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An investigation of the efficacy of a research-based regimen of skill development on the instructional clarity of preservice teachers

Metcalf, Kim Kenneth, Ph.D.
The Ohio State University, 1989

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AN INVESTIGATION OF THE EFFICACY OF A RESEARCH-BASED REGIMEN OF SKILL DEVELOPMENT ON THE INSTRUCTIONAL CLARITY OF PRESERVICE TEACHERS

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Kim K. Metcalf, B.S., M.A.

* * * * *

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1989

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To Danielle and Kassandra
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"The main aim of teaching is maximizing student learning" (Scrivens, 1988, p. 320). It follows then that the main aim of teacher education must be to effectively and efficiently develop teachers' skill in achieving this aim.

Student learning can, of course, be defined in a number of ways. Valuable learning outcomes can include emotional, social, and physical goals. However, a primary goal of public education in this country has and likely will continue to be student achievement, particularly in basic skill areas such as mathematics, science, and reading. Low public opinion regarding the level of student achievement in the U.S. during the early 1980's (Phi Delta Kappa, 1987), and subsequent reform proposals (Carnegie Foundation, 1986; Holmes Consortium, 1986; among others) is evidence of the importance placed on student achievement by the taxpaying citizenry.
Maximized student learning is largely dependent on the ability of the classroom teacher. In the words of Gage (1984),

Teaching is the central process in education. It comes after economic resources, physical facilities, and curriculum have been determined... (p.87)

Medley (1986) concurs stating,

The role of the classroom teacher in education is critical. The teacher is, after all, the point of contact between the educational system and the pupil: the impact of any educational program or innovation on the pupil operates through the pupil's teachers. It is therefore quite accurate to say that a school's effectiveness depends directly on the effectiveness of its teachers. Maximizing teacher effectiveness is a major goal of education. (p.1894)

It is incumbent upon teacher educators to help teachers maximize their effectiveness, their ability to produce student learning. In order to do so, techniques, principles, and behaviors which promote student learning must be identified through research of
teachers whose pupils achieve at high levels. Then, using the most efficacious training methods available, teachers must be trained to effectively use these techniques.

Much is known about effective teaching, that is, teaching which is associated with increased levels of student learning and satisfaction. According to Cruickshank (1986), research conducted over the last three decades provides a profile of the teacher who is effective. Among other things, this teacher sets high goals, uses much whole class instruction, maintains an appropriate level of difficulty, provides immediate feedback, holds students responsible for their work, minimizes transition time, is friendly, attentive, accepting, tolerant, and provides clear instructional presentations.

Less is known about effective methods of developing teachers' skill in using this research-based knowledge in their classrooms. Cruickshank and Metcalf (1990) review attempts at skill development within teacher preparation, and note the dearth of research on the subject. Teacher education has sporadically utilized training to help teachers learn to effectively use behavior modification, become more reflective about their teaching, use indirect influence, and to develop
isolated teaching skills. However, as noted by Cruickshank and Metcalf, few of these efforts have been based upon research of skill development. Most use traditional practices, relying heavily on didactic instruction and practice. Further, those who develop training efforts in teacher preparation have worked in relative isolation, seldom incorporating knowledge gained from other such efforts. The result has been infrequent, unsystematic, and ineffective training that is seldom found to transfer to natural classroom use.

Statement of Purpose

The intent of this investigation is twofold. As it seeks to extend empirical knowledge of effective teaching, specifically of teacher clarity, the study attempts to determine whether preservice teachers can be trained to be more clear in their instructional presentations. Relatedly, does such training result in changes in teachers' ability to produce increased student learning and satisfaction? By providing preservice teachers with training in the use of behaviors drawn from research on teacher clarity, and subsequently observing their teaching behavior in peer teaching settings, the effects of training, both on teacher behavior and subsequent student performance, can be assessed.
A second broad purpose of this investigation is to develop a training regimen, based on research of training, which can serve as a model for those who wish to conduct teacher skill development. Research and scholarly literature regarding training serve as the knowledge base from which effective components of training are drawn. These components are then organized into a regimen of training that is likely to provide optimal results in developing teachers' use of complex skills, in the present case teacher clarity.

More specifically, the purposes of this study are: (a) to develop a research-based regimen for developing clarity skills (b) to use the regimen to train preservice teachers, (c) to compare instructional clarity of trained versus untrained teachers, (d) to compare differences in student learning produced by trained versus untrained teachers, and (e) to compare differences in student satisfaction between students of trained versus untrained teachers.

**Background of the Study**

Research efforts were directed at identifying teachers deemed to be good or effective as early as 1900 (Ellena, Stevenson, and Webb, 1961). These early efforts mostly looked for relationships between administrative ratings of teaching and teacher traits,
characteristics, or personality factors such as gender, marital status, intelligence, bouyancy, enthusiasm, and emotional stability, among others (Cruickshank, 1986). Although inquiry of this type persisted for over half a century, the results of this early era of teacher effectiveness research were disappointing. In examining the findings of this early era, Howsam (1960) concluded,

Few, if any, factors are now deemed established about teacher effectiveness and many former findings have been repudiated. It is not an exaggeration to say that we do not know today how to select, train for, encourage, or evaluate teacher effectiveness. (p. 11)

Early in the 1960's, however, investigators of effective teaching began looking at the relationship between teacher behavior and student learning. This second era of research, often described as "process-product" research (examining the process: teacher behavior, for example, and its effect on product: student learning), has and continues to provide much knowledge of behaviors and practices common to teachers whose learners achieve at higher levels. Among
behaviors characteristic of effective teachers, perhaps most important is their ability to make clear instructional presentations.

Teacher clarity gained widespread recognition when it was first identified by Rosenshine (1971) and Rosenshine and Furst (1971) as the "most promising" finding of studies of effective teaching. According to Rosenshine and Furst, at least ten studies provide evidence that the ability of the teacher to make clear presentations is consistently and significantly related to higher levels of student achievement.

Following the publication of the Rosenshine and Furst reviews, a number of investigators began to directly study teacher clarity. Much of this research attempted to more specifically define and delimit clear teaching in behavioral, measurable terms. A particular line of systematic inquiry, begun in 1974 by Cruickshank and associates at The Ohio State University and supplemented by several independent studies, has established an extensive knowledge base regarding teacher clarity.

Clear teaching is made up of several specific behaviors (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Myers, & Moenjak, 1974; Hines, 1981; Kennedy, Cruickshank, Bush, & Myers, 1975; Murray, 1982
Smith, 1978; White, 1979). These specific behaviors can and have been clearly and behaviorally defined, observed, and counted, and as a result, they are labelled low-inference. Little subjective judgement is needed to identify these behaviors.

Research has further identified some of these low-inference behaviors which discriminate between clear and unclear teachers (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Hines, 1981; Kennedy, Cruickshank, Bush, & Myers, 1975; White, 1979). Teachers who are clear perform these "prime discriminators" more frequently and with greater proficiency than their unclear peers.

Through factor analysis, these specific, low-inference behaviors have been objectively organized into groups of similar or related behaviors. Three or four of these factors or groups, known as intermediate dimensions or moderate-inference behaviors, have repeatedly been identified.

Clear teaching, as described by low- and moderate-inference behaviors, has been found to generalize across grade levels and geographical regions (Hines, 1981; Holland, 1979), and appears to be stable across subjects, student groups, and time (Larsen, 1985; Williams, 1983).
Teacher clarity, in its low-, moderate-, and high-inference (subjective) dimensions, can be reliably observed and measured (Gloeckner, 1983; Hamilton, 1988; Hines, 1981; Larsen, 1985; Williams, 1983). This holds true whether teaching is observed in simulated, laboratory settings (Gloeckner, 1983; Hines, 1981; Williams, 1983) or in natural classroom settings (Hamilton, 1988; Larsen, 1985).

A strong, positive relationship has consistently been found between teachers' performance of these low- and moderate-inference behaviors and desirable student outcomes. Students of teachers who are more clear achieve at higher levels than those of less clear teachers (Evans & Guyman, 1977; Frey, Leonard, & Beatty, 1975; Good and Grouws, 1977; Hines, 1981; Hines, Kennedy, & Cruickshank, 1985; Larsen, 1985; Williams, 1983). Similarly, student satisfaction is greater for students of clear teachers (Hines, 1981; Hines, Kennedy, & Cruickshank, 1985; Williams, 1983).

In spite of the promising and substantial findings of teacher clarity inquiry, nearly two decades of investigation have failed to provide evidence of a causal relationship between teacher clarity and desirable student outcomes. The correlational research method used in most studies precludes such a conclusion.
Further, research has failed to determine whether teachers can be helped to become more clear in their presentations. Two such attempts have produced inconsistent results (Gloeckner, 1983; Larsen, 1985). It is critical to further substantive inquiry of teacher clarity that these questions be answered.

Teacher clarity research is not alone in its failure to answer questions of this type. Researchers have attempted to answer similar questions regarding other behaviors drawn from teacher effectiveness research. Cruickshank and Metcalf (1990) describe twelve such attempts. Briefly, these studies first assess student achievement. Then, volunteer teachers, usually inservice, are instructed in the use of classroom behaviors and practices drawn from correlational research of effective teaching, usually by reading about and discussing the behaviors with the investigators. Following training, the classroom behavior of these teachers is observed and compared with that of untrained teachers, and student achievement is again tested.

According to Gage (1985) and Cruickshank and Metcalf (1990), the results of these few studies are promising. In spite of minimal training intervention, positive and significant changes in teacher behavior are
often found. Similarly, through these efforts, many of the teacher behaviors originally drawn from correlational research, have been empirically determined to lead to increased pupil achievement.

These efforts hold promise for similar research with teacher clarity. However, they present a difficult question: Why, if minimal training intervention has been shown to effectively develop inservice teachers' use of research-based behaviors, has training in clarity failed to do so? Three factors may account for this. First, training in teacher clarity has been unorganized and unsystematic, even when compared with the minimal interventions described above. As a result, the effects of clarity training may have been hindered. Second, whereas training effects noted above attempted to develop small numbers of discrete and basic teacher behaviors, teacher clarity is a complex, interactive skill consisting of at least twenty-nine interrelated behaviors. Therefore, training in teacher clarity may require more intensive intervention. Third, all but one of the studies noted above trained inservice, practicing teachers, whereas training in clarity has been focused on preservice teachers. It is reasonable to assume that inservice teachers, who have daily opportunities to
utilize newly acquired skills, may require less intensive training than preservice teachers to develop skill mastery.

Justification and Significance of the Study

No matter how effective training procedures may be or how fruitful conceptions of learning or teaching may be in generating ways of conducting instruction, teaching will not be improved if the skills taught in teacher education programs have no greater influence upon pupil learning than the skills teachers ordinarily use. (Smith, 1971, p. 4)

Perhaps the time has come when those who are engaged in research in teacher education should take more seriously the problems of determining how the theoretical knowledge of pedagogy can be rendered more effective in controlling the behavior of teachers both in the classroom and their pre- and post-classroom activities. (Smith, 1971, p. 7)

Smith points out the need to objectively identify teacher practices and behaviors which maximize desirable student outcomes, and to develop the most efficacious methods of helping teachers become proficient in their
use of these skills. The present study is unique and of particular importance in that it seeks to do this integrating research on effective teaching and research on effective training. As a result, the study advances knowledge of effective teaching, specifically of teacher clarity, and may serve to inform those who responsible for professional education.

Relative to the identification of effective teaching behaviors, this study furthers the established and substantial line of teacher clarity inquiry.

Investigation of teacher clarity has revealed much about the nature of clear teaching in a variety of simulated and natural classroom settings, and strongly suggests that it is desirable for teachers to be as clear as possible in their presentations. However, as noted above, critical questions remain unanswered. In the words of Cruickshank and Kennedy (1986),

There is the need to continue the lines of inquiry that have been introduced by Hines, Williams, and Gloeckner. The research described by Hines et al. needs to be pushed, with justification, into an experimental setting. ... And it has yet to be determined
whether teachers can effectively be trained
to be clear, and if they can, whether it makes
a difference. (p. 66)

Clear teaching is consistently, significantly, and
positively correlated with such desirable student
outcomes as increased pupil achievement and
satisfaction. However, these strong correlations do not
provide evidence of a causal relationship. Research of
teacher clarity has yet to effectively utilize
experimental designs that would allow such a conclusion
to be reached. The resolution of this issue is critical
to further inquiry of teacher clarity. If clear
teaching, as made up of specific low and moderate-
inference behaviors, can be shown to cause increased
pupil learning and/or satisfaction, continued research
of teacher clarity is not only justified but imperative.
Relatedly, teacher education would be enhanced to the
extent that it worked to develop teachers' use of the
specific behaviors which make teaching more clear. If,
on the other hand, a causal relationship cannot be
established between teacher clarity and desirable
student outcomes, further investigation of teacher
clarity is less useful.

Inquiry into teacher clarity will also be furthered
by a second important contribution made by this
investigation. That is the attempt to answer the question, can teachers be trained to be more clear? Earlier studies (Gloeckner, 1983; Larsen, 1985) failed in their attempts to train preservice teachers to be more clear. Although troubling, the results of these studies must be considered with a great deal of skepticism due to a number of methodological weaknesses and limited training intervention. Carefully controlled experimental research is warranted.

The knowledge base upon which effective professional education can be established may also be increased by this study. Little has been written about effective training practices in professional education (Hinnrichs, 1976; Cruickshank and Metcalf, 1990). Teacher education, as noted, and much professional education, suffers from training which is mostly based upon common sense or tradition. For example, microteaching (Allen & Ryan, 1969), the most widely accepted and utilized form of systematic skill development in teacher education (Cruickshank & Metcalf, in press), has not proved consistent in producing long term changes in teachers' behavior (Copeland, 1973, 1977, 1982; Copeland & Doyle, 1975; Kallenbach and Gall, 1969; Katz, 1976; and others).
There exists a need to establish a regimen of skill development which is effective in producing desired changes in the behavior of preservice and inservice professionals. This regimen would be based upon research of training and would incorporate those components and techniques of training which were proven to be most effective and efficient. Such a regimen would make a substantial contribution to the education of teachers and other professionals.

Justification for the present investigation is specifically based upon the following grounds: (1) a causal relationship between teacher clarity and increased pupil learning or satisfaction must be investigated; (2) the usefulness of training in helping teachers be more clear must be established; and (3) skill development, in teacher education and other professional education, can be enhanced by the development and study of a research-based regimen of training.
Research Questions

This study will investigate the following specific research questions and subquestions:

1) Can preservice teachers be trained to be more clear in instructional presentations?
   a. Will trained preservice teachers make more frequent use of low-inference indicators of clarity than untrained teachers?
   b. Will trained preservice teachers make more frequent use of intermediate-inference indicators of clarity than untrained teachers?
   c. Will trained preservice teachers be rated by trained observers as more clear than untrained teachers?

2) Will students of clarity trained preservice teachers perform better than students of untrained teachers on tests of lesson content?

3) Will students of clarity trained preservice teachers report greater satisfaction with teaching than students of untrained teachers?

