supported the idea of peer coaching.

Showers (1983a) concluded that the implementation of a peer-coaching program in a school has effects much more far-reaching than the mastery and integration of new knowledge and skills for individual teachers. The development of school norms which support the continuous study and improvement of teaching builds capabilities for any kind of change, whether it be adoption of a new curriculum, school-wide

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discipline policies, or the building of teaching repertoires. By building permanent structures for collegial relationships, schools can organize themselves for improvement in whatever area they choose.

Despite the potential for increasing effectiveness of inservice training, few programs incorporate coaching as a component of training. Servatius and Young (1985) suggested typical training programs neglect to provide coaching possibly because it is perceived to be logistically impractical, expensive, or threatening to the participant. Peer coaching may be problematic if (1) the peer is not an expert in the use and training of the new techniques, (2) the peer is not respected as an expert, being just "the teacher down the hall," or (3) the peer does not possess the interpersonal skills necessary for supportive, growth-producing coaching (Sparks, 1983b). These problems may also apply to coaching by a supervisor. A principal, especially, may not have the time or inclination to become an expert in the teaching methods and the necessary consulting skills. The problem of evaluation tends to create feelings of resistance on the part of the teachers when a supervisor or principal participates in the coaching process.

Trainer coaching. A promising, but expensive, solution is to have the person providing the training be the coach. This person is likely to be a highly respected expert. Berman and McLaughlin (1978) noted the importance of in-class assistance as one of the activities frequently occurring in effective change programs. Stallings and Mohlman (1982) provided coaching for those teachers who

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requested extra help in a recent study of teacher change and school policies. They reported the technique helped some of the teachers make significant changes in their teaching style.

Showers (1983b) designed a study to examine the relationships among training components, treatment conditions (coaching and no coaching), teacher transfer of training, and student outcomes. Showers selected and trained 25 volunteer seventh- and eighth-grade language arts and social studies teachers from two Oregon districts to use three new teaching models. After seven weekly, three-hour training sessions in the new models, Showers randomly selected and coached nine of the teachers five times. Data were collected on the transfer of training of the new teaching strategies and on student outcomes. Showers concluded that teachers who participated in an inservice which used theory, demonstrations, practice and feedback, and coaching transferred newly learned teaching strategies to classroom use. "Trainer coaching strongly influenced teacher transfer of training but transfer of training did not affect student outcomes in the ways predicted" (Showers, 1983b, p. 27).

Servatius and Young (1985), in their report about the outcome of the EDC Teacher Advisor Program (an advisor coaching inservice program utilizing teachers trained in two new teaching strategies), stated the most productive outcome had been that teachers who received both training and coaching implemented the trained skills correctly and consistently. The researchers felt several factors interacted to produce successful implementation through coaching: (1) classroom visitations promoted accountability; (2) support and companionship

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developed between advisor and advisee; and (3) teachers were provided with specific feedback, so they truly learned whether or not they were implementing the skill correctly. In addition, teachers who participated in the EDC Teacher Advisor Program reported overwhelming positive feelings about the experience, especially about receiving positive feedback from advisors who were trained in the new teaching strategies.

Recently, Sparks (1983b) examined the effects of three combinations of training activities on classroom teaching behavior. Three groups of six junior high school teachers participated in five Effective-Use-of-Time workshops. Teachers in one group conducted two peer observations between workshops; teachers in the second group were coached individually by the trainer; and teachers in the third group received only the workshops with no extra feedback or coaching. The teachers in the workshops plus peer observations group and trainer-coaching group improved more than did the teachers in the workshops-only group. It appeared that peer observation may have been more powerful than coaching in producing improvements in teaching behavior. One reason cited for the effectiveness of the peer observation was that the peer observers were involved in the analysis and coding of teacher and student behavior. This experience may have made them more aware of their own behavior and thus more able to analyze and make changes in their own teaching. Thus, the purpose of the coaching was more for "fine-tuning" of skills rather than incorporating a completely new teaching strategy.

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Few studies have been conducted on the effectiveness of trainer coaching in improving the transfer of teaching skills. Showers' and Stallings' studies demonstrate that outside consultants can coach successfully. "It is unrealistic, however, to view the services of consultants as a substitute for on-going collegial coaching" (Showers, 1983a, p. 27). Berman and McLaughlin (1978) concurred when they recommended concrete on-going training by local people if school districts expected changes from innovative projects. Joyce and Showers (1981) described teaching as "the second most private social activity." Coaching offers an alternative if the isolation of the classroom is to be broken, teachers are given a chance to observe others so they can compare their own skills, and a sharing of ideas across classrooms is fostered. Coaching is perhaps the best strategy currently available for improving instructional skills. Evidence is accumulating that local people can serve as effective coaches.

Clearly, the concept of coaching, peer and trainer, continues to be an educational issue. Results of research are certainly not conclusive, either in proving the effectiveness or ineffectiveness of this concept. Although coaching is labor-intensive, expensive, and time-consuming, further research is necessary. The concept continues to be a potentially effective training device, especially if the inherent problems can be identified and addressed. Additional research may help to further define the potential of coaching.

In summary, this section of the literature review focused on inservice education for teachers as structured learning activities

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designed to assist teachers to develop and utilize skills that will make them more effective. Researchers tended to agree that the most effective inservice programs evidenced presentation of theory, demonstration, practice, and feedback. Most, although not all, researchers also contended there were trends toward local responsibility for and school-based delivery of inservice education. The most effective inservice tended to be carried out over a period of time with participants involved in the planning of content and delivery. Principals played an important role in the success of inservice programs, although whether principal delivery of the workshop was part of that role was at issue. The effectiveness of coaching, peer and trainer, as part of inservice training appears to be an issue that is in need of more study.

Active Participation

Active participation, the teaching behavior which served as the subject of examination in the study, is focused upon in this section of the review of literature. This review includes: (1) overview of active participation, (2) components of active participation, and (3) applications of research findings.

Overview of Active Participation

In recent years, public confidence has been shaken by the realization that the academic performance of students (as measured by standardized tests) has been declining. In their reviews of research on teacher behavior, Rosenshine and Furst (1971) and

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Rosenshine (1976) asserted that the instructional behavior manifested by a teacher in the classroom influences student growth. Partially in response to this situation, administrators and teachers have given more attention to the need to maximize student learning. Much attention has been given to the specific behaviors of teachers and students, teacher-student interactions as related to student learning, and teaching as viewed in the natural setting (Pratton & Hales, 1986). As an aid in identifying effective strategies of instruction, the literature on how people learn was thoroughly investigated.

Although studies on teacher behaviors and teacher effects have been reported since 1940, the modern era of this research began in the 1960's with the work of investigators such as Flanders, Medley, and Mitzel. These researchers attempted to identify what type of teaching created effective learning. To acquire accurate research on teacher behaviors, they used the teacher rather than the student as the unit of analysis according to Medley (1979). To synthesize these early studies, generally four types of teaching models were identified: (1) social interaction, (2) information processing, (3) personal source, and (4) behavior modification (Rosenshine, 1976; Silvernail, 1979). Two general modes of teaching were identified, and they were described as "direct" and "indirect" teaching. The "direct" mode employed methods of lecture and information processing, whereas the "indirect" mode dealt with discussion and discovery methods. These methods, coupled with findings from his interaction analysis, caused Flanders to postulate "that pupils' learning is affected by teacher influence in

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the classroom and this influence is established through verbal behavior" (Silvernail, 1979, p. 14).

During the period of time Flanders was investigating teacher characteristics, there was a shift in several areas of research interest. Educational theorists and researchers began to abandon all-encompassing theories and models which failed to explain teaching-learning in the past and began to concentrate on more specific behaviors of both teachers and students. Theorists began to correlate teacher and student interaction in terms of learning and achievement. Coleman, in his 1966 study of equality of educational opportunity, maintained that "the quality of teachers shows a stronger relationship to pupil achievement than facilities and materials." He went on to state that the variation in school averages of teachers' characteristics accounted for a higher proportion of variation in student achievement than did all other aspects of the school combined excluding student body characteristics.

Brophy's (1979b) and Medley's (1979) reviews of the research found that in effective teaching (where pupils achieve): (1) more time is spent on and allocated for teaching, and there is greater pupil encouragement in lesson-related activity; (2) classroom management results in more productive time and less distraction from learning; and (3) the method of instruction could be characterized as direct instruction where there is more structured, teacher-directed, whole class interaction and more active supervision of work. Both Brophy and Medley found that effective behaviors vary according to the

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learning context and that few specific behaviors are appropriate for all situations.

Silvernail (1979) summarized several research studies and found there were several factors involved with the teaching-learning act that had a direct effect on student achievement as a result of specific teacher behavior. They were: (1) flexibility in teaching style, (2) feedback, (3) questioning strategies, (4) structuring activities (planning and active participation), (5) clarity (lesson organization), (6) task-oriented teaching, (7) enthusiasm, (8) rewards (individual), and (9) class climate (allowing for involvement, affiliation, and cohesiveness).

Good and Brophy (1984) found that opportunities for students to immediately practice newly learned skills, together with the opportunity for immediate corrective feedback, were very important for student achievement. Thus, the most successful teachers, in terms of pupil gain, conducted group lessons by giving initial demonstrations and then quickly moved around having each student try out what had been demonstrated and provided feedback on an individual basis.

Teacher effectiveness may be defined as the contribution of the teacher behavior to pupil achievement. While many variables affect pupil achievement, the best effectiveness research has focused on what Bloom (1976, 1984) called alterable variables, that is, those teacher behaviors, strategies, or activities which can be adjusted to increase probabilities that learning will take place. Bloom (1976) focused on four major instructional strategies which affect student

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learning: teacher cues, student participation, reinforcement, and feedback/correctives. Student participation is the one of major interest in this study. Bloom discussed twenty studies of classroom situations that have included measures of participation. These studies were done at all levels and included precise accounts of the amount of student participation and practice in groups of students. In general, about 20 percent of the variation of achievement of individuals could be accounted for by their participation in the classroom learning process. Bloom concluded that the amount of active participation in the learning (overt and covert) is an excellent index of the quality of instruction for the purpose of predicting or accounting for individual student learning.

