

AN ABSTRACT OF THE THESIS OF

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William R. Fielder

School districts across the nation are engaged in an ongoing attempt to bring about change. Educational researchers strive to initiate change in the classroom with students as well as the teachers of these students.

The evaluation of a change effort is a key element in any implementation model; as the actual training and development strategies used to induce change need to be consistently refined. The change effort studied was an effort to implement Madeline Hunter's Instructional Theory Into Practice (referred to as ITIP).

The study evaluated the effectiveness of this change effort over time. The evaluation determined the extent to which intended behavioral outcomes of five dimensions (key elements in the ITIP model) were realized initially and four years after treatment.

Because the behaviors of the treatment teachers and control group teachers were crucial to the study, the research design collected data by videotaping teaching episodes of the sample group pre- and post-treatment. These episodes were assessed for their pre-treatment teaching behaviors and post-treatment teaching behaviors. In addition, the research design collected data by videotape and assessed the teaching behaviors four years after the initial training. In the same manner, the control group's teaching behaviors were assessed.

An analysis of the study's treatment group concerns was done as they evolved through the change stages, as hypothesized by Dr. Frances F. Fuller (Fuller, 1969). This change analysis and behavioral assessment led to additional evidence for the evaluation of the effectiveness of the change effort in question.

This study showed that, from the beginning, a change effort needs to be carefully and clearly defined so that everyone involved understands it well and everyone shares the same definition. The study found that the initial training did change teaching behaviors in four of the five areas in question. However, four years after the initial training, it was found that there was significant regression in the skills learned from the initial training

sessions. Specifically, it was the areas that showed significant growth in the initial training that regressed four years later. These behaviors though, even after regressing after four years, were significantly displayed to a greater degree in each of the individual's teaching behaviors when compared to individuals who had no formal training at all. Therefore, it must be concluded that the formal training made a difference in the teaching behaviors of those who participated in the change effort design, but not to the degree that was necessary for the dimensions to become part of each individuals' teaching behavior over the long term.

Change effort designs of the future must account for the time necessary for change to occur and promote follow up activities until a significant amount of time for this follow up has occurred.

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Ron Carlson

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Professor of Curriculum and Instruction in charge of major

Redacted for Privacy

Chairman of the Department of Curriculum and Instruction

Redacted for Privacy

Dean of College of Education

Redacted for Privacy

Dean of Graduate Studies

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Typed by the author for Ron Carlson

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AN EVALUATION OF A CHANGE EFFORT

CHAPTER I

INTRODUCTION

School districts across the nation are engaged in an ongoing attempt to bring about change. Educational researchers strive to initiate change in the classroom with students as well as the teachers of these students.

In the past 20 years, millions of dollars have been spent to promote improvement in schools. New curriculum, new teaching techniques, and new modes of school organization supported by federal, state, local, and private sources were introduced. These intense efforts resulted in little change behind the classroom door (Loucks, 1979).

Why is this? What makes it so hard to change a person's behaviors? How can a change effort be effective in the short and long term? What should staff developers know about the nature of change and the resistance to change? Shirley Hord (1987) states that change is still not thoroughly understood, not easily embraced, and is more of a process, not an event.

The objective of this study was to increase understanding of the change process itself in a complex organization. This study analyzes a change effort in a moderately large suburban school district. The objective of the change effort was the improvement of instructional delivery by all district teachers.

Significance

The evaluation of a change effort is a key element in any implementation model; as the actual training and development strategies used to induce change need to be consistently refined. Simply, a program that is of very high quality but is implemented poorly is not likely to produce the desired outcomes (Huling, Hall, Hord, & Rutherford, 1983). Teacher improvement is not only related to the quality of the change, but to how well and to what degree the change is delivered and implemented. A common assumption is that, once a change has been introduced and the initial training completed, the intended users will put the change into practice (Hord, 1987).

Private and public organizations study and evaluate change efforts to ensure that the predicted benefits are obtained. Such evaluations should improve ways for the individual to acquire the new behaviors associated with the change. This study should increase our

understanding of factors most likely to promote or inhibit efforts to change teacher behaviors. This understanding will aid staff development personnel in the development of future change efforts in the school district studied and in others.

Problem

This study investigated to what extent intended teaching behaviors were realized initially and four years after treatment. The treatment was to implement Madeline Hunter's Instructional Theory Into Practice (referred to as ITIP). This study evaluated a change effort design in three ways. First it examined the initial implementation effectiveness. Second, it examined how well the change behaviors were sustained four years after the initial training. Finally, it examined the attitude patterns of those involved, which might have influenced the change process.

Background

From 1981 through 1988, Beaverton Oregon School District teachers were involved in a district-wide change effort. The inservice objective was to implement Madeline Hunter's Instructional Theory Into Practice (referred to as ITIP). Specifically, each elementary teacher was involved in a two year change effort. The first year included a five day inservice which was divided into two equal sessions. Following each session, each participant practiced the new learning in the classroom and received four observations from Staff Development department personnel with feedback .

In the second year, two additional observations from Staff Development department personnel with feedback were conducted with each participant. After the second year the building principal initiated any further practice and/or observations with those trained.

The Beaverton project had two basic components:

1. To train teachers to use a set of particular teaching behaviors called "elements of effective instruction". These were related to teaching to an objective, modeling, motivating, monitoring and adjusting, and elements of rate and degree.
2. To use peer coaching by teachers who had used the elements of effective instruction consistently, and who had been selected to train fellow teachers in the use of these elements.

According to Madeline Hunter's research the ITIP model has the following characteristics. First, the ITIP model deals with the essential elements of effective teaching, regardless of style. Second, it is independent of the organizational structure of the school (small group, large group, graded, non-graded, team teaching, self-contained

classrooms). Third, the elements are equally applicable at all grade levels and for all types of students. Fourth, it is independent of the type or quality of instructional materials used in the classroom. It is a teacher decision-making model, not a recipe that dictates teaching style.

Madeline Hunter describes her model as the undergirding structure upon which an artistic professional performance can be built. The deliberate inclusion or exclusion of various elements, according to Hunter, differentiates the professional from the technician. The creative way in which these elements are combined is what separates the artist from a promising amateur (Hunter, 1982).

According to Madeline Hunter, the deliberate application of the elements increases the teacher's efficiency, results in a positive feeling about the teaching process, and increases the probability of student learning.

The Beaverton Elementary ITIP project approach was based on the following notions, with the intent that they will become an integral part of the teacher's decision-making process when planning for and implementing the instructional program.

1. The teacher teaches to an appropriate objective, and all activities carried out are directly relevant, not just related, to the objective.
2. The objective and relevant instruction are at the correct level of difficulty for the students.
3. The teacher constantly monitors student progress and adjusts her or his teaching accordingly.
4. The teacher utilizes the principles of learning. Areas covered in the training include the following:

- Motivation
- Reinforcement
- Rate and Degree
- Modifying and Changing student behavior
- Lesson design
- Giving directions

The Change Effort Design

The change effort design had District elementary teachers in the Beaverton School District, Beaverton, Oregon, participate in a two year inservice. The elementary ITIP change effort brought together teachers to be trained at a specific school site for five days. The five-day training sequence was broken into two workshops, each lasting two and one-half days. The ITIP change effort incorporated guided practice and independent practice at

the actual training site. It utilized observations of colleagues using the ITIP elements in actual classroom settings as well as peer coaching and practice throughout the training. After each workshop four follow up observations of each participant at the individual schools were conducted. Each of these observations was followed by a conference in which the target elements of the ITIP model were observed, recorded, and discussed through the use of a verbatim transcript.

Two additional follow up observations were made in each participant's classroom during the second year of the change effort. Again, a verbatim transcript of the classroom observation was used to identify ITIP elements in the teacher's teaching behaviors.

During the second year of the training, the ITIP change effort design provided six days of substitute time to each school involved to encourage and allow practice using the elements of ITIP. This aspect was to be monitored but not evaluated by the school principal.

Beaverton's elementary ITIP change effort used district staff development personnel who were trained in the understanding and use of ITIP and who provided follow up, peer coaching, and practice at each of the respective schools.

The change effort included pre- and post-assessment (videotaped lessons) of the participants' knowledge, attitude, and performance.

In summary, the Beaverton ITIP change effort takes Madeline Hunter's model for improving classroom instruction and

1. Instructs teachers in the use of the teaching behaviors called elements of effective instruction; and
2. Develops peer coaching by teachers who use the elements of effective instruction consistently and who can share this information with colleagues.

The goal is that through deliberate application of the elements, the effectiveness of the teachers increases, resulting in a positive feeling about the teaching process and increasing the probability of student learning. The effectiveness of this change effort is the focus of this study.

Research Questions

The study is designed to investigate the change effort of a school district as it pertained to a particular innovation. The innovation called for teachers to use the planning, instructional, and evaluation strategies specified in Madeline Hunter's Instructional Theory Into Practice model (ITIP). Much research of and about change indicates that change takes time: time to implement, time to practice, and time to nurture. It is crucial to evaluate these change efforts from beginning to end. The object was to see if change actually occurred

and, if so, was it sustained.

The study approached its analysis by asking the following questions:

1. Initially, what was the observable change in each participant teaching behaviors as a result of the specific training in ITIP?
2. What is the effect of time on the ITIP teaching behaviors four years after the initial treatment (inservice training)?
3. Does the evaluation of the five elements of Teaching to an Objective, Monitor and Adjustment, Reinforcement, Motivation Theory, and Rate and Degree show any area with more change or regression at any point during the research study?
4. Have teachers working in the school district the entire time the training project was implemented, who have not been through the training project, changed to include observable teaching behaviors at the same level as the teachers who were trained?
5. Does teacher grade level influence the degree of use of the teaching behaviors?
6. Do the concerns of teachers trained and who are using the ITIP teaching behaviors four years after the initial training show any change?
7. Are the individual concerns about the ITIP project grade level specific?

Definition of Terms

The following terms are defined below as they were used in the study.

Training and development: a planned effort by an organization to facilitate the learning of job-related behavior on the part of its employees (Wexley, 1981).

Behavior: any performance that takes place using the knowledge and skills acquired by an employee through training and practice.

Change: any significant alteration in the status quo. In this study change will mean an observable behavioral alteration which has been induced through a planned effort.

Change Effort Model: the staff development implementation strategy designed to impart the new information and evaluate its transfer to performance.

Change Process: the stages of change an individual goes through during the implementation effort. This term is characterized by analysis of the orientation and preparation of a change effort, the implementation of the change, the maintenance of such a change, and the refinement of the change over time.

Concern: the composite representation of the feelings, the preoccupation, thought, and consideration that is given to a particular issue or task. Concern can be studied through feelings, attitudes, thoughts, ideas, or reactions an individual has related to an innovation and to the training.

Instructional Theory Into Practice: specific program developed by Madeline Hunter pertaining to classroom instruction. ITIP identifies what it refers to as the "essential

elements of effective teaching."

Limitations

The present study was conducted under the following limitations:

1. The sample was but one segment of the total population trained in the ITIP model in the entire Beaverton School District, Beaverton, Oregon. The sample was selected on the basis of the school groups that were trained in 1981-82.
2. Only 30 of the original 72 staff members originally trained in the ITIP model remained as teachers in the Beaverton School District in 1985-86.
3. The control group (30 teachers) included teachers who had been in the school district since 1981 but who had not received formal ITIP training. They have remained in the elementary division since 1981, but have not necessarily taught at the same grade level during that time.

CHAPTER II

LITERATURE REVIEW

Every institution, every profession, and every industry is affected by change; nothing is entirely stable. What was effective yesterday may not be today. Anticipating and responding to change is a major responsibility for all organizations and institutions (Renfro and Morrison, 1983). What can an organization do to ensure its survival and prosperity as it copes with change? It must plan for change in order to manage it. It must evaluate change not just react to it.

Improving an organization or educational institution is difficult, but not impossible. This study focuses on planned change, change that is derived from a purposeful decision to effect improvements in the organization.

The study looks at planned change efforts from two perspectives: staff development efforts and the process of change.

Staff Development

Past events indicate that education is and will continue to be under considerable pressure to change its practices. In 1983 the National Commission on Excellence proposed an 11-month contract for teachers to allow time for professional development. In 1981 the Association for Supervision and Curriculum Development published a yearbook on staff development (Dillon-Peterson) identifying staff development as a compelling issue in education. The entire 82nd yearbook of the National Society for the Study of Education focused on the topic of staff development (Griffin, 1983).

Staff development activities are purposeful and teachers are on the receiving end of such purposeful activities. Adler (1982) states "There are no unteachable children. There are only schools and teachers and parents who fail to teach them." Implicit in this statement is the need to train and retrain teachers in appropriate skills. The issue is to maximize the efforts and effects of the staff development of teachers (Cummings, 1985).

What is staff development? Bernice McCarthy (1982) states "Staff development is the facilitation of growth. It requires a knowledge of the clients, a talent for scanning the outside world for means and resources, and a belief that support and challenge, give people the courage to create." William Glueck (1982) describes employee development "as a systematic process of altering the behavior, knowledge, and/or motivation of employees in a direction to increase organizational goal achievement." Dennis Sparks and Susan Loucks-Horsley (1989) define staff development as those processes that improve the job related knowledge, skills, or attitudes of school employees.

In education, staff development is a basic component in the continuing preparation of teachers, administrators, and other district staff as they extend their professional or technical knowledge. The aim of staff development is to ensure effective schools by

1. improving school personnel performance,
2. improving on existing school programs,
3. implementing new school programs,
4. increasing job satisfaction for school personnel, and
5. providing career development for educational practitioners.

Wexley (1981) extends this philosophy to any organization where a need to increase knowledge and skills exists, as employees experience feelings ranging from frustration due to either professional obsolescence or increasing levels of expected expertise on the job. The concern is primarily improving the self-awareness, knowledge and skills, and motivation of organization members.

Three types of staff development practices are prominent (Korinex & Schmid, 1985). The most common form of staff development is described as information transmission. This practice increases the knowledge of a specific group through lecture, presenter demonstration, or panel discussion. The presentation generally lasts up to three hours with minimal learner participation. This practice has been unsuccessful in changing teacher behavior over the long term (Korinex & Schmid, 1985).

The second type can be described as skill acquisition. This practice imparts new skills or strengthens to those already existing through sequential large-group activities or demonstrations. Participants are required to attend, but have little input or choice in activities being presented. If the new skills create excitement in the participant, there is a good chance these skills will be practiced upon return to the work environment. If not, then the participant will shelve the new skills. This practice has no feedback or practice component after the initial presentation. These types of staff development practices have been successful if the participant experiences personal excitement and can make a direct connection to the work environment.

The third type is best described as a flexible plan. This type differs from the first two because it attempts to present and develop the desired new behaviors in whatever manner is required. Sessions are united by a common goal and are built around careful assessment, clear objectives, observations, and record keeping. Active involvement and participant ownership (a willingness to take responsibility for changing behavior) is key. This type has been found to be the most successful of the three, especially for sustaining the new learning over a period of time.

The Staff Development Process

The implementation process of any innovation within the organization can be identified in key steps. Each step has a variety of strategies to achieve its goal. The selection of the particular strategy depends on the organization and its resources.

Step One: Assessment

The first step is the identification of training needs. The purpose is to determine the innovation that can have the greatest impact in meeting the identified need(s). Second, the strategies usually are focused to provide answers to the following three questions (Wexley, 1981):

1. Where is training needed in the organization?
2. What must a trainee learn in order to perform the job effectively?
3. Who needs training and what kind is needed?