Definition of Terms

The Clarity Training Program: A training regimen developed by the investigator which incorporates components of effective training in a program intended
to help teachers develop their skill in using specific constituent behaviors of teacher clarity.

**High-inference behaviors**: Those teacher behaviors which require observers or raters to make subjective judgments or ratings about their quality and/or occurrence in the classroom.

**Intermediate-inference behaviors**: Those teacher behaviors which are specific, but that require observers or raters to make judgements or ratings about their quality which are in part subjective (e.g., "provides for student understanding and assimilation of instructional content"). These behaviors are sometimes referred to as intermediate dimensions due to their identification by way of factor analytic procedures. Often these dimensions are used to group or organize low-inference behaviors which are related or similar.

**Low-inference behaviors**: Those teacher behaviors which can be objectively observed and counted in the classroom setting (e.g., "uses examples when explaining").

**Prime discriminators**: Those specific, low-inference behaviors which have been found in discriminant analysis to best discriminate between clear and unclear teachers.

Teacher clarity: "A cluster of teacher behaviors that result in learners' gaining knowledge or understanding of a topic, if they possess adequate interest, aptitude, opportunity, and time" (Cruickshank and Kennedy, 1986, p. 43). These teacher behaviors include those which are low- and moderate-inference. Teacher clarity is a form of didactic teaching.

A Priori Limitations

This study is subject to a few a priori limitations which must be acknowledged.

First, the sample used in this study consists of preservice teachers enrolled in four sections of ED:T&P 451, a required course in the professional education of teachers at The Ohio State University. Individual subjects were not randomly selected; although, four sections of the course were randomly selected from seven taught by college instructors who volunteered to participate. In that students enroll with no knowledge of course instructor or course activities, student enrollment into sections is considered random. However, the findings of this study may best be generalized only
to the training of preservice teachers at The Ohio State University. Further, and to the extent it is important, the findings are representative only of situations in which training is voluntarily conducted by course instructors.

Second, only seventeen of over twenty-nine possible prime discriminators were selected for development in The Clarity Training Program. In spite of purposive selection, behaviors which are prime discriminators, but which were not included in the training regimen may contribute significantly to teachers' clarity.

Third, the effects of clarity training are measured using teachers' performance in laboratory teaching settings. This study does not attempt to evaluate teachers' use of the clarity behaviors in natural classrooms. It is possible that effects which are manifested in laboratory settings would not be transferred to use in natural classrooms. Similarly, clarity behaviors which are shown to be positively affected by training may not be transferred to use in regular classrooms. The findings of the present study are appropriately generalized only to the effects of training in producing changes in preservice teachers' behavior in subsequent laboratory teaching experiences.
Fourth, the instrument used in this study to assess teachers' performance of the clarity behaviors differs slightly from that of previous research. Hines' (1981) Clarity Observation Instrument was abridged in order to more accurately reflect the behaviors included in the training regimen. As a result, direct comparisons across this and other clarity studies must be limited.

Fifth, the most critical limitation of this study may derive from the instruments used to measure learner achievement and satisfaction. Tests of lesson content and the Likert-type scale on which learner satisfaction is rated (to be further described in Chapter III) have not been subjected to empirical tests of validity or reliability. Hence, these instruments may not accurately assess learning or learner satisfaction.

Sixth, the Reflective Teaching Lessons used in this study are not all of equal difficulty. Although attempts were match pre- and posttraining lessons on difficulty, at least some differences existed. As a result, between groups differences in learner achievement and satisfaction may have resulted from variations in content and difficulty among the Reflective Teaching Lessons.

An additional limitation of this study results from the use of Reflective Teaching Lessons solely drawn from
the cognitive domain. Generalization of findings to lessons in which content is of the affective or psychomotor domains may not be appropriate.
CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The purpose of the study, is to answer the question, Can preservice teachers be taught to be more clear in their instructional presentations? The intent of this chapter is: (1) to thoroughly review the line of inquiry into teacher clarity which it seeks to further, (2) to review attempts at research-based teacher skill development, and (3) to review research and scholarly literature relating to training which informs the development of training regimens. Literature in three areas is most relevant and will be presented: Literature regarding the study of the variable "teacher clarity," literature describing the effectiveness of attempts to train teachers in using skills drawn from research, and literature which informs practice in training procedure and design.

Excellent current reviews of the literature on teacher clarity are available from numerous sources
(Armaline, 1985; Cruickshank & Kennedy, 1986; Hines, 1981; Williams, 1983; and others). However, this review will examine this body of knowledge from a new perspective. After presenting research in which teacher clarity was first found to be related to desirable student outcomes, this review of teacher clarity research differs from previous reviews in three ways: (1) it organizes studies of teacher clarity around eight specific research questions, (2) it includes additional studies more recently completed, and (3) it does not include a separate but related line of inquiry into teacher "vagueness" or absence of clarity.

**Literature that Informs Regarding Teacher Clarity**

**The Genesis of Teacher Clarity Research**

Teacher clarity first gained widespread recognition as a variable related to desirable student outcomes through the reviews of research of effective teaching by Rosenshine (1971) and Rosenshine and Furst (1971). The investigators reviewed fifty-one correlational and ten experimental studies which examined the relationship between particular teacher behaviors and student outcomes. Rosenshine and Furst note eleven teacher variables with support for their
relationship to increased student achievement. Five of these variables were noted by the reviewers as having strong research support. In order of strength they are: clarity, variability of instructional method, enthusiasm, task oriented/business-like behavior, and student opportunity to learn criterion material.

The review of Rosenshine and Furst (1971) was the subject of strong criticism from Heath and Nielson (1972) and Sherman and Giles (1983). In their attempt to critically value the use of research-based skills in teacher education, Heath and Nielson (1972) question the entire set of findings of Rosenshine and Furst. Among their criticisms are:

1) The operational definitions used by Rosenshine and Furst do not always correspond directly to the names of the teaching variables cited in their review.

2) Operational definitions of teacher behaviors that have little in common are often combined as examples of a single teaching variable.

3) Operational definitions reflect teaching only in a traditional lecture-discussion mode.

4) Operational definitions of student achievement are narrow.
5) The research designs used in the original studies are fundamentally weak, for instance, use of statistical procedures which assume randomization when, in fact, subjects were neither randomly selected nor randomly assigned.

6) Rosenshine and Furst often report findings as statistically significant when the original investigators did not.

7) The original studies frequently made use of statistical analyses which were or might have been in violation of critical assumptions such as linearity, homogeneity of variance, and normality.

Among their conclusions, Heath and Nielson state,

The research literature on the relation between teacher and student achievement does not offer an empirical basis for the prescription of teacher-training objectives.

Also, this literature fails to provide such a basis, not because of minor flaws in the statistical analyses, but because of sterile operational definitions of both teaching and achievement, and because of fundamentally weak research designs.
Sherman and Giles (1983) limit their criticisms to the original studies supporting the clarity variable which were reviewed by Rosenshine and Furst. Sherman and Giles note the following problems in the original studies of teacher clarity:

1) The failure to randomly assign subjects which limits the generalizability of findings.
2) None of the original studies was primarily concerned with the study of clarity.
3) None of the studies presented low-inference definitions of clarity.
4) Due to the small number of subjects in most of the original studies, the factor analyses used must be considered "highly tentative."
5) The studies suffer from and do not consider the problems of repeated measurements.
6) The differing descriptions used in the studies indicates that they are not all examining the same concept.
7) The results of the studies are not consistent.
8) All of the studies were correlational, not experimental, therefore, causality cannot be assumed.
These criticisms in part led Cruickshank and Kennedy (1986) to re-examine the studies which Rosenshine and Furst use to establish the teacher clarity-pupil achievement relationship. As will be seen, the investigators, although agreeing with some of the above mentioned criticisms, find that the original clarity studies identified by Rosenshine and Furst provide a substantial basis which supports the relationship of a clarity-like variable to increased student achievement.

Ten studies are noted by Rosenshine and Furst which provide support for the relationship between what they term instructional or teacher clarity and increased levels of student achievement. The studies examined a variety of divergent variables, some by obtaining ratings of a teachers' clarity from observers or students and others by attempting to count the frequency with which a teacher made use of particular behaviors. Criticisms of the studies reviewed by Rosenshine and Furst notwithstanding, re-examination of the original studies reveals relatively strong and consistent support for such a concept.

It is useful to briefly discuss each of the original studies, their stated purpose, method, sample, and findings. Criticisms, particularly those
presented by Heath and Nielson (1973), and conclusions
drawn by Cruickshank and Kennedy (1986) will also be
examined.

Morsh, Burgess, and Smith (1955). The
investigators examined the relationship between a
number of teacher variables and student achievement in
the hydraulics phase of Aircraft Mechanics courses
taught at Sheppard Air Force Base. One hundred twenty
one instructors and their students served as subjects.
Data were obtained at the conclusion of the courses.
Student learning was measured by a seventy-five item
written test of course material, a performance
examination, and general examination. Instructor
behavior was assessed through post course ratings of
instructors completed by students. According to the
investigators, overall student ratings of instruction
correlated with all measures of student learning
\( r=0.32 \text{ to } 0.40 \).

Rosenshine (1971) identifies this study as
providing "marginal" support for a concept such as
teacher clarity due to the correlation of student
achievement with an item labelled "understanding of
students." Rosenshine and Furst (1971) do not
mention this study in their later review and Heath and
Nielson (1973) do not include it in their examination.
As a result of this inconsistency and a seeming lack of face validity, Cruickshank and Kennedy (1986) indicate that "the results of this phantom study should probably be disregarded" (p. 51). This study does not seem to appropriately provide the support for clarity originally noted by Rosenshine.

_Solomon, Bezdek, and Rosenberg (1963)._ The purpose of this study was to identify components of teaching which were effective with adult learners. Twenty-four teachers of adult evening classes in American Government and their students served as subjects. Learners were pre- and posttested using a thirty-five item test of factual knowledge drawn from lessons and a ten item test of ability to comprehend content not covered in the lessons. Data on teacher behavior were gathered in three ways: (1) trained raters observed and rated each teacher two times during the semester using a thirty-eight item performance scale, (2) three audio tapes of teacher lessons were obtained during the middle and end of the semester from which the frequency of particular teacher verbal behaviors was determined, and (3) at the conclusion of the course, students completed a sixty item questionnaire rating teacher performance. The results indicated that teachers who were high on a
factor labelled "Clarity-Expressiveness" (as opposed to "Obscurity-Vagueness") had classes with higher gain scores on the test of factual knowledge. According to the investigators, this factor included such low-inference items as: "understanding of student statements" and "coherence" as observed by trained raters, and "clear and understandable" and "well organized" as rated by students.

Rosenshine indicates that this study provides strong support for high-inference teacher clarity based on several lower-inference measures. Heath and Nielson (1974) and Cruickshank and Kennedy (1986) agree despite the small sample size. The study by Solomon, Bezdek, and Rosenberg seems to identify and provide statistical support for a relationship between a concept like teacher clarity and student achievement.

Chall and Feldman (1966). The purpose of this study was to examine the relationship between teachers' methods of teaching reading and pupil gain in several areas of reading achievement. Twelve volunteer first-grade teachers and their students served as subjects. Pupils' reading achievement was tested in October and again in June. Teachers completed a questionnaire and were interviewed to
determine their professed methods of teaching reading. Teachers were regularly observed over two semesters to determine their actual methods of teaching. Teacher performance was rated on such factors as overall competence, amount of individual attention given, appropriateness of lesson in terms of difficulty, ways used to obtain student involvement, handling student errors, interest level of materials, and classroom structure. Among other things, the results indicated that teachers' ability to maintain an appropriate level of instructional difficulty "most of the time" showed a positive relationship to increased levels of student achievement.

Rosenshine and Furst include this study as supportive of teacher clarity based on the item "appropriateness or difficulty of the lesson" (Does the lesson appear to be too easy, just right, or too hard for the children?), and inferred statistical significance although none was forwarded by the original investigators. Heath and Nielson (1974) and Cruickshank and Kennedy (1986) are critical of Rosenshine and Furst's inclusion of this study. They note problems with the validity of this variable as representative of clarity, and weak, often inappropriate statistical and reporting procedures in
the original study. As a result of these problems, this study cannot appropriately be used to substantiate the relationship between teacher clarity and student achievement.

Fortune, Gage, and Shutes (1966). The investigators examined the generalizability of a lecturer's "effectiveness" over different topics and different student groups. Thirty preservice social studies teachers served as subjects. Each teacher taught four lessons, two on each of two consecutive days. On day one each teacher taught two different topics to the same groups of students. On day two each teacher taught two different groups of students. One group of students received the lesson from day one, the other a different lesson. After each lesson, students completed a ten item multiple choice test of content and a thirteen item rating of teacher performance. Mean achievement of learner groups was adjusted for topic and group effects and then correlated with teaching setting (occasion, topics and group) and with items on the student rating. Although the investigators do not indicate statistical significance, the strongest relationships were reported between each of two items on the student rating scale ("Clarity of presentation" and "Clarity
of aims") and adjusted student mean achievement
(r=0.39 to 0.72 and r= 0.21 to 0.42 respectively).

Rosenshine (1971) and Rosenshine and Furst (1971)
include this study due to the strong relationship
evident between the two "clarity" items and student
achievement. Heath and Nielson (1974) and Cruickshank
and Kennedy (1986) also see this categorization as
accurate. Heath and Nielson object to the implication
by Rosenshine and Furst that this study provides
statistically significant support when, in fact, the
original investigators do not claim such. Cruickshank
and Kennedy, however, indicate that Rosenshine and
Furst's extrapolation from the original investigators' use of "strong" and "high" to mean statistically
significant is appropriate in this case. Fortune,
Gage, and Shutes (1966) provide strong support for a
high-inference variable like teacher clarity and its
relation to student achievement.

Wallen (1966, two studies). Wallen conducted two
studies (often referred to as the 1st-grade and
3rd-grade studies) which investigated the relationship
between teacher characteristics and student behavior.
Specifically, Wallen investigated: (1) relationships
between specific teacher measures and pupil change and
status measures, (2) consistencies among measures of
teacher behavior, (3) relationships between teacher behavior and teacher test data, and (4) specific teacher-pupil classroom interactions. Seventy-six teachers (36 first-grade, and 40 third-grade) and their pupils served as subjects. Each teacher was observed on nine occasions and rated on several items in each of four areas: control of class, affiliation with students, stimulation of presentation, and academic achievement orientation. Pupil learning was measured via regression scores on tests of math and reading. "Intellectual effectiveness" as rated by observers and defined as "able to explain concepts clearly and such that the students seemed to be gaining understanding" (p. 2.18) was found to correlate with student achievement (r=0.30 to 0.50).

Rosenshine (1971) included this study on the basis of the similarity of "intellectual effectiveness" as defined and teacher clarity, and notes that it lends statistical support to the relationship between clarity and student achievement. Heath and Nielson (1974) and Cruickshank and Kennedy (1986) agree. Cruickshank and Kennedy state, Wallen (1986) represents one of the more ambitious and competent research efforts of its kind and of its time, and its results
support the clarity-achievement relationship (p. 51).