Bloom (1984), in later research on active participation, compared student learning under conventional instruction with tutoring. He concluded that approximately 20 percent of the students probably would not do any better under a tutoring situation than they already did under conventional instruction. In contrast, about 80 percent of the students did poorly under conventional instruction as compared with what they might have done under tutoring. He concluded that this, in part, results from the unequal treatment of students within most classrooms. Observations of teacher interaction with students in the classroom have revealed that teachers frequently direct their teaching and explanations to some students and ignore others. They encourage active participation in the classroom from some students and discourage it from others. According to several studies,

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teachers typically give students in the top third of the class the greatest attention and students in the bottom third of the class receive the least attention and support. Teachers are frequently unaware of the fact they are providing more favorable conditions of learning for some students than for other students. Generally, the teachers are under the impression that all students in their classes are given equality of opportunity for learning.

Nordin (1980) completed a study on improving instruction by finding ways of improving teacher cues and explanations for students as well as increasing the active participation of students. He concluded that teachers could be taught ways to be more responsive to most of the students in the class, secure increased participation of the students, and insure that most of the students understood the explanations the teacher provided. The observers noted the students in the enhanced participation and cue classes were actively engaged in learning about 75 percent of the classroom time, whereas the control students were actively learning only about 57 percent of the time.

Hunter (1976) stated that teachers are central to effective learning:

> Of the many factors critical to students' successful achievement in school, one of the most important is the professional competence of teachers. This competence is based on what a teacher does, not on what a teacher is. When teachers' plans are based on sound theory, then implemented with an artistry that incorporates fundamental principles of human learning, students will learn. If these principles of human learning are violated or neglected, learning will be impeded. (p. 1)

Hunter (1976) attempted to merge various concepts from learning

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theory with concepts derived from studies on effective teaching to form a theoretical framework of instruction that can be applied in school settings by classroom teachers. Her basic tenet was that learning is enhanced by efficient and effective teaching. Hunter believed that teacher behavior has definite effects, either positive or negative, on student learning and, furthermore, that the teacher ought to be both skilled and knowledgeable enough to consciously use those behaviors relative to the learning at hand.

In her theoretical framework, Hunter (1976) identified four major components that enhance the students' learning: (1) teaching to an objective, (2) selecting objectives at the correct level of difficulty, (3) monitoring and adjusting student progress toward objectives, and (4) applying principles of learning. She stated some principles of learning which, when applied, she believed will increase the probability and efficiency of student learning. Some of Hunter's principles of learning are motivation, transfer, retention, and reinforcement theory. Within the principles of learning is a component called "active participation."

Recent developments in educational research have demonstrated conclusive empirical evidence relating specific behaviors to student learning (Brophy, 1979b). Research indicates that getting all students actively involved in the learning will increase student achievement. The contemporary educator, Goodlad (1983), stated:

> Being a spectator not only deprives one of participation, but also leaves one's mind free for unrelated activity. If academic learning does not engage students, something else will. (p. 4)

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Elaboration and discussion of active participation, one strategy for effective teaching, is provided in the next subsection of the review of literature.

Components of Active Participation

If students are to learn by doing, there is a need to get all students to do so. This is called active participation. The definition of active participation, types of active participation (covert and overt), wait-time, and techniques which create equal participation are discussed in this subsection.

Active participation is defined as the deliberate and conscious attempt on the part of the teacher to cause all students to participate in activities congruent with the learning throughout the lesson (Bloom, 1976, 1984; Cummings, 1985; Hunter, 1976). One of the hallmarks of successful teaching would appear to be keeping pupils actively engaged in productive activities rather than waiting for something to happen. Effective teachers keep all students actively engaged because they have high expectations for all students. They do not "write kids off" because of the student's background or attitude. They assume responsibility for teaching all students, not just those who want to learn. They are always looking for new ideas when old strategies no longer work. These expectations and attitudes create a "self-fulfilling prophecy" (Brophy & Evertson, 1981). If one believes a student can learn, one persists in teaching that student until the learning occurs.

The teacher's expectations may determine who is actively

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participating in the classroom. Active participation in classroom activity is not fairly distributed. Low achievers who probably need it the most experience it the least. In many cases, it is the teacher's expectations that these students are low achievers which determines their lack of opportunity to respond in the classroom (Cooper, 1979).

Teachers smile more often and nod their heads more if they perceive a student as bright. These same students are given more opportunity to respond in class and are given more positive and encouraging feedback than low achievers. Students for whom a teacher has low expectations: (1) are given less time to answer a question; (2) experience more call-outs by other students if they should as much as pause in answering a question; (3) are less likely to have the teacher elaborate on their answers; and (4) receive astonished looks from the teacher when the answer is correct, which communicates low expectations (Cornbleth, Davis, & Button, 1974).

It is easy to see how this self-fulfilling prophecy continues to be reinforced. The teacher asks a question and a few hands go up, and the teacher calls on someone. That someone is generally a bright student who knew the answer immediately. Or the teacher may use a student's name at the beginning of the question which allows the remainder of the students to not listen. Unconsciously, teachers want students to have correct answers. It is easier to call on someone who has the right answer. This provides the teacher with positive reinforcement about his or her teaching, which makes the teacher feel better.

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If a low achiever is called upon and gives an incorrect answer, it is a poor model for others to hear. The teacher must then take time to respond to the incorrect response. The momentum of the class may be slowed down if reteaching of the same material must occur, and this reteaching will take time, something a teacher does not feel she or he has because of the need to cover the material (Good & Brophy, 1984).

One questioning strategy heard consistently at all grade levels begins with: "Who can tell me . . ." This "who can tell me" preface to a teacher's question subtly reveals expectations; some students will have the answers, some will not. Research indicated that those students with low academic self-concept tune out the questions entirely as soon as the cut "who can tell me" is given (Cummings, 1985).

Cooper (1979) developed a model to describe the effects of teacher expectations on student performance:

1. Teachers have different expectations for student performance depending upon ability and background.

2. Teachers find that when low expectation students respond they have less control over student responses, and the interaction is less likely to end successfully.

3. Low expectation students are less likely to respond. They develop the belief the teacher, not student effort, determines success.

5. A self-fulfilling prophecy has begun.

To ensure that expectations are not influencing who is called upon, consistent involvement of all learners is imperative. Anderson and Faust (1973) suggested that three levels of active response may

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be distinguished. At the first level, the student is required to read, listen, or watch. At the second level, he or she is required to make a particular covert response. And, finally, at the third level, the student is required to make a particular overt response.

When students read silently, they are making active responses. To be sure, unless they move their lips, no one else can see these responses. Nonetheless, silent reading does entail active responding. When active responding stops, for any practical purpose, reading ceases. Most people have had the experience of beginning to read a book and finding they have turned several pages without the slightest idea of what has passed before their eyes. This phenomenon occurs when active engagement with the text stops. Similarly, listening and watching entail active responding. If students are not actively engaged with what a speaker is saying, they are not really listening.

At the next level, students are requested to make particular covert responses. Of course, the responses involved in reading, watching, and listening are also largely covert. But, unlike reading or listening, the response requirement at this level is quite definite and structured. Covert behavior is behavior that cannot be seen; it is the thinking behavior that has to come first. For instance, students may be asked to answer a question or solve a problem. The covert response is not publicly observable. Hence, students are directed to "think" the answer rather than to write it or to check an alternative. Or they are asked to work a problem in their head without writing down the result of any of the intermediate steps. There is

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considerable evidence that requiring particular covert responses within a lesson increases learning (Anderson & Faust, 1973; Bloom, 1976).

If teachers wish to validate that learning has taken place, they need to have the learner engage in some activity that can be seen. Teachers are eliciting overt behavior on the part of the learner. This behavior allows teachers to determine the degree to which they are moving toward the achievement of the objective.

When the response is publicly observable or leaves a publicly-observable record, it is said to be an overt response. Just as there is evidence to suggest active recitation, as compared to reading, increases recall, there is evidence the requirement to make overt responses increases learning to a somewhat greater extent than the requirement to make covert responses. Anderson and Faust (1973) discussed a study in which high school juniors and seniors were divided into three groups and shown a film. One group only saw the film; the second group not only saw the film but was involved in four covert participation sessions throughout the film. During participation sessions, the teacher read questions covering some of the points presented in the preceding section of the film. For the third group, overt participation was expected by asking the students also write the answers to the questions asked throughout the film. After the film, all students were given a posttest which resulted in the following: Students who only saw the film got 52.5 percent of the answers correct; those who made covert responses during the participation

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sessions answered 66.1 percent of the questions correctly; and those students who made overt, written responses got 70.4 percent of the answers correct. This fact indicates that, in this case at least, covert followed by overt participation increases student learning.

Cummings (1985) stressed that relevant overt responses must occur for the right reasons for learning to increase. Research demonstrates that in order for overt responses to facilitate learning, the responses must be congruent with the critical content of the lesson. Bloom (1976) suggested that not all participation must be overt and observable. If the students are actively participating in a covert way, that may be as effective under some conditions as overt participation. It is likely that overt participation may be especially needed for young children to learn, while covert participation, if it can be ensured, is highly effective for older learners.

The fact that covert responses improve upon simple reading, watching, or listening indicates the need for covert responding to precede overt responding. However, overt responses are superior to covert responses. Anderson and Faust (1973) suggested that the causative factor of "degree of activity" is the main reason why overt responding increases learning. The more active the response that students make, the more they apparently learn. One can urge students to make a covert response, but one cannot effectively require them to because there is no way to monitor covert responses short of requiring overt ones. Covert responses, then, are fine as long as students make them. The problem is that students, particularly less conscientious

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ones or those perceived as low achievers, often stop making covert responses when they get bored or tired, or the material becomes difficult.

It must be emphasized that asking a question every now and then is not enough to satisfy the principle of active participation. If one takes seriously the principle that students learn what they do, then an active response will be required for each significant aspect of the subject matter from each learner. Not just any response will do. The student must be led to make each of the responses designated in the behavioral objectives for a lesson. Thus, requiring active involvement of all learners conveys the message that all students are held accountable for learning the subject matter, and it offers a perfect opportunity for teachers to monitor their instruction while teaching (Anderson & Faust, 1973; Bloom, 1976, 1984; Cummings, 1980, 1983).

Rowe (1976, 1978) found that for covert participation to be effective wait-time must be provided once the teacher elicits the question or activity. She also found that calling on students perceived as low achievers more often is not enough. The "I don't know" or "no" responses were often as high as 30 percent in normal classrooms. She found teachers could change this lack of a response pattern of low achievers by adding "wait-time" after asking a question and waiting after a student response. The typical rate of exchange between instructors and students is far too rapid, according to wait-time research conducted by Rowe (1978). She found that teachers typically wait one second after they ask a question for students to begin an

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answer. If they do not start to reply in that period the teacher either repeats the question or calls on another student. After the student responds, the teacher usually reacts within a second. There rarely is time for students to have second thoughts, to try alternate explanations, or to otherwise speculate about possibilities.