Step Two: Environments

The second step is designing training environments that meet the individual needs and learning styles. The individuals experiencing the change need to have regular feedback on their performance. Secondly, the participants need feedback on the student outcomes. Third, practice and continued support must be present to continue the change. To maximize the trainee's learning involves careful consideration of the environment and provisions for appropriate modeling, practice, and feedback (Servatius, 1985).

Studies of Servatius (1985) and of Guskey (1982, 1985), suggest teachers apply new innovations most effectively when they see them used in actual classrooms, when they can try them out and get feedback on their efforts, and when they receive regular feedback on student learning outcomes as a result of the new innovation. Furthermore these studies show that when teachers can discuss the innovation with fellow colleagues and when they can integrate the innovation into existing classroom routines; application increases (Harvard Education Letter, 1986).

Crandell (1982) states that there is a need for teachers to try out an innovation in the classroom. Crandell and Servatius (1982, 1985) both found that teachers seldom become committed to an innovation until they have seen the practice work well in their classroom with their students.

Brooks' (1984) studies of change efforts found that feedback helped teachers make the change. In addition to conducting the initial training, staff spent time in classrooms working with teachers through the implementation and giving them feedback. By design, the activities provided specific feedback to teachers to learn whether or not they were

implementing the skill correctly. If they were not, re-teaching took place in their classrooms.

Peer coaching has proven mutually beneficial to both the individuals involved in the activity (Joyce & Showers, 1983). Joyce and Showers (1983) further contend that peer teaming and peer observations, built into the change effort, provide consistent feedback from a trusted colleague. Stallings (1980) concurs with them that providing teachers with regular and precise feedback during class sessions can be a powerful way of implementing change. When teachers see a new program or innovation work in their classroom, change in their beliefs and attitudes can and will follow. If the innovation is well presented and demonstrated, if practice has been provided under simulated conditions with careful and consistent feedback, and if that practice is followed with application in the classroom with coaching and further feedback, then it is likely that a vast majority of teachers will be able to expand their utilization of the innovation (Joyce & Showers, 1982). Joyce (Cummings, 1985) advocates coaching as an alternative for teachers to break the isolation of the classroom, giving them a chance to observe others to compare their own skills and foster ideas across classrooms.

The Jeffco field study (Loucks & Hall, 1979) provides insights into time factors in the implementation process of an innovation. The Jeffco study concluded that the implementation of an innovation takes more than one year. It was found that if the innovation is appropriate, if the change agents are effective, and if there is organization support, the institutionalization of the innovation may occur more rapidly. However, if the innovation is complex or is actually a "bundle" of innovations, or if the change process is poorly managed, institutionalization of the innovation may take three to five years, or may never be achieved. One implication of the Jeffco field study is that change agents and policy makers must acknowledge the time requirements of a staff development change effort, and set realistic expectations for themselves, the individuals, the administrators, and the evaluators.

Step Three: Evaluation

Evaluation of educational staff development activities provides information on the effectiveness and efficiency of a program. Included in the evaluation is the second dimension, that of the evaluation of the staff development process itself. Evaluation strengthens program quality, the responsiveness to educational needs, and the implementation of new programs. Evaluations provide consistent opportunities for individuals to engage in self-examination and renewal in the most effective and appropriate ways.

Gene Hall stresses that the characteristics of the innovation, its scope, and how it is perceived by the user can determine the success of a change effort. The process of implementing the innovation spans various developmental levels which can be identified. The individual teacher has to be the unit of analysis for the evaluation of the implementation as well as for the study of teacher effects. Recognition of school-level and district-level variables must also be included in the evaluation process. Consequently, the implementation of innovations must be viewed systemically. The process must be viewed as an adaptive, interactive, ongoing developmental process, rather than being viewed as some sort of dichotomous yes-no, go-no, decision point (Hall, 1977).

The Network Study (Loucks, 1983) gives support to the three steps described. From the Network Study factors surfaced in the evaluation of successful staff development efforts. Successful efforts were composed of the following:

1. commitment of teachers,
2. carefully developed, well-defined, and effective instructional practices,
3. training and follow up by credible people,
4. assistance and continued support by other teachers, principals, district staff, and external trainers, and
5. ongoing evaluation.

Final Comments

Concerned citizens, educational leaders, and school directors have been aware of staff development efforts for several years (Orlich, 1984). Traditionally, staff development focused on initiating change in the beliefs, attitudes, and perceptions of teachers. It was assumed that these changes would then lead to other specific changes in the classroom behaviors and practices, which would in turn lead to improved student learning. Current studies show that these assumptions are inaccurate and point to the fact that what is missing is the involvement of those experiencing the change.

Korinex and Schmid (1985) list five factors necessary for successful staff development efforts. Effective staff development efforts

1. are school based rather than college based,
2. have administrators involved with the training and supporting the effort by coordinating and recognizing the efforts and contributions of the teachers involved,
3. plan change efforts at convenient times for the participants and are built into the regular school day,
4. give attention to incentives, rewards, and reinforcement during the change effort, and

5. are planned in response to assessed needs.

From the literature four important principles regarding an effective staff development program consistently surface:

1. Change is a slow, difficult, and gradual process for teachers. The larger the magnitude of the required change for each individual, the slower the implementation will be.

2. Teachers need to receive regular feedback on student learning outcomes. When teachers see that an innovation works well in the classroom, change in their beliefs, attitudes, and use of the innovation will follow.

3. Teachers need to receive feedback about their performance of the innovation in their classrooms. Teachers need continuous guidance and direction in order to make the new behaviors, attitudes, and skills part of their professional work ethics.

4. Continued support and follow up are necessary after initial training. The teacher needs to know that assistance is readily available and that they can discuss their experience with the new innovation with colleagues.

Dodd and Rosenbaum (1986) in their discussion of the strategy of "Learning Communities" emphasized a simple progression in changing teacher behavior. They advocate that learning new ways to teach, trying them out, sharing the experiences, making refinements, and trying again, is the staff development process. Additionally, establishing clear and simple goals on which everyone can agree and toward which everyone will work creates an environment in which change is valued by everyone. Professional growth and change are dynamic rather than static, and groups of teachers should be expected to work together and be given time to do so.

Despite differences in context and format, staff development programs share a common purpose: to bring about change. More specially, Guskey (1985) asserts that the major outcomes of effective staff development programs are changes in teachers' beliefs and attitudes, changes in instructional practices, and subsequent student learning.

The Process of Change

The trauma of change is increasingly a part of our environment. For educators, whether they are classroom teachers, professors, or administrators, change exerts a demanding pressure. All are bombarded with new ideas and innovations that promise to cure present ills.

Educational change has long been the topic for discussion and debate among researchers, theorists, and practitioners. Only in the past 10 years has systematic attention been given to exactly what happens when innovations are implemented. In general, these

studies attempted to investigate two broad questions:

1. What processes and characteristics of individuals and settings facilitate or inhibit the change process?
2. How do people change in both their feelings and their use of new programs?

Process

Many writers in the field of educational change have repeatedly pointed out that change in schools is a process, not an event. Yet, policy makers, decision makers, administrators, and even staff developers frequently behave in ways that betray this basic assumption. For example, there are the "hit and run" workshops and lectures by visiting experts to the whole school system. The assumption is that this event will cause change.

Certain studies have looked at successful change efforts such as those involved in the Concerns-Based Adoption Model Project, commonly referred to as CBAM. This project's belief is that change efforts should be primarily focused on the people who must make the change. People respond to change in uniquely personal ways; therefore, the individual must be the primary target of the change effort. Much of this recent work on the study of change was done at the Research and Development Center for Teacher Education, University of Texas at Austin. Fuller (1969), first proposed the concept for the study of change and the first instruments to assess change.

Gene Hall, Susan Loucks, Shirley Hord, and Leslie Haling have since applied Fuller's concept to many situations. The CBAM researchers have used extensive field documentation of their experiences as adoption agents, as a basis for theory concerning how innovations are adopted. The following assumptions are implicit in the CBAM field research:

1. Change is a process that takes time and is achieved in stages.
2. The individual must be the primary target.
3. Change is highly personal.
4. Stages of change involve both perceptions and feelings of individuals concerning the innovation as well as their skill in its use.
5. Staff developers need to diagnose their clients' location in the change process and assess the state of readiness for change as they adapt strategies along the way.

Susan Loucks (1981) has described four phases of the change process and their characteristics. She believes that staff development activities and the change process should have a "people" focus occurring within an organizational context and dealing with organizational constraints. However, if organizations are to improve, the individuals within them must change. The phases Loucks describes are (a) Orientation and

Preparation, (b) Implementation, (c) Maintenance, and (d) Refinement.

In the Orientation and Preparation phase individuals have concerns that are personal and informational in nature. They want to know about the innovation and how it will affect them. To be successful the fundamental needs of adult learners need to be addressed. Some activities that are likely to help people in the use of the innovation during this phase are

1. teacher involvement in planning,
2. clearly stated expectations,
3. a safe learning environment, and
4. opportunities for active involvement and practice during the training.

In the Implementation phase individuals master the behaviors necessary to use the innovation smoothly, to integrate it into daily practice. Implementation of innovations, whether it be teaching process innovations, curriculum product innovations, or organizational innovations, must be viewed as a process and not an event, (Hall, 1977).

Well-planned delivery format for staff development inservices and/or workshops are the key to success. Effective staff development practices at this phase are

1. opportunity for follow up,
2. continuous assessment of needs,
3. reinforcement of effort, and
4. opportunities for professional dialogue and collaboration with other teachers.

The Maintenance phase usually occurs when the routine is established and no particular concerns are expressed. Usually many change efforts fail here, for once the individuals have settled back into their roles the organization focuses its efforts elsewhere. Consider the number of innovations imposed on teachers in the past 20 years that have since been dropped. It is remarkable that any new idea is accepted at all (WU, 1988). Two practices are encouraged here

1. ongoing administrative support, and
2. ongoing opportunities for problem-solving.

The Refinement phase indicates that some refinement of the innovation is valued. Here it is necessary to raise impact-orientation concerns. Literature indicates that individuals often reach a maintenance phase, where use is routine and no particular concerns are expressed, never moving to innovation refinement. If refinement is valued, then the following practices are encouraged:

1. opportunities for self observation,
2. individualization,
3. opportunity for choice,

4. opportunities for leadership, and
5. administrative support.

Other studies have shown various degrees of use of Susan Loucks' four phrases during change efforts. These studies allow a closer look at the implementation process and the changing individual.

Gross, Giacquinta, and Bernstein, (1980) headed a team of researchers who virtually immersed themselves in an elementary school to study an attempt at instituting greater student autonomy, called the "catalytic role model." The program emphasized the teacher's role as a catalyst rather than director and aimed at making students responsible for their own learning. The program was minimally implemented. There were a number of reasons for the unsuccessful event. The bottom-line difficulties included the following: program administrators lack of necessary capabilities, training was not provided, instructional materials were not available, and feedback mechanisms were not established. No planned effort was established. It was assumed that telling about the objectives would lead to their achievement.

Charters and Pellegrin (1980) conducted a year-long study of educational change on differentiated staffing through on-site observations, interviews, and questionnaires. The outcome was also disappointing for reasons similar to those found by Gross, Giacquinta, and Bernstein. Charters and Pellegrin found that there were no monitoring procedures, no established ways to evaluate the project, and that the time line for implementation was unrealistically short.

Berman and McLaughlin (1976) summarized the 4-year study by the Rand Corporation that looked at 293 change attempts. They tried to identify change that was successful and that continued for a significant time. Their findings are as follows:

1. As to which innovation was the best, there was no particular educational innovation more successfully implemented than any other. No pattern emerged that one innovation worked and lasted in one school or district and failed in another.
2. How the change process was undertaken mattered significantly. Berman and McLaughlin found what mattered most was how the project was done. Their study of successful strategies revealed:
 - a. Concrete, teacher-specific, extended training provided the teachers with the needed knowledge to make the project work and was

continued throughout the process. This training was provided best by project or district staff because they could be in close touch with the ongoing immediate training needs of the participants.

- b. Regular project meetings that focused on practical problems were scheduled. It was assumed that problems would arise and structured ways of dealing with these problems were designed in the beginning. Teachers were also encouraged to reveal their problems and to work to solve them.

Corbett and D'Amico (1986) stress from their studies and experience that the time it takes to understand an innovation and transfer it into practice conflicts with the time participants need to perform their responsibilities. Change priorities compete with one another, incentives for making changes are glaringly absent, and participants rarely see evidence of a system-wide commitment to an innovation. From their studies and others, (Clark, 1984, Fullen, 1985; Loucks, 1981; Peters & Waterman, 1982) at least four organizational conditions can help change efforts:

1. available time,
2. strategies against interference,
3. opportunities for encouragement and feedback, and
4. recognition of the need for incorporation.

Clark (1984) argues that the availability of uncommitted time is one of seven distinguishing features of excellent schools. Available time enables staff to venture beyond the tried and true, to confer with peers about special or routine problems, or to participate in change projects.

Fullen (1985) argues that changes in attitudes, beliefs, and understanding usually follow changes in behavior. Once again it takes time for commitment to develop. Along with some initial ambiguity, participants experience confusion, frustration, anger, and exhaustion when they begin using new practices. A series of stages most participants go through include the following:

1. little concern for use and ability to cope with it daily,
2. disjointed use,
3. initial coordination and consolidation of basic routines, and
4. refinement and extension.

Fullen points out that the greatest problem is the difficult time the participants have determining what is most important and to foresee what will last long enough to be

worthwhile. Hall and Rutherford (1975) stress that those administrators and others involved in the design of change efforts cannot ignore the fact of time in the change process. Change is a slow, difficult, and a gradual process for those involved (Gusky, 1985). Time is at a premium in most schools. For the teacher to use the innovation, the techniques need to be clear and explicit and the teacher must be convinced that the innovation is worthwhile (in terms of teacher or student outcomes).

The Individual

Research conducted by Hall and Rutherford (1979) looked at the fact that individuals have different stages of concern about their involvement with change at different times. By being aware of the kind of concern that an individual has at a given time, the manager of the change process can better prescribe relevant strategies. This approach to the individual in the change process is supported by the CBAM research (Hord, 1981, Loucks, 1981).

What was found was that, in introducing the innovation, special attention need to be given to pre-use, self-oriented exploration, and anticipation concerns. Not resolving them is likely to detract from or be an obstacle to implementing the innovation or developing a high level of use. Addressing these concerns by using targeted strategies may make for a more personalized approach to the change process and would help individuals in pursuing the change.

Gross, Giacquinta, and Bernstein (1980) noted that, prior to implementation, program administrators failed to identify possible difficulties of teachers and forgot to bring them out into the open to be dealt with. Additionally, if a problem did arise, it was swept under the carpet, ignored, or glossed over. Additionally, teachers did not really understand the innovation or what it entailed before and after the implementation. There appeared to be no ownership by the teachers involved, no definite design and plan of implementation, and no communication link for the teachers. These conclusions seem to hold true for other change efforts.

Charters and Pellegrin (1980) found that the meaning of the innovation was not very clear and that teachers had no ownership in the project. They expressed that they were "experiencing overload."

Another element vital to change efforts is encouragement and feedback to the staff for their participation. Teacher isolation or lack of collegiality has been cited as one of the greatest obstacles to professional development (Valencia & Killion, 1988). Peters and Waterman (1982) identify a paradox of human nature: an individual's need to stand out, and the desire to be on a winning team. The existence of this paradox in education is

significant in the recognition, encouragement, and feedback given from peers, experts, and supervisors. This recognition, encouragement, and feedback signal to participants that what they are doing is good for their own development and important to the institution they serve. It also gives them individual information on how they are handling the change.