**Fortune (1967).** This study examined the generality of teacher behavior across different groups of students and different lesson content, and the relationship between teacher behavior and student achievement. Forty-two preservice elementary student teachers and their fourth, fifth or sixth grade students served as subjects. Each teacher taught a prescribed English, mathematics, or social studies lesson to a group of fifteen elementary students selected from their class. Student teaching supervisors observed each lesson and rated teacher performance of specific behaviors. At the conclusion of each lesson, students completed a test of lesson content. Teacher behavior was found to generalize only across similar lesson content taught to different groups of learners. However, Fortune reports a strong correlation between ratings of teachers' "lesson presentation" and student achievement (mdn. r = 0.71). The investigator does not indicate the statistical significance of this finding.

Rosenshine (1971) and Rosenshine and Furst (1971) include this study as providing significant statistical support for the relationship between
clarity and student achievement on the basis of the item "lesson presentation." They indicate that "lesson presentation" can be seen as a proxy for the teacher clarity variable. Heath and Nielson (1974) object to the claims of statistical significance made by Rosenshine and Furst, and to the notion that "lesson presentation" represents anything like teacher clarity. Cruickshank and Kennedy (1986) do not fault the reviewers for attributing statistical significance to the correlation achieved, but agree with Heath and Nielson that "lesson presentation" can not be assumed to represent teacher clarity. No information is available in the original report by Fortune (1967) that can be used to adequately resolve this discrepancy, and as a result, it is best to consider the support provided for teacher clarity by this study to be questionable at best.

Hiller, Fisher, and Kaess (1969). This study examined the relationship between teacher behavior during explanatory lecturing and pupil achievement gain. Experienced social studies teachers and their senior level students were subjects (The investigators do not indicate the number of subjects). On each of two consecutive days, each teacher taught a fifteen minute lesson which was prescribed and content
controlled. Immediately following each lesson, students were administered a multiple choice test of content. The frequency of teacher behaviors in five factors (verbal fluency, information, knowledge structure, interest, vagueness) was assessed utilizing transcriptions of the lessons. Strongest relationships were a negative correlation found between teacher vagueness and student achievement ($r=-0.59$ to $-0.48$) and a positive correlation between teachers' verbal fluency and student achievement ($r=0.42$ to $0.38$).

Rosenshine and Furst (1971) include this study based on the "vagueness" dimension, implying that "vagueness" is the antithesis of "clarity." Heath and Nielson (1974) agree that this study provides support for clarity and that this support is statistically significant. Cruickshank and Kennedy (1986), however, do not feel that this study lends support to the relationship between teacher clarity and student achievement. According to Cruickshank and Kennedy, it can be safely assumed that the absence of vagueness is a requisite for presentational clarity. It is not a sufficient requisite, however. Hence, it follows that the didactic exposition of a teacher can lack vagueness, as
defined by Hiller et al. (1969) ... yet still lack clarity" (p. 52).

Although statistically and methodologically sound, this study can not be appropriately viewed as supporting the clarity-achievement relationship. Rather, it serves as a basis for a parallel line of inquiry into "teacher vagueness."

Wright and Nuthall (1970). This study was designed to identify the most significant relationships between pupil performance on an achievement test and particular teacher behaviors. Seventeen teachers were selected based on teaching experience. Six highly experienced teachers, five student teachers completing a two year course of study, and six student teachers just beginning a three year teacher training sequence were selected. Each teacher taught three lessons to a group of elementary students randomly selected from the classroom in which the teachers were working. Lessons were observed and the frequency with which each teacher used twenty-eight specific behaviors was recorded. After each lesson, students were administered a test of lesson specific content. Six types of teacher behavior were found to account for approximately 77% of the variance in pupil achievement: patterns of
solicitation, types of solicitations, teacher reactions to student responses (reciprocation and redirection), teacher reactions to student responses (comments), structuring, and recapitulation.

Rosenshine and Furst (1971) note that the variable "pattern of solicitation" defined as "Was the teacher skillful at questioning such that they asked for and got the response they desired?" represents clarity. Heath and Nielson (1974) and Cruickshank and Kennedy (1986) disagree with Rosenshine and Furst. Cruickshank and Kennedy indicate that soliciting behavior may best be viewed as "a quality control mechanism" for the clear teacher, not as necessarily representative of the teacher's clarity. Although amenable to clarity, this study does not directly support the clarity-achievement relationship.

Belgard, Rosenshine, and Gage (1971). The investigators sought to determine whether "effective explanation" was generalizable over different lessons. Forty-three inservice social studies teachers and their pupils served as subjects. Teachers taught two fifteen minute lessons to their class and each class received a third lesson by way of video-tape. At the conclusion of each lesson, pupils completed a ten item multiple choice test of content. Teacher behavior was
rated by their students on nine items drawn from the Stanford Teacher Appraisal Guide (STAG). Similar to Fortune, Gage and Shutes (1966), the most prominent relationships between teacher behavior and adjusted student achievement were found for "Clarity of Aims" and "Clarity of Presentation" (r=0.43 to 0.64) although the investigators do not claim statistical significance.

Rosenshine (1971) included this study in the findings for teacher clarity due to the strength of the relationships and the nature of the "Clarity" items. Heath and Nielson (1974) agree that these variables seem to represent clarity, but disagree with Rosenshine that statistical significance should be claimed. Cruickshank and Kennedy (1986), using tables provided by the original investigators, conclude that

An examination of the original tables would lead all but the most skeptical of critics to conclude that the results would satisfy reasonable tests for both statistical and practical significance, even though statistical significance was not properly discussed by the original investigators.

(p. 48)
This study would seem to provide strong statistical support for a relationship between the high-inference variable clarity and student achievement.

**Summary.** The ten studies outlined above were noted by Rosenshine (1971) and Rosenshine and Furst (1971) to support a relationship between teachers' "clarity" and student learning. However, the original studies are open to some criticisms. A notable problem of all ten studies is that none had as its primary or explicit purpose the investigation of teacher clarity. Another serious flaw common among the studies is failure to randomly select or assign subjects which may preclude generalization of findings. Additional weaknesses are found in particular studies. For instance, several made use of extremely small samples (Chall & Feldman, 1966; Hiller, Fisher, & Kaess, 1969; and Wright & Nuthall, 1970), and many fail to report the statistical significance of their results (Chall & Feldman, 1966; Fortune, 1967; and Fortune, Gage, & Shutes, 1966).

In order to examine the diversity of variables which Rosenshine and Furst included under the rubric of clarity, it may be useful to organize the studies in tabular form. Table 1 depicts the variety of clarity-like variables which were examined in the
original studies. For each variable, the study or studies which provided support for the variable is (are) identified. The nature of measurement (whether teacher behavior was rated or counted) is also noted.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Study</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriateness or difficulty of the lesson</td>
<td>Chall &amp; Feldman (1966)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Clarity of aims</td>
<td>Fortune, Gage, &amp; Shutes (1966)</td>
<td>Ratings</td>
</tr>
<tr>
<td></td>
<td>Belgard, Rosenshine, &amp; Gage (1971)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Clarity of presentation</td>
<td>Fortune, Gage, &amp; Shutes (1966)</td>
<td>Ratings</td>
</tr>
<tr>
<td></td>
<td>Belgard, Rosenshine, &amp; Gage (1971)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Clear and understandable</td>
<td>Solomon, Bezdek, &amp; Rosenberg (1963)</td>
<td>Ratings &amp; frequency</td>
</tr>
<tr>
<td>Coherence</td>
<td>Solomon, Bezdek, &amp; Rosenberg (1963)</td>
<td>Ratings &amp; frequency</td>
</tr>
<tr>
<td>Intellectual effectiveness</td>
<td>Wallen (1968)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Lesson presentation</td>
<td>Fortune (1967)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Pattern of solicitation</td>
<td>Wright &amp; Nuthall (1970)</td>
<td>Frequency</td>
</tr>
<tr>
<td>Understanding of students</td>
<td>Morsh, Burgess, &amp; Smith (1955)</td>
<td>Ratings</td>
</tr>
<tr>
<td>Understanding of student statements</td>
<td>Solomon, Bezdek, &amp; Rosenberg (1963)</td>
<td>Ratings &amp; frequency</td>
</tr>
<tr>
<td>Vagueness</td>
<td>Hiller, Fisher, &amp; Kaess (1969)</td>
<td>Frequency</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Well organized</th>
<th>Solomon, Bezdek, &amp; Rosenberg (1963)</th>
<th>Ratings &amp; frequency</th>
</tr>
</thead>
</table>

According to Cruickshank and Kennedy (1986) and Armaline (1985), four of the original studies should be considered inconclusive or unrepresentative of the clarity variable: Chall and Feldman (1966); Hiller, Fisher, and Kaess, (1969); Morsh, Burgess, and Smith (1955); and Wright and Nuthall (1970). Of the remaining studies, at least one seems to provide only marginal support for clarity (Fortune, 1967).

The remaining five studies seem to provide strong evidence of the validity of a high-inference concept like teacher clarity and a relationship between such a variable and increased student learning. Belgard, Rosenshine, and Gage (1971) and Fortune, Gage, and Shutes (1966) used a modified version of the Stanford Teacher Appraisal Guide (STAG) and student ratings of teaching to identify "Clarity of Presentation" and "Clarity of Aims" as significantly related to increased student learning. Solomon, Bezdek, and Rosenberg (1963), using student and observer ratings, found that students of teachers who were more clear and expressive achieved at higher levels than students
of teachers who were more obscure and vague. In this study, clear teachers evidenced "understanding of student statements" and "coherence," were "clear and understandable" and "well-organized." Wallen (1966), in two studies, found observer ratings of a teacher's "intellectual effectiveness" highly correlated with student achievement.

The original reviews by Rosenshine (1971) and Rosenshine and Furst (1971) indicated that a high-inference concept like clarity was related to increased levels of student achievement. Their review led them to conclude,

The results on clarity are most consistent and significant, particularly in contrast to the results on other variables. Therefore, variables such as "clarity" are highly recommended for future study (p. 107).

Cruickshank and Kennedy (1986), noted investigators of the teacher clarity-student achievement relationship, summarize their re-examination of the original studies.

Within this imperfect body of process-product research, there were patterns of substantively - and to the extent to which it is important, statistically significant -
linear relations between something like clarity and measures of desirable outcome. Such relations are undeniably present, though not always highlighted, in a number of the early studies. (p. 53)

In spite of methodological problems associated with those early studies, it seems evident that the ability of teachers to make clear presentations is related to student learning. Studies noted by Rosenshine (1971) and Rosenshine and Furst (1971) identify a number of high-inference variables (e.g., intellectual effectiveness, understanding of students, and organization) which resemble teacher clarity and which have a statistically significant relationship with increased pupil achievement.

Teacher Clarity Research

The reviews by Rosenshine (1971) and Rosenshine and Furst (1971) inspired others to begin more directly to investigate the nature of teacher clarity. The line of inquiry which grew from the work of Rosenshine and Furst at first was directed at more clearly defining teacher clarity and identifying its low-inference constituents. Gradually it began to investigate the utility of teacher clarity in the education and evaluation of teachers.
An examination of the literature indicates that subsequent teacher clarity research overall has addressed eight questions listed below.


2) Are those specific instructional behaviors related to each other in some way that might permit them to be grouped into "families" or factors of intermediate dimensionality (Bush, 1976; Bush, Kennedy and Cruickshank, 1977; Cruickshank, Myers and Moenjak, 1975; Hines, 1981; Kennedy, Cruickshank, Bush and Myers, 1978; White, 1979)?

3) Are some of the low-inference behaviors more able than others to discriminate between clear and unclear teachers (Bush, 1976; Bush, Kennedy and Cruickshank, 1977; Hines, 1981; and Kennedy, Cruickshank, Bush and Myers, 1978)?
4) Can instructional behaviors constituting clarity be reliably observed and measured (Hamilton, 1988; Hines, 1981; Hines, Kennedy and Cruickshank, 1985; Larsen, 1985; and Williams, 1983)?


6) Is teacher clarity stable/generalizable across varied content and/or groups of learners (Holland, 1979; Larsen, 1985; and Williams, 1983)?

8) Can teachers be trained to be more clear
(Gliessman, Pugh, Brown and Archer, 1989; Gloeckner, 1983; and Larsen, 1985)?

The first three questions characterize studies which attempt to investigate the nature of teacher clarity. Remaining questions have guided research into the usefulness of teacher clarity.

These questions will serve to organize the review of this substantial literature. Due to their similarity of purpose, studies which have investigated the nature or power of teacher clarity (guided by the first three questions) will be reviewed first. Studies which have addressed questions four through eight will then be examined.

What is the nature of teacher clarity?

Three questions are aggregated for discussion under this rubric.

1) What specific, low-inference instructional behaviors make teaching more clear?

2) Are those specific instructional behaviors related to each other in some way that might permit them to be grouped into "families" or factors of intermediate dimensionality?
3) Are some of the low-inference behaviors more able than others to discriminate between clear and unclear teachers?

Nine studies have addressed some or all of these questions (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Myers, & Moenjak, 1975; French-Lazovich, 1974; Hines, 1981; Kennedy, Cruickshank, Bush, & Myers, 1978; Murray, 1983; Smith, 1978; and White, 1979). Most, particularly those conducted at The Ohio State University, have done so by asking students to indicate what behaviors they perceive to make teaching more clear. A much smaller number have made use of expert opinion to define the constituents of clear teaching.

French-Lazovich (1974). French-Lazovich reports the findings of two studies which attempted to determine what teaching characteristics are most predictive of college students' overall judgements of teaching effectiveness. In one study, representative teaching characteristics were drawn from college rating forms, students' comments, faculty views of good teaching, and from the work of Guthrie (1954), and then organized into a survey instrument. In the second study, a survey instrument was developed by drawing teaching characteristics from factor analytic
studies of student evaluation item pools. During the final three weeks of the term, students in each study were asked to use the particular instrument to rate their instructor's performance.

According to French-Lazovich, the two studies reveal surprising consistency of findings. The top ten ranking items from each study are nearly identical and can be organized into three larger categories: clarity of exposition, arousal of student interest, and motivation of intellectual activities or stimulation of thought. Clarity of exposition is primarily composed of four specific behaviors:

1) Interprets difficult or abstract ideas clearly.
2) Makes good use of examples and illustrations.
3) Presented the course in an organized manner.
4) Inspires confidence in his/her knowledge of the subject.

Although not intended to directly investigate teacher clarity, the findings of these studies provide initial information which identifies constituent behaviors of clear teaching. French-Lazovich notes that, "Some items grouped with clarity suggest measures by which clarity can be achieved" (p. 382). As will be seen, three of the four constituents
identified in these studies are highly similar to the findings of subsequent and more direct research into the nature of clarity.