Rowe (1976) studied the impact of changing average wait-times (both categories of pauses) to three seconds or longer for elementary and secondary age students. The quality of expressed thought changed markedly. For example, students gave fuller explanations. They made better connections between evidence and inference. Rowe found the second pause, the one after a student makes an initial response, accounted for more of the variance in the verbal behavior of students than did the first category of pause.

Brophy (1979a) concurred with Rowe's findings. He suggested that after teachers ask a question they should wait for the student to respond and also see that other students wait and do not call out answers. If the student does not respond within a reasonable time, the teacher should indicate that some response is expected by probing.

Tobin (1987) found that in natural settings, most teachers maintain an average wait-time of between 0.2 and 0.9 seconds. Teachers are prepared to wait for the more able students, as they have an expectation they can produce a worthwhile answer if they are given the time to formulate a response. Similarly, they are also prepared to wait for lower ability students, based on an expectation that such students need more time to think. Allowing all students between 3 and

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5 seconds wait-time was associated with higher student achievement and retention. Tobin's research indicated that the number of teacher questions decreased in extended wait-time classes. The classes became more conversational and encouraged students to think at a higher level. Students were asked to understand the meaning of words and concepts as opposed to recalling the meanings. The additional time provided in long wait-time classes made the lessons more understandable for students. Less student confusion and more confidence was reported in extended wait-time classes. Tobin concluded that all questions do not require a wait-time of 3 to 5 seconds. There are many classroom contexts in which shorter pauses between speakers can be justified. For example, when rote memorization or recall of facts is required, drill and practice activities might be conducted at a brisk pace using a short wait-time.

In addition to wait-time, Cummings (1983) recommended subtle changes in how the teacher phrases questions helps increase active participation. Such an example would be: (1) "What is the difference between a noun and a pronoun?" or (2) "Think about the difference between a noun and a pronoun." "Raise your hand when you are ready with your answer."

In the first example, the teacher is likely to get a "blurter-outer"--an eager responder who deprives the rest of the class of the chance to think of the answer. The lower the level of the question, the more likely someone is to blurt out unless the question is phrased to encourage thinking, and students are told what signal to use to cue

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the teacher they are ready with an answer.

Once the students have formulated the answer, the teacher has to decide the overt technique to use to ensure student involvement in sharing the answer. Techniques to create equal participation are numerous. The techniques shared in the remainder of this subsection have been taken from the research of Anderson and Faust (1973), Cummings (1980, 1983), Doyle (1979), and Hunter (1976, 1982). If the decision is to use a single student response to ensure that expectations are not influencing who is called upon in the class, the teacher needs a technique to guarantee randomness. Examples might include:

1. Have a deck of 3 x 5 cards with a student name on each card. Shuffle the deck at the beginning of each period. Some secondary teachers record on the card whether the student attempts to answer the question. They then have a fairly accurate record of class participation.

2. When several students are needed for board work, use the "army style selection" process. Select (or have students select) a random number from 1 to 10. If the number is three, point randomly to the class list and call out every third name.

The random selection technique has a double edge to it. Students know in advance they are likely to be called upon, and they are more likely to be listening. Teachers, knowing they have an equal chance of calling on a low achiever, may provide better instruction before asking the question to avoid having to handle an incorrect response (Cummings, 1983).

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Group responding is another technique to consider in maintaining momentum and accountability. While the research is limited and mixed on the benefits of group responses over individual responses, it would seem logical to try any technique to get low achievers involved in the lesson. Group response is a way to hold everyone accountable for being on task and gives the teacher opportunity to monitor the understanding of the whole class, not just a selected few. It should also encourage more learning if all students have to mentally process information. This recitation gives students practice in retrieving information necessary for effective learning (Higbee, 1977).

Choral responding is fast, efficient, and requires no extra materials. Students are allowed to respond anonymously. Choral responding can keep students attentive without interrupting the momentum and pacing of the instruction. Such responding sometimes sounds like a "fill in the blanks lecture."

Signals are similar to choral responding in that they are efficient and require no extra materials. Signals include the use of thumbs, fingers, pointing, and gesturing to indicate an answer. Recent researchers have suggested that the use of imaging when signaling increases student learning. An example would be having the students signal the correct sign with their fingers if the problem is addition or subtraction as opposed to thumbs up for addition and thumbs down for subtraction (Hunter, 1982).

Another approach with signaling is after selecting one student to respond, the rest of the class might be asked if they agree (thumbs up), disagree (thumbs down), or not sure (thumbs sideways). Used

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occasionally, this technique works. However, when overused the results are not successful.

Individual chalkboards for the younger students and think pads for the older students have been proven to be successful. For example, all students are asked to write the answer to the math problem or the definition of a new vocabulary word in their own words or to write their own sentence showing possession.

Sharing answers with a neighbor gives everyone a chance to verbalize a more complex answer. Oftentimes, verbalization of the process for completing the math formula assists in new learning. As students are explaining to a peer, the teacher is walking around and monitoring particular students.

Cooperative grouping is a way of organizing the classroom for learning and getting all students actively involved. Students work together in small groups to complete worksheets, study for tests, and solve problems. The benefits of this structure accrue in the areas of cognitive and affective growth for the student. Cooperative grouping fosters academic achievement. The means by which students can have their questions answered immediately by their peers, more time to learn and practice, and less time waiting for the teacher to come and help them are provided (Slavin, 1980). Students need opportunities to practice new material, but it is generally accomplished alone. Yet, research supports group instruction--not totally independent--as most effective for learning. Students are more engaged during group work (Rosenshine, 1976).

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Given the choice, many students would choose to follow the law of least effort. That is, they will put no more effort into the lesson than is required of them. When teachers offer this opportunity to tune out a lesson by calling on only the eager or high achievers, the potential for low student achievement results while management problems increase. Questioning all students consistently, not eventually, during the lesson increases their active participation in the learning.

Applications of Research Findings

Research indicates that teachers should change their teaching methods to provide more equal treatment of the students in their classes. When this equal treatment of active involvement is provided the average student approaches a higher level of learning.

Pratton and Hales (1986) reported that from a theoretical viewpoint active participation should enhance student learning. The purpose of their study was to investigate this assertion experimentally by comparing student learning outcomes under two conditions (active participation and no active participation). The research hypothesis was accepted; the study confirmed that active participation does make a difference in the degree of student learning as measured by a posttest. Probably the most important conclusion to be set forth is the notion that the teachers can have positive effects on the learning of their students. McDonald (1976) reported that the Beginning Teacher Evaluation Study (BTES) found that students were engaged in a lesson only about 70 to 75 percent of the time across all students

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and teachers observed. However, for some the engagement rate was much higher, 90 percent, and for many others it was quite low, 40 percent or lower. Much needs to be done to help teachers improve student engagement rates. Perhaps the most unique finding from the BTES was that engaged time still was not enough; students had to be successfully engaged. If the performance of students is not carefully monitored, students may make a large number of errors which remain uncorrected.

Active participation has many positive benefits. Students' rate of learning increases; they learn more information and they learn it faster. This is accomplished when all students, not just one or two, are given the opportunity to rehearse information in their short-term memories. This rehearsal is essential for transferring information into the long-term memory. Thus, active participation increases retention. The more involvement the student has, the more rehearsal, the more probability that the information is imbedded in the long-term memory and can be retrieved.

Active participation helps hold students' attention and increases their accountability. If a teacher says, "I have a question and I want you to think about it, and then looks around the room to catch the eyes of all the students, he or she is increasing the probability they are thinking about that answer because they do not know which student or students will be asked to respond.

Also, active participation helps teachers assess the learning as they teach. Often, teachers wait until test time or until they collect the worksheet or assignment to find out what students are

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learning or thinking. But by actively involving them in the learning, by using activite participation techniques as they are teaching, the teacher can find out immediately where the students are in the learning process (Bloom, 1976, 1984; Hunter, 1982).

According to the research of Anderson and Faust (1973), students learn what they are led to do. Consequently, lessons should be planned so that during the course of the lesson the student actually practices the skills and applies the concepts which the lesson is designed to teach. According to the principle of active participation, to learn a concept the student must understand the concept, use it, and distinguish it from other concepts being taught. Being active and busy are not enough. Active responses must be congruent with the learning. In fact, active responses which are irrelevant to the purpose of the lesson can interfere with learning.

Research indicates that the student should be required to make a response as soon as he or she is capable of making it. This means that immediately after reading a passage, listening to a lecture, or watching a demonstration, the student should be asked to attempt a performance, answer questions, or to do whatever was intended to be taught through the presentation. The student's ability to respond correctly will deteriorate rapidly with even short delays. By much the same reasoning, lessons should be divided into short segments in which brief presentations are followed by student practice.

Forms of covert participation can involve active responses from the learner; however, there is a great deal of evidence that

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overt participation produces a sizeable increment in achievement. While covert participation, such as having students think the answer to a question to them, work a problem in their head, or engage in imaginary practice, is extremely important, the overt response is one which is publicly observable. In summary, researchers have shown that overt responses during a lesson can improve achievement by causing students to pay closer attention.

Summary

The review of the literature chapter focused upon two areas: (1) inservice training for teachers, and (2) active participation, an effective teaching behavior. The two areas served as the basis for the research problem. Can a selected inservice approach be utilized to help teachers transfer a skill into their instructional repertoire in the classroom? A significant body of research supports the notion that effective inservice programs consist of presentation of theory, demonstration, practice, and feedback. Research indicates there are ways of giving feedback to teachers on the extent to which they are providing equality of interaction with their students. The tactic of providing a peer coach and/or a trainer coach to mirror ways in which the teacher is securing covert and overt participation of the students in the learning process seems to be an excellent approach. Peer coaching was examined in numerous studies. The notion of trainer coaching by a district inservice trainer or consultant appeared to be an issue in need of more study.

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Active participation is an effective teaching behavior used by teachers. Procedures and techniques for using active participation have been clearly identified by a significant body of literature. Improvment of teachers' use of active participation is a logical focus in the investigation of the effects of peer coaching and trainer coaching and transfer of a new skill into the teachers' active instructional repertoire.

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CHAPTER III

METHODS

The purpose of this chapter is to describe the methods and procedures used to implement the study. The chapter is divided into the following sections: (1) purpose of the study, (2) research design, (3) subjects, (4) instrumentation, (4) procedures, (5) description of the inservices, and (6) data analysis.