Conclusion

Change is difficult. It is difficult to imagine, difficult to plan, difficult to implement, difficult to manage, and difficult to measure. Change is multidimensional in that one must consider new materials, new teaching approaches, and alteration of beliefs.

Change in education, as in all professional fields, must be accompanied by a broad base of support and evaluation. It does not really matter what the change is -- whether educators are assessing the literature on effective schools, increasing productivity, or considering implementation of recommendations from the national studies and reports -- a change effort must be planned.

Before actually proceeding with any change, educators should have a clear picture of exactly what change is desired, why the change is needed, how the decision was arrived at, and where the support base lies.

Three questions are created from this way of thinking (McCoy & Allred, 1985):

1. Are those most affected by the proposed changes given the most input in the various considerations?
2. Do district level changes involve district representation?
3. Do school level changes show consensus of those staffed in the school?

A number of assumptions about the process of change have been verified by the literature.

Change is a process, not an event. A persistent tendency of those who do not appreciate the complexity of change is to equate change with handing over an innovation, which is an event (Hord, 1987). This false tenet fails to recognize that change is a process occurring over time, usually over several years.

Change is accomplished by individuals. A common notion considering change is to think about it in ambiguous, impersonal terms. But change affects people; therefore, individuals must be the focus of attention in the staff development change efforts of any innovation.

Change is a personal experience. People do not behave collectively; each will react differently to a change effort. Therefore, a sufficient accounting of individual differences must be taken.

Change involves developmental growth. Individuals involved with change appear

to express or demonstrate growth in terms of their feelings and skills (Hord, 1987). These feelings and skills tend to shift with respect to the innovation as the individual passes through degrees of experience and use.

Change is best understood in operational terms. Individuals relate to change in terms of what it will mean to them and how it will affect their current work environment.

The obstacles to change efforts seem to follow a general theme. The literature maintains that the change process must contend with variables of resistance and time. Staff development change efforts that place the teacher in a active role versus a receptive role are more likely to accomplish the objectives. Change efforts that emphasize demonstration, supervised trials and feedback are more successful than those that simply present new ideas and/or materials without opportunities for practice. Change efforts in which teachers share and provide mutual assistance to one another are more likely to succeed than those that fail to encourage interaction during and after the training. There is a need for continued staff encouragement, feedback, and commitment or acknowledgment from the organization that the change was important.

The strategies suggested by Susan Loucks show that when planned change is carefully and clearly defined and when provisions for ongoing feedback mechanisms are in place, change will happen, given enough time and support.

CHAPTER III

METHODS and PROCEDURES

The study evaluated the effectiveness of a change effort over time. The evaluation determined the extent to which intended behavioral outcomes of five dimensions were realized initially and four years after treatment. The teaching behaviors investigated were introduced in 1981/82. The hypothesis of this study was that these behaviors would not be present in the same degree as they were after the initial introduction.

Research Design

This study required a research design that would (1) investigate the initial implementation effectiveness of a change effort, (2) examine how well the changed behaviors were sustained four years after the initial training, and (3) assess and analyze the attitudes that might have influenced the change process itself. However, the research design also needed to account for the fact that no control group was established in 1981-82 when the change effort was initiated. This factor left uncontrolled variables that possibly would jeopardize internal validity as well as explanations of any findings. Therefore, a true pretest / post-test design could not be used (Campbell and Stanley, 1963).

Upon investigation, it was found that a 'post-test only control' design could be used for this study (Campbell and Stanley, 1963, Good, 1963, Issac, 1981). This design is similar to a 'pretest-post-test control-group' design except that a pretest of the dependent variable is not administered to the experimental and control group. A pretest was unavailable and, as stated, a control group was not established in 1981-82, therefore Campbell and Stanley suggest the use of a 'post-test only control' design. This type of design establishes for comparison a static group. This static group is established after the fact and is compared (post-test) to the treatment group that has received treatment. The static group could not have participated in the change effort and thus provides a base line from which to analyze the effect of the change effort over a period of time. The research design strengths attempted to control the variables of history, maturation, testing, instruction, regression, selection, and mortality.

Selecting the Treatment Sample

The study investigated a change effort used during the 1981-82 school year in the Beaverton School District and the individuals trained that year. The treatment sample was selected on the basis of the school group that were trained in the year 1981-82. To be included in the treatment sample, a person had:

1. to be one of the original 72 teachers given training in 1981-82,
2. to be teaching at the elementary level in Beaverton during the 1985-86 school year,
3. to hold a full-time position in one school, and
4. to have a source of data from the 1981-82 training year for comparison.

To be included in the control group a person had:

1. to be in the district since 1981,
2. to be teaching at the elementary level, and
3. not participated in this particular district change effort.

The treatment sample was taken from the grades one through sixth. Teachers from the Library or Physical Education were also included. The treatment and the control group had equal numbers of each grade level and both groups worked with four teachers from the Library or Physical Education. Total number in each group was 30.

The present school and teaching position of each participant was identified from current personnel records. The respective principals were notified and an orientation meeting was conducted with the Director of Elementary Education, the Director of Staff Services, and the principals. The meeting set the stage for the study in each of the schools and with the selected sample.

Before each meeting each teacher was informed by the principal about the study. At the meeting, the investigator described the research project, including each teacher's role and the time line for the research. The meeting was carried out with each teacher and where more than one teacher in a particular school was involved, in one large school meeting. During the informational meeting up-coming classroom observations and videotaping of each teacher were scheduled.

The Method

Teacher behaviors of the treatment and control group were central to the study, the research design called for collecting data by videotaping teaching episodes of the treatment group pre- and post-treatment. Subsequently, teaching behaviors of the treatment group were assessed four years after the initial training, also through videotaping. Finally, the control group's teaching behaviors were assessed by the use of videotaped teaching

episodes during the 1985-86 school year, the same year as the final videotaping of the treatment sample.

In addition, an analysis of the study's treatment group concerns as they evolved through the change stages were assessed.

The questions being asked were to shed light on the following areas.

Change in Teaching Behaviors (Treatment group)

1. As a result of specific training in ITIP, was there an observable change in participant teaching behavior?
2. Do the trainees exhibit the ITIP teaching behaviors four years after the training to the same degree they were exhibited immediately after the training?
3. Does the evaluation of the six dimensions, where evaluation data was collected, show any dimension with more change or regression at any point during the research study?
4. Is the grade level of each teacher associated with the degree of use of the teaching behaviors?

Comparative Teaching Behaviors (Treatment versus Control group)

5. Do teachers working in the school district the entire time the change effort was implemented, who have not been through the training project, demonstrate the observable teaching behaviors at the same level as the teachers who were trained?

Change in Concerns (Treatment Group)

6. Do the concerns of trained teachers who are using the ITIP teaching behaviors four years after the initial training show any change?
7. Does the assigned grade level relate to the type of concerns trained teachers have four years after the initial training?

The Instruments

Videotape Evaluation Instrument

The Videotape Evaluation Instrument is a rating sheet. The evaluators, using this instrument judged a teacher's performance on five specific dimensions as well as one composite or overall rating. The six dimensions rated are:

- Teach to an Objective
- Monitor and Adjust
- Reinforcement
- Motivation
- Rate and Degree
- General Rating

Each dimension was rated on a 4-point scale, with 1 being the lowest and 4 being the highest. The form used by the evaluators during the review process appears in Appendix A. The training of the evaluators as well as the reliability and validity of the process will be discussed later in this chapter.

Stages of Concern Questionnaire

Concern is defined as the composite representation of the feelings and the preoccupation of thought that is given to a particular issue or task. Depending on personal make-up, knowledge, and experiences, each person has a different perception of a given issue; thus there are different levels of concerns (Newlove & Hall, 1976).

The instrument for assessing teacher concerns used here was developed by the University of Texas Research and Development Center and was based on the teacher concerns research conducted by Dr. Frances Fuller (Fuller, 1969), in the 1960's.

The Stages of Concern Questionnaire (referred to as SoCQ) was developed to assess seven hypothesized stages of concern about an innovation (Appendix B). The instrument assesses the kinds of concerns the individual may experience or is experiencing across time, related to a given innovation. The 35-item questionnaire has been tested for reliability, internal consistency, and validity with several different samples and 11 different innovations, all of which provided confidence that the SoCQ measures the hypothesized stages of concern (Hall, George, & Rutherford, 1979).

The SoCQ has three parts: the introductory page, the 35 items, and the demographic page. The introductory page presents the purpose of the questionnaire, explains and shows how to complete the instrument, and identifies the "innovation" the individual is to consider when responding.

The second part of the questionnaire consists of 35 items to which the individual

responds. The questionnaire's 35 statements are selected to represent seven fundamental areas of concern. Thus, each of the seven Stages of Concern is represented by five statements. The 35 questions ask the respondent to answer each statement on a Likert scale of 0 to 7. The respondents indicate the degree to which each concern is true of them, in the present, by marking a number next to each statement. By selecting 0 the statement is irrelevant. A selection of 1 means that the statement is not true of them now. A selection of 2-3-4 indicates a range of somewhat true of them now. A selection of 5-6-7 indicates a range of very true of them now.

The third, and optional, part of the SoCQ is the demographic page. This page however was omitted in the present study. Instead the demographic information needed for the study was collected through interviews and through information provided by the Beaverton Department of Staff Services.

Interview

An interview was conducted to gain understanding of the respondent's opinions of the innovation, their specific training in the innovation, and the follow up after the training. Important were the respondent's perceptions about the use of ITIP, their concerns and recommendations about ITIP, and their thoughts on the training process. The questions used were open ended giving the respondent a frame of reference with which to start their thinking. A copy of the interview questions and probes for further information are available in Appendix D.

Validity of the Videotape Instrument

The videotape evaluation instrument appeared to measure "what it claims to measure," therefore had face validity. The videotape instrument had content validity as well, for it measures skills that were taught and practiced. Therefore, this evaluation instrument was valid for the purposes of this investigation (Borg, 1983).

Validity of the SoCQ Questionnaire Instrument

The SoCQ questionnaire and the interview are dependent on the response(s) recorded. The instruments are valid when they elicit a response that reflects the individual's true concern and knowledge on a given topic or issue. It was assumed by the investigator that the subjects would reveal their true concerns in both cases because their names were not written or recorded on the questionnaire or during the interview.

Reliability of the Videotape Instrument

The reliability of a measurement device is established by the degree to which it can reproduce the same score when the subjects are measured repeatedly. Reliability can be defined as the level of internal consistency or stability of a measuring device.

It was inevitable that some measurement error occurred in the assessment of a complex performance task such as teaching. The measurement error could have taken form from evaluator bias, shifting judgement thresholds across 5 days of evaluating videotapes, and/or inadvertently selecting an inappropriate time for the videotaping of the teacher's performance (e.g., teacher may have had a bad day, the students may have been temporarily restless, etc.).

The procedure of having each videotaped lesson evaluated twice by two evaluators helped offset some of these concerns. Each evaluator scored their rating of the videotaped lesson and an independent checker compared the scores. If any one dimension had two scores separated by more than one on the scale, the two evaluators together reviewed the videotape and came to a closer agreement on that dimension(s).

A viewer-reliability measurement was conducted in 1981/82. Each dimension on each individual was analyzed to see if the initial ranking by both evaluators were reliable. These tests were made prior to the independent check of the evaluators and their reassessment of any dimension(s) that had scores separated by more than one. The same test was conducted for this study. Table I shows the results for 1981-82. Table II shows the 1985-86 results.

Table 1
Viewer - Reliability Results on Video Evaluation 1981/82

	Teach to an Obj.	Monitor & Adjust	Reinforcement	Motivation	Rate & Degree	General Rating
# < or = 1	98	106	104	106	110	110
% < 1 Agree	81.7%	88.3%	86.7%	88.3%	91.7%	91.7%
# exact	50	53	40	44	59	66
% exact	41.7%	44.2%	33.3%	36.7%	49.2%	55.0%
# 1 apart	48	53	64	62	51	44
% 1 apart	40.0%	44.2%	53.3%	51.7%	42.5%	36.7%
# 2 apart	22	14	16	14	12	12
% 2 apart	18.3%	11.7%	13.3%	11.7%	10.0%	10.0%
Exact agree	No less than 1/3					
1 apart	No less than 1/3					
2 apart	No more than 1/5					

Table 2
Viewer - Reliability Results on Video Evaluation 1985/86

	Teach to an Obj.	Monitor & Adjust	Reinforcement	Motivation	Rate & Degree	General Rating
# < or = 1	53	54	55	54	53	55
% < 1 Agree	89.8%	91.5%	93.2%	91.5%	89.8%	93.2%
# exact	27	29	23	25	27	31
% exact	45.8%	49.2%	39.0%	42.4%	45.8%	52.5%
# 1 apart	26	25	32	29	26	24
% 1 apart	44.1%	42.4%	54.2%	49.2%	44.1%	40.7%
# 2 apart	6	5	4	5	6	4
% 2 apart	10.2%	8.5%	6.8%	8.5%	10.2%	6.8%
Exact agree	No less than 1/3					
1 apart	No less than 1/3					
2 apart	No more than 1/9					

The summary (Table 3) shows that the viewer-reliability was high for all dimensions. For each dimension the evaluators were within one scale point of each other in their ranking 80 percent or more of the time.

Table 3
Summary of the Viewer - Reliability Results from both Years of Study

<u>Dimension</u>	<u>Reliability</u>	
	1981/2	1985/6
Teach to an Objective	81.7%	89.8%
Monitor and Adjust	88.3%	91.5%
Principles of Motivation	86.7%	93.2%
Principles of Motivation	88.4%	91.5%
Principles of Rate & Degree	90.0%	89.8%
General Rating	90.0%	93.2%

Stages of Concern Questionnaire

Items were selected on the questionnaire in a manner to attain high internal reliability. In order for an item to be included, it had to correlate more highly with responses to other items measuring the same stage, rather than correlate with responses to items on other stages. As a result, high internal reliability was ensured (Hall et al., 1979).

Coefficients of internal reliability for the Stages of Concern Questionnaire are provided by Hall et al., (1979).

Interview

One of the disadvantages of an interview is bias. One interviewer was used in this study. The interviewer in this study was the researcher himself. Questions were established along with probing questions, and the interview was audio recorded for further analysis. The interviewer practiced the interview format on 15 subjects (not involved in the study) prior to the first interview. No conclusive measurement of reliability can be made on the interview instrument.

Data Collection

The data for the control group were collected by videotaping two lessons one to three weeks apart, each in a different content area, 15 to 25 minutes in duration, and after the second lesson, feedback was given to the teacher.

Data for the treatment teachers were collected by videotaping two lessons, 15 to 25 minutes in duration one to three weeks apart. Each teacher taught two lessons, each in a different content area. Feedback was given to each participant after each lesson.

A feedback conference was conducted by trained personnel with verbatim script. The verbatim script was taken by one of three staff development specialists who had been trained to take verbatim script. Each lesson's conference gave positive feedback to the participant about the use of identified ITIP elements. The second lesson's conference provided review of the ITIP elements and instructional feedback to the participant.

A Stages of Concerns Questionnaire was given to each individual by appointment after the last videotaping and prior to the interview (Appendix B). The questionnaire was administered and collected by the researcher.

The directions to the questionnaire were read from the cover letter (Appendix B). This cover letter introduced the questionnaire, defined the innovation, gave an explanation of the importance of completing the questionnaire, and provided one example question format.

An average of 15 minutes was needed to complete the questionnaire after the introductory page was read and reviewed to ensure understanding of the task. It was then collected by the researcher. This was done to ensure 100 percent return. In past studies, seriousness with which individuals respond to the questionnaire does not seem to vary noticeably in relation to the method of administration (Hall et al., 1979).