Cruickshank, Myers, and Moenjak (1975). The investigators began their study with the assumption that "clarity is a function of the beholder and therefore that learners are in the best position to describe what clear teaching is" (Cruickshank, Kennedy, Bush, and Myers, 1979, p. 28). The purpose of this study, then, was to determine what specific instructional behaviors are perceived by learners as making teaching more clear. Junior high students (N=1,009) in grades six through nine in Columbus, Ohio were surveyed. The students were asked to think about their "most clear" teacher and then to list about five things that this teacher did that made them clear. The resultant lists generated thousands of specific teacher behaviors which were perceived by learners as making up clear teaching. Cruickshank and his associates then set out to reduce and synthesize these behaviors into a more manageable list. Responses which were considered obviously not relevant to clarity (e.g., "gives students a lot of work" or "is an older woman") were eliminated. Remaining responses
were examined for face validity and similarity. Those which were deemed quite similar were combined. After subjective synthesis of the original responses, a list of 110 specific behaviors remained. Further examination revealed thirteen categories or groups into which the 110 behaviors could be organized. The original behaviors organized into thirteen categories are as follows:

1. **Providing students with feedback makes things more clear.**
   1. Tells the student whether he is right or wrong.
   2. Helps the student do the first problem right.
   3. Asks the student before he starts to work if he knows what to do and how to do it.
   4. Shows the student where he is wrong.
   5. Gives the student frequent grades or marks.
   6. Goes over all work and tests with students.
   7. Gives the student individual help.
   8. Gives frequent tests or quizzes.
   9. Lets students ask questions.
  10. Reviews what has already been studied.
  11. Has students review what they have already learned.
  12. Has students work problems on the board instead of asking them only to tell their answers.
  13. Reviews work with students in preparation for a test.
  14. Answers students' questions.
  15. Asks students questions to find out if they understand what he has told them.
  16. Explains the answers to questions.
  17. Gives students an example and then lets them try to do it.
  18. Tells students what to do and then has different students work different examples of what they are supposed to do.
  19. Gives a quiz on what was studied the day before.
20. Takes time to answer students' questions before a test.

2. **Teaching things in a related, step-by-step manner makes things more clear.**
   
   22. Teaches one thing at a time.
   23. Finishes teaching what he wants to teach without stopping in the middle of it.
   24. Talks only about things related to topic he is teaching.
   25. Starts teaching at the beginning of a book and finishes at the end of it.

3. **Orienting and preparing students makes things more clear.**
   
   26. Prepares the student for what he will be doing next.
   27. Writes the assignment on the chalkboard.
   28. Gives pre-tests.
   29. Explains in detail what will be on a test.
   30. Explains the assignment and the materials to be used such as dittos.
   31. Tells students why he thinks they should learn what he is teaching.
   32. Gives students written directions for doing something or makes them write the steps, in order, for doing it.
   33. Writes assignments and directions for doing things on the board.
   34. Explains work to be done and how to do it.
   35. Relates what has already been learned to new material.
   36. Relates what he is teaching to real life.
   37. Shows students how different subjects are related.

4. **Providing students with standards and rules makes things more clear.**
   
   38. Makes the students aware of standards and rules to be followed.
   39. Tells students when assignments are due.
   40. Makes students do things right.
   41. Uses contracts for grading.
   42. Tells students what he wants them to do.
5. **Using a variety of teaching materials makes things more clear.**

43. Uses overhead projectors, films, textbooks, pictures, real objects, diagrams, maps, demonstrations, etc.
44. Provides students with the materials he needs when he needs them.
45. Explains orally and in writing.

6. **Repeating and stressing directions and difficult points makes things more clear.**

46. Repeats the same thing more than once.
47. Stresses difficult points.
48. Repeats slowly.
49. Repeats for students in groups what he taught the whole class.
50. Repeats directions.
51. Repeats enough but not too much.
52. Repeats questions and explanations if students don’t understand them the first time.
53. Says a spelling word more than once.
54. Tells students to take notes.
55. Reads the directions with the students.
56. Has students make outlines.
57. Writes on the board and explains as he writes.
58. Writes important things on the board.

7. **Demonstrating makes things more clear.**

59. Shows students how to do things.
60. Tells and shows students what they should do.
61. Gives an example on the board of how to do something.
62. Uses some students' work as examples to show other students how to do something.
63. Shows movies and explains them afterwards.
64. Stops a filmstrip or movie before it is finished to explain or discuss it.
65. Uses examples when explaining.
66. Explains the work to be done and how to do it.
67. Tells students tricks for remembering things.
8. **Providing practice makes things more clear.**
   68. Gives the student daily practice.
   69. Gives the student enough time to practice.
   70. Gives the student various kinds of practice.
   71. Gives students practice by giving workbook assignments.
   72. Has students write definitions, etc., many times.

9. **Adjusting teaching to the learner and the topic makes things more clear.**
   73. Gives the student work he is able to do.
   74. Teaches at a pace appropriate to the topic and the students.
   75. Stays with the point or topic until it is understood.
   76. Starts the lesson slowly.
   77. Explains something and then stops so that students can think about it.
   78. Takes time when explaining.
   79. Gives explanations that the student understands.
   80. Speaks slowly.
   81. Has students who understand how to do the work begin while he explains it again to others.
   82. Separates students who understand from others who don't.

10. **Providing illustrations or examples makes things more clear.**
   83. Goes from the general to the specific.
   84. Supports what he teaches with facts from the textbook.

11. **Communicating so that students can understand makes things more clear.**
   85. Speaks so that all the students can hear.
   86. Pronounces words distinctly.
   87. Uses common words.
   88. Speaks with expression.
   89. Speaks grammatically.
   90. Uses words correctly.
   91. Gives students ditto's that are clearly printed.
92. Stands so that everyone can see what he writes on the board.
93. Writes legibly on the board.

12. Providing examples makes things more clear.
94. Uses common examples.
95. Gives examples and explains them.
96. Gives personal examples.
97. Gives written examples.
98. Shows students examples of how to do classwork or homework.
100. Tells humorous stories to explain.
101. Explains and then works an example.
102. Works difficult homework problems, selected by students, on the board.
103. Works examples and explains them.
104. Explains new words.
105. Makes comparisons.
106. Supports the lesson with specific details.
107. Provides additional information besides what is in the book.
108. Supports what he teachers with facts from the textbook.

13. Causing students to organize material in a way meaningful to them makes things more clear.
109. Has students make outlines.
110. Tells students to take notes.

This study, the first in the Ohio State series, provided researchers with some idea of the constituent behaviors of which clear teaching was made. Cruickshank, Myers, and Moenjak provided foundational evidence of teacher clarity as consisting of specific, low-inference behaviors. The results of this study served to guide and promote nearly all subsequent investigation in the Ohio State line of teacher clarity research. However, problems existed. The
sample, composed entirely of junior high school students from Columbus, Ohio, might not be representative of other students in their perceptions of clear teaching. No information was gained as to the relative importance of each of these behaviors. And the thirteen categories were subjectively derived by the jury of three investigators.

_Bush (1976) and Bush, Kennedy, and Cruickshank (1977)_ Building upon the work of Cruickshank, Myers, and Moenjak (1975), Bush et al. sought to further define teacher clarity in terms of its low-inference constituents. Among the purposes of the two studies were:

1) To investigate and define the teacher clarity construct in terms of observable teacher behaviors.

2) To determine statistically the intermediate-inference dimensions underlying the 110 behaviors identified in Cruickshank, et al. (1975).

3) To determine whether specific behaviors identified in Cruickshank, et al. (1975) discriminate between _most clear_ and _most unclear_ junior high teachers.
4) To relate the above identified prime
discriminators to intermediate-inference
dimensions of teacher clarity.

In the first portion of the study, Bush began by randomly dividing the 110 behaviors identified in Cruickshank, Myers, and Moenjak (1975) into two groups of fifty-five items. Each of these two groups was then randomly ordered to produce two orderings of each set of fifty-five behaviors. The resulting four sets of behaviors (two sets of fifty-five behaviors with two different orderings of each) were then adapted to produce two types of instrument: one asking students to target their most clear teacher when responding to the set of fifty-five items, and the other asking students to target their most unclear teacher when responding.

The forms were administered to 1,549 ninth grade students enrolled in nine Catholic high schools in Cleveland, Ohio. Each student was to target the appropriate teacher (most clear or most unclear) and to respond to each of the fifty-five items by rating the frequency with which their targeted teacher performed the behavior. Each form also asked the student to provide demographic information.
Through factor analysis, student responses on each form type (clear or unclear) revealed five principle factors from each of the forms which were "highly consistent across clarity levels." Clear teachers were found to be adept at:

Form A - Explaining: explaining through written or verbal examples
- Individualizing: personalizing, using multiple strategies
- Task orientation: inflexible style
- Verbal fluency
- Organizing student work

Form B - Explaining: providing for student understanding
- Explaining: explaining through written or verbal examples
- Synthesis and/or relevancy
- Verbal repetition
- Uninterpretable

Discriminant analysis was employed to determine which behaviors best discriminated between teachers perceived by students as most clear and those perceived as most unclear. A number of prime discriminators were revealed. Strongest among them were: (continued on the following page)
Form A - Gives the student individual help.
- Explains something and then stops so students can think about it.
- Explains the work to be done and how to do it.
- Repeats questions and explanations if students don't understand them.
- Asks students before they start work if they know what to do and how to do it.

Form B - Gives explanations that students understand.
- Teaches at a pace appropriate to the topic and the student.
- Takes time when explaining.
- Answers student questions.
- Stresses difficult points.

Bush et al. also indicate that the prime discriminators loaded most heavily on the factor "Explaining: explaining through written or verbal examples." The data suggest that the most important intermediate dimensions of teacher clarity pertain to explaining ideas and directions, and using ample illustrations during the process of explaining ideas and directions.
In stating their conclusions, the investigators note that teacher clarity seems to consist of two general dimensions each made up of several lower-inference behaviors. The first general or intermediate dimension, *explaining concepts and directions in an understandable manner and at an appropriate pace*, includes the more specific lower-inference behaviors: takes time when explaining, stresses difficult points, and explains new words. A second general dimension is *use of examples and illustrations in presenting material* which consists of: gives an example on the board of how to do something, works difficult homework problems selected by students on the board, and gives students an example and then lets them try to do it.

In spite of limited generalizability, the findings of the two studies reported herein provide a great deal of information regarding the clarity construct. These studies further refined the list of specific behaviors which make teaching more clear. The investigators identify a number of behaviors which serve as prime discriminators between clear and unclear teachers. They also provide objective, quantifiable evidence of the intermediate-dimensions
of clarity. The investigators note the practical implications of their findings including,

If teacher educators desire to train teachers to be perceived as clear, an argument could be advanced for the incorporation of discriminating (clarity) behaviors into preservice education courses in such a manner as to encourage their practice. (Bush et al., 1977, p. 57)

Kennedy, Cruickshank, Bush, and Myers (1978). The purpose of this study was to replicate Bush et al. (1977) making use of improved instrumentation and utilizing a more diverse sample of students. Forty-three behaviors identified by Bush et al. as most able to discriminate between clear and unclear teachers were refined and added to eighteen new behavioral statements generated by the investigators to "fill gaps in content coverage and to augment several sketchy behavioral patterns" (p. 4). The sixty-one behaviors were then incorporated into four versions of an instrument similar to that used in Bush et al.. Two types of instrument were employed, one targeting teachers perceived as most clear and another for teachers perceived as most unclear. Each form contained 34 specific behavioral statements (seven
were common to both forms). 1,263 adolescent students from three diverse geographical locations were subjects. Ninth grade students from Columbus, Ohio (N=425) and Nashville, Tennessee (N=307); and public school students aged 13-15 in Sydney and Perth, Australia (N=531) were asked to target their most clear and most unclear teacher and to respond to items on the instrument accordingly.

Multiple correlations indicated that the new set of behaviors discriminated significantly between clear and unclear teachers (multiple Rs > 0.80). The discriminatory power of the behaviors exceeded that found in Bush et al. (1977). Further, behaviors were found to be highly correlated across geographical locations (r= 0.68 to 0.88). Pooling responses across all geographical locations and both forms resulted in a list of 29 behaviors which most discriminated between clear and unclear teachers. In order of power they are:

1. Explains things simply.
2. Gives explanations we understand.*
3. Teaches at a pace appropriate to the topic and to the students.*
4. Stays with the topic until we understand.
5. Tries to find out if we don't understand and then repeats things.
7. Describes the work to be done and how to do it.*
8. Asks if we know what to do and how to do it.*
9. Repeats things when we don't understand.
10. Explains something and then works an example.
11. Explains something and then stops so we can ask questions.
12. Prepares us for what we will be doing next.
14. Repeats things that are hard to understand.
15. Works examples and explains them.
16. Gives us a chance to think about what's been taught.
17. Explains something and then stops so we can think about it.*
18. Shows us how to do the work.
19. Explains the assignment and the materials we need to use to do it.
20. Stresses difficult points.*
21. Shows examples of how to do classwork and homework.
22. Gives us enough time for practice.
23. Answers our questions.*
24. Asks questions to find out if we understand.
25. Shows examples of how to do classwork and homework.
26. Explains how to do assignments by using examples.
27. Shows the difference between things.
28. Goes over difficult homework problems on the board.
29. Shows us how to remember things.

It should be noted that several of these behaviors were also identified as prime discriminators in Bush et al. (1977). Behaviors found to discriminate well in both studies are marked by an asterisk (*).

Factor analysis revealed four intermediate dimensions, rather than two as in Bush et al. (1976). Intermediate-dimensions and their definitions are:

**Assesses student learning.** The teacher actively attempts to determine if students understand the content or task and attempts to adjust his or her activity to accommodate students.

**Provides student opportunity.** The teacher structures classroom activities to allow time for
students to think about, respond to, and synthesize what they are learning.

*Uses examples.* The teacher frequently uses examples, especially on the chalkboard.

*Reviews and organizes.* The teacher frequently reviews prior work and prepares students for upcoming work.

The findings of Kennedy, Cruickshank, Bush, and Myers (1978) serve to further refine the low- and moderate-inference dimensions of teacher clarity, and confirm many of the principal findings in Bush et al. (1977). Twenty-nine specific low-inference behaviors were identified which were most able to discriminate between clear and unclear teachers. Several of these behaviors were identical and many others quite similar to those identified in Bush et al. (1977). Four, rather than two, intermediate-inference dimensions of clarity were identified and defined. The investigators conclude that,

Currently enough is known about the low-inference constituents of teacher clarity that encouragement can be given to research efforts which attempt to relate these known constituents to measures of student outcome. In particular, encouragement should be
provided studies which attempt to (a) measure the degree to which teachers exhibit selected clarity behaviors, (b) determine the extent to which students perceive these clarity behaviors, and then (c) investigate the strength of the relations between these variables and student outcome measures. (p. 9) Smith (1978). In an independent study, Smith sought to identify the low-inference behaviors which constitute "clarity of presentation." In an approach different from that of the Ohio State researchers, Smith began his investigation by identifying representative clarity behaviors from the literature. Forty-one such behaviors were identified and then rated by a panel of thirty-one experts in teacher education on three criteria: a) value, b) learnability, and c) measurability. Eleven items which were deemed to sufficiently meet these three criteria were then used in the development of a manual to guide observation of teaching. This manual was used to rate audio taped lessons of ninety-nine community college instructors.