Purpose of the Study

The purpose of this study was to test for differences among three levels of inservice intensity in the transfer of a skill into the teacher's instructional repertoire in the classroom. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, practice with feedback

Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

The following research questions were formulated to measure the effects of the levels of inservice intensity on the use of active participation measured on the pretest and posttest videotaped scores:

1. Will there be a significant difference in teacher use of an instructional skill given the three levels of inservice intensity?

2. Will there be a significant difference in ratings between the pretest and posttest scores?

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3. Will there be a significant interaction between the three levels of inservice intensity and teacher use of an instructional skill on pretest and posttest ratings?

Research Design

The framework for the three levels of inservice intensity is shown in Figure 2. The framework conjectures that: (1) there are essential components of an effective inservice workshop; (2) effective inservice is carried out over a long period of time; and (3) practice and feedback through coaching and/or peer coaching are an integral part of effective inservice programs. Therefore, inservice training on effective teaching behaviors (i.e., active participation) begins with a skilled inservice trainer who trains teachers. Teachers use the new content and practice skills in their own classrooms while being observed by the inservice trainer and/or a colleague who provides feedback. The framework suggests that interaction between inservice trainers and teachers via the coaching or peer coaching cycle will result in positive change in teachers' classroom behaviors.

The research design employed in this study was quasi-experimental in nature, using three treatment groups and repeated measures of the teaching behavior. The experimental groups were trained, coached, and/or peer coached in a teaching behavior, active participation. The control group was trained but not coached and/or peer coached in the teaching behavior, active participation.

The research design used in the study is presented in Figure 3. Teachers were randomly assigned to one of the following training

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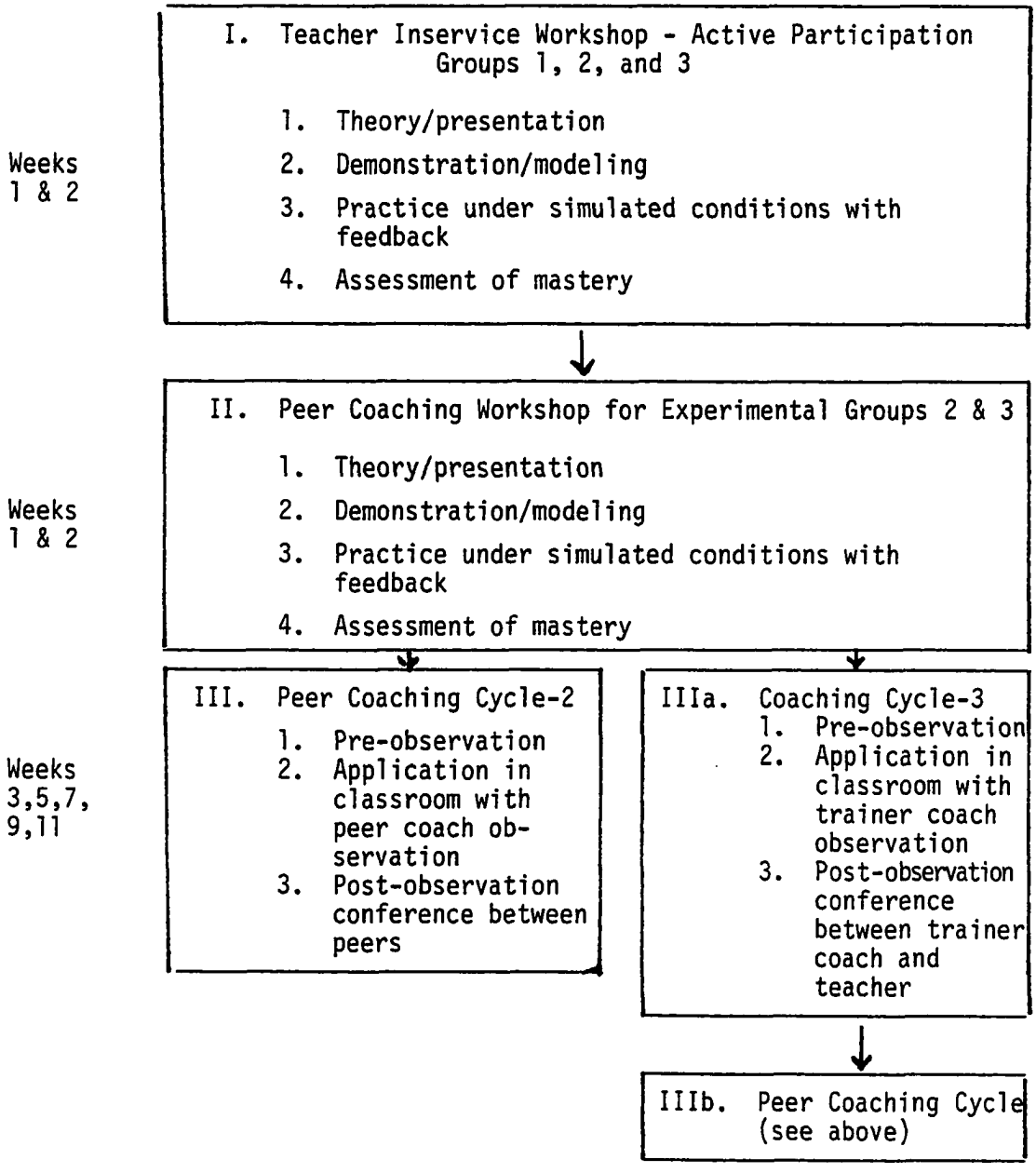

FIGURE 2

Selected Inservice Approaches

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groups: (1) Level 1 control group that received only inservice training, (2) Level 2 experimental group that received inservice training and peer coaching, and (3) Level 3 experimental group that received inservice training, peer coaching, and trainer coaching.

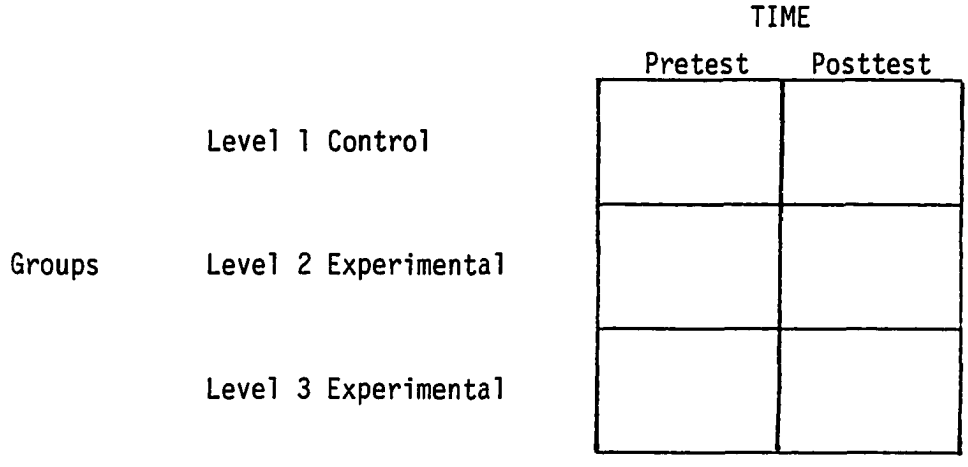

FIGURE 3

Research Design

The two factors were levels of inservice intensity and active participation. The dependent variable was measured by videotaping teachers' instructional lessons in the classroom and scoring the performance for use of active participation.

Subjects

The subjects used in this study were secondary teachers from Westside High School in Omaha, Nebraska. Westside High School is a high socioeconomic level suburban school of 2100 students in grades

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nine through twelve. Twenty-four teachers participated in the study. Pertinent demographic data about the teachers are presented in Table 1. Ten teachers were female and 14 male. The average number of years of classroom teaching experience was 18.5. All teachers taught more than one grade level, most tenth through twelfth grades. The average number of students per class was 22.6 with a range of 16-30. Subjects taught by the teachers included science, home economics, mathematics, English, social studies, health, foreign language, business education, and music. Nine teachers had previous instruction in a district course, Instructional Theory into Practice (ITIP), which includes a brief discussion of active participation.

The 24 sample volunteer teachers were grouped into eight matched groups of three. The demographic data were used as criteria for determining the matched groups. According to Borg and Gall (1979), the main purpose of matching is to reduce the initial differences between the experimental and control groups on the dependent variable or a related variable. This matching technique is used when samples are small and when large differences are not expected. To help the researcher determine the subjects' knowledge and use of active participation, each teacher's teaching was assessed by previewing a pre-videotape of each subject teaching. Following the matching procedure, the researcher randomly assigned the teachers in each matched trio to one of the three training groups. The 24 teachers were personally notified by the researcher of their group assignment.

The distribution of the teachers into the three training groups is presented in Tables 2 through 4. Four teachers in Group 1

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TABLE 1

Demographic Data for Teachers Participating in the Study (N=24)

Teacher Code	Gender	Number of Years of Classroom Teaching	Grade Levels Taught	Average Number of Students per Class	Subjects Taught	Previous Instruction in Active Participation
5653	F	15	10-12	20	French	No
8380	M	19	10-12	18	Vocabulary Enrichment/ Foreign Language	Some
7083	M	28	10-12	18	Geology/Zoology	No
0456	M	19	10-11	20	Journalism	Some
2262	F	14	10-12	27	Geometry/Algebra	No
9643	M	25	9-12	25	Chemistry/Physics	No
1903	F	16	11-12	23	Accounting	Some
0463	M	2	11-12	25	Biology/Chemistry	No
7767	F	25	10-12	16	Business Systems/Procedures	Some
1450	M	1	10-12	17	Business Law	No
5330	M	22	9-11	17	Social Studies	No
8771	F	9	10-12	25	Pre-calculus, Calculus Basic Arithmetic	No
9727	M	32	10-12	25	Physics	No
4763	M	29	9-10	25	Biology	Some
8980	F	13	10-12	21	Home Ec./Child Development	Some
4345	M	25	9-10	28	English/Music	No
8643	F	9	9-10	30	Health/First Aid/P.E.	Some
9584	M	21	11-12	24	Chemistry	No
7301	M	14	10-12	28	Geometry/Algebra	No
3450	M	19	10-12	20	Composition/Literature	No
7841	F	17	11-12	20	Marketing/Computers	Some
7441	F	16	9-12	24	Foods/Interior Design	Some

TABLE 1 (continued)

Teacher Code	Gender	Number of Years of Classroom Teaching	Grade Levels Taught	Average Number of Students per Class	Subjects Taught	Previous Instruction in Active Participation
9227	F	20	10-12	23	French	No
0198	M	34	10-12	25	Social Studies	No
		$\bar{X}$ = 18.5		$\bar{X}$ = 23		