Questions by the respondents for further clarification were handled solely by reviewing the cover letter. This was done to prevent any influence on the responses.

An interview with each teacher took place no more than two to five days after the last lesson had been taped and questionnaire had been administered. Most interviews were conducted on the same day the questionnaire was administered. The question format helped assess perceptions about the use of ITIP, concerns and recommendations about ITIP, and the training process (Appendix C). This interview was audiotaped using the guide questions and probe questions and was conducted by the researcher with the entire sample.

Data Treatment

Each teacher's videotaped lessons were judged using an observation instrument for the analysis of his or her ITIP teaching behaviors (Appendix A). The personnel doing this analysis were hired by the Beaverton School District for this one change effort. These evaluators were teachers not employed by the Beaverton School District during the regular school year, but who had extensive ITIP training. They came from out-of-district and thus were unfamiliar with the subject teachers appearing on the videotapes. This allowed for more objective rating of their performances. The evaluators were trained by the District's Evaluation Department and had established high viewer reliability scores by the end of the training.

The videotape evaluation instrument used a scale of 1-4 along the six dimensions analyzed: teaching to a objective, monitor and adjust, reinforcement, motivation, rate and degree, and the general overall rating.

However, the scale used in the videotape evaluation must be emphasized as internally relevant only. For example, a score of one indicates the lowest rating within the sample of teachers while a score of a four indicates the highest rating within the sample. A four does not indicate a perfect teaching performance; it simply indicates that the performance was within the highest section of the available range.

The method used to evaluate the videotapings consisted of each videotape being viewed twice by two of the evaluators. Each evaluator rated the videotape, and an independent rater compared the scores. If anyone dimension had two scores separated on the scale by more than one, the two evaluators together reviewed the videotape and came to a closer agreement on that dimension(s).

For example, if scores of one dimension were one and three on the scale, a review of the videotape would take place so that the evaluators could come to a closer agreement, (a separation of no more than one). This same process was used in 1981-82 evaluation of the videotapes.

Available for use by the researcher was the recorded evaluation data of the actual performances of the treatment group prior to the first day of initial training and the post-performance data taken at the end of that year, in 1982. Thus, a cross analysis of the data was possible to determine if the ITIP elements were still part of the actual performance of the treatment sample in 1985-86.

A comparison on the treatment sample was appropriate here because the purpose of this evaluation was to determine whether the change effort had made a difference and to see if the difference was maintained over a period of four years.

Comparison Tests

To make the comparison (between the pre-treatment behaviors and post-treatment behaviors), a sign test, a Wilcoxon signed-rank test, and a Mann-Whitney test were conducted on the data for each of the six dimensions (Campbell & Stanley, 1963, Siegel, 1956). These tests were selected since it could not be assumed that the treatment population was normally distributed. Additionally, the data collected on a small scale (1-4) and the dichotomous nature of the question being asked (growth or no growth) give reason to pick such comparison methods.

These non-parametric tests test for differences between issues that involve samples of matched pairs and only consider the direction of the difference in each sample pair. This is expressed by either a plus (+) or minus (-) sign. The tests evaluate the null hypothesis.

For example: An analysis to measure the ability of an individual to write an instructional objective is based on four criteria:

- stating a learning
- stating a behavior
- stating a condition(s)
- stating a performance level

Before any training occurs, a base line performance score, a behavioral anchor, is taken on each subject. Training is conducted and the ability to write an object is measured again with the same criteria. The sign test is done to compare the scores, pre-training and post-training. The sign test indicates whether the post-training measurements are:

1. as good as (equal to) the pre training scores indicating no growth.
2. greater than pre training scores indicating growth.
3. less than pre training scores indicating a regression in skill.

The sign test makes no assumption about the shape or the parameters for sample frequency distributions. It must be noted that because a teaching performance cannot be segmented into absolute discrete dimensions, the six sign tests will probably not be totally independent.

This study made a comparison of the six sign tests prior to the initial training, to the post-training, and to the 1985-86 videotaping. By taking the initial training video evaluation and comparing with the post-training video evaluation, an analysis of the scores will show

1. elements that have changed,
2. the change as (+) or (-), and
3. a profile of each individual.

Taking the post-training video evaluation and comparing with the 1985-86 video evaluation and analysis will

1. determine which elements have been maintained,
2. show elements that have changed,
3. show the change as (+) or (-), and
4. show a profile of each individual.

By adding the grade level factor, an analysis will

1. show grade level significance, and
2. show which element(s) were affected by this factor.

The sign test is more likely to accept a false null hypothesis, because it allows too much information to be "thrown away" (Weiss and Hassett, 1982). Therefore, the Wilcoxon signed-rank test (Campbell & Stanley, 1963, Siegel, 1956), was used to verify the sign test results. This non-parametric test does not throw away as much information as the sign test and is less likely to accept a false null hypothesis. The reasoning behind the Wilcoxon test, is that to accept the null hypothesis the researcher would expect the sum of the positive and the negative ranks to have about the same magnitude. Otherwise the researcher would reject the null hypothesis in favor of the alternative hypothesis.

Another consideration for use of both tests is the assumption that the treatment population was symmetrical. A symmetrical population means that a distribution curve could be cut into two halves that are mirror images of each other. A sign test does not require this but the Wilcoxon test does.

The third test, the Mann-Whitney test (Campbell & Stanley, 1963, Siegel, 1956), was used since it allows the comparison of two populations. The study compared behavior performances of a treatment and a non-treatment group. The test is very similar to the Wilcoxon test as it involves ranks. This test is based on the assumption that the two populations have distribution curves that closely resemble each other.

The results of these tests allowed an analysis of the data to answer the following questions:

1. As a result of specific training in ITIP, was there an observable change in participant teaching behavior?

2. Do the trainees exhibit the ITIP teaching behaviors 4 years after the training to the same degree they were exhibited immediately after the training?
3. Does the evaluation of the six areas, where evaluation data was collected, show any area with more change or regression at any point during the research study?
4. Do teachers working in the school district the entire time the change effort was implemented, who have not been through the training project, demonstrate the observable teaching behaviors at the same level as the teachers who were trained?
5. Does the grade level of each teacher influence the degree of use of the teaching behaviors?

The study attempted to see if the skills were still present and at the same performance level after initial training. The non-parametric tests made such comparisons.

The Change Factor

The change process and its implications on an implementation process were studied along with the performance evaluation. The study investigated the characteristics of individuals and the settings that might facilitate or inhibit the change effort or the use of the innovation over a period of time.

The instrument used was the Stages of Concern Questionnaire (SoCQ; Appendix B). This questionnaire assessed the kinds of concerns an individual may experience or is experiencing across time related to the innovation.

The questionnaire provided information of how the treatment population was attempting to make the innovation part of their everyday performance. It presented self reporting evidence of what level of change the treatment sample population had reached.

The respondent marked each item on a Likert scale of 0 to 7 according to how true it was that the item described a concern felt by the individual at that time. The 0 at the end of the scale was recommended for making items that are completely irrelevant. The respondent was asked to complete the questionnaire without consultation with anyone. The purpose was to identify the concerns of individual, not a consensus of several persons (Hall et al., 1979).

After the individual completed the questionnaire, it was hand scored using the Stages of Concern Questionnaire Quick Scoring Device (Appendix B). The "raw score" for each scale was simply the sum of the responses to the five statements on that scale. An individual profile was made as to the concerns the individual was experiencing.

The range used was from initial self-concerns, "What ways will I be affected by this innovation?" (Stages 1-2); "How can I make this innovation work?" (concerns related to task -- Stage 3); and then, "How will using this innovation affect my students?" (concerns for impact -- Stages 4,5,6).

The questionnaire looked at perceptions or how the subjects saw their use of the innovation. The data focused on the present cognitive knowledge of each participant and levels of use. These data built an individual profile that hypothesized how much the individual had changed with the acceptance and use of the innovation. It gave clues about why the present performance had or had not been maintained since the original training.

The interview was used to capture any other perceptions the individual may have about the training, the change effort, and the use of the innovation. Close attention to further training, follow up in the work situation and by whom, and attitudes towards the entire process were the major focus.

These data focused attention on concerns that were still present as of 1985-86. The analysis of this information was compared to the actual performance data to see if there are any relationships.

The data collected by the SoCQ and the interview were used to analyze and answer the following questions:

1. Do the concerns of teachers trained and who are using ITIP teaching behaviors 4 years after the initial training show any change?
2. Does the assigned grade level determine the type of concerns trained teachers have 4 years after the initial training?

Summary

The study evaluated the effectiveness of a change effort over time. The evaluation determined the extent to which intended behavioral outcomes of six dimensions were realized initially and four years after treatment. Therefore this study, required a research design that would investigate the initial implementation effectiveness of a change effort, examine how well the changed behaviors were sustained four years after the initial training, and assess and analyze the attitudes that might have influenced the change process. The research design also needed to account for the fact that no control group was established in 1981-82. Therefore, a true pretest/post-test design could not be used.

A post-test-only control design was modified for this study (Campbell and Stanley, 1963, Good, 1963, Issac, 1981). This type of design established for comparison a static group. This static group was established after the fact and was compared to the treatment group that had received treatment. The research design allowed the strength of two true

experimental designs described by Campbell and Stanley (1963) to be used to attempt to control the variables of history, maturation, testing, instruction, regression, selection, and mortality.

Because the behaviors of the treatment teachers and control group teachers were crucial to the study, the research design collected data by videotaping teaching episodes of the treatment group pre- and post-treatment. These episodes were assessed for their pre-treatment teaching behaviors and post-treatment teaching behaviors. In addition, the research design collected data by videotape and assessed the teaching behaviors 4 years after the initial training. In the same manner, the control group's teaching behaviors were assessed in 1985-86.

In addition, an analysis of the study's treatment group concerns as they evolved through the change stages was assessed. This change analysis and behavioral assessment led to additional evidence for the evaluation of the effectiveness of the change effort in question.

The treatment population selected met the following criteria:

1. one of the original 72 teachers given training in 1981-82,
2. teaching at elementary level in Beaverton during the 1985-86 school year,
3. holding a full-time position in one school, and
4. have a source of data from the 1981-82 training year for comparison.

To be included in the control group a person

1. needed to have been in the district since 1981,
2. needed to be teaching at the elementary level, and
3. had not participated in this particular district change effort.

Three instruments were used in the research design. (1) The Videotape Evaluation Instrument was a rating sheet. This instrument rated a teacher's performance on five individual dimensions and one composite or overall rating. The six dimensions rated were; Teach to an Objective, Monitor and Adjust, Reinforcement, Motivation, Rate and Degree, and a General Rating. (2) The Stages of Concern Questionnaire (SoCQ), an instrument that assessed the stages of concern about an innovation as hypothesized by Dr. Frances Fuller. (3) The interview which was conducted to gain further understanding of the treatment population's opinions of the innovation and assess any additional training to the innovation that had taken place.

Using these instruments the data were collected by videotaping two lessons, each in different content areas, 15 to 25 minutes in duration of each participant in the study. The SoCQ was given to each individual after the last videotaping and prior to the interview.

To make the comparison, a sign test, a Wilcoxon signed-rank test, and a Mann-Whitney test was conducted on the data for each of the six dimensions.

The assessment of the SoCQ questionnaire led to a raw score and individual profiles were drawn to show the concerns that the individual was experiencing.

The interview captured any other perceptions the individual may have about the training, the change effort, and the use of the innovation. Close attention to additional training, follow up in the work situation and by whom, and one's attitude towards the entire process were studied.

CHAPTER IV

THE ANALYSIS

Change in Teaching Behaviors

The study attempted to see if the ITIP skills were still present and at what performance level after the initial training and four years after the initial training. The non-parametric tests made such comparisons. In addition, an analysis of the treatment group's concerns as they evolved through the change stages was done. The analysis is presented question by question and is followed by a summary of the data analyses.

The results of the tests conducted on the data were analyzed to shed light on the following areas.

Change in Teaching Behaviors (Treatment group)

1. As a result of specific training in ITIP, was there an observable change in participant teaching behavior?
2. Do the trainees exhibit the ITIP teaching behaviors four years after the training to the same degree they were exhibited immediately after the training?
3. Does the evaluation of the six dimensions, where evaluation data was collected, show any dimension with more change or regression at any point during the research study?
4. Is the grade level of each teacher associated with the degree of use of the teaching behaviors?

Comparative Teaching Behaviors (Treatment versus Control group)

5. Do teachers working in the school district the entire time the change effort was implemented, who have not been through the training project, demonstrate the observable teaching behaviors at the same level as the teachers who were trained?

Change in Concerns (Treatment Group)

6. Do the concerns of trained teachers who are using the ITIP teaching behaviors four years after the initial training show any change?
7. Does the assigned grade level relate to the type of concerns trained teachers have four years after the initial training?

The Questions

Question 1

Will there be observable change in participant teaching behavior as a result of specific training ?

The study's null hypothesis stated that there would be no growth after the initial training. The alternative hypothesis stated that there would be a significant growth of skills from pre-training teaching behavior compared to post-training teaching behavior (1981-82) as measured by the videotape evaluation instrument (Appendix A).

Video evaluation data collected pre-treatment 1981/82 was compared to the video evaluation data collected post-treatment 1981/82. The data was first analyzed by using a sign test analysis on the six dimensions. The six sign tests are not totally independent, but with reasonable amount of caution, strong trends in the data can allow interpretation of the results. Therefore an additional test, the Wilcoxon signed-rank test, was conducted to help in the analysis of the magnitude as well as the direction of the difference between the pairs of data.

Table 4 displays the sign test statistical data analysis showing that in 1981/82 the research treatment sample had a significant positive (+) change after the initial training in four of the six dimensions.

The results indicate that the training had significant effect on each participant's teaching behavior in five of the six areas analyzed. Significant observable change in these areas allows one to conclude that the change effort design was effective in the short term.

Table 4
Change After the Initial Training
Sign Test Analysis

Five Dimensions Post Initial training 1981/82.

YEAR 1981/82
N =30

Dimension	N	F(z)	p
Teach to an Objective	22	.583	
Monitor and Adjust	21	.995	.01
Principles of Reinforcement	24	.987	.01
Principles of Motivation	22	.972	.03
Principles of Rate & Degree	24	.998	.001
General Overall	26	.999	.001

TOTAL N = (+) change significant at .05 or less

Question 2

Looking at the treatment group four years after the initial training, it was questioned whether the level of teaching behavior that was observed after the initial training still existed. The study's null hypothesis stated that there would be no significant regression of skills from 1981/82 post-training compared to 1985/86 post-training as measured by the videotape evaluation instrument (Appendix A).

Once again a sign test was conducted comparing the treatment group's analyzed post-treatment video data of 1981/82 and the treatment group's analyzed video data of 1985/86. Table 5 displays the negative (-) sign test results. All areas regressed from their post-treatment 1981/82 points, five areas significant at the .02 or better levels. The three dimensions of principles of Motivation, Rate and Degree, and the General rating regressed at the .01 or .001 level. The significant regression of the five identified areas points to the assumption that the change effort's sustaining objective was not accomplished.

A further display of this analysis is done by graphing the scores of each dimension. Graphs of each dimension (Figures 1-6, Appendix F) show the actual scores post-treatment 1981/82 and four years later, 1986/86. The diagonal line indicates no growth or stable status. The data points above the line would indicate growth in the skill and below the line would indicate a regression of skill over the four years since the initial treatment. The graphs show a high percentage of scores below the line in all dimensions. The further the score is plotted away from the diagonal the more significant the growth or regression.