Factor analyses revealed ten of the items to be most promising as constituents of presentational clarity. Several of these are similar to prime
discriminators identified in Bush (1976), Bush et al. (1977) and Kennedy et al. (1978). The ten items identified as most promising constituents by Smith are listed below. Items similar to prime discriminators in earlier research (Bush, 1976; Bush, et al., 1977) are noted by an asterisk (*).

1) Uses examples with explicit referents.*
2) Lets students ask questions.*
3) Answers student questions.*
4) Asks questions related to material being taught.*
5) Encourages students to ask questions.*
6) Shares over-all structure of the lecture with the students.*
7) Teaches step-by-step.*
8) Prepares students for what is upcoming.
9) Uses verbal markers of importance.
10) Summarizes material at appropriate points in the presentation.

Through factor analysis, Smith also found three intermediate factors which seemed to subsume most of the ten items: a) makes organization of the presentation explicit to the students, b) organization, and c) uses questioning skills, examples.
The findings of Smith (1978) affirmed many of the findings of earlier work into the constituents of teacher clarity. Several low- and intermediate-inference behaviors were consistently found to be aspects of clarity.

White (1979). As part of an investigation into the relationship between teacher clarity and student achievement, White replicated the study performed earlier by Kennedy et al. (1977). White slightly modified the original Kennedy et al. instrument by requesting that students rate their targeted teachers' use of behaviors as occurring never, almost never, often, very often, or not applicable. The investigator included this final selection whereas Kennedy et al. had not. Similar to Kennedy et al., four forms of this instrument were administered to 306 high school students in Nashville, Tennessee. Students were asked to target their most clear teacher and their most unclear teacher.

Factor analysis was employed to examine students' responses and revealed essentially the same four intermediate-dimensions as Kennedy et al. (1977). White identified a number of low-inference behaviors with factor loadings of greater than .5 which were
labelled prime discriminators. The strongest of these are listed below.

**Form A**
- Explains something and then stops so we can think about it
- Gives an example on the board of how to do something
- Goes over instructions more than once
- Repeats directions
- Gives us enough time to practice
- Gives us a chance to think about what's been taught

**Form B**
- Goes over past work before a test
- Shows examples of how to do classwork and homework
- Shows the difference between things
- Explains something and then stops so we can think about it
- Teaches a few of us at a time
- Tells us tricks for recalling information

An examination of these behaviors indicates similarity to prime discriminators identified in earlier studies (Bush, Kennedy, Cruickshank, and Myers, 1976; Kennedy, Cruickshank, Bush, and Myers, 1976; Kennedy, Cruickshank, Bush, and Myers, 1976).
1977). The work of White provides increased support for behaviors identified in the work of Kennedy et al. (1977), particularly in validating the intermediate-dimensions of clear teaching.

Hines (1981). Hines attempted to determine whether the low-inference behaviors identified by junior high school students in earlier studies (e.g., Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Kennedy, Bush, & Myers, 1978) were generalizable to students at the college level. In a similar fashion to Kennedy et al. (1978), four forms of an instrument were designed which requested students to target their most clear and most unclear teacher when responding. Each form contained 62 items, 42 drawn from the work of Kennedy et al. (1978), 11 generated by the investigator, and several open-ended questions. Undergraduate students at The Ohio State University (N=573) were asked to rate their most clear and most unclear instructor on each of twenty-nine behavioral statements. Open-ended questions asked subjects to note any behaviors that made instruction more or less clear which did not appear on the instrument. Each student was also asked to respond to the quality of their work in the class of the targeted instructor.
Discriminant analysis revealed that the forty-two items drawn from Kennedy et al. and the eleven behavioral statements generated by the investigator did discriminate between clear and unclear teachers at the college level. Factor analysis found that these behaviors could be grouped into three intermediate-dimensionalities. Clarity behaviors which best discriminated between clear and unclear teachers, and the intermediate-dimensions into which they may be organized are:

Provides for student understanding and assimilation of instructional content.
1. Answers student questions
2. Asks questions to find out if students understand
3. Repeats things when students do not understand
4. Explains things and then stops for questions
5. Explains things simply
6. Teaches at an appropriate pace

Explains/demonstrates how to do the work by use of examples.
7. Uses examples
8. Works examples and explains them
9. Shows students how to do work by use of examples
10. Teaches step-by-step

**Structures instruction and instructional content/Presents content in a logical sequence.**

11. Presents content in a logical manner

12. Points out what is important

13. Informs students of objectives

The findings of Hines' study again confirm the validity of the low- and intermediate-dimensions of clarity identified in earlier research (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Kennedy, Bush, & Myers, 1978). The low-inference behaviors identified as prime discriminators by Hines are nearly identical to those found in previous studies. Although Hines identifies three intermediate dimensions rather than two as in Kennedy et al., much similarity is evident.

**Murray (1983).** The purpose of this study was to compare the frequency with which university lecturers used sixty low-inference teaching behaviors derived from previous college level observation instruments. Fifty-four college instructors were identified who had consistently received either low (n=18), moderate (n=18), or high (n=18) student ratings over previous years. Each lecturer was observed by trained raters on 18 to 24 occasions using The Teacher Behavior Inventory.
The inventory is used to record specific teacher behavior in eight areas (non-verbal behavior, speech, rapport, explanation, organization, interest, task orientation, and participation).

Discriminant analyses revealed significant differences between groups in these areas. Subsequent factor analysis revealed that three factors (enthusiasm, clarity, and rapport) varied significantly across groups. Of greatest interest to research of teacher clarity are the results of factor analysis. Murray reports that "clarity of explanation" or "expositional clarity" consists of several specific behaviors:

1. Uses concrete examples
2. Gives multiple examples
3. Repeats difficult ideas
4. Asks questions of class as a whole
5. Suggests practical applications
6. Shows concern for students
7. Uses graphs and diagrams
8. Stresses important points
9. Suggests mnemonic aids
10. Shows strong interest in the subject
11. Takes initiative in the class
Summary. Ten studies have examined the nature of the high-inference teacher clarity variable. By aggregating the findings of these studies as they relate to each of three research questions, we may best be able to understand the significance of this research.

Five of the studies identified specific low-inference behaviors which constitute clear teaching (French-Lazovich, 1974; Cruickshank, Myer, & Moenjak, 1975; Bush, 1976; Smith, 1978; and Murray, 1983). French-Lazovich (1974) found clear college instruction to consist of interpreting difficult or abstract points clearly, making good use of examples and illustrations, presenting material in an organized manner, and inspiring confidence in the instructor's knowledge. Murray (1983), also examining clear teaching at the college level, found much of clear teaching to be characterized by the instructor's ability to explain, such as: use of concrete examples, use of multiple examples, repetition of difficult ideas, suggestion of practical applications, and others. Clear teachers, as perceived by junior high school students, were characterized by 110 specific behaviors (Cruickshank, Myers, & Moenjak, 1975). Bush (1976) and Bush, Kennedy, and Cruickshank (1977) further refined this list of behaviors through factor analysis and found clear
teachers to be proficient at: explaining using written or verbal examples, individualizing instruction, maintaining task orientation, verbal fluency, organizing student work, synthesizing, and verbal repetition.

Clear teaching, at least at the junior high school and college level can be explained by a number of specific behaviors. These behaviors relate to the teacher's ability to explain and demonstrate, to monitor students' understanding by asking questions and encouraging students to ask questions, and to repeat important points when students fail to understand.

Five studies attempted to relate these low-inference behaviors to intermediate dimensions or "families" of similar behaviors (Bush, Kennedy, & Cruickshank, 1977; Cruickshank, Myers, & Moenjak, 1975; Kennedy, Cruickshank, Bush, & Myers, 1978; Hines, 1981; and White, 1979). Cruickshank, Myers and Moenjak (1975) subjectively organized 110 low-inference behaviors into thirteen categories. Their work was later refined by Bush (1976) and Bush, Kennedy, and Cruickshank (1977) who, using factor analytic procedures, found that most low-inference clarity behaviors were related to two intermediate dimensions: (1) Explaining concepts and directions in an understandable manner and at an appropriate pace, and (2) use of examples and
illustrations in presenting material. Kennedy, Cruickshank, Bush, and Myers (1978) and White (1979) also employed factor analysis to reveal four intermediate dimensions of clarity. They are (1) assesses student learning, (2) provides student opportunity, (3) uses examples, and (4) reviews and organizes. Hines (1981), again through factor analysis, found that most low-inference clarity behaviors could be organized into three categories: (1) provides for student understanding and assimilation of instructional content, (2) explains/demonstrates how to do the work, and (3) structures instruction and instructional content/presents content in a logical sequence.

The results of these studies suggest that teacher clarity can be organized (subjectively and/or statistically) into three or four moderate-inference "families." The intermediate dimensions of teacher clarity relating to explanation or demonstration consistently appears in this research. Another frequently appearing dimension of clear teaching relates to asking students questions and answering students' questions. Pacing of explanation, organizing instruction, and reviewing what has been taught also have been found. Teacher clarity can be viewed and described at three dimensions: a global, high-inference
dimension; a moderate-inference dimension consisting of three or four "families" of similar behaviors; and a low-inference dimension consisting of numerous specific teacher behaviors.

Four studies have examined the ability of identified low-inference behaviors to discriminate between clear and unclear teachers (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Hines, 1981; and Kennedy, Cruickshank, Bush, & Myers, 1978). These "prime discriminators" apply to teaching at least at the junior high school and college levels and are similar across geographical regions. Among prime discriminators that recur in the studies are: answers student questions, asks questions to find out if students understand, repeats things when students do not understand, explains and then pauses for questions, teaches at an appropriate pace, works examples and explains them, shows students how to do the work, teaches step-by-step, points out what is important, and informs students of objectives. Clear teachers consistently perform these behaviors more frequently and with greater proficiency than unclear teachers. In efforts to improve teaching through training and evaluation, these behaviors would seem to hold great promise.
Four general conclusions can be drawn in response to the research questions addressed by these studies. First, teacher clarity is a multidimensional variable consisting of low-, moderate-, and high-inference dimensions. Second, low-inference constituents of clear teaching have been identified. Third, several of these low-inference behaviors consistently and significantly discriminate between clear and unclear teachers. Fourth, these behaviors can be organized into moderate-inference "families" of similar or related behaviors.

Can Instructional Behaviors Constituting Clarity be Observed and Measured?

Investigation of the observability and/or measurability of teacher clarity has been conducted directly or indirectly in five studies (Hamilton, 1988; Hines, 1981; Hines, Kennedy, & Cruickshank, 1985; Larsen, 1985; and Williams, 1983). All but one of these studies were conducted at The Ohio State University and all examined this aspect as only a portion of their investigation. Each makes use of low-inference behaviors identified in earlier research in the development or refinement of an instrument which is then used to observe and measure teachers' clarity.
Hines (1981) and Hines, Kennedy, and Cruickshank (1985). A second phase of the Hines' study described earlier included the development of an observation instrument for use in measuring teachers' clarity (The Clarity Observation Instrument). Using data obtained in Phase One, Hines' instrument contained items which were identified as prime discriminators of clear and unclear teaching. Items included eighteen low-inference behaviors which were counted, eleven low- and moderate-inference behaviors which were rated, and a global rating of overall (high-inference) clarity. Thirty-two preservice teachers each taught a short lesson to a small group of peers while being videotaped. Following each lesson, teachers and learners completed an instrument which asked them to rate their teacher's clarity on several low-, moderate-, and high-inference items. Trained observers then viewed the videotaped lessons and rated or counted each teacher's use of the clarity behaviors.

Results indicated that the Clarity Observation Instrument was highly reliable. Analysis of observers measures revealed a generalizability coefficient of 0.97 for both counted and rated items. Further, measures of
teachers' clarity (low-, moderate-, and high-inference) were highly correlated between teachers, learners, and trained observers.

Williams (1983). In an investigation of the stability of teacher clarity, Williams made use of trained observers and The Clarity Observation Instrument (Hines, 1981). Fifty-two preservice teachers taught short lessons to small groups of their peers. The video-taped lessons were then observed and evaluated by trained raters using the Clarity Observation Instrument. Generalizability coefficients for the eighteen low-inference behaviors ranged from 0.40 to 0.54 while ratings of moderate- and high-inference behaviors produced generalizability coefficients from 0.60 to 0.85. Williams notes,

The comprehensive reliability estimates for the Observation Instrument indicated a fairly high level of consistency of the measures in differentiating between teachers and their generalizability over teachers, behaviors, and observers. (p. 91)

Larsen (1985). This study included observation of teachers' clarity using a greatly modified version of Hines' (1981) instrument. In an attempt to reduce the time needed to train observers to use Hines' instrument,
Larsen revised the instrument such that no items were counted. Unlike Hines' instrument, in which the frequency of eighteen low-inference behaviors was recorded in the first section, Larsen's instrument used a five point Likert-type scale to rate each of the eighteen behaviors. Further, all moderate- and high-inference behaviors were eliminated from the instrument.

Larsen tested the reliability of his instrument by correlating measures obtained using this new instrument with measures which had been obtained using Hines' instrument. Pearson-Product Moment correlations \( r > 0.66 \) and measures of Cronbach's Standardized Alpha \( r > 0.80 \) all were deemed statistically significant, and led Larsen to conclude that his instrument was a reliable method of evaluating teachers' use of the clarity behaviors.

Hamilton (1988). In an investigation of the observability and measurability of teacher clarity, Hamilton made use of a modified version of The Clarity Observation Instrument (Hines, 1981). One hundred sixteen student teachers who had submitted video taped lessons to the National Education Association Student Teacher Competition volunteered to participate. The
video taped lessons, which represented all grade levels and all subject areas, were observed and rated by five trained raters using the modified instrument.

The newly modified instrument, quite similar to the original instrument developed by Hines (1981), contained 35 items in two parts. Part Two remained virtually unchanged from Hines (1981). However, Part One contained 25 low-inference behaviors which represented prime discriminators from Kennedy, et al. (1978). Seven of these were prime discriminators which did not appear in the original instrument because they had been deemed to be difficult to assess or unnecessary for the peer teaching setting in which the original instrument was used. They are:

1. Stresses difficult points.
2. Repeats instructions/directions.
3. Works examples/problems and explains them.
4. Explains how to do assignments by using examples.
5. Explains assignments and the materials students need to use.
6. Compares new material to what students have already learned.
7. Reviews work before a test.
Hamilton reports that internal reliability of the modified instrument was high, coefficients ranging from $r=0.75$ (low-inference frequency measures) to $r=0.97$ (moderate- and high-inference ratings). Observer agreement on low-inference behaviors ranged from $r=0.86$ to $r=0.97$, while ratings of moderate- and high-inference behaviors resulted in agreement ranging from $r=0.80$ to $r=1.00$. Little correlation was found between low-inference frequencies and moderate or high-inference ratings ($r=0.44$). Hamilton concludes that, "On the whole, the behaviors added to the instrument occurred less frequently than the original eighteen low-inference behaviors (used by Hines, 1981)" (p. 157).