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TABLE 2

Demographic Data for Teachers Participating in Group 1 (N=8)

Teacher Code	Gender	Number of Years of Classroom Teaching	Grade Levels Taught	Average Number of Students per Class	Subjects Taught	Previous Instruction in Active Participation
8643	F	9	9-10	30	Health/First Aid/P.E.	Some
9584	M	21	11-12	24	Chemistry	No
7301	M	14	10-12	28	Geometry/Algebra	No
3450	M	19	10-12	20	Composition/Literature	No
7841	F	17	11-12	20	Marketing/Computers	Some
7441	F	16	9-12	24	Foods/Interior Design	Some
9227	F	20	10-12	23	French	No
0198	M	34	10-12	25	Social Studies	No
		$\bar{X}$ = 18.75		$\bar{X}$ = 24.25		

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TABLE 3

Demographic Data for Teachers Participating in Group 2 (N=8)

Teacher Code	Gender	Number of Years of Classroom Teaching	Grade Levels Taught	Average Number of Students per Class	Subjects Taught	Previous Instruction in Active Participation
7767	F	25	10-12	16	Business Systems/Procedures	Some
1450	M	1	10-12	17	Business Law	No
5330	M	22	9-11	17	Social Studies	No
8771	F	9	10-12	25	Pre-calculus, Calculus/ Basic Arithmetic	No
9727	M	32	10-12	25	Physics	No
4763	M	29	9-10	25	Biology	Some
8980	F	13	10-12	21	Home Ec./Child Development	Some
4345	M	25	9-10	28	English/Music	No
		$\bar{X}$ = 19.5		$\bar{X}$ = 21.75		

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TABLE 4

Demographic Data for Teachers Participating in Group 3 (N=8)

Teacher Code	Gender	Number of Years of Classroom Teaching	Grade Levels Taught	Average Number of Students per Class	Subjects Taught	Previous Instruction in Active Participation
5653	F	15	10-12	20	French	No
8380	M	19	10-12	18	Vocabulary Enrichment Foreign Language	Some
7083	M	28	10-12	18	Geology/Zoology	No
0456	M	19	10-11	20	Journalism	Some
2262	F	14	10-12	27	Geometry/Algebra	No
9643	M	25	9-12	25	Chemistry/Physics	No
1903	F	16	11-12	23	Accounting	Some
0463	M	2	11-12	25	Biology/Chemistry	No
		$\bar{X}$ = 17.25		$\bar{X}$ = 22		

were female and four male. Three teachers in Group 2 were female and five male. Three teachers in Group 3 were female and five male. The average number of years of classroom teaching for teachers in Group 1 was 18.75, in Group 2 was 19.5, and in Group 3 was 17.25. The average number of students per class in Group 1 was 24.25, in Group 2 was 21.75, and in Group 3 was 22. Subjects taught by the teachers in Group 1 were mathematics, science, business education, English, social studies, health, foreign language, and home economics. Subjects taught by the teachers in Group 2 included mathematics, science, business education, English, social studies, and home economics. Subjects taught by the teachers in Group 3 included mathematics, foreign language, science, business education, and English. Three teachers in each group had previous instruction in a district course, Instructional Theory into Practice (ITIP), which includes a brief discussion of active participation.

Instrumentation

The researcher found virtually no instruments designed to assess the teaching behavior, active participation. Instruments were developed specifically for this study. Instruments were developed after a thorough examination of the literature pertinent to effective teaching behaviors, especially active participation. The instruments were examined by professionals knowledgeable in instrumentation. Research consultants from Educational Evaluation Consultants, Inc., in Long Beach, California, who were familiar with instrumentation

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as well as active participation, carefully guided the development of the instruments.

Videotape

Videotaping provided visual as well as audio replay of the teaching behavior of active participation. Schueler, Lesser, and Dobbins (1967) reviewed the possibilities of the videotape technique.

> Video tape shares the same properties and potentialities as sound tape; but with the addition of a moving visual image, it opens an even wider field of application than does sound tape. In language recording, it provides a more multidimensional communication image, since facial expression and gesture are as much a party of speech as sound production. For the function of self-appraisal, it provides not simply the mirror image, that one has learned to accept, but the image that others see. In theory at least, it can provide learning applications in any situation in which the projection of one's own sound and sight image is desirable. The act of teaching is an obvious example. (p. 23)

The operation of the video equipment was performed by qualified high school personnel. All videotapes were forwarded to the investigator. The tapes were analyzed by two expert raters knowledgeable in the use of active participation. Intra-rater reliability was established with each rater. Intra-rater reliability is a method of comparing one person's ratings of an evaluation, assessment, or test over the course of time. Each expert rater was sent two tapes to code for active participation, once in November 1987 and again in January 1988. Codings for each tape were consistent from November to January for each rater. Inter-rater reliability was established between the two raters as well. Inter-rater reliability is a method of comparing what one person perceives to what another person perceives on an

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evaluation, assessment, or test. To determine inter-rater reliability on the active participation coding forms, both evaluators and the investigator together viewed videotapes of teachers teaching and coded active participation. After two work sessions the two evaluators and the investigator established the inter-rater reliability of .93.

Active Participation Coding Instrument

The active participation coding form was developed after (1) reviewing the literature on teaching behavior, especially active participation, (2) analyzing salient characteristics of active participation, and (3) specifying representative examples of each salient characteristic of active participation (see Appendix D). This instrument was used by the videotape raters to code for the presence or absence of the salient characteristics of active participation strategies observed on the pre- and post-videotapes of all participants teaching. The instrument was also used by the trainer coach and peer coaches when observing a teacher in the classroom to record data for a post-observation conference.

After the videotape evaluators coded each tape for presence or absence of the salient characteristics of active participation, they summarized the pretest and posttest results on a Summative Evaluation form. A five-point Likert scale was used. The expert raters selected one of five judgments for each of the six salient characteristics: (1) was not observed, (2) rarely, (3) sometimes, (4) frequently, and (5) almost always. A reliability analysis was

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completed on the pretest and on the posttest active participation Summative Evaluation form. Total scores for the pretest and the posttest were computed and frequencies and descriptive statistics were obtained. Coefficient Alpha was derived for the pretest (α = .88) and the posttest (α = .91). Given the high reliability coefficients and item-total correlations, the scales were judged to be internally consistent and all items were retained for both scales.

Use of Human Subjects

The University of Nebraska Institutional Review Board for the Protection of Human Subjects reviewed this project and concluded that the rights and welfare of the human subjects were adequately protected, that risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of data was assured, and that informed consent was obtained by appropriate procedures.

Procedures

Between September 1987 and December 1987, the researcher met with the principal at Westside High School. The principal was interested in gathering data on inservice training at the secondary level with the hope of implementing a more effective inservice approach for an aging staff.

Permission to conduct this study was obtained from the superintendent of schools in the Westside Community Schools. Video recorders, monitors, and tapes for the project were subsequently

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supplied by the Westside Schools.

In December 1987, the researcher presented the proposed research plan and the objectives of the study to the entire high school staff (see Appendix B). Teachers were asked to participate on a voluntary basis and told that a total of 30 volunteers were needed. Again after meeting with individual departments to recruit more participants, the researcher only secured 24 teachers willing to participate. Specific guidelines of the study were discussed with those 24 volunteers, pre-videotaping dates were arranged for the beginning of January 1988, and the two inservice dates on the effective teaching behavior and peer coaching were set for mid-January 1988 (see Appendix A).

The inservice training for this study focused on active participation for Level 1, 2, and 3 group participants and peer coaching for those in Levels 2 and 3 experimental groups to facilitate effective teacher use of active participation in the classroom. The inservices were developed and conducted by the researcher. The inservices focused upon active participation theory, demonstration, and practice with feedback and peer coaching theory, demonstration, and practice with feedback.

To assess the teachers' basic knowledge and understanding of the teaching behavior, the Cognitive Comprehension Mastery of Active Participation (see Appendix C) was administered at the completion of the inservices. All teachers displayed cognitive mastery of active participation by correctly answering all eight

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questions. Each participant also demonstrated understanding during practice with the feedback portion of the inservice.

At the last inservice, participants in the Level 2 and Level 3 experimental groups chose a peer coaching partner within their level. They set specific time schedules for working together. The inservice trainer set specific coaching times with all participants in the Level 3 group.

During the ten weeks following the inservice workshops, late January to early April 1988, the inservice trainer (researcher) coached Level 3 participants for transfer of the skill into the classroom. The trainer worked with each teacher five times, equally distributed over the ten-week period. The teachers in the Level 2 and Level 3 experimental groups completed five peer coaching cycles within the ten-week period by observing and providing feedback for their partner.

In April 1988, all 24 participants were videotaped for the post-assessment. To help alleviate the Hawthorne effect, each teacher submitted several possible videotaping dates to the videotaping technician. The technician then decided the exact videotaping date and gave the teachers no prior notice. Once the post-videotaping was completed, the tapes were returned to the researcher. The tapes were mailed to the professional evaluators to be analyzed, coded, and evaluated for summative results.

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Description of the Inservices

The major thrust of the three selected inservice approaches was to determine which level of intensity made a difference in the transfer of a skill and knowledge gained by teachers in the inservices to their instructional repertoire in their classrooms. More explicitly, in this study the researcher was looking for more frequent teacher use of active student participation in secondary classrooms. Level 1, 2, and 3 subjects in the study participated in the inservices on active participation. The objectives of the inservice training were to enable teachers to:

1. develop knowledge and understanding of the teaching behavior, active participation;

2. identify techniques and strategies associated with active participation; and

3. adopt effective techniques which elicit active participation for use in their own classrooms.

Instructional Content--Active Participation

A considerable amount of research was found dealing with active participation. For the inservice training in this study, the researcher focused attention on the critical attributes of active participation, types of active participation (covert and overt), active participation strategies, and abuses of the use of active participation. The content focused upon could be infused into all subjects via the strategies outlined in the inservice. The inservice

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framework was designed to influence teachers at four levels of understanding resulting in: (1) awareness of the theory base underlying effective use of active participation, (2) intellectual control over relevant content, (3) acquisition of skills for action, and (4) transfer of concepts, principles, and skills to the classroom.

Inservice Components

The inservice had four components: (1) presentation of theory, (2) modeling/demonstration, (3) practice in simulated settings, and (4) feedback.

Presentation of theory. The rationale, theoretical base, research, and description of active participation were presented. This aspect of the workshop was designed primarily to raise awareness, establish a conceptual base, share current research, and enhance application of effective active participation techniques and theory in the classroom.