The observable data analysis points to the conclusion that the change effort design was effective in the short term, but did not have the ability to sustain the behaviors over time.

Table 5
Change Four Years Later
Sign Test Analysis

YEAR 1985/86
N =30

Dimension	N	F(z)	p
Teach to an Objective	26	.984	.02
Monitor and Adjust	25	.977	.02
Principles of Reinforcement	27	.938	
Principles of Motivation	24	.987	.01
Principles of Rate & Degree	27	.999	.001
General Overall	25	.999	.001

TOTAL N = (-) change significant at .05 or less

Question 3

Looking at the six areas of evaluation, did any one or more areas see more growth or regression at any point during the research study?

The study's null hypothesis would be that there would be no significant regression in 1985/86 in those skills that were measured to have greatest growth in 1981/82, as measured by the videotape evaluation instrument.

Comparing the results of 1981/82 and 1985/86 sign test analysis (Tables 4 and 5), the dimensions of Rate and Degree and General, both of which had the most significant growth in 1981/82, had the most significant regression in 1985/86. The areas of Motivation and Monitor and Adjust also indicated significant regression. The area of Teaching to an Objective indicated a .02 percent regression. This one area was not affected significantly by the initial training but regressed within this treatment sample over four years. The area of Reinforcement appears to have no significant change after four years.

The data analysis did show that the training was effective and that growth did occur as demonstrated by actual teaching behaviors in the classroom. The significant regression in four dimensions indicated that the maintenance of the skills with individuals had not been accomplished. Additionally, the analysis did show that the most significant growth in 1981/82 (new learning) was not sustained over the four year period.

Additional Test

To verify the analysis of the data for questions 1 through 3, the Wilcoxon matched-pairs signed-ranks test was conducted using the observable data.

Table 6 is a display of the Wilcoxon matched-pairs signed-ranks test. This test gives more weight to a pair which shows a large difference between the two conditions than to a pair which shows a small difference. The results of this test only verify a stronger relationship than the findings of the Sign Test.

Table 6
Change After Initial Training
Compared to
Change Four Years Later
Wilcoxon Matched -Pair Signed Ranks Test

Dimension	Pre /post 81/82 (+) Change significant at		post 85/86 (-) change significant at	
	z score	significance	z score	significance
Teach to Object	0.91	0.05	3.391	0.001
Mon. & Adj	3.211	0.001	2.045	0.02
Motivation	2.127	0.02	2.686	0.0037
Rate & Degree	3.171	0.001	3.291	0.001
Reinforcement	2.601	0.0047	3.327	0.001
Gen Rating	3.441	0.001	3.337	0.001

This analysis verified that, as a result of specific training, the participants grew in their teaching behavior using the ITIP concepts. The second column verified that after four years from the initial training the newly learned skills regressed in use.

Question 4

Does the grade level of each teacher relate to the degree of use of the teaching behaviors in question?

Grade level responsibilities and the differences of each teacher and each of their classroom learning styles, abilities, and readiness could influence the use of an innovation. In this case the advocates of the innovation have stated that the innovation contains behaviors used by all effective teachers regardless of grade level. The study attempted to test these claims. Table 7 is a summary of the difference between post-training scores of 1982 and scores of 1985/86 in each dimension by grade level.

Looking at the dimension of Teaching to an Objective it was found that of the Grade 5/6 teachers, a lower percentage of the group's individuals regressed over the four years, whereas the entire group of teachers who teach only Music, Library or P.E. regressed over the four-year period. This did not hold true for each dimension. Each grade level varies in their performance of each dimension. Overall, the grade level groups of 1/2 and 3/4 appeared to be demonstrating the behaviors more than the other groups. As many as 37.5 percent of the 1/2 and 3/4 grade level participants were able to demonstrate the behaviors whereas only 20 percent of the 5/6 teachers were able to demonstrate the behaviors.

Table 7
Grade Level Comparisons

		Difference Between Training Scores of each dimension			
Grade		1/2	3/4	5/6	Special
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D					
i		N=8	N=8	N=10	N=4
m	Teach to Object.	62.5%	62.5%	60.0%	100.0%
e	Monitor/Adjust	50.0%	50.0%	70.0%	75.0%
n	Reinforcement	50.0%	87.5%	70.0%	50.0%
s	Motivation	62.5%	50.0%	70.0%	50.0%
i	Rate/Degree	62.5%	87.5%	70.0%	75.0%
o	General Rating	62.5%	62.5%	80.0%	75.0%
<hr/>					

Percentage of individuals regressing in performance of studied dimensions by group.

Question 5

Do teachers working in the school district the entire time the change effort was implemented, who have not been through the training sessions, demonstrate the observable teaching behaviors at the same level as the teachers who weretrained?

It could be assumed that there would be a growth difference between the treatment sample (four years after the treatment occurred) and a control group of teachers, but would that difference be significant? At the time of the study, the particular change effort studied had been in operation for 7 continuous years. Comparison of the two populations using the Mann-Whitney U test provided insight into the sustaining effects of the treatment. The results of the Mann-Whitney U test are displayed in Table 8.

Table 8
Retained Learning 85/86
Mann-Whitney U test

Dimension	z score	significance
Teach to Object	2.17	
Mon. & Adj	3.55	.01
Motivation	2.80	.01
Rate & Degree	0.69	
Reinforcement	3.34	.01
General	2.76	.01

The Mann-Whitney test approached the the treatment and control groups with the idea that the treatment sample would rank higher in the six dimensions. If they did not, then the two groups would be equal in their use of the six dimensions under study.

The areas of significant difference were in the dimensions of Monitor and Adjust, Motivation, Reinforcement, and General. The two dimensions of Teaching to an Objective and Rate and Degree were found to have no significant difference.

It can then be concluded that the training did change the teaching behaviors in four dimensions, initially and after four years, when compared to a sample of teachers who had not received formal training. This is in spite of the regression that took place over these four years in these same areas.

Change in Concerns

Change is a personal experience, and those who undergo change have concerns that depend on many different factors. It was important to see if the treatment group's concern profile had changed. The following questions were analyzed to see if the concerns of each individual had changed over the four years in question.

Question 6

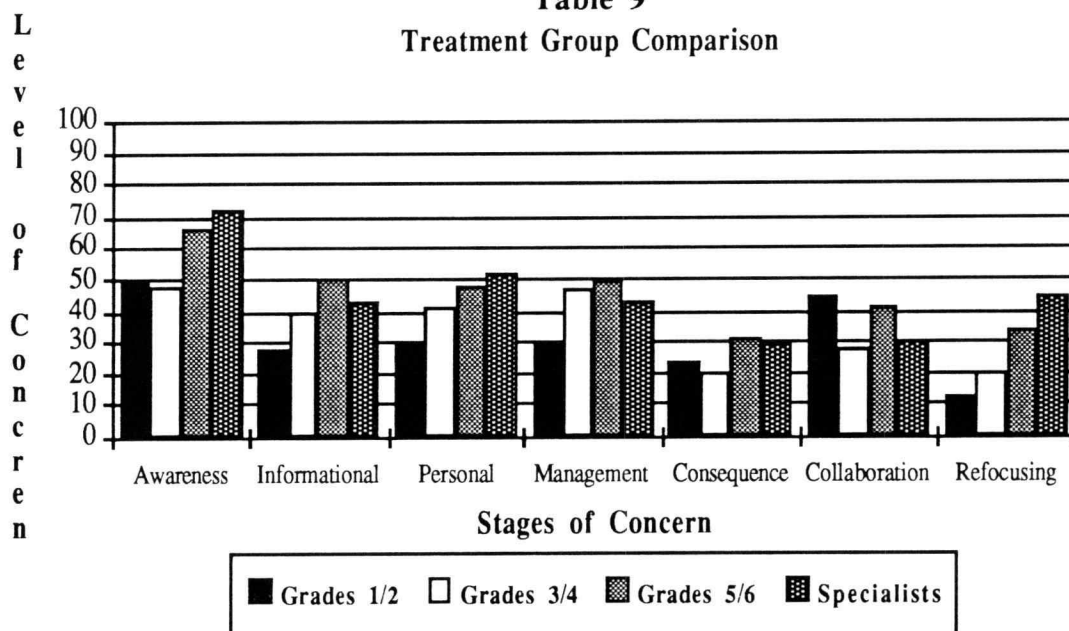
Do the concerns of trained teachers who are using the ITIP teaching behaviors four years after the initial training show any change?

Because no initial data were available, an assumption was made that the original profile would be towards an awareness and information stage of concern as described by the CBAM research. After four years, the profile would have moved to the management and/or consequence stages of concern.

Each participant in the treatment group was given a 35-item questionnaire by appointment after the last videotaping and prior to the interview. The Stages of Concern Questionnaire assesses seven hypothesized stages of concern about an innovation or change. The questionnaire assesses the kinds of concerns an individual may have experienced or is experiencing across time, related to a given innovation or change effort.

Table 9 displays the average score of the participants over the seven hypothesized stages of concern. As can be seen by the display, the awareness area is the predominant concern, followed by management, personal, and informational. Teachers seldom have concerns at only one stage. The profile of the treatment group indicates that the group is made up of non-users and inexperienced users who are still trying to personalize and manage the ITIP teaching behaviors.

Table 9
Treatment Group Comparison



Question 7

Does the assigned grade level determine the type of concerns trained teachers have four years after the initial training?

As we look at the grade level group profiles, we find some sharp distinctions (Tables 10, 11, 12, 13, pages 45 and 46).

Grades 1/2 show a renewing user profile (Table 10). The stage of collaboration as well as the awareness stage are the two dominant peaks of the group. The profile indicates that these users could collaborate to learn, practice, or refine the ITIP teaching behaviors. The profile indicates that these users are seeking information of how to work with others in their use of the ITIP teaching behaviors.

Grades 3/4 have dominant stages found from awareness through management (Table 11). This represents a non-user and/or inexperienced user of the innovation. With regards to the ITIP teaching behaviors, these users are still trying to personalize the teaching behaviors.

Grades 5/6 represent a similar profile (Table 12) to the 3/4 group. They have moved more towards the awareness and informational stages of concern, indicating more of a non-user profile. This group is concerned with the characteristics of the effects of and the requirements of use with regards to the ITIP teaching behaviors. Some could be found to have little concern about or involvement with the ITIP teaching behaviors.

The specialists show a non-user profile (Table 13). They are not concerned about the innovation and are trying to personalize the information as it relates to their job. The two dominant stages indicate that the ITIP teaching behaviors are not yet personalized and the major concern is how these teaching behaviors affect their job. They have trouble seeing the job relationship and therefore are not really concerned with their involvement.