**Summary.** Teacher clarity can be reliably observed and measured. The studies noted above indicate that this holds true across low-, moderate-, and high-inference dimensions of clarity. The most substantial amount of observation of teacher clarity has been conducted using The Clarity Observation Instrument (Hines, 1981) or adaptations thereof. Some have modified the original instrument to make it more useful in natural classroom settings by expanding the number of low-inference behaviors to be counted (Hamilton, 1988). Others have eliminated measures of the frequency of low-inference behaviors substituting Likert-type ratings
of these behaviors to facilitate more expedient training of observers (Larsen, 1985). Each of these instruments has been found to reliably assess teachers' use of constituent behaviors of teacher clarity. Interestingly, reliability coefficients for ratings of moderate and high-inference behaviors ($r=0.60$ to $1.00$) have been somewhat greater than for low-inference behaviors which were counted ($r=0.40$ to $0.97$). Whether due to more effective training of observers or investigator familiarity with the instrument, overall reliability estimates have been highest for the original Clarity Observation Instrument ($r=0.97$).

**What is the Relationship Between the Clarity Behaviors and Student Learning and Satisfaction?**

Among the most researched aspect of teacher clarity is the relationship between observed or perceived teacher clarity and desirable student outcomes. Eight studies have investigated this question (Evans & Guyman, 1977; Frey, Leonard, & Beatty, 1975; Good & Grouws, 1977; Hines, 1981; Hines, Kennedy, & Cruickshank, 1985; Larsen, 1985; White, 1979; and Williams, 1983). In these studies, measures of teacher clarity are obtained from student perceptions, teacher perceptions, and/or
trained observers. Measures of student learning and/or satisfaction are also obtained and then correlated with teacher clarity.

Frey, Leonard, and Beatty (1975). In a study intended to examine the relationship between college student ratings of instruction and their performance on the final exam, investigators surveyed 778 undergraduate students enrolled in the same course at one of three midwestern universities. During the final two weeks of the term, students were asked to rate their instructor on each of twenty-one items relating to seven aspects of teaching (clarity of presentations, work load, personal attention, class discussion, organization-planning, grading, and student accomplishment). Relative performance of each class on the final exam was then compared with student ratings. Results indicate that three factors (student accomplishment, presentational clarity, and organization-planning) showed a strong and significant correlation with student achievement on the final exam ($r=0.59$, $0.58$, and $0.51$ respectively).

Good and Grouws (1977). The investigators examined the classroom behavior of teachers who were most successful at helping fourth-grade students achieve in mathematics. Nine effective and nine ineffective teachers of mathematics were identified according to
their students' performance on the Iowa Test of Basic Skills. From October through December these teachers were repeatedly observed by trained raters using an instrument designed by the researchers.

The investigators report that effective teachers differed from less effective teachers in a number of ways. Foremost among them was their ability to be clear.

One of the necessary skills for effective whole class instruction is the ability to make clear presentations . . . The effective teachers generally introduced and explained material more clearly, . . . asked more product questions, . . . and were more likely to give process feedback. (p. 52)

Evans and Guyman (1978). The purpose of this study was to experimentally investigate components of clarity as identified in earlier studies, and measure their effect on student achievement and rating forms. Nineteen undergraduate students were randomly assigned to view either a "clear" or "unclear" video taped lecture. At the conclusion of the lesson, subjects were asked to complete a twelve item multiple choice test of content, a five item rating of their affect toward the lesson, and an instrument rating teacher effectiveness.
Results indicated that students receiving the "clear" lecture achieved at significantly higher levels and were more satisfied with their lesson than students receiving the "unclear" lesson.

White (1979). The purpose of a second phase of this investigation was to examine the relationship between teacher clarity and student achievement. Twelve student teachers each taught a prescribed lesson in mathematics, English or history to students in their class. All lessons were video-taped. At the conclusion of each lesson, students completed a ten item test of lesson content. Teacher clarity was assessed utilizing a short observation instrument designed by the investigator. The instrument contained seven teacher behaviors identified in Phase One (described earlier) and five behaviors deemed by the investigator to be important "generic" teaching behaviors. For each behavior, trained observers noted whether or not the behavior occurred, and whether performance of the behavior was satisfactory or unsatisfactory.

Results evidenced significant negative correlations between teachers' use and performance of the twelve behaviors and student achievement ($r = -0.3301$ to $-0.4988$). In explaining her unexpected findings (these contradict all earlier findings), White indicates that
teachers who made most frequent and satisfactory use of the twelve specific behaviors often failed to present all lesson content in the time allotted. White concludes that teacher clarity is not sufficient for producing significant increases in student learning. Rather, teacher clarity is related to student achievement only when students are provided sufficient opportunity to learn criterion material.

This second phase of the White study has come under strong and harsh criticism from scholars of teacher clarity (Armaline, 1985; Cruickshank & Kennedy, 1986; Hines, 1981; Williams, 1983; and others). Most open to criticism is White's selection of the twelve behaviors to be used in the observation instrument. Of the twelve behaviors used in the White instrument, only six are identified as prime discriminators in Kennedy et al. (1978). The present investigator further agrees with Hines (1981) in pointing out that the twelve items may be too narrow to allow a representative assessment of teachers' clarity. Also problematic is a failure of the instrument to consider the frequency with which behaviors were performed. Such problems and methodological weaknesses make the findings and conclusions of White (1979) open to question.
Hines (1981) and Hines, Cruickshank, and Kennedy (1985). In another phase of this investigation, the researchers examined the relationship between teacher clarity as perceived by students, teachers, and trained observers and measures of student achievement and satisfaction. Thirty-two preservice teachers each taught a short lesson to small groups of their peers while being video taped. Upon completion of the lesson, learners completed a test of content and a learner satisfaction form and teachers and learners completed an instrument assessing the perceived clarity of the teacher. Trained observers used the Clarity Observation Instrument to assess each teacher's clarity. The investigators then compared data from all sources. Results indicated that teacher clarity, whether assessed by learners, teachers or trained observers, was significantly and positively related to measures of student achievement and satisfaction across all dimensions of clarity (low-, moderate-, and high-inference).

Williams (1983). As a part of her investigation into the stability of teacher clarity across time, subjects, and learners, Williams investigated the relationship between teachers' clarity and their students' achievement and satisfaction. As described
earlier, fifty-two preservice teachers taught short lessons to small groups of their peers. After each lesson learners were tested over content, rated the teacher's clarity, and noted their satisfaction with the lesson on a Likert-type scale. The results indicate that teachers who are consistently clear produce greater student learning than consistently unclear teachers. Further, clear teachers produce gains in student achievement over time while unclear teachers produce losses. Clear teachers also produced significantly greater feelings of student satisfaction with the lesson than did unclear teachers.

Larsen (1985). This study looked into the relationship between teacher clarity and student achievement and satisfaction in natural classroom settings. Thirty-two preservice mathematics teachers were audio-taped on several occasions while student teaching. At the conclusion of each of these lessons, students were administered a fifteen item test of content. Using the modified version of The Clarity Observation Instrument noted above, the investigator rated each student teacher's clarity. Results indicate a significant and positive relationship between teacher clarity and student learning of mathematical concepts.
Summary. Among the most promising results of research which examines teacher clarity are the findings of the relationship between clarity and desirable student outcomes. In spite of conflicting results obtained by one investigator (White 1979), this relationship has repeatedly been found to be positive and statistically significant. In college classrooms, Frey, Leonard, and Beatty (1975) found instructors' clarity of presentation to correlate positively with student performance on the final examination ($r=0.58$). In elementary classrooms, Good and Grouws (1977) found that teachers' ability to make clear presentations was the most important teacher variable associated with student learning of mathematics. Similarly, Larsen (1985) revealed a significant and positive relationship between student teachers' clarity and their students' learning of mathematical concepts.

In more controlled experiments, several investigators also have found teacher clarity to be closely associated with student learning and satisfaction. Evans and Guyman (1978) discovered that learners who viewed a "clear" lesson performed significantly better on a test of achievement than learners who viewed an "unclear" lesson. Further, learners in the "clear" setting reported significantly
greater satisfaction with the learning experience. Studies by Hines (1981), Hines, Kennedy, and Cruickshank (1985), and Williams (1983) obtained similar results. Learners of teachers who were most clear significantly outperformed learners of less clear teachers on tests of understanding and reported greater satisfaction with the lesson. Williams (1983) also reports that, over time, clear teachers produce gains in student learning while unclear teachers produce decreases.

The relationship between teacher clarity and desirable student outcomes is substantial and reasonably consistent. Students achieve more when their teachers make greater use of the constituent behaviors of teacher clarity, and these students tend to be more satisfied with the teacher's performance.

Is Teacher Clarity Stable/Generalizable Across Content and Learners?

Three studies have investigated this question: Williams (1983), Holland (1979), and Larsen (1985).

Holland (1979). Using data obtained in the 1978 study by Kennedy et al. (see above), Holland compared the clarity of teachers of science and mathematics to that of teachers of social studies and English. Holland also examined differences in clarity which might exist between teachers in the three geographical locations.
The results of multivariate analyses of variance indicated that students perceived teachers of mathematics and science as somewhat more clear than teachers of social studies and English. However, discriminant analysis revealed that prime discriminators identified in Kennedy et al. (1978) were highly similar between teachers of mathematics-science and English-social studies. Further, students in all three geographical regions held common conceptions of clear teaching. The results of his study lead Holland to conclude, "There is strong support for the stability of clarity across subject areas and geographical regions" (p. 121).

Williams (1983). Williams investigated the stability of teachers' clarity across time, subject matter, and groups of learners. Fifty-two preservice teachers were subjects. Teachers taught two short lessons to peers while being video taped. Each teacher taught the same or a different lesson to either the same or a different group of peers. After each lesson, learners completed a test of content, a measure of their satisfaction with the lesson, and a rating of their teacher's clarity. Observers rated each teacher's clarity using the video-taped lessons and The Clarity Observation Instrument (Hines, 1981).
Multivariate and univariate analyses found teacher clarity to be highly stable, particularly at the moderate- and high-inference levels. Measures of teacher clarity obtained from both trained observers and learners were relatively stable across time, content, and groups of learners in all three dimensions of clarity.

Larsen (1985). Larsen examined the stability of preservice mathematics teachers' clarity in natural classrooms over a five week period. In the study described earlier, thirty-two student teachers were audio-taped on five occasions while teaching elementary mathematics lessons. Taped lessons were then rated by the investigator using the modified and abridged version of Hines' Clarity Observation Instrument described earlier.

Larsen reports that teachers' clarity was not stable over the five week period. Although he does not indicate correlation coefficients, he states that these were not statistically significant. In explaining these findings, Larsen notes that this instability in teachers' clarity may have resulted from the professional immaturity and lack of natural classroom teaching experience of the teachers in the study.
Summary. The answer to the question, Is teacher clarity stable/generalizable across content and learners, is unclear, but would seem to be affirmative. Holland (1979) and Williams (1983) found statistical support for the stability and generalizability of clarity. Holland (1979) provides evidence of the generalizability of teacher clarity across different subjects and at least three geographical locations. Williams (1983) provides strong statistical support for the stability of teachers' clarity across time, subjects, and groups of learners. Larsen (1985) failed to obtain significant results from his analysis of the stability of untrained teachers' clarity over time. However, this was not the subject of direct investigation in the study and the findings may have resulted from methodological weakness. It is the view of this investigator that the strong research designs and instrumentation used in Holland and Williams make their findings most useful. It would seem that teacher clarity is generalizable and reasonably stable (Cruickshank, 1985).

Are There Demographic or Presage Variables Which are Related to Teacher Clarity?

A number of the studies reviewed here have looked into the relationship between certain presage or context

**Bush (1976) and Bush, Kennedy, and Cruickshank (1977).** As a part of their research endeavor, the investigators examined the relationship between a number of status or demographic variables and student perceptions of teacher clarity. Ninth grade parochial school students (N=1,549) were asked to provide information regarding their age, sex, composition of their school, median family income; and their targeted (clear or unclear) teacher's sex, estimated age, and whether or not a member of the clergy. The results of canonical analysis indicated that younger teachers were perceived as more clear. Further, teacher sex and student sex may also affect student perceptions of teacher clarity, however, neither of these variables assumed more than a secondary role in discriminant analysis.

**Kennedy, Cruickshank, Bush, and Myers (1978).** In a portion of the study described earlier, the investigators asked 1,263 junior high students to provide information regarding their targeted (clear or
unclear) teachers' age, sex, and subject taught; their performance in the teacher's class, and other demographic variables. Canonical analysis revealed only a modest relationship between student performance in the targeted teacher's class and perceived clarity (structure loadings from 0.45 to 0.58). Notable also is failure to support the findings of Bush et al. (1977) regarding teacher age and student perceptions of teachers' clarity.

Gloeckner (1983). Gloeckner examined the relationship between teacher clarity and selected attributes, attitudes, and aptitudes. Data from the Personality Research Form, the Myers-Briggs Type Indicator, and American College Testing Service (ACT) were obtained and examined with regard to their relation to teacher's clarity. No significant correlations were found between any of the measures of teachers' clarity and personality type or college admissions test score. However, the correlation between ACT performance and the frequency of demonstrated low-inference clarity behaviors (r= 0.23) approached significance (p=0.056).

Larsen (1985). Larsen examined the relationship between mathematical competence of twenty-four preservice elementary teachers and their ability to provide clear mathematics instruction. Teachers' grade
point average in university mathematics coursework was used as a measure of mathematical competence and was compared to measures of clarity. Analysis of variance was employed to determine if most clear teachers differed from least clear teachers on mathematical competence. The results indicate no significant differences between clear and unclear teachers' mathematical competence, and no significant interactions between competence and instructional clarity.

Hamilton (1988). In the study described earlier, Hamilton utilized data from a self-report survey to investigate the relationship between teacher clarity and such variables as teacher age, gender, grade point average, college rank, area of specialization; grade level of lesson, content of lesson; or college size; and teacher clarity (N=116). Results of analysis of variance indicate that teachers of elementary lessons exhibited greater use of the low- and moderate-inference clarity behaviors, although this difference was not statistically significant. Grade point average was found to have a significant correlation to use of the clarity behaviors (Teachers with low G.P.A. used significantly fewer of the behaviors). Additional relationships were not found to be statistically significant.
Summary. Findings regarding the relationship between demographic variables and other presage or context variables and assessed teacher clarity are inconsistent. Findings of individual studies have contrarily found evidence of a relationship between teacher age and student perceptions of clarity (Bush et al., 1977), a relationship between subject matter and student perceptions of clarity (Holland, 1979), a relationship between college entrance examination score and teacher clarity (Gloeckner, 1983), or teacher grade point average and teacher clarity (Hamilton, 1988). Each of these represents a singular, and unreplicated finding and must be considered contradictory. A reason for this may be the diversity of variables examined and a related failure to replicate studies investigating a common set of variables. Future research studies would benefit were they to pursue investigation of a common set of demographic, context, and presage variables.