Modeling/demonstration. As the researcher led the instruction, effective active participation strategies illustrating the content identified earlier were modeled. Videotapes of teachers teaching at the secondary level using active participation strategies in the classroom were previewed and discussed.

Practice in simulated settings. Teachers worked in groups to examine a videotape of a classroom session identifying use of both effective and ineffective active participation strategies.

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Ideas for eliciting more effective ways for student involvement were suggested by group members following the tape preview on ineffective use of active participation strategies. Teachers then coded for use of active participation as they observed a second portion of a classroom session.

Feedback. Immediate feedback was given to teachers by the trainer and colleagues about identification of effective and ineffective active participation strategies as well as on their list for eliciting more effective ways for student involvement. Teachers received feedback on their coding practice through group discussion among the teachers and the inservice trainer following observation of the videotape.

For participants in the Level 2 and Level 3 experimental groups, the ideas and strategies were intended to identify and strengthen, through practice and feedback via coaching and peer coaching, teaching behaviors which relate to and influence the effectiveness of teacher use of active participation in the classroom. The objectives of the inservice training on peer coaching were to enable teachers to: (1) develop knowledge and understanding of peer coaching; (2) list and explain the major functions of peer coaching; and (3) demonstrate a peer coaching process.

Instructional Content--Peer Coaching

The content of the inservice training on peer coaching included the following: (1) the major functions of peer coaching,

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(2) the guidelines for implementing a peer coaching process, (3) effective feedback techniques, and (4) peer observation and coaching.

Inservice Components

The workshop had five components: (1) presentation of theory, (2) modeling/demonstration, (3) practice in simulated settings, (4) feedback, and (5) coaching for application.

Presentation of theory. The rationale, theoretical base, research, and description of peer coaching were presented. This aspect of the workshop was designed primarily to raise awareness, establish a conceptual base, and discuss the role of peer observation and feedback in the transfer of skills and knowledge to teacher behavior.

Modeling/demonstration. Teachers previewed a videotaped lesson modeling the five steps of the peer coaching process. All five steps of the process were modeled: pre-observation conference, observation of the tape, analysis of the lesson, post-observation conference, and critique of the entire process. The participants then viewed a videotape of a secondary teacher teaching an English lesson. The inservice presenter coded (displayed on the overhead) for use of active participation. Following the previewing of the tape, the inservice presenter role-played the five steps of the peer coaching process with another teacher within the group. Examples of effective feedback procedures were modeling citing specific examples for teacher use of active participation.

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Practice in simulated settings. Teachers worked in groups to examine poorly phrased feedback statements and to rewrite them to practice development of reinforcement statements. All teachers participated in a peer coaching process by teaching to a small group a prepared five-minute lesson which incorporated active participation techniques. Each teacher practiced coding active participation techniques and giving effective feedback to the teacher teaching the lesson.

Feedback. Immediate feedback was given to teachers by both the trainer and colleagues about their practice in development of effective feedback statements. Feedback concerning the peer coaching process was discussed with each small group as teachers taught a five-minute lesson and other teachers practiced coding active participation strategies and giving each other feedback.

Coaching for application. The role of peer observation and feedback in the transfer of skills and knowledge to teacher behavior was discussed in the workshop. The peer and trainer coaching components of the inservice approaches were discussed and procedures for coaching were outlined.

Data Analysis

This study used a two-factor design with repeated measures on the second factor. The two factors were: (1) levels of inservice intensity, and (2) active participation measured on the pretest and

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posttest videotaped scores.

Empirical research strives generalizability of findings through random assignment (Borg & Gall, 1979). In this study, teachers were matched according to predetermined criteria and randomly assigned to the experimental or control groups. The random assignment of teachers ensured generalizability of this study's findings.

Treatment consisted of inservice training on active participation for Level 1; inservice training and peer coaching for Level 2; and inservice training, peer coaching, and trainer coaching for Level 3. The experimental teachers were trained and coached and/or peer coached; the control teachers received training but not peer coaching or trainer coaching in active participation.

Descriptive statistics (i.e., means, standard deviations) were calculated on the results of the pretest and posttest scores. Analysis of variance was used to determine differences between and within and the interaction effects between the tests and the levels of inservice intensity. This type of analysis of variance reduces the experiment-wise (Type I) errors and gives a more powerful analysis than a t test.

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CHAPTER IV

PRESENTATION OF THE DATA

The purpose of this study was to test for differences among three levels of inservice intensity in the transfer of a skill into the teacher's instructional repertoire in the classroom. The following research questions were formulated to measure the effects of the levels of inservice intensity on the use of active participation measured by the pretest and posttest videotaped scores:

1. Will there be a significant difference in teacher use of an instructional skill given the three levels of inservice intensity?

2. Will there be a significant difference in ratings between the pretest and posttest scores?

3. Will there be a significant interaction between the three levels of inservice intensity and teacher use of an instructional skill on pretest and posttest ratings? Specifically, no change is predicted between the pretest and posttest ratings for Level 1; there will be a significant increase between the pretest and posttest ratings for Level 2, but this increase will not be as great as for Level 3.

The research questions were tested using a two-factor design with one between and one within subjects variable. The between factor was the teacher training/level of inservice intensity. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, and practice with feedback

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Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

The within factor was teacher use of active participation as measured by ratings obtained from pretest and posttest videotaped scores.

The means and standard deviation scores for the control group and the experimental groups during the pretest and posttest videotaped sessions are presented in Table 5. The means for the group ratings and the total means for the pretest and posttest ratings are also presented in Table 5.

An ANOVA for the effect of training on active participation was conducted and the results are presented in Table 6. The data are reported and analyzed in relation to the three research questions.

Research Question One

Will there be a significant difference in teacher use of an instructional skill given the three levels of inservice intensity? The hypothesis was not supported. The overall main effect for groups was not significant (see Table 6). There was no significant change between groups across the tests ($p > .685$).

Research Question Two

Will there be a significant difference in ratings between the pretest and posttest score? The hypothesis was supported (see

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TABLE 5

Means and Standard Deviations for Teacher Use of the Teaching Behavior, Active Participation on Videotape

Group	n	Pretest $\bar{X}$	Pretest SD	Posttest $\bar{X}$	Posttest SD	Means ($\bar{X}$)
Level 1 (Control)	8	19.000	6.590	17.250	7.206	18.125
Level 2 (Experimental)	8	18.875	6.490	21.500	6.650	20.1888
Level 3 (Experimental)	8	16.625	3.335	23.750	3.240	20.1888
		$\bar{X}$=18.167		$\bar{X}$=20.833		

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TABLE 6

ANOVA Table for the Effect of Training on Active Participation Pre- and Post-Scores

SV	df	SS	MS	F	p
Between	23	1280.01			
Levels of in-service intensity (A)	2	45.38	22.69	.39	.685
Error between S/A	21	1234.63	58.79		
Within	24	432.00			
Pretest/Post-tests (B)	1	85.33	85.33	9.48	.006*
Interaction (AB)	2	157.54	78.77	8.75	.002*
Error within (BS/A)	21	189.13	9.01		
Total	47	1712.01			

*Significant at the .01 level

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Table 6). The overall main effect for tests was significant. There was a significant change between the pretest mean (18.17) and the posttest mean (20.833) on the dependent variable active participation ($p < .006$).

Research Question Three

Will there be a significant interaction between the three levels of inservice intensity and teacher use of an instructional skill on pretest and posttest ratings?

The hypothesis was supported. There was a significant interaction between the levels of inservice intensity (groups) and the pretest and posttest ratings ($p < .002$). The analysis for simple effects (see Table 7) revealed a significant difference between pretest and posttest ratings for Level 3 ($F = 22.53$, $p < .01$), but none of the other simple effects was significant. The important finding was the interaction, which when analyzed, revealed a significant difference in tests for Level 3 inservice intensity. The Level 3 inservice group, that received peer coaching coupled with trainer coaching, made a statistically significant difference in transfer of the teaching behavior, active participation, into the teacher's instructional repertoire in the classroom. The addition of a trainer coach made a statistically significant effect on the teachers' use of active participation in the classroom. It should be noted that this statistically significant effect was obtained despite the small number of subjects in each group.

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TABLE 7

Simple Effects of Training with
Pre- and Post-Test Scores

SV	df	SS	MS	F
Between				
Levels at pretest (A at B_1)	2	28.58	14.29	.24
Levels at posttest (A at B_2)	2	174.33	87.17	1.48
Error between (S/A)	21	1234.63	58.79	
Within				
Level 1 at pretest/ posttest (B at A_1)	1	12.25	12.25	1.36
Level 2 at pretest/ posttest (B at A_2)	1	27.56	27.56	3.06
Level 3 at pretest/ posttest (B at A_3)	1	203.06	203.06	22.53*
Error between (BS/A)	21	189.13	9.01	

*Significant at the .01 level

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Summary

In summary, the level of inservice intensity was related to teacher transfer of a skill to the classroom. There was a statistically significant difference in teacher use of active participation, as measured by the pretest and posttest videotape scores. There was a significant difference between the pretest and posttest ratings for the Level 3 experimental group. Trainer coaching coupled with peer coaching positively affected teachers' transfer of a skill to the classroom. It appeared that peer coaching was not sufficient for transfer of a skill into the teacher's instructional repertoire in the classroom.

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CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The main purpose of this study was to test for differences among three levels of inservice intensity in the transfer of the teaching behavior, active participation, into the teacher's instructional repertoire in the classroom. The major tasks to be completed for the study included: identifying a key effective teaching behavior for secondary level teaching; developing three levels of inservice intensity incorporating major components of effective inservice education; and developing the inservices, instrumentation, and procedural design. A quasi-experimental design using three treatment groups and repeated measures of the teaching behavior was used. The control group (Group 1) received training but was not coached; Group 2 (experimental) received training and peer coaching; and Group 3 (experimental) received training, peer coaching, and trainer coaching.

The data analyses resulted in the following findings:

1. The overall main effect for tests was significant, but the overall main effect for groups was not significant. However, there was a significant interaction between the groups and the tests.

2. The significant difference between the tests was for the Level 3 experimental group. Level 1 inservice training emphasizing theory, demonstration, and practice with feedback in simulated situations implemented in the control group was not sufficient to ensure

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transfer of a new teaching skill into the classroom. Teachers participating in the control group did not improve their scores from the pretest to the posttest.