Table 10
Treatment Group Grades 1 and 2

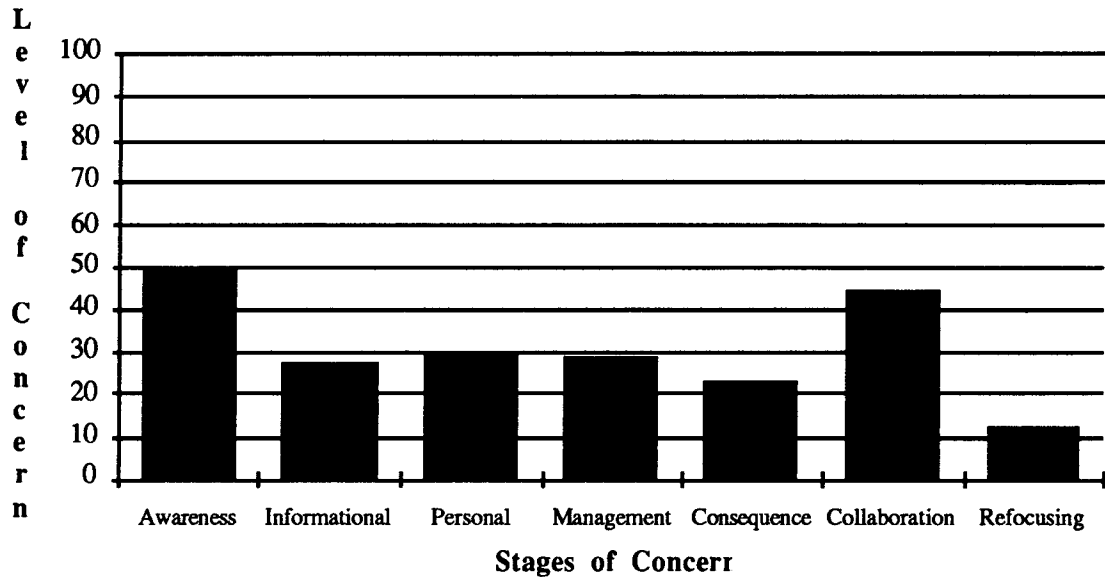


Table 11
Treatment Group Grades 3 and 4

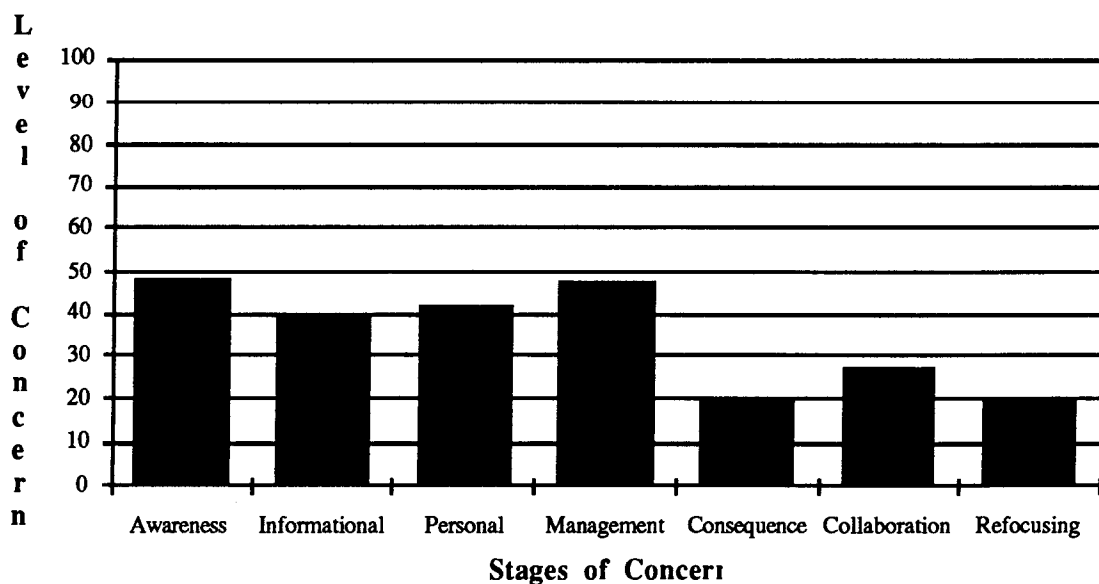


Table 12
Treatment Group Grades 5 and 6

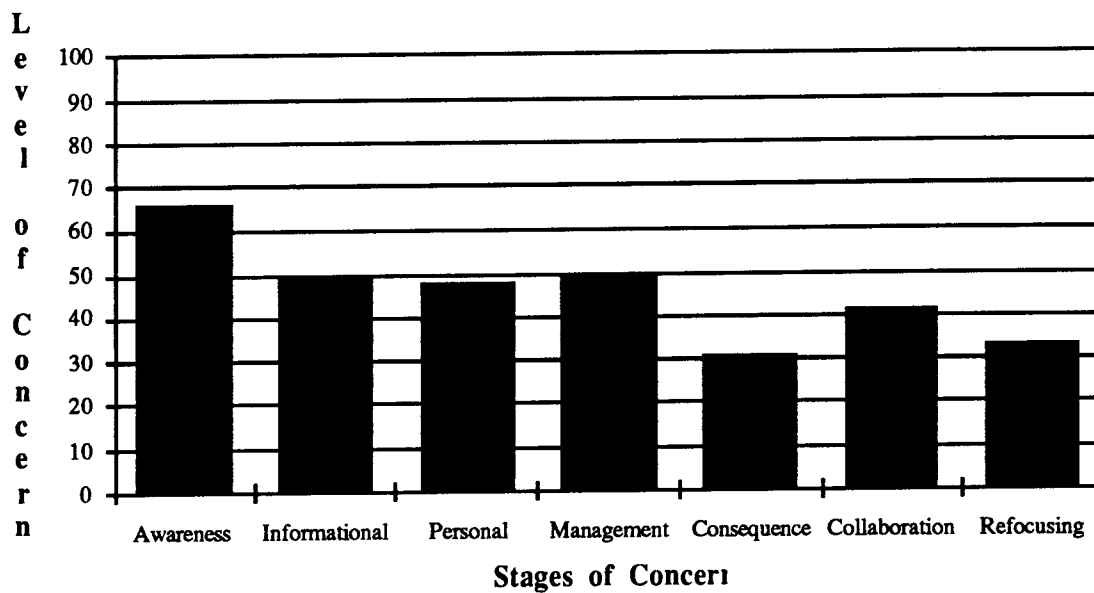
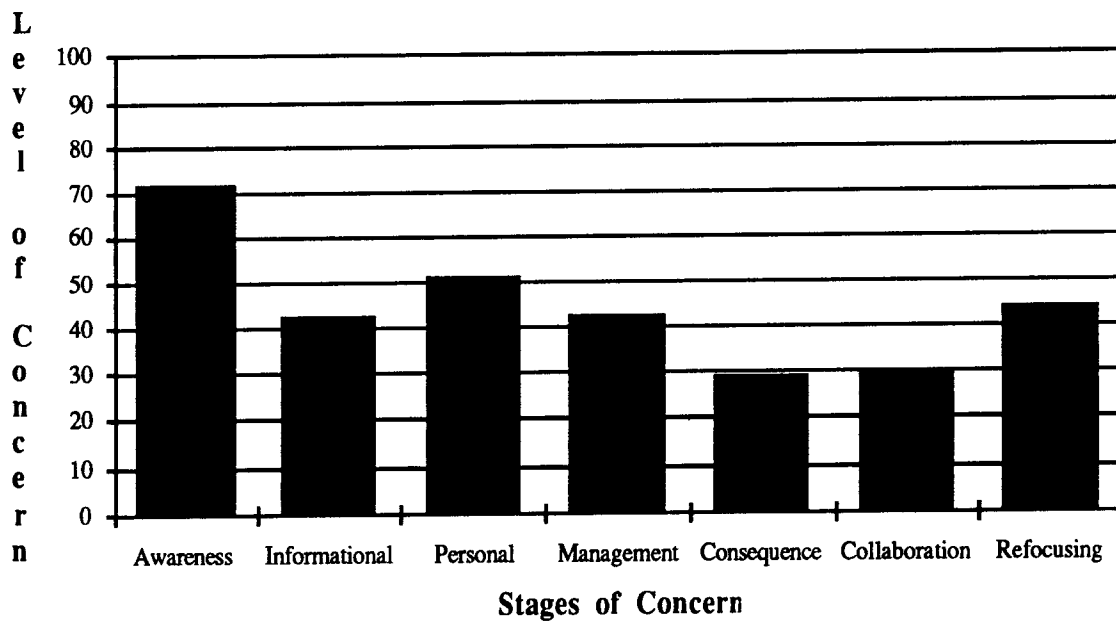


Table 13
Treatment Group Specialists



CHAPTER V

CONCLUSIONS

The successful implementation of an innovation requires more than introducing the innovation in a one-time inservice session. This study has evaluated a change effort design that took place over a period of time and sought to find out whether this particular planned change effort had both initial and long-term results. The study examined the effectiveness of the initial implementation, and also examined how well the change behaviors were sustained 4 years after the initial training. Additionally, it examined the attitude patterns of those involved, attitudes that might have influenced the change process.

Research about change indicates that change takes time: time to implement, time to practice, and time to nurture. Thus, it is essential to evaluate any change effort over a period of time. Such research endeavors to see if change actually occurred and, if so, if it was sustained.

Teacher improvement is not only related to the quality of the change, but also to how well and to what degree the change is delivered and implemented. A common assumption is that, once a change has been introduced and the initial training completed, the intended users will put the change into practice (Hord, 1987). What really matters, however, is *how* the implementation was undertaken. Berman and McLaughlin (1978), put it this way: "In short, what the project was mattered less than how it was done."

Conclusions with Discussion

Addressing the issue of initial implementation effectiveness, this study evaluated that the initial inservice achieved change. All six areas analyzed were significantly affected.

The change effort design, which brought in each participant for two, two and one-half day sessions to learn, practice, and observe *others* using the instructional concepts being presented, promoted change. The design incorporated immediate feedback and high quality practice sessions that were followed by actual classroom observations and feedback. This enhanced the chance that there would be change in all areas. The analysis shows that this was the case.

A review of the literature continues to support such change. Studies of Servatius (1985) and of Guskey (1982, 1985) suggest that teachers apply innovations most effectively when they see them used in actual classrooms, when they can try them out and get feedback on their efforts, and when they receive regular feedback on student learning as a result of the innovation. Furthermore, studies show that when teachers can discuss the

innovation with colleagues and when they can integrate the innovation into existing classroom routines, application increases (Harvard Education Letter, 1986).

Crandell (1982) states that teachers need to try out an innovation in the classroom. Crandell and Servatius both found that teachers seldom become committed to an innovation until they have seen the practice work well in their classroom with their students.

Brooks' (1984) studies of change efforts found that feedback helped teachers make the change. In this study, in addition to conducting the initial training, staff spent time in classrooms working with and giving feedback to teachers during the implementation period. By design, the activities provided specific feedback to teachers so they learned whether or not they were implementing the skill correctly. If they were not, re-teaching took place in their classrooms.

Joyce and Showers (1983) further contend that peer teaming and peer observations, built into the change effort, provide consistent feedback from a trusted colleague. Stallings (1980) concurs with them and states that providing teachers with regular and precise feedback during class sessions can be a powerful way of implementing change. When teachers see a new program or innovation work in their classroom, they will change their beliefs and attitudes. If the innovation is well presented and demonstrated, if practice has been provided under simulated conditions with careful and consistent feedback, and if that practice is followed with application in the classroom with coaching and further feedback, then it is likely that a vast majority of teachers will be able to expand their utilization of the innovation (Joyce & Showers, 1982).

The significant change demonstrated by this part of the change effort design suggests a number of important considerations regarding the design of the initial inservice package. It was found that the initial training sessions had elements of active involvement, a learning atmosphere of trust and support among both the instructors and the other participants, instructors who modeled the behaviors they expected the others to learn as they conducted the inservice, opportunities for transfer to personal and profession settings, and scheduled follow-up sessions in each participant's actual teaching situation. All elements described are crucial to the successful implementation of change for adult learners (Cross, 1981).

Second, four years after the initial training, this study found that there was significant regression in the skills learned from the initial training sessions. Specifically, it was the areas that showed significant change in the initial training that regressed four years later.

However, this study found that the training did change teaching behaviors in four of the six areas. These behaviors, even after regressing after four years, were significantly

displayed to a greater degree in each of the individual's teaching behaviors when compared to individuals who had no formal training at all. It must be concluded, therefore, that the formal training made a difference in the teaching behaviors of those who participated in the change effort design, even after four years.

This study indicates that change agents and policy makers must acknowledge the time requirements of a staff development change effort. They must set realistic expectations for themselves, as well as for the individuals, the administrators, and the evaluators. This change effort design did not account fully for the time required for a change process; it therefore allowed regression of the learned skills after a four year period.

The strategies suggested by Susan Loucks as described, show that when planned change is carefully and clearly defined, and when provisions for ongoing feedback mechanisms are in place, change will happen, given enough time and support.

Change effort designs of the future must account for the time necessary for change to occur and promote follow up activities until a significant amount of time for this follow up has occurred. The design analyzed in this study promoted follow up for the rest of the year of the initial training and then for a year after that. This was not enough for the degree of change that was required for this particular innovation. Researchers need to determine the amount of time necessary to prevent regression.

The literature points to four important principles inherent in an effective staff development program:

1. Change is a slow, difficult, and gradual process for teachers. The larger the magnitude of the required change for each individual, the slower the implementation will be.
2. Teachers need to receive regular feedback on student learning. When teachers see that an innovation works well in the classroom, they will change their beliefs and attitudes, and begin to use the innovation.
3. Teachers need to receive feedback about their performance of the innovation in their classrooms. Teachers need continuous guidance and direction in order to make the new behaviors, attitudes, and skills part of their professional work ethics.
4. Continued support and follow-up sessions are necessary after initial training. The teacher needs to know that assistance is readily available and that they can discuss their experience with colleagues.

Corbett and D'Amico (1986) stress that the time it takes to understand an innovation and transfer it into practice conflicts with the time participants need to perform their responsibilities. The responsibilities of each grade level or specialty may thus influence the

degree of use and transfer. Upon investigation, this researcher found no conclusive evidence that this was the case. Each grade level that was analyzed varied in its retention of the teaching behaviors. The grade levels of 1/2 and 3/4 did show less overall regression than did the other grade levels, but this still raises questions. A closer look is needed at each grade level's classroom (in and out), curriculum responsibilities, teaching periods, and administrative expectations, to name a few.

Third, change is a personal experience, and those who undergo change have concerns about many different factors. Thus, it was important in this study to see if the treatment group's concern profile had changed. Because no initial data were available, an assumption was made that the original profile would be towards an awareness and information stage of concern, as described by the CBAM research. After four years, the profile should have moved to the management and/or consequence stages of concern. As can be seen by the profile, the area of awareness is the predominant concern, followed by management, personal, and informational.

Teachers seldom have concerns at only one stage. If you look at the profile and follow the concepts of the CBAM research, the profile of the treatment group indicates that the group consists of inexperienced users, users who have not been given the time to fully integrate the ITIP teaching behaviors into their regular teaching practices. The group as a whole is still trying to personalize the ITIP teaching behaviors as related to their past experiences, student outcomes, and their new learning.

This is supported again and again in the literature. Clark (1984) argues that the availability of non-committed time is one of seven distinguishing features of excellent schools. Available time enables staff to venture beyond the tried and true, to confer with peers about special or routine problems, or to participate in change projects.

Fullen (1985) argues that changes in attitudes, beliefs, and understanding usually follow changes in behavior. Once again it takes time for commitment to develop. Along with some initial ambiguity, participants experience confusion, frustration, anger, and exhaustion when they begin using new practices. A series of stages most participants go through include the following:

1. Little concern for use and ability to cope with it daily
2. Disjointed use
3. Initial coordination and consolidation of basic routines
4. Refinement and extension

For the teacher to use the innovation, the techniques need to be clear and explicit and the teacher must be convinced that the innovation is worthwhile (in terms of teacher or student outcomes). Additionally, Fullen study's teachers did not really understand the

innovation or what it entailed before and after the implementation. There appeared to be no ownership by the teachers involved, no definite design and plan of implementation after the second year of use, and no communication link for the teachers once the training had ended.

Another element vital to change efforts is encouragement and feedback to the staff for their participation. Teacher isolation or lack of collegial time has been cited as one of the greatest obstacles to professional development (Valencia & Killion, 1988). Peters and Waterman (1982) identify a paradox of human nature: an individual's need to stand out, and the desire to be on a winning team. The existence of this paradox in education is significant in the recognition, encouragement, and feedback given from peers, experts, and supervisors. This recognition, encouragement, and feedback signal to participants that what they are doing is good for their own development and important to the institution they serve. It also gives them individual information on how they are handling the change. This was only seen in the cadre of trainers and colleagues who modeled the ITIP behaviors for their peers.

Looking at the selected grade level grouping, the profile can give excellent information as to where the participant's concern about the innovation is focused. This leads one to hypothesize a "use level" to the profile.

Grades 1/2 show a "renewing" user profile. The stage of *collaboration* as well as *awareness* stage are the two dominant peaks of the group. The profile indicates that these users could collaborate with others to learn, practice, or refine the ITIP teaching behaviors. The profile indicates that these users are seeking information about how to work with others in their use of the ITIP teaching behaviors.

Grades 3/4 show dominant stages from *awareness* through *management*. This is typical for an "inexperienced" user of the innovation; these users are still trying to personalize the teaching behaviors and bring themselves to manage them.

Grades 5/6 represent a profile that is similar to the 3/4 group profile. They have more towards the *awareness* and *informational* stages of concern, indicating more of a "non-user" profile. This group is concerned with the characteristics of, the effects of, and the requirements of use with regards to the ITIP teaching behaviors. Some show little concern about or involvement with the ITIP teaching behaviors.

The specialists show a non-user profile. They are not concerned about the innovation but are *aware* and are trying to *personalize* the information as it relates to their job. The two dominant stages indicate that the ITIP teaching behaviors are not yet personalized and the major concern is how these teaching behaviors affect their job. They have trouble seeing the job relationship and therefore are not really concerned with their

involvement.

Additional Thoughts

No one yet has discovered all the elements that make staff development programs successful. It is difficult to design studies that isolate the effective practices from the background noise of incidental and uncontrolled effects.

This change effort design took the training all the way to the classroom level where observation and feedback of actual classroom practices were done; however, it did not continue long enough with the level of activity necessary for long lasting implementation. Because change takes time and is best viewed as an ongoing process this design could have benefitted from a continual tracking of the internal state of the learners, the teachers themselves, through the evolution of their concern about the innovation. This could have acted as a diagnostic tool to monitor the acceptance, growth, and use of the ITIP teaching behaviors.

This study found that, from the beginning, a change effort needs to be carefully and clearly defined so that everyone involved understands it well and everyone shares the same definition. The study supported the idea that change is decidedly more complex and difficult for adults because it may entail eliminating well-established patterns. Signals of change are available, but separating them from the tremendous amount of "information noise or overload" is difficult. Besides this, another difficulty lies in the human characteristic of seeing only what we want to see. One filters out the change signals that do not confirm our established positions and ideas. One also blocks out information that may force us to rethink ideas, opinions, and attitudes, or that might force us to adapt to change. Change also brings the risk of failure, a potent negative force in adult education.

A large body of research supports the basic assumptions underlying a pragmatic model for change. First, people will more readily accept innovations that they can understand and that they perceive as relevant, as well as they have shared in the planning. The change effort studied did not involve any of the participants in its planning; instead, this was a change effort mandated for the entire district, and labeled as a district improvement effort which relied heavily on staff development for its success. Disharmony between teachers and administrators was bound to be present. How long this disharmony persisted and how much actual subversion of elements of the change effort took place is hard to say. Both Miles (1983) and Crandall (1983) found that in projects of this nature, initial disharmony between teachers and administrators disappeared or diminished as the innovation brought about positive results with students.

No previous research has been done in this district regarding the effects of ITIP on

student learning. Therefore, the teachers involved in this change effort had to evaluate relevancy by research presented in the inservice sessions and by personal experience and evaluation in their classrooms.

Significant change in a teacher's beliefs and attitudes takes place only after student learning has changed. These changes in student learning result, of course, from specific changes teachers have made in their classroom practices. Evidence of change in learning involves not only cognitive and achievement indexes, but also a wide range of student affective variables, such as involvement in class sessions, motivation for learning, and student attitudes toward school, class, and themselves.