Can Teachers be Taught to be More Clear?

This question has been addressed by only three studies (Gliessman, Pugh, Brown, & Archer, 1989; Gloeckner, 1983; and Larsen, 1985). All attempted to train preservice teachers to make more or better use of behaviors drawn from the study of teacher clarity by Hines (1981) and others. Poor research design and
methodology, the use of dissimilar measuring instruments, inappropriate conclusions, and other weaknesses apparent in these studies make interpretation of these findings difficult.

Gloeckner (1983). The principal purpose of this two phase study was to determine whether a training unit was effective in helping preservice teachers become more clear. In Phase One, twenty-four preservice teachers enrolled in an education course taught by the investigator were subjects. To assess pre-training clarity, teachers taught a four minute lesson to their peers while being video-taped. Then they were trained to use seventeen low-inference behaviors identified as prime discriminators in Kennedy et al. (1978). Training was conducted in a single ten hour session during which teachers discussed the clarity behaviors with the investigator and viewed a tape which depicted each behavior. Teachers then prepared a lesson in which they were to make use of the seventeen skills. Next, they taught these 2-1/2 minute lessons to their peers while being video-taped. Twenty-two preservice teachers enrolled in another section of the course were used as a control group and also taught the 2-1/2 minute lessons to their peers while being videotaped.
Trained observers assessed teachers' clarity using The Clarity Observation Instrument (Hines, 1981). Post-training observations revealed that trained teachers made significantly greater use of the clarity skills than did teachers in the control group.

Phase Two compared the clarity of trained teachers to a different section of untrained teachers. Eight teachers from each group taught fifteen minute lessons to a small group of students from the control section. At the conclusion of each lesson, learners completed a test of content, a measure of their satisfaction with the lesson, and a measure of their perception of the teacher's clarity. Teachers completed an instrument rating their instructional clarity. Trained observers also assessed each teacher's clarity utilizing the video-taped lessons.

The results of this phase indicate no statistically significant differences between trained and untrained teachers on any dimension of clarity (low-, moderate-, or high-inference) or from any rating source (learners, teachers, or trained observers).

Larsen (1985). In another aspect of the study explained earlier, Larsen investigated whether mathematics student teachers could be trained to be more clear. Thirty-two preservice teachers of elementary
mathematics enrolled in a course taught by the investigator were subjects. Teachers were randomly assigned to either training or control conditions, to one of three schools, and to one of three grade levels. Prior to training, each teacher taught an assigned lesson to a group of five elementary students selected from the teacher's class. All lessons were audio-taped.

Teachers assigned to the training group received 2-1/2 hours of instruction and practice of clarity skills drawn from the work of Hines (1981) and Kennedy et al. (1978) over a five week period. This training was incorporated into regular class activities. Following training all subjects again taught a thirty minute lesson to students selected from the teacher's elementary classroom.

Using the modified Clarity Observation Instrument described earlier, Larsen rated each teacher's use of eighteen low-inference clarity behaviors in natural classroom lessons. Analysis revealed that clarity training produced insignificant improvements in teachers' use of the desired behaviors. However, due in part to a decline in control teachers' clarity from pre- to posttest, post-training differences between the trained and untrained groups were found to be statistically significant.
Glissman, Pugh, Brown, and Archer (1989). The researchers conducted a three phase investigation to determine the effect of conceptually-based training on preservice teachers' instructional clarity. Based on research, the investigators defined six components of clarity: "(1) Framing an explanation, (2) stating or identifying key ideas, (3) linking these ideas one to another or to a central theme, (4) focusing attention on key ideas, (5) giving examples of key ideas, and (6) monitoring or checking on student understanding through the use of clarity-seeking questions" (p. 4). A training regimen was designed which emphasized development of learners' conceptual understanding of teacher clarity. Such training utilized observation, discussion, and written instruction.

In Phase One, ninety-seven preservice teachers were randomly assigned to one of three groups: Extended conceptual instruction, limited conceptual instruction, and no instruction. Subjects in both instruction groups received about 45 minutes of conceptual training in which they viewed videotaped demonstrations of the clarity skills, and were presented with skill names, definitions, and attributes. Subjects in the extended instruction group received an additional hour of training in which they were presented examples and
non-examples of clarity, and completed written skill recognition exercises. The effects of training were assessed through a written examination which required trainees to identify skill definitions, identify examples of the skills, and construct examples of the skills. Significant results indicated that subjects in both instruction groups were more able to accurately complete the exercises than subjects in the no training group.

Phase Two utilized nineteen subjects from the extended instruction group of Phase One and twelve randomly selected untrained subjects. Subjects from the extended instruction group were randomly assigned to either instruction/application (I/A) or instruction/no application (I/N) groups. Subjects in the I/A group worked in pairs to plan a peer teaching lesson in which they were to optimize their use of the six clarity skills. Then subjects in all three groups taught a short lesson to small groups of peers.

Clarity of instruction was assessed in two ways: (1) Learners were asked to list three key points of the teacher's lesson, and percentage of agreement among learners was calculated; (2) learners rated teachers' clarity in three areas (semantic clarity, structural clarity, and monitoring understanding) on Likert-type
scales. Analysis of clarity ratings revealed no significant differences. However, teachers in both the I/A and I/N groups produced a significantly greater percentage of learner agreement regarding key points of the lesson. Further, significant differences in learner agreement of key points was found between instruction/application teachers and instruction/no application teachers.

In Phase Three, subjects were selected from Phase Two. Six subjects from the instruction/application group received further practice in the six skills by preparing and presenting peer lessons. Then the investigators helped each of these teachers prepare a lesson to be taught in a natural classroom setting. This planning emphasized the inclusion of the clarity skills. Further, the cooperating teachers with whom these I/A teachers would be working were given information about the clarity skills. Nine subjects who had been in the I/A group during Phase Two also received further practice by way of peer teacher and then prepared a lesson to be taught in a natural classroom without assistance. All natural classroom lessons were videotaped and observed by blind raters.

Two observers each rated teachers' lessons on the presence or absence of the six clarity skills. They
also completed a topical outline of the lesson from which a percentage of agreement was calculated. Significant differences in use of the six skills \((z=1.74, p<0.04)\) and rater agreement on key points \((z=2.32, p<0.01)\) favored the more extensively trained teachers.

In discussing their findings, Gliessman and his associates indicate that, "consistent, although only moderately powerful" support was provided for the training regimen (p. 29). They conclude that conceptual training, particularly extended training wherein teachers were guided in planning lessons, resulted in significant transfer of developed skills to natural classrooms.

**Summary.** The results of these studies are disquieting. While much of the research into teacher clarity has produced encouraging and supportive results, attempts to train teachers to be more clear have provided inconsistent findings. It is the view of this investigator that much of this might be explained by methodological problems inherent in the studies of clarity training.
In Gloeckner (1983), the following must be considered to have adversely contributed to the results:

1. Training was minimal: less than ten hours and conducted over a single weekend. It is likely that longer and more systematic training may have produced more consistent training effects.

2. The setting in which post-training lessons were conducted presented trained teachers with a disadvantage. All teachers taught learners from the untrained (control) section of the course. Hence, while untrained teachers taught familiar classmates, trained teachers taught unfamiliar learners.

3. It should be noted that the post-training results for Phase Two reported by Gloeckner as statistically insignificant are quite close to significance and are incorrectly reported in the original source (Table 15, p. 125). The small number of subjects in this phase (N=16) and questionable research methodology discussed above could more than account for this finding.

Larsen (1985) is also subject to some question regarding research technique, particularly in the use of a newly devised instrument that differed significantly from those with substantial research support (ie.,}
Hines, 1981; Williams, 1983). By choosing to rate teacher use of the low-inference behaviors rather than count their frequency and by eliminating from use the moderate-and high-inference behaviors, Larsen substantially altered the instrument used to assess teacher clarity.

As admitted by the investigator, the clarity training which was provided, although of greater duration than in Gloeckner, still was minimal. It is reasonable to believe that successful skill development in preservice teacher education requires extensive amounts of practice in a variety of contexts (e.g., laboratory or natural classroom) and with substantial provision of feedback regarding performance (Cruickshank and Metcalf, in press).

The results of Gliessman et al. (1989) are important and bear discussion. Gliessman and his associates establish that preservice teachers can be helped to develop increased use of components of clear teaching. Further, teachers who are so trained produce greater student learning, when learning is defined as the ability to list key topics of a lesson. Such a definition may be narrow, perhaps too narrow, but the investigators present a method of assessing learner
understanding that may be useful in natural classrooms or settings in which lesson content is uncontrolled.

The present investigator takes issue, however, with the conclusions drawn by Gliessman et al. First, the results can not be used to support what the investigators label conceptual training. In fact, they would seem to suggest the opposite. Conceptual training alone (provided in Phase One) did not result in greater use of the clarity skills or in greater student learning. Such gains were made only when training included practice of the skills and guidance from the investigators in implementing the skills. Further, the results indicate that training was made more effective to the extent practice and coaching were included.

Second, it is not appropriate to conclude that training produced transfer of the desired skills to use in natural classrooms. Teacher use of the behaviors in natural classrooms must be assumed to have been directly and substantially influenced by the assistance in planning provided by the investigators. Ergo, lessons taught in natural classrooms represented a phase of the training process. It cannot be assumed that trained teachers would implement the skills to any greater extent in subsequent classroom lessons were assistance not provided.
The results of this study support conceptual training in the development of teachers' clarity. However, conceptual training is likely to be only one part of a thorough regimen of skill development.

The question, Can teachers be taught to be more clear deserves further examination. A thorough, systematic, and well-controlled investigation of this question making use of low-inference constituents of clarity is critical to the continued advance of inquiry in teacher clarity.

Summary

Review of teacher clarity literature reveals that a line of systematic inquiry has as its genesis five studies which indicated a strong relationship between teachers' ability to make clear presentations and student learning. The subsequent line of inquiry has provided the following in answer to eight specific research questions:

(1) Teacher clarity is a multidimensional teacher attribute consisting of a number of specific and identifiable low-inference behaviors.
(2) These specific, low-inference behaviors can be organized into moderate-inference "families" or groups of similar behaviors.
(3) Approximately twenty-nine of the identified specific behaviors are best able to discriminate between clear and unclear teachers.

(4) Teacher clarity, consisting of specific low-inference behaviors, is generalizable across at least three diverse geographical regions; and is stable/consistent across time, content, and groups of learners.

(5) A strong, positive, and statistically significant relationship exists between teacher clarity and such desirable student outcomes as learning and satisfaction.

(6) Teacher clarity can be reliably observed and measured using low- and moderate-inference behaviors.

(7) No consistent relationship has been found between demographic or presage variables and measures of teachers' clarity.

(8) Whether teachers can be taught to be more clear remains unknown due to inconsistent results obtained in studies utilizing questionable research methods.
Literature that Informs Training in Teacher Education

A goal of research which examines effective teaching is ultimately to improve classroom instruction and resultant student learning. This goal might be reached by first identifying instructional practices and behaviors found to be related to increased student learning, and then helping teachers develop skill in their use of these behaviors. Research has revealed a number of instructional practices, clarity for instance, which might be used for such purposes. In spite of this, there have been few recorded attempts to train teachers to use behaviors or practices drawn from teacher effectiveness research. A review of such attempts will serve to establish the usefulness and need for similar investigation in research of teacher clarity.

Gage, Crawford, Stallings, Corno, and Mitman (1978). This study examined whether teaching practices drawn from correlational research could be fostered by teacher training, and whether those teaching practices cause pupil achievement differences. Specific teaching practices addressed by training appear in Appendix A. Eighteen third-grade teachers served as subjects and were randomly assigned to one of three groups: "maximal
training," "minimal training," and control (no-training). All teachers were regularly observed from mid September through May. Prior to training, all teachers completed instruments which assessed their attitude, aptitudes, and teaching styles, and all pupils were pretested.

Training was conducted over a six week period beginning in November. Teachers in training groups were provided a series of recommendations for desirable instructional practice drawn from correlational research in packets of written, self-instructional materials. In addition, "maximal training" teachers met regularly with the investigators who provided feedback of the teachers' use of the recommendations from video-tape recorded lessons. "Refresher" training was conducted for both groups during late February and early March. Pupils were posttested in January and again in May.

The results indicate a significant training effect on teachers' use of the recommendations. Group differences favored "minimal" over "maximal" training, although this was not statistically significant. Surprisingly, no significant relationships were found between teacher implementation of the recommendations and improved student achievement.
Anderson, Evertson, and Brophy (1979). The purpose of this study was twofold: to experimentally test several principles of instruction drawn from research of effective instruction in reading, and to determine the effectiveness of a training regimen in helping teachers develop their use of these principles (A list of these principles appears in Appendix A). Subjects were seventeen teachers of first grade reading who volunteered to participate in training and ten teachers who made up a control (no training) group.

Students were pre- and posttested with the Metropolitan Readiness Test. Training group teachers met with the investigators in October to discuss twenty-two instructional principles correlated with student achievement and were given a manual which described them. Teachers were instructed to read the manual and to prepare to implement the principles. Training concluded with a second meeting between training group teachers and the investigators in which the principles were discussed and teachers' questions answered. Following training, ten of the trained teachers and all of the control teachers were observed "about once a week" (p. 198) from November through April.
Results support the effectiveness of the principles in producing increased student learning, but are inconsistent regarding the effects of the training regimen. Student achievement of teachers who most implemented the instructional practices increased at significantly higher rates than that of students whose teachers used the principles to a lesser extent. However, trained teachers did not make more frequent overall use of the principles than control teachers.

Observations indicated that portions of the instructional model were used significantly more by trained teachers than by controls, while other parts were not. Those which were most implemented:

- specifically described the instructional behavior that the teacher was to implement,
- . . . focused on behaviors that were familiar to the teachers, . . . and had a rationale based on teacher classroom processes or student outcomes that made sense to the teachers” (p. 219).

**Good and Grouws (1979).** The investigators examined whether teachers could be taught to use a set of behaviors synthesized from correlational research, and if teacher implementation of the behaviors would enhance students' mathematics learning (See Appendix A for a
list of these behaviors). Subjects in a first study were forty fourth-grade teachers, and in a second thirty-six sixth-grade teachers. Prior to training, students were pretested using a standardized achievement test. All teachers then met with the investigators and were presented with information about the purposes of the study. Teachers who were randomly assigned to receive training remained for a ninety minute meeting during which they received information about the desirable instructional behaviors and were given a manual describing them. A second meeting was held to answer training group teachers' questions. In the first study, all teachers were observed on six occasions. The second study made no use of observation. Pupils in both studies were posttested using a standardized achievement test and a specially constructed, content specific test.

Results of the first study indicate that following training, training group teachers made significantly greater use of the desired instructional practices than control teachers. Further, students in trained teachers' classrooms showed significantly greater residual gain scores than students in untrained teachers' rooms. Because the second study did not make use of observation no data is presented regarding the effectiveness of
training, however, student residual gain scores were again shown to be significantly greater for students of trained teachers.