Level 2 inservice training emphasizing theory, demonstration, practice with feedback in simulated conditions, and peer coaching utilized in Group 2 (experimental) appeared to influence transfer of a new teaching skill into the teacher's instructional repertoire in the classroom. The mean scores for teachers in this experimental group did improve from the pretest to the posttest; however, the improvement was not statistically significant.

Level 3 inservice training was comprised of theory, demonstration, practice with feedback in simulated conditions, peer coaching, and trainer coaching. This treatment did make a statistically significant effect in the transfer of a new teaching skill into the teacher's instructional repertoire in the classroom. The pretest mean score of this experimental group was somewhat lower than the pretest mean score in the other two groups; however, the posttest score surpassed the other two groups.

3. The difference between groups was analyzed for each of the tests separately. There was not a significant difference for either test. This might be due to the small group size.

Conclusions

The purpose of this study was to test for differences among three levels of inservice intensity and transfer of a skill into the

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teacher's instructional repertoire in the classroom. The three levels of inservice intensity were:

Level 1 - Theory/presentation, demonstration, practice with feedback

Level 2 - Theory/presentation, demonstration, practice with feedback, and peer coaching

Level 3 - Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching

Based on the research findings the following conclusions were drawn:

1. The results of the descriptive data indicated the mean videotape scores of the Level 2 peer coaching teachers increased. These results indicate that peer coaching did affect the Level 2 experimental group but not in statistically significant ways. Several conditions which may have influence those nonsignificant findings were: (1) naivete with respect to the coaching process, (2) lack of direction or communication with the peer coaching group by the in-service trainer, and (3) small sample size.

2. Peer coaching coupled with trainer coaching significantly increased teachers' knowledge and use of active participation. This study demonstrated that a trainer coach is an important ingredient in inservice training if the goal of the inservice is to add a new teaching strategy to the teacher's instructional repertoire.

In conclusion, this study confirmed that trainer coaching coupled with peer coaching contributes significantly to positive transfer of a teaching behavior into the teacher's instructional

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repertoire in the classroom. While the peer coaching mean scores did increase, the trainer coaching coupled with peer coaching results revealed a statisticially significant difference in teacher use of active participation in the classroom. On the basis of these results, three major implications concerning inservice training may be inferred.

1. Trainer coaching coupled with peer coaching should be added to inservice training that incorporates theory, demonstrations, practice, and feedback into the initial training.

2. Coaching can be accomplished by trainer coaches who are hired by the district to provide follow-up inservice training services.

3. This study, along with other coaching studies, confirms the worth of coaching teacher behaviors.

Recommendations

Recommendations for the application of knowledge gained by this research fall into three categories: (1) policy development, (2) further research, and (3) on-going practice.

Clear goals for inservice training programs need to be set in school districts. For example, school district personnel need to determine if the inservice training is designed to achieve awareness, fine tuning, or transfer of new instructional skills. If the goals for inservice training are transfer of instructional skills, policies and practices should be established to inspire the inclusion of trainer coaching coupled with peer coaching as a major program.

Further research to lend support to new policies and practices could be implemented in two directions: (1) replication of this study,

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and (2) refinement of the coaching technology.

If this study is replicated, four changes are recommended. The teacher sample could be changed by using a larger number of teachers within each group. To meet the requirements of selected statistical tests, the size of each group should be increased to a minimum of ten teachers.

Second, four levels of inservice intensity should be considered. Adding a fourth level consisting of theory/presentation, demonstration, practice with feedback, and trainer coaching would allow the researcher to determine the effectiveness of trainer coaching in transferring an instructional behavior versus trainer coaching coupled with peer coaching.

Third, a problem-solving session with the inservice trainer could be incorporated for the peer coaching group midway through the ten-week treatment period. This would give the peer coaches an opportunity to ask questions and share concerns about the use of the teaching behavior, as well as the peer coaching process.

Fourth, the study should include a follow-up videotaping of the participants several months after the intense training has elapsed. This would allow the researcher to test the long-range transfer of the new instructional skill. The Hawthorne effect suggests people do things when given attention. Once the special attention is gone, one can question if the performance is the same. This later videotaping could yield some interesting results.

Finally, the coaching technology could also be refined. Comparative studies could assess who can coach most effectively:

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(1) trainers, (2) principals, (3) consultants, (4) peers, or (5) others. Mohlman, Kierstad, and Gundlach (1982) concluded peers coach more successfully than trainers. Showers (1983a) recommended peers be trained and used as coaches for financial reasons. This study concluded a trainer coach coupled with a peer coach works effectively. Just who can coach most effectively needs further investigation.

Appropriate practices may follow policy development and further research. Trainer coaching coupled with peer coaching enhances transfer of a skill into the classroom. Teachers could receive the appropriate advanced training in effective teaching behaviors, work with a trainer coach, and be released from classes to peer coach. School boards, state legislatures, and the federal government might appropriate money if they can see that inservice dollars are spent wisely and effectively. Such appropriate practices are already being implemented. More may follow.

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APPENDIX A

Procedures Checklist for the Study

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PROCEDURES CHECKLIST

Date
Completed

_____ 1. Secure volunteers.

_____ 2. Have volunteers select code numbers - last 4 digits of Social Security number.

_____ 3. Secure twenty four 60-minute video tapes for each participating teacher.

_____ 4. Secure video technician to video tape pre and posttest and send to researcher.

_____ 5. Distribute video taping form to all participants for pre and posttest taping.

_____ 6. Schedule pretest video taping with technician and all participants.

_____ 7. Examine tapes to determine subjects knowledge and use of active participation.

_____ 8. Assign participants to one of three groups.

_____ 9. Select inservice dates.

_____ 10. Prepare for the inservices on active participation and peer coaching.

_____ 11. Conduct inservices.

_____ 12. Arrange peer coaching schedules for teachers in Level 2 and 3 experimental groups.

_____ 13. Arrange trainer coaching schedules for teachers in Level 3 experimental group.

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_____ 14. Secure 2 expert raters to evaluate the pre and posttest video tapes and establish inter-rater and intra-rater reliability with expert raters.

_____ 15. Coach teachers in Level 3 experimental group 5 times over the ten week period.

_____ 16. Mid-way through the study send a letter to all participants reminding them that five weeks of the study is complete and that half of the peer coaching cycles should have been conducted.

_____ 17. Schedule the posttest video taping with the technician and all participants in the study.

_____ 18. Secure all video tapes and video taping forms from the technician and send them to the expert raters for evaluating.

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APPENDIX B

Selected Samples of Correspondence When Securing Teachers

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INFORMATION SHARED WITH TEACHERS WHEN SEEKING VOLUNTEERS FOR THE STUDY:

A. INTRODUCTION. The goal of inservice education programs is to help teachers develop and utilize skills that make them more effective. The research indicates that the current inservice education programs are in need of assessment. The data related to educational change, studies of effective training, and research on skill transfer support the concept of coaching as a training device. The problem being addressed in this study is, is the level of inservice intensity related to teacher transfer of a skill to the classroom?

The purpose of this study is to test for differences between three levels of inservice intensity and transfer of a skill in the teacher's instructional repertoire in the classroom. The three levels of inservice intensity are:

Level 1: Theory/presentation, demonstration, practice with feedback.
Level 2: Theory/presentation, demonstration, practice with feedback and peer coaching.
Level 3: Theory/presentation, demonstration, practice with feedback, peer coaching, and trainer coaching.

B. Confidentiality and Anonymity. This study involves video taping volunteer teachers as they present a lesson to a class. To assure confidentiality, all participating teachers will be assigned a confidential code number to use on all data gathered. The video tape technician will be asked to gather tapes and video taping forms from teachers and send them to the researcher.

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C. Activities and Time Commitments. Detailed descriptions of activities and anticipated time commitments for participating teachers are listed on a separate sheet.

D. Participants. All participants in this study are to be volunteers. The teachers in this study are all from Westside High School. Thirty teachers are needed to conduct the study. Those thirty volunteers will comprise three groups as follows: (1) Control group 1 receiving inservice training on a selected teaching behavior, (2) Experimental group 2 receiving inservice training on a selected teaching behavior and peer coaching with another teacher in that group to assist in transfer of the skill into the classroom, and (3) Experimental group 3 receiving inservice training on a selected teaching behavior, peer coaching with another teacher in that group, and working with a trainer coach for transfer of the skill into the classroom.

All participants will be video taped before the study begins and after the study is completed. Participants in groups 1 and 2 will be offered the opportunity to work with the trainer coach on the selected teaching behaviors after the study is completed if they so desire.

E. Length of the Study. This will be a twelve week study which will begin during the second semester of this school year. To gather baseline data, each participating teacher will be video taped while teaching one lesson before the inservice workshop. The pretest video tape will be previewed by the researcher to determine each participants knowledge and use of the selected teaching behavior. Using that information each participant will be randomly assigned to one of the three groups. A detailed description of the time line for participants is outlined on a separate sheet entitled "Selected Inservice Approaches."

F. Assessment. The design of the study calls for independent raters to rate the pretest and posttest video tapes for each participating teacher. All data received by the researcher and raters will be

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coded to assure confidentiality and anonymity.

G. Feedback. To protect confidentiality of individuals, the researcher will not share the data with anyone. Individual teachers may receive their own results after the study is completed (if they so desire) by providing the researcher with their code.

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DESCRIPTION OF ACTIVITIES FOR PARTICIPATING TEACHERS:

I. Pretest video taping of all participants teaching before the study begins.

II. Random assignment to one of three groups:
   A. Level 1 Control Group
      1. Attend two 1-hour inservice session on a selected teaching behavior conducted by the researcher.
      2. Receive two contact hours professional growth.

   B. Level 2 Experimental Group
      1. Attend two 1-hour inservice sessions on a selected teaching behavior conducted by the researcher.
      2. Attend two 1-hour inservice sessions on peer coaching conducted by the researcher.
      3. Participate in five peer coaching cycles with paired teacher from level 2 experimental group once every other week for a ten week period. Each cycle is approximately one hour in length. Five observations are required for each paired teacher, thus ten hours will be required of each teacher to complete the peer coaching cycles.
      4. Receive fourteen contact hours professional growth.

   C. Level 3 Experimental Group
      1. Attend two 1-hour inservice sessions on a selected teaching behavior conducted by the researcher.
      2. Attend two 1-hour inservice sessions on peer coaching conducted by the researcher.
      3. Participate in five peer coaching cycles with paired teacher from level 3 experimental group once every other week for a ten week period. Each cycle is approximately one hour in length. Five observations are required for each paired teacher, thus ten hours will be required of each teacher to complete the peer coaching cyles.
      4. Receive trainer coaching five times while teaching once every other week within a ten week period. Each trainer coaching cycle will demand one-half hour of the teacher's time for feedback from the trainer.
      5. Receive seventeen contact hours professional growth.