It can be assumed that, within the study treatment group, there were teachers who did see student learning improvement. These teachers became more positive in their attitudes toward the innovation and used the teaching behaviors more in their everyday practice. These changes did not occur among those who used the ITIP teaching behaviors but did not see strong student learning improvement. Nor did these changes occur among those who were trained but who never attempted implementation, except when forced.

We must assume that the skills were not totally mastered. The data show that regression of initial learning began after the second year of use. This did not allow establishment of a true base to determine whether or not student outcomes were increased solely by the elements of ITIP.

Adult learners demand task-relevant activities. When they decide to become involved in the staff development, they expect to learn something new. They also want to transfer the new learning back into their personal and professional lives. Additionally, there is a need for continued staff encouragement, feedback, and commitment or acknowledgment from the organization that the change objective is important.

Observation of the inservice sessions showed that the activities were task-relevant and were related to their professional and personal lives and background. During the two years of training, the staffs involved had district exposure, encouragement, focused activity, and district commitment in the forms of budget, release time, public relations, and school board priority. After the initial two years, only the board priority remained, unless principals focused their attention in this area. Projects that combine a supportive organizational environment along with the teacher participation are most able to effectively implement and continue the innovation once the funding stops (Roy, 1989)

Staff development efforts that place the teacher in an active role (versus a receptive role) are more likely to accomplish their objectives. Change efforts that emphasize demonstration, supervised trials, and feedback are more successful than those that simply present new ideas and/or materials without opportunities for practice. Demonstration

enhances achievement of mastery, while supervised practice and consistent, regular feedback aid in the development of instructional competence. These opportunities to practice the new learning, supported by feedback on their performance in the classroom situation are essential. A collaborative atmosphere is needed in which one can practice new approaches and analyze their effectiveness.

Change efforts in which teachers share and provide mutual assistance to one another are more likely to succeed than those that fail to encourage interaction during and after the training. The degree of change is strongly related to the extent to which teachers interact and provide technical help to one another (Sparks and Loucks-Horsley, 1989). This study points out that, without sustained feedback and peer coaching, the objective had a very good chance of not being reached or maintained after the initial training. As shown by the data collected, regression set in and the initial training mastery disappeared when the feedback and expectation of observations ended. Ongoing training of the necessary skills must be provided along with ways to provide feedback so that problems and confusion can be expressed and resolved, and so further practice can be provided by trained personnel.

No one can fault the change effort that places the participant into an active role. For this study, from the first hour, the participants witnessed demonstrations, took part in activities that allowed them to try out their new learning under supervision, and received feedback in every phrase. This was practiced again in the classroom observations and visitations and was encouraged during peer coaching sessions. This last point was emphasized throughout the change effort inservice sessions, for two supervised years. However, these activities were not maintained long enough.

The literature maintains that the change process must contend with variables of resistance and time. The greater the scope of the change, the more time and effort are necessary to implement the change (Roy, 1989). Complex innovations take more time than refining existing skills. ITIP was a complex innovation in that it changed teaching behaviors and awareness in the eyes of the participants. Two years were allotted for making the transition, but in only two years, the skills could not be totally personalized, managed, and finally brought to a point where the teacher had made the ITIP elements their own. Implementation in this case required more than two years; the third year and the fourth year (possibly the fifth year) needed the same degree of facilitation time and energy.

Assessment of the participants' concerns, four years after the initial training, indicates that the participants on a whole had not yet fully integrated the ITIP elements into their professional teaching behaviors. According to responses to the questionnaire, the majority of the participants were still personalizing or were barely able to integrate the ITIP elements in their teaching behaviors. Very few had started questioning the impact on

student learning.

Final Comments

A major factor inhibiting systematic progress in education is the lack of agreement about what constitutes progress and what constitutes adequate evidence to support action. Other fields have clear indicators of progress such as yield per acre, mortality per 1000 patients, or return on investment.

Education, however, is continually swinging from one innovation to another. To bring about significant increases in student achievement, researchers must first change the ground rules under which innovations are selected, implemented, evaluated, and institutionalized.

In the early 1970's, a growing concern about the effectiveness of inservice education resulted in a spate of studies to determine the attitudes of educators about these efforts. The findings indicated nearly unanimous dissatisfaction with current efforts, but strong consensus that change efforts were essential if school programs and practices were to be improved.

Most attempts to bring about teacher change are brief, infrequent workshops that are designed and mandated by central or building administrators. They lack opportunities for follow up, practice, and feedback.

Changes in current delivery formats of staff development need to account for the following:

1. teacher isolation or lack of collegial time has been one of the greatest obstacles. Little opportunity to learn from one another or to observe models of excellence is the norm.

2. the tendency to maintain the status quo, the belief that one should not tamper with something that is working fairly well, or that new concepts, techniques or strategies may temporarily unsettle the classroom and precipitate problems that did not previously exist is yet another obstacle to overcome.

3. formats must show a fundamental understanding of the needs of adult learners and their stages of development and concerns.

The design of a change effort must apply the following:

1. The change effort must be recognized as process not an event.
2. The change effort requires time and energy and ongoing support.
3. Change will be more lasting if work is done with teachers on a number of occasions over an extended period of time with appropriate follow up.

4. The need for coaching from peers and the establishment of a dialogue and collaboration with peers must be encouraged and built in.

5. Risk taking must be encouraged and promoted with positive support, allowing one to take small steps when trying new techniques, while models and demonstrations are provided, and where no formal evaluation is focused on the innovation.

Many studies indicate that the support of the principal is essential to successful implementation of an innovation (Cox, 1983; Hall and Rutherford, 1983; Roy, 1989). The principal also needs to have a part in the planning of the change effort. The principal communicates the legitimacy of the practice and supports the continuation of the skill over the long term. In this study, the principals participated in the initial training along with their staffs, but did not receive feedback on why and how they should continue the skill development in their schools. Only two principals showed any planned follow up in their schools, but this was not at the District's request or with its guidance.

The risk involved in change requires that the change effort carry an atmosphere of trust and support, not only between the change agent and the participants but among the participants themselves. Peer support should be developed among the participants so that they experience a non-threatening, encouraging, and accepting environment.

The implications for adding innovations in a school or a district after only 1 year of experience with the innovation is problematic. It is important to understand that efforts to change teacher practice in order to bring about school improvement are not likely to happen very quickly. The data show clearly that there is a high price to pay for improvement and the price is in intervention time (Hord, Hurling, & Stiegelbauer, 1983). It becomes even more problematic if innovations are added after the first or second year.

Strategies that get teachers committed to the effort will contribute to the success of the change effort. Carefully developed, well-defined, and effective instructional practices should be used throughout the effort and should be carried out by staff development personnel.

How-to-do-it inservices should incorporate practice and follow up with coaching in the change effort format. The inservice should be done in small increments, so the parts can be mastered one at a time and problems dealt with as they arise. Then teachers will be provided with opportunities to interact with one another about the innovation and its relevance to their classroom. They would be provided with feedback that is objective, concrete, and focused, with opportunities for guided reflection concerning the innovation.

At least a year of follow up support (the length of time depends on the innovation) in the classroom should include continual demonstrations and assistance, along with problem-solving gatherings, materials, and evaluation and refinement.

As the district institutionalizes the innovation, district guidelines should be established so that new or reassigned teachers are automatically trained. Also, funding

should be a line item, and continued follow up with review and renewal training opportunities should be provided.

The research on staff development has given a list of effective practices. This list includes the following:

1. Programs are conducted in school settings and linked to school-wide efforts.
2. Teachers participate as helpers to each other and as planners with administrators in the inservice activities and goals.
3. Emphasis is on self-instruction, with differentiated training opportunities.
4. Teachers are in active roles, choosing goals and activities for themselves.
5. Emphasis is on demonstration, supervised trials, feedback, and training that is concrete and ongoing.

This study points out that good change efforts must have a plan for sustained feedback and peer coaching or they will fail to meet objectives even if all of the above are in place.

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Appendices

Appendix A
VIDEO TAPE ASSESSMENT INSTRUMENT

Objective: _____

Raters Initials: _____

Tape No.: _____

Pre/Post: _____

<p>Teach to Objective 1 2 3 4</p>	<p>Comments</p>	<p>Taught to stated obj.? Yes No One or two small detours Major detours Input was: relevant irrelevant in appropriate order not appropriate order enough not enough misinformation inappropriate tape</p>																		
<p>Monitor & Adjust 1 2 3 4</p>	<p>Comments</p>	<p>Monitoring:</p> <table border="1"> <thead> <tr> <th></th> <th>Mass</th> <th>Individual</th> </tr> </thead> <tbody> <tr> <td>None</td> <td></td> <td></td> </tr> <tr> <td>Signs</td> <td></td> <td></td> </tr> <tr> <td>Oral</td> <td></td> <td></td> </tr> <tr> <td>Written</td> <td></td> <td></td> </tr> <tr> <td>Other</td> <td></td> <td></td> </tr> </tbody> </table> <p>Adjusting: Individual Mass</p>		Mass	Individual	None			Signs			Oral			Written			Other		
	Mass	Individual																		
None																				
Signs																				
Oral																				
Written																				
Other																				
<p>Reinforcement 1 2 3 4</p>	<p>Comments</p>	<p>Learning Behavior</p> <table border="1"> <tbody> <tr> <td>Positive</td> <td></td> <td></td> </tr> <tr> <td>Negative</td> <td></td> <td></td> </tr> <tr> <td>Extinction</td> <td></td> <td></td> </tr> </tbody> </table>	Positive			Negative			Extinction											
Positive																				
Negative																				
Extinction																				
<p>Motivation 1 2 3 4</p>	<p>Comments</p>	<p>Meaning / interest _____ Feeling Tone _____ Level of concern _____ Allow for success _____ Knowledge of results _____ Extrinsic / intrinsic _____</p>																		
<p>Rate & Degree 1 2 3 4</p>	<p>a) Set:(Meaning, Relevancy, Active Participation) b) Modeling: c) Active Participation: <u>All</u> students Involved? Overt? Covert? d) Practice: Guided? Independent? e) End of Lesson Reached? Summary? Closure?</p>	<p>None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent None Inadequate Adequate Excellent</p>																		
<p>General Rating 1 2 3 4</p>	<p>Comments</p>	<p>Type of Lesson: Activity: New Information: Review Textbook: Other:</p>																		

Appendix B
CONCERNS QUESTIONNAIRE MATERIALS

Dear Teacher,

Thank you for assisting in my research efforts. As explained before the research is studying the process of change in education and the design of the change model that the Beaverton School District has been using to bring about change.

I ask you to fill out the attached questionnaire. Please be assured that your name will not be used in the study. Each questionnaire has a number for the purpose of the data analysis already marked.

Thank you for your help. I will report my findings upon your request in hope that they will be of value in your teaching.

Sincerely,

Ron Carlson
Staff Services

Stages of Concern Questionnaire

The purpose of this questionnaire is to determine what people who are using or thinking of using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years experience in using them. Therefore, a good part of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time.	0 1 2 3 4 5 6 7
This statement is somewhat true of me at this time.	0 1 2 3 4 5 6 7
This statement is not at all true of me at this time.	0 1 2 3 4 5 6 7
This statement seems irrelevant to me.	0 1 2 3 4 5 6 7

Please respond to the items in terms of your present concerns, or how you feel about your involvement with **ITIP**. I do not hold to any one definition of this innovation, please think of it in your own perception of what it involves.

Thank you for taking time to complete this task.

Circle your choice.

0	1	2	3	4	5	6	7						
Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now							
1.	I am concerned about teacher's attitudes toward ITIP.					0	1	2	3	4	5	6	7
2.	I know of some other approaches that might work better.					0	1	2	3	4	5	6	7
3.	I don't even know what ITIP is.					0	1	2	3	4	5	6	7
4.	I am concerned about not having enough time to organize myself each day.					0	1	2	3	4	5	6	7
5.	I would like to help other faculty in their use of ITIP.					0	1	2	3	4	5	6	7
6.	I have a very limited knowledge about ITIP.					0	1	2	3	4	5	6	7
7.	I would like to know the effect of reorganization of my professional status.					0	1	2	3	4	5	6	7
8.	I am concerned about the conflict between my interests and my responsibilities.					0	1	2	3	4	5	6	7
9.	I am concerned about revising my use of ITIP.					0	1	2	3	4	5	6	7
10.	I would like to develop working relationships with our faculty and outside faculty using ITIP.					0	1	2	3	4	5	6	7
11.	I am concerned about how ITIP affects students.					0	1	2	3	4	5	6	7
12.	I am not concerned about ITIP.					0	1	2	3	4	5	6	7
13.	I would like to know who makes the decisions in the ITIP program.					0	1	2	3	4	5	6	7
14.	I would like to discuss the possibility of using ITIP.					0	1	2	3	4	5	6	7

0	1	2	3	4	5	6	7					
Irrelevant	Not true of me now	Somewhat true of me now			Very true of me now							
15.	I would like to know what resources are available to continue to practice ITIP.				0	1	2	3	4	5	6	7
16.	I am concerned about my inability to manage the elements of ITIP.				0	1	2	3	4	5	6	7
17.	I would like to know how my teaching is suppose to change.				0	1	2	3	4	5	6	7
18.	I would like to familiarize other teachers with the progress of the ITIP program.				0	1	2	3	4	5	6	7
19.	I am concerned about evaluating my impact on students.				0	1	2	3	4	5	6	7
20.	I would like to revise the ITIP instructional approach.				0	1	2	3	4	5	6	7
21.	I am completely occupied with other things.				0	1	2	3	4	5	6	7
22.	I would like to modify our use of ITIP based on the experiences of our teachers.				0	1	2	3	4	5	6	7
23.	Although I don't know about ITIP, I am concerned about things in this area.				0	1	2	3	4	5	6	7
24.	I would like to excite my colleagues about their part in this approach.				0	1	2	3	4	5	6	7
25.	I am concerned about the time spent working with non-academic problems related to ITIP.				0	1	2	3	4	5	6	7
26.	I would like to know what the use of ITIP will require in the immediate future.				0	1	2	3	4	5	6	7
27.	I would like to coordinate my efforts with others to maximize ITIP's effects.				0	1	2	3	4	5	6	7
28.	I would like to have more information on time and energy commitments required by ITIP.				0	1	2	3	4	5	6	7

	0	1	2	3	4	5	6	7
	Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now	
29. I would like to know what other faculty members are doing in this area.						0	1	2 3 4 5 6 7
30. At this time, I am not interested in learning about ITIP.						0	1	2 3 4 5 6 7
31. I would like to determine how to supplement, enhance, or replace ITIP.						0	1	2 3 4 5 6 7
32. I would like to use feedback from teachers to change the program.						0	1	2 3 4 5 6 7
33. I would like to know how my role will change when I use ITIP.						0	1	2 3 4 5 6 7
34. Coordination of tasks and people is taking too much of my time.						0	1	2 3 4 5 6 7
35. I would like to know how ITIP is better than what we have now.						0	1	2 3 4 5 6 7