III. Posttest video taping of all participants teaching after the ten week treatment period.

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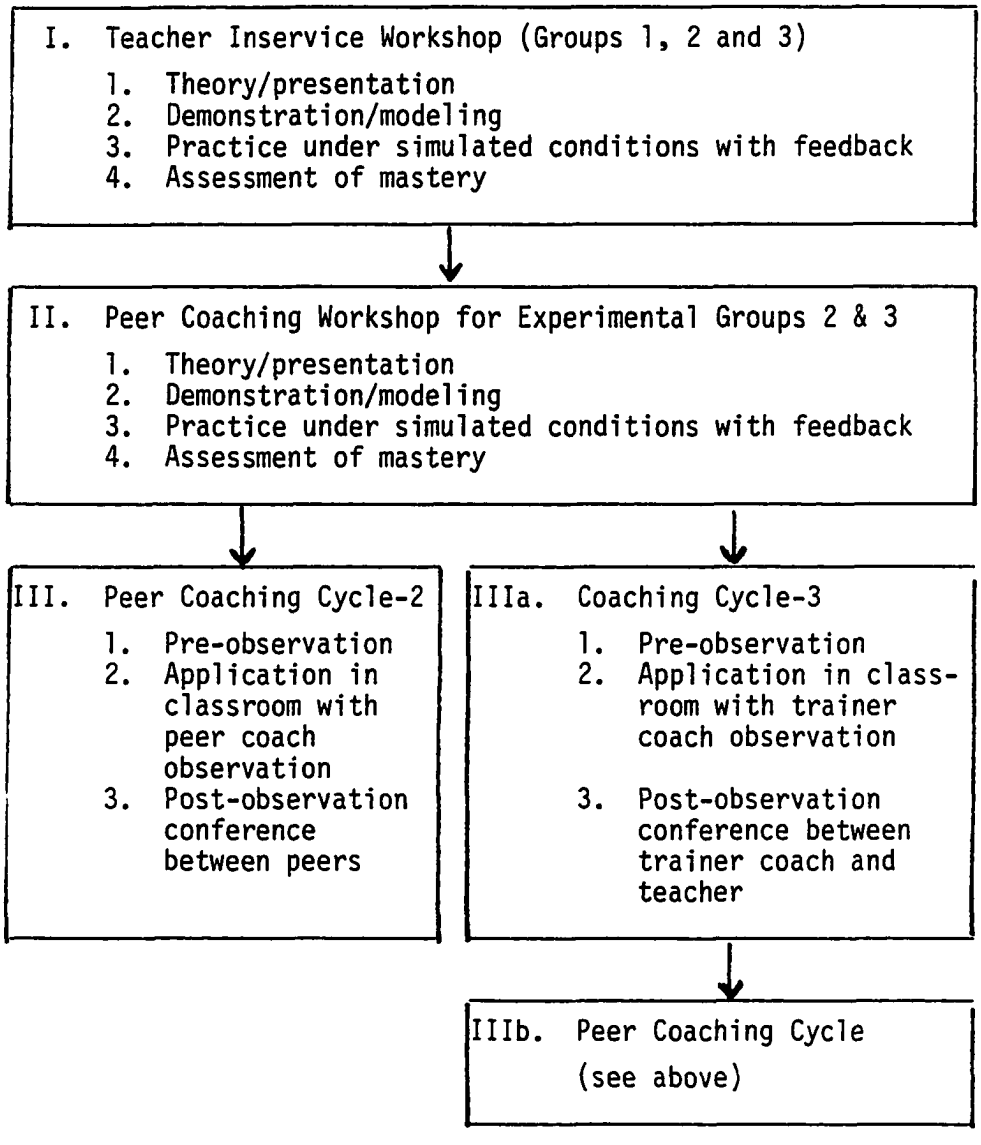
BEFORE THE STUDY BEGINS: PRETEST VIDEOTAPING OF ALL PARTICIPANTS

Selected Inservice Approaches



END OF THE STUDY: POSTTEST VIDEOTAPING OF ALL PARTICIPANTS

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APPENDIX C

Inservice Workshop Overview, Evaluation, and Cognitive Comprehensive Mastery of Active Participation Form

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ACTIVE PARTICIPATION INSERVICE WORKSHOP OVERVIEW

SESSION I. THEORY/PRESENTATION (one hour)

A. Research on active participation
B. Definition
C. Critical attributes
D. Types - Covert and Overt
   1. Definition of each
   2. Wait time information
   3. Accountability for all learners
   4. Advantages and Disadvantages
E. Strategies to elicit active participation from students

SESSION 2. DEMONSTRATION/MODELING (30 minutes)

A. Viewing the video tape - "Increasing Accountability through Active Participation"
B. Role-playing different strategies by the presenter

PRACTICE WITH FEEDBACK (25 minutes)

A. Examine a video tape to code for teacher use of active participation while teaching
B. Brainstorm ways of incorporating more student involvement

COGNITIVE COMPREHENSION MASTERY OF ACTIVE PARTICIPATION (5 minutes)

EVALUATION OF INSERVICE ON ACTIVE PARTICIPATION

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PEER COACHING INSERVICE WORKSHOP OVERVIEW

SESSION 1: THEORY/PRESENTATION (35 minutes)

A. Components of an Effective Staff Development Program
B. Research on Peer Coaching
C. Definition of Peer Coaching
D. Funtions of Peer Coaching
E. Guidelines for Implementing
F. Peer Coaching Process
G. Feedback Techniques

DEMONSTRATION/MODELING (25 minutes)

A. Preview a video taped lesson modeling the five steps of the peer coaching process
B. View a tape of a teacher teaching with the presenter coding for use of active participation. Role play the five steps of the peer coaching process with another teacher

SESSION 2: PRACTICE WITH FEEDBACK (one hour)

A. Examine poorly phrased feedback statements and rewrite them to practice development of reinforcement statements.
B. Participate in a practicum incorporating the five steps of the peer coaching process. Each teacher will: (1) teach a five minute lesson, (2) receive feedback from a peer, and (3) practice giving a peer feedback on the lesson taught.

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INSERVICE EVALUATION FORM

1. How useful was the content of this workshop?

   ____ extremely useful ____ very useful ____ useful

   ____ of some use ____ of no use

2. The one thing I found most useful was: _____

   _____

   _____

3. What would you suggest be done differently (e.g., what would you suggest be added or deleted)?: _____

   _____

   _____

   _____

4. Specific comments: _____

   _____

   _____

   _____

   _____

THANKS FOR YOUR INTEREST AND SUPPORT!

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COGNITIVE COMPREHENSION MASTERY OF ACTIVE PARTICIPATION

1. What is the definition of active participation?

2. What is the effect on the learner of increased active participation?

3. What are the critical attributes of active participation? Explain each.

4. What is covert behavior? List 2 examples of student behavior that is covert.

5. What is overt behavior? List 2 examples of student behavior that is overt.

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6. Under what conditions/circumstances might a teacher choose covert behavior as the form of active participation to use?

7. Under what conditions/circumstances might a teacher choose covert followed by overt behavior as the form of active participation to use?

8. What are some examples of abusing the principle of active participation?

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APPENDIX D

Instruments Used in the Study

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PLEASE COMPLETE AND RETURN TO YOUR PRINCIPAL:

Name: _____

Grade level: _____

Class size: _____

Classes teaching _____

Previous instruction in EEI or ITIP: _____

Check one response:

____ I will participate as a part of any of the three groups: Group A - Trainer Coaching coupled with Peer Coaching, Group B - Peer coaching, or Group C - Traditional inservice.

____ I prefer to be part of Group A - Trainer Coaching coupled with Peer Coaching inservice.

____ I prefer to be part of Group B - Peer Coaching inservice.

____ I prefer to be part of Group C - Traditional inservice.

____ I am interested in the study but need additional information. Please contact me.

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DEMOGRAPHIC DATA: PARTICIPATING TEACHERS

The following information will assist the researcher with analysis of data when the study has been completed. Please complete each item. To assure anonymity, please do not put your name on this paper; use only your code number.

1. Teacher code number - last four digits of soc. security no. _____

2. Male or female _____

3. Number of years spent in classroom teaching _____

4. Grades primarily teaching _____

5. Average number of students per class taught _____

6. Have you received instruction in EEI or ITIP? _____

7. Name of specific class chosen to work with throughout the study; include: _____

   Grade level _____

   Number of students _____

   Time and days class meets _____

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VIDEO TAPING FORM

Information form to be completed by the teacher during video taping. Submit form with video tape.

Participant Number_____Group Number_____Date_____

Subject_____

Time observation began_____Time observation ended_____

Total length of lesson_____Total number of students in class_____

Objective of the lesson_____

_____

_____

_____

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PEER COACHING FORM

NAME_____GROUP_____

PEER COACHING PARTNER_____

DAY AND TIME I OBSERVE AND GIVE FEEDBACK TO MY PARTNER:

OBSERVE_____

FEEDBACK_____

DAY AND TIME MY PARTNER OBSERVES AND GIVES FEEDBACK TO ME:

OBSERVE_____

FEEDBACK_____

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CODING ACTIVE PARTICIPATION

OBJECTIVE OF LESSON _____ PARTICIPANT NO. _____ DATE _____

_____

Listen for what the teacher says that elicits covert and overt student involvement. Script the sentence. Record the time the involvement began and ended. Record if there was wait time of 3 seconds or more once Active Participation was elicited. Count the number of students involved. Record if the Active Participation was congruent with the objective and if there was teacher monitoring.

Covert	Overt	Time Began	Time Ended	Total Time	Wait Time		Number of Students	Congruent		Monitor	
					Yes	No		Yes	No	Yes	No

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SUMMATIVE EVALUATION AFTER VIEWING THE TAPE

PARTICIPANT NO. _____ DATE _____ GROUP _____

	Wasn't Observed	Rarely	Sometimes	Frequently	Almost Always
1. The behavior being elicited is congruent with the objective.	1	2	3	4	5
2. The involvement is consistent throughout the lesson.	1	2	3	4	5
3. The question/activity was focused to all the learners.	1	2	3	4	5
4. There was simultaneous involvement (covert followed by overt).	1	2	3	4	5
5. The teacher is providing appropriate wait time once the behavior is elicited.	1	2	3	4	5
6. The teacher is monitoring the behavior once elicited.	1	2	3	4	5