Date: _____ Site: _____ Innovation: _____

Five ItemRaw	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Scale Score Total							
0	0	1	0	0	0	0	0
1	1	2	1	1	0	0	1
2	2	3	2	1	0	0	3
3	4	5	4	2	1	0	8
4	7	8	7	2	1	0	8
5	14	13	12	5	1	0	13
6	22	18	18	8	1	1	18
7	31	21	24	11	1	1	23
8	40	26	30	15	2	2	31
9	48	30	34	19	2	3	39
10	55	34	39	22	2	3	47
11	61	37	43	26	2	4	55
12	69	40	49	30	2	5	63
13	75	43	56	35	3	7	68
14	81	46	62	40	3	8	75
15	87	49	68	44	4	9	81
16	91	53	73	50	5	12	86
17	94	56	77	55	6	15	89
18	96	59	79	60	7	18	90
19	97	61	81	66	9	21	92
20	98	64	84	71	11	24	95
21	99	66	87	74	13	28	96
22	99	69	89	78	16	32	97
23	99	72	91	82	20	36	97
24	99	76	93	86	27	40	98
25	99	79	95	89	33	43	98
26	99	81	97	91	39	48	99
27	99	84	98	93	46	54	99
28	99	87	99	94	54	60	99
29	99	89	99	94	62	67	99
30	99	92	99	95	68	72	99
31	99	94	99	96	74	77	99
32	99	96	99	97	82	82	99
33	99	98	99	98	87	85	99
34	99	99	99	99	91	91	99
35	99	99	99	99	97	97	99

C F S o C Q Quick Scoring Device

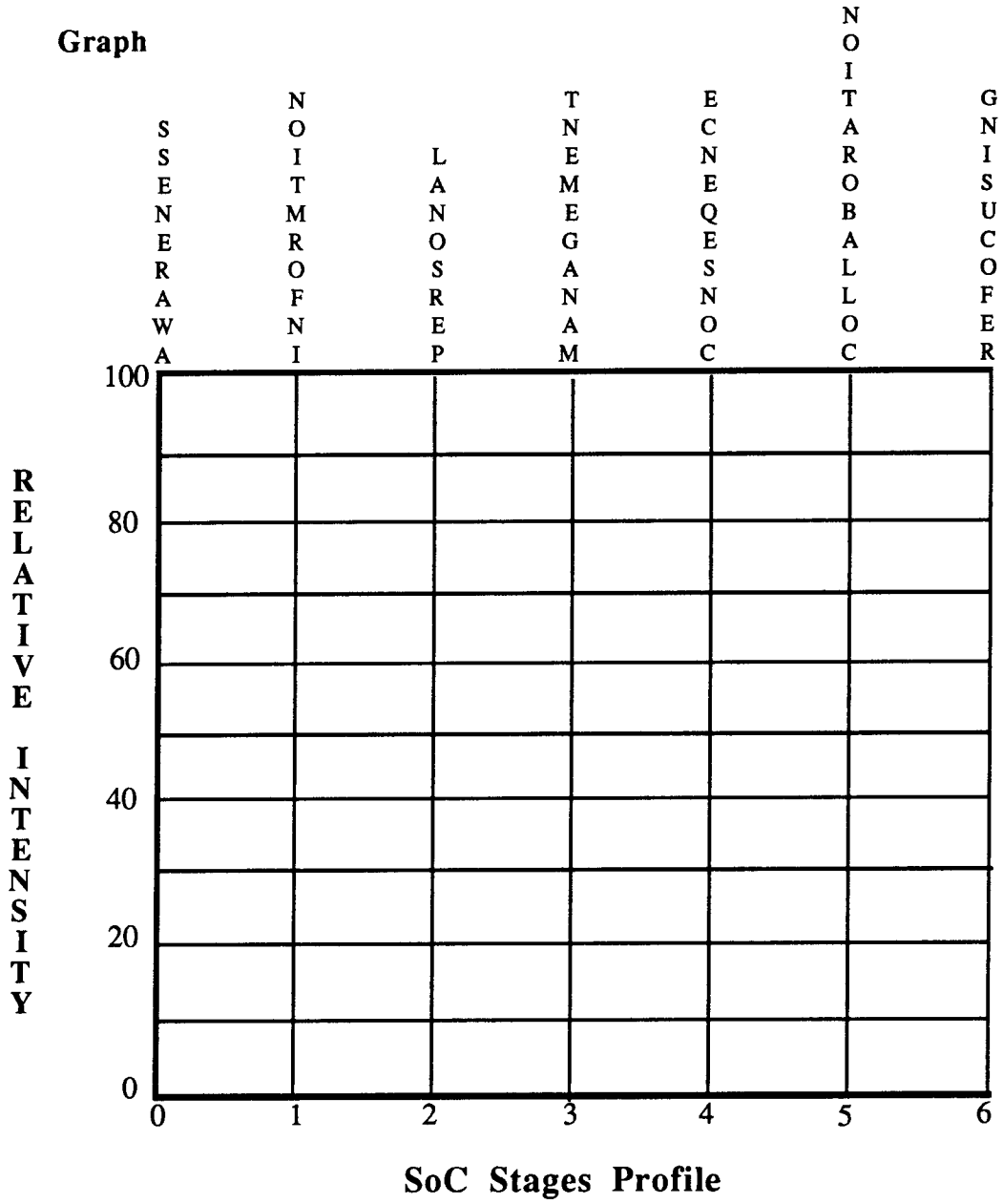
SoCQ Responses

Raw Score Listing

	0	1	2	3	4	5	6
2__	1__	8__	4__	6__	3__	13__	
5__	7__	11__	14__	18__	9__	19__	
10__	12__	17__	23__	21__	15__	26__	
22__	16__	24__	28__	27__	20__	32__	
25__	30__	29__	34__	31__	33__	35__	
Total	—	—	—	—	—	—	—

Individual Profile

Graph



Appendix C
INTERVIEW QUESTION GUIDE

Interview Guide

1. In what ways has the content of ITIP changed the way you instruct to students?

* Follow up questions:

Give an example of _____ in a past lesson.

What were your feelings about the impact on students.

2. What concerns or difficulties do you have with the implementation of ITIP in your classroom?

In your school?

* Follow up focus questions:

Has there been any follow up practice since your training?

Do you see a need to have follow up training and explain your view?

Does the principal use the ITIP elements in your evaluation?

Appendix D
SUMMARY OF STATISTICAL TEST
PROCEDURES

Sign test

Summary of procedure:

These are the steps in the use of the sign test:

1. Determine the sign of the difference between the two observed scores of each participant.
2. Count to determine the value of N which is the number of pairs whose difference show a sign.
3. The method for determining the probability associated with the occurrence of the null hypothesis is computed by finding the z score using the following formula.

$$z = \frac{|P - p| - 1/(2N)}{\sqrt{pq / N}}$$

- P equals the sum of the largest number of pairs that show a particular sign difference (either + or -).
- The small p equals the expected population, or theoretical proportion showing a positive (+) or negative (-) change.
- N equals the number of pairs which showed either a positive (+) or negative (-) change (excluding those pairs which showed no change).
- The statistical correction for continuity is handled by the 1/(2N) expression.
- The (pq) expression is the expected population showing a positive change; (p), times the expected population showing a negative change; (q).
- If z score that is computed by this test is equal to or less than , one can reject the null hypothesis.

The sign test is about 95 per cent efficient for N values of 6, but it declines as the size of the sample increases to an eventual efficiency of 63 per cent.

Wilcoxon Matched-Pairs Signed-Ranks test

Summary of procedure:

These are the steps in the use of the Wilcoxon matched-pairs signed-ranks test:

1. For each matched pair, determine the signed difference between the scores.
(pre/post 81/82 and post 82/study year 85/86)
2. Rank these differences without respect to sign. With tied differences, assign the average of the tied ranks. The differences of zero are thrown out.
3. Affix to each rank the sign (+ or -) of the difference which it represents.
4. Sum the liked signed ranks. Determine the T, which equals the smaller of the sums of the like signed ranks.
5. By counting, determine the N, which equals the total number of scores having a sign (+ or -) difference.
6. Determine the significance of the observed behavior value.
 - a. If the N is 25 or less, consult critical values table for various sizes of N. If observed value of T is equal to or less than that given in the table for a particular significance level and a particular N, the null hypothesis may be rejected at that level of significance.
 - b. If the N is larger than 25, the value of z was computed by the following formula.

$$z = \frac{T - \frac{N(N + 1)}{4}}{\sqrt{\frac{N(N + 1)(2N + 1)}{24}}}$$

Significance level is determined by referring to a z score probability table.

When the assumptions of the parametric t test are met, the efficiency of the Wilcoxon matched-pairs signed-rank test compared with the t test is 95.5 percent (Siegel, 1956). For small samples, the efficiency is near 95 percent.

Mann-Whitney test

Summary of the procedure:

1. Determine the values of the number of cases in the smaller group (n_1) and the number of cases in the larger group (n_2).
2. Rank together the scores for both groups, assigning the rank of 1 to the score that is algebraically lowest. Ranks will range from 1 to $N = n_1 + n_2$. Assign tied observations to the average of the tied ranks.
3. Determine the value of U either by the counting method or by applying the following formula:

$$U = (n_1)(n_2) + \frac{n_1(n_1 + 1)}{2} - R_1$$

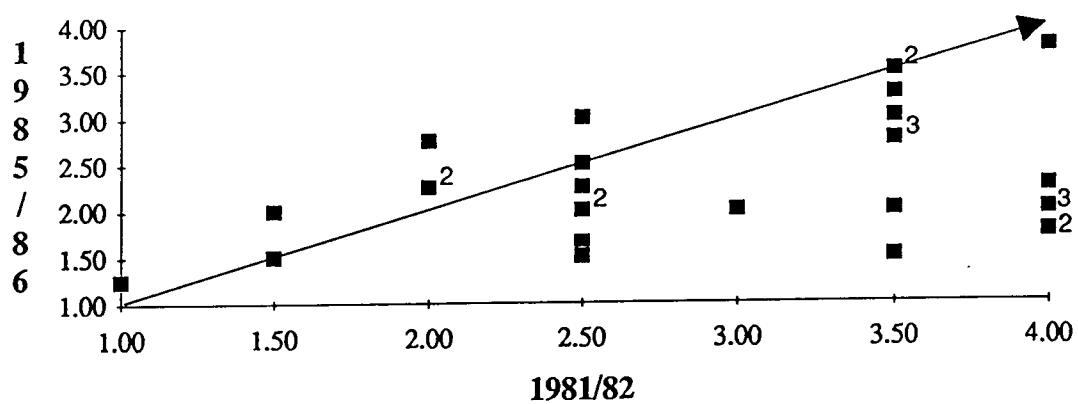
Knowing the U , one then can find the z value by using the following formula for the n_2 (n_2 was larger than 20 in all cases)..

$$Z = \frac{U - \frac{(n_1)(n_2)}{2}}{\frac{\sqrt{(n_1)(n_2)(n_1 + n_2 + 1)}}{12}}$$

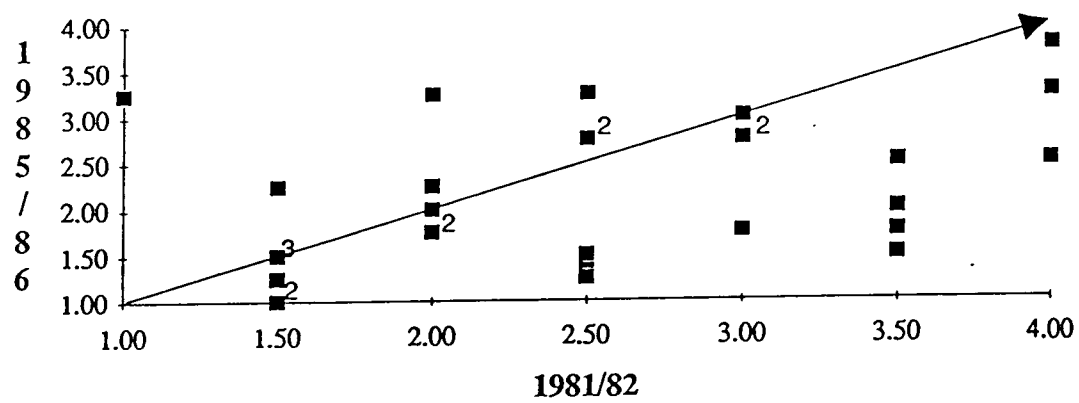
When Mann-Whitney test is applied to data which might properly be analyzed by the most powerful parametric test, the t test, its power efficiency approaches 95.5 percent as the N increases (Siegel, 1956), and is close to 95 percent even for moderate-sized samples. It is therefore an excellent alternative to the t test without the restrictive assumptions and requirements associated with the t test.

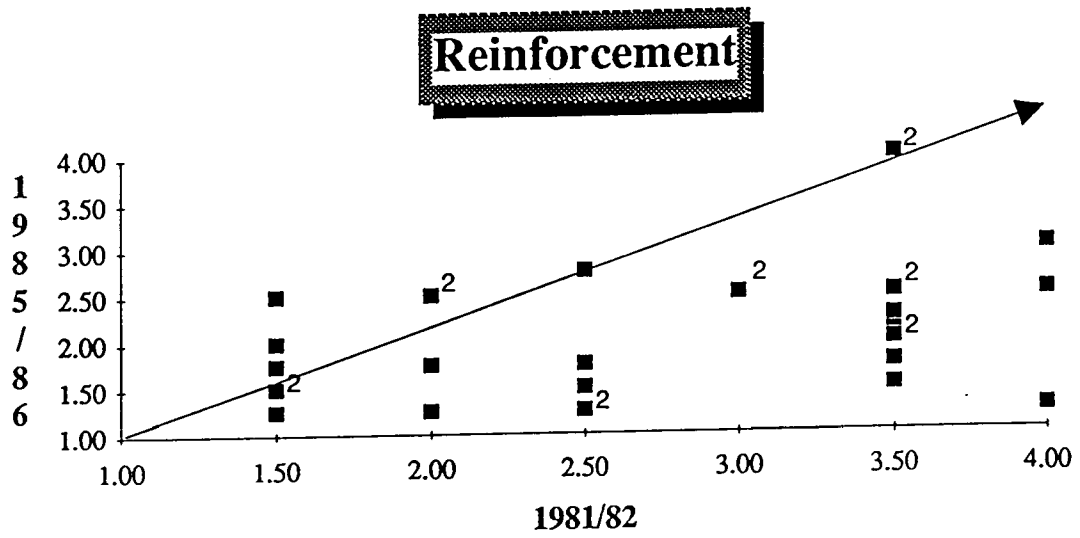
Appendix E
CBAM GRAPHS OF STUDY GROUP

Teaching to an Objective

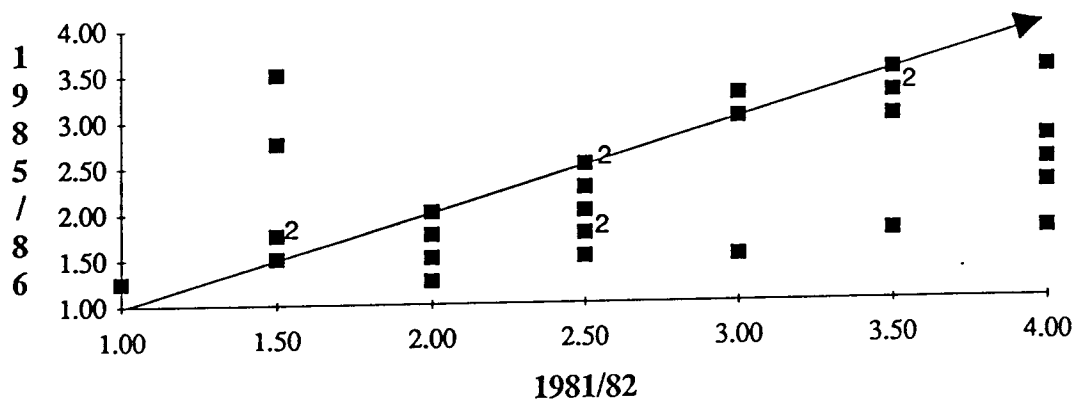


Monitor and Adjust





Motivation



Rate & Degree