**Stallings, Needels, and Stayrook (1980)**. The investigators sought to: (1) determine the effectiveness and effects of a training program intended to help teachers develop skill in and use of principles drawn from correlational research of effective reading instruction at the secondary level (Appendix A), and (2) to determine the effectiveness of having former trainees provide training to a new group of teachers.

In a first phase of the investigation, forty-seven secondary reading teachers volunteered to participate and were observed three times prior to training, three times during training, and three times following training. Their students were also tested on three occasions (before, during, and after training). Teachers who were randomly assigned to the training group received instruction in the use of instructional behaviors correlated with increased reading achievement at the secondary level. Training made use of discussion and a set of written materials which explained the desirable practices. Six training sessions conveying information regarding effective behavior/classroom
management, classroom organization, direct teaching, and motivation of students were conducted and directed by the investigators.

Although no tests of significance were conducted, descriptive statistics reveal that teachers who were trained made greater use of the desired behaviors than untrained teachers. Additionally, teacher implementation of the behaviors had a moderate and positive effect on student achievement (0.52 s.d.).

In a second phase, forty-three teachers were randomly assigned to one of three training conditions: training conducted by teachers who had been trained in Phase One, training conducted by one of the investigators, or no training. Training and observation procedures were similar to those of Phase One. Results indicate that training was more effective than non-training for both conditions, however, statistical significance is not reported.

Emmer, Sanford, Eyerton, Clements, and Martin (1981). The investigators examined the effectiveness and effects of a training regimen which was intended to help teachers develop their use of research-based principles of classroom management. A list of specific principles developed in training appears in Appendix A. Forty-one elementary teachers were randomly assigned to
one of three groups: those who would receive training at the beginning of the school year, those who would receive training at mid year, and those who would receive no training. All teachers and their students were regularly observed from August through February. Shortly after the beginning of school, group one teachers were trained in the use of eleven principles of effective classroom management. Training made use of a manual which described and explained the principles and two half day workshops. Group two teachers received this same training early in December. Group three teachers did not receive training.

Observations revealed that teachers who received training early in the school year implemented the principles significantly more often than teachers in either of the remaining groups. Teachers who received mid-year training implemented the principles only somewhat more frequently than control teachers. Further, a strong but not statistically significant correlation was found between teacher implementation of the principles and increased student task involvement and cooperation.

Good And Grouws (1981). This study examined the effects of training on the instructional behavior of teachers of secondary mathematics. Nineteen eighth-
grade mathematics teachers were randomly assigned to one of two training conditions or a control group. Group one, termed a "partnership group" met with the investigators to examine and modify a training regimen. These teachers were then combined with remaining training group teachers and received instruction in the use of desirable mathematics instructional practices (Appendix A) by way of the training regimen. Training consisted of reading a forty-five page manual, and discussion of desirable instructional practices with the investigators.

Through pre- and post-training tests of student achievement and observation of teacher behavior, the investigators conclude that training had a significant impact. Although no tests of significance were performed, both "partnership" and non-partnership training resulted in greater teacher use of the practices than non-training. Student problem solving was also found to be greater for students in trained teachers' classes.

Borg and Ascione (1982). The investigators examined the effect of a training program on teachers' use of seventeen specific practices drawn from research of effective classroom management (Appendix A). Thirty-four elementary teachers were randomly assigned to
control or training groups. Training group teachers met at least weekly for nine weeks to receive instruction in the use of the seventeen skills. Training consisted of reading written descriptions and explanations of the skills, completing written exercises intended to develop teachers' ability to recognize and apply the skills in simulated situations, practice and audio recording of the skills in teachers' own classrooms, and peer critique. Control teachers received instruction in the development of student self esteem. Observation in teachers' natural classrooms conducted before and after training was used to determine the frequency with which teachers used each of the behaviors and to record student behavior (on task, mildly deviant, and seriously deviant).

Analysis of covariance (ANCOVA) indicates that after training, eleven of the seventeen skills were used significantly more often by trained teachers than by control teachers. Significant and positive effects of teacher training on student behavior were also found.

Emmer, Sanford, Clements, and Martin (1982). The purpose of this study was to determine the effectiveness of training in promoting teachers' use of research-derived principles of classroom management (A list of these principles appears in Appendix A). Thirty-eight
junior high teachers volunteered and were randomly assigned to training or control groups. Training group teachers were instructed in the use of desirable classroom practices in nine areas of classroom management. Training was conducted using a manual which provided explanations of the practices, case studies, and checklists to aid teachers in assessing their use of the practices. Two half day workshops were designed to supplement the manual. Before, during, and after training teachers and their students were observed.

Analyses revealed that many of the skills were implemented to a significantly greater degree by trained teachers than by control. The investigators note, however, that these differences are marginal and did not appear for all practices. Additionally, students of training group teachers were found to exhibit less off-task behavior and greater task engagement than students of control teachers.

Colodarci and Gage (1984). Building on the earlier work of Gage et al. (1978), the investigators examined the effectiveness of a "minimal" training program. Thirty-two elementary teachers volunteered to participate, however, only twenty-eight continued through the conclusion of the study. Training consisted of seven packets of written material mailed to teachers
during December and January. Packets contained information about twenty-eight desirable behaviors related to classroom management, instructional methods, and questioning and feedback. Appendix A presents a list of the twenty-two specific behaviors developed in training. No face-to-face meetings were held between teachers and the investigators. All teachers were observed twice prior to and following training and the frequency of their use of the behaviors was recorded. Pupil achievement data was obtained from schools' existing test records.

T-tests revealed no significant post-training differences in use of the behaviors between trained and untrained teachers. Similar tests also failed to provide evidence of significant effects on student achievement. Colodarci and Gage conclude, "It appears that for an intervention to be successful, the project staff must be engaged with participating teachers in some fashion" (p. 551).

Griffin and Barnes (1986). The investigators sought to determine the effects of a training regimen on staff developers, their teachers, and the teachers' students. Ten staff developers were nominated by school district officials for participation and were randomly assigned to training or control groups. Training group
staff developers were provided one week of training prior to the beginning of the school year. Training presented findings from teacher and school effectiveness studies through lectures, videotapes, written narratives and descriptions, filmstrips or slides, and manuals developed in earlier studies (e.g., Evertson et al., 1981; Good and Grouws, 1977). However, Griffin and Barnes do not explicitly state the principles developed. Training was followed up with a three hour workshop and 45 minute interviews with trainees.

Staff developers and their teachers were asked to maintain journals recording their impressions, staff development activities in which they engaged, and classroom behavior. Teachers were observed on four occasions from September through November and the frequency of their use of specific behaviors was recorded. These observations were also used to record student on-task behavior at ten minute intervals.

From journal entries, trained staff developers were reported to use significantly more of the desired behaviors than untrained staff developers. Classroom observations revealed a significant training effect on teachers' use of desirable practices in the areas of planning and preparation, organizing the classroom, and presentation of rules and procedures, but several other
areas demonstrated no differences. Classroom observation also revealed favorable though not statistically significant differences in student on-task behavior favoring student whose teachers worked with a trained staff developer.

Denight and Gall (1989). The investigators examined the effectiveness of enthusiasm training on teachers' classroom behavior, and subsequent student behavior. Twenty secondary level teachers volunteered to participate. Control and experimental groups were done by matched on subject area to insure equal subject area representation. All subjects were videotaped while teaching their regular class. Then, experimental group teachers began training intended to improve their use of eight indicators of teacher enthusiasm (Indicators and their descriptions appear in Appendix A). Training was conducted in four sessions: (1) group instruction regarding teacher enthusiasm and the eight indicators thereof, (2) peer microteaching wherein teachers received feedback on the quality of their enthusiasm, (3) microteaching with actual students, and (4) review of the eight indicators of teacher enthusiasm and how to implement them. Control group teachers received no training. Then, all teachers were again videotaped while teaching their regular class.
Analysis of covariance (ANCOVA) revealed significant effects of training on teachers' overall enthusiasm ratings. Experimental group teachers were rated by trained observers as more enthusiastic than control group teachers. Additionally, student on-task behavior was significantly greater for trained teachers than for untrained teachers under direct teacher influence. Similar, although not statistically significant results were found for student on-task behavior under indirect teacher influence.

Harris (1989). Harris synthesizes the results of four studies intended to examine the effect of the Stallings Effective Use of Time (EUOT) staff development program (See also Stallings, et al., 1980) on preservice teachers' classroom behavior. Fifty student teachers served as subjects and were assigned to full training, feedback only, or control groups. Although, the investigator does not describe the manner in which subjects were selected or assigned. All subjects were observed and their use of classroom time recorded during the first two weeks of student teaching. Then, training intervention was implemented. Full training teachers participated in the EUOT conducted by the investigator. EUOT training consisted of five ninety minute workshops which provided feedback regarding teachers' use of
classroom time, practice teaching, and peer observation. Feedback only subjects did not participate in the workshops, however, they were regularly provided feedback regarding their use of classroom time. Control teachers participated only in regular student teaching seminars and were not provided feedback. During the final two weeks of student teaching, all subjects were again observed and their use of classroom time recorded.

Results indicate that student teachers participating in full EUOT training and feedback only training made more desirable use of classroom time than control teachers. However, statistically significant differences were found in only three of eleven areas (increased time in teacher monitoring, increased time in students in instruction, and decreased time in student off-task behavior). Further analysis revealed that student teachers who received only feedback made more desirable use of time than either full training or control group teachers.

Summary

The studies reviewed above provide valuable and encouraging information for those who wish to make use of the findings of teachers effectiveness research in teacher education. With the exception of the study by Colodarci and Gage (1984), attempts to
train teachers to make use of research-based principles of instruction have met with at least moderate success. Most produced desirable short-term changes in teacher behavior despite training which was frequently limited in scope and lacking in structure. Further, such training seems to validate many of the findings of correlational teacher effectiveness research.

In spite of the success reported by these studies, several caveats are in order. First, all but one of the studies reviewed (Harris, 1989) made use of volunteer subjects. Although it can be assumed that use of random assignment of subjects to treatment would control for most group differences, it cannot be assumed that volunteer samples will produce comparable results to non-volunteer, less motivated samples.

Second, with the exception of Harris (1989), all of the studies trained inservice teachers. As such, these teachers had available a significant arena for practice of the desired skills in work-like settings, and a sizable foundation of background knowledge and experience. It is likely that preservice teachers' behavior would be impacted to a lesser degree by such limited training efforts.
Third, training in most of these studies was not structured or based upon desirable or effective training practice. Mostly it consisted of didactic instruction, not skill development. Only Borg and Ascione (1982) considered training literature in the design of their intervention, and at that, they considered only a small set of studies related specifically to the development of their Minicourse format (Borg, 1972). None of the studies examined literature from fields which frequently address training and might inform training practice: occupational, industrial, and cognitive psychology.

These studies and their findings suggest a need and direction for further research. An attempt must be made to develop a regimen of training based upon what is known about effective training. Then, this regimen must be used to study the efficacy of training preservice teachers to be more clear. Such an attempt might serve to clarify the inconsistent results of Gloeckner (1983) and Larsen (1985). Further, such a project might provide a vehicle by which preservice and inservice teachers could be effectively and efficiently trained to make use of a variety of desirable instructional skills drawn from research.
Literature that Informs the Development of Training Regimens

This section reviews literature which may inform the development of training regimens. The ultimate goal of this review is to suggest a system of training which incorporates components of training known to be most effective in developing professional skill.

Few studies have directly investigated the effects of particular training components or even of complete training systems (Hinnrichs, 1976). As a result, literature reviewed in this section does not describe individual studies as in earlier sections. Rather, training literature, mostly drawn from the fields of occupational, industrial, and social psychology, is organized around broad components of training practice suggested by particular conceptions of training. An attempt is made here to describe and synthesize techniques with support for their effectiveness in producing enhanced skill development. When possible, techniques with established empirical support are presented. In remaining cases, practices which are suggested by research, if not explicitly supported, are included.

This section begins with descriptions of five broad conceptions of desirable training. All are
explained and then synthesized into a composite model for the organization of training systems. Following sections are devoted to description of specific practices and techniques. A proposed "model" training regimen which incorporates the most effective techniques and components is then presented.

Conceptions of Training Program Design

Several conceptions of training design have been proposed which may provide a framework around which more specific components of training may be organized. The designs to be described below contain components amenable to use in teacher skill development and have some degree of empirical evidence to support their use.

Systems Approach. Most training regimens are based on a conception of training popular in the late 1960s and early 1970s called the systems approach or systems analysis. As described by LeBaron (1969), "Systems analysis" is an orderly process for first, defining and describing a universe of interest (and the significant factors and their interrelationships within the universe); and, second, determining what changes in the universe will cause a desired effect. (p. 12)

Implicit in this design is a regimen or procedure
consisting of four parts: instructional objectives, controlled learning experiences, performance criteria, and evaluation.

When the basic goal of training, what trainees need to be able to do, is identified, that skill is analyzed to determine the specific behaviors necessary to perform the skill: the instructional objectives. These are stated in behavioral terms and include the minimum acceptable level of trainee performance expected upon completion of training. These objectives also serve as performance criteria for evaluating trainee mastery of skills.

Controlled learning experiences help learners develop their understanding and performance of the specific behaviors (objectives). Hinnrichs (1976) notes some commonly used types of learning experience: cognitively oriented (lecturing, audiovisuals, programmed instruction), process oriented (role playing, sensitivity training), and mixed (conference-discussion, case study, simulations, on-the-job-training).

Information gained through evaluation is used for assessing the effectiveness and efficiency of the training regimen. In this case, efficiency meaning does it accomplish its objectives, and effectiveness
meaning do learners feel satisfied with the process. As Goldstein (1986) notes, "Training programs are never finished products; they are continually adaptive to information that indicates whether the program is meeting its stated goals" (p. 15).

**Closed Loop System.** A training design which emphasizes clear delineation of the parameters of training is the "closed loop" model presented by Tracey (1984) and Turner (1973). "Closed loop" implies that the training program is an organized and orderly whole, that the limitations of the program are clearly defined. Within this conception, a training program should be designed in such a way that objectives are accurately circumscribed and indeed can be developed within the constraints of the regimen.

Accordingly, such a design emphasizes the consideration of several factors in the selection of learning experiences. Turner indicates the following as critical considerations: the objectives of training (What will trainees be expected to do when training is completed?), the content or instructional material to be conveyed (Can this information best be learned verbally or does it require concrete experiences?), the characteristics of the trainee population (size, education level, prior training,
number, availability), available *facilities and resources* (instructional spaces, equipment and materials), the *time* available for training (How long can training last? When will training take place?), and the *costs* involved in implementing and maintaining the training system.

**Reality continuum.** Turner (1973) and Hudgins (1974) propose that training systems incorporate a gradually increasing degree of reality. Within this conception, training is best when the context of training proceeds from highly controlled environments toward natural, work-like settings.

In Turner's "spiral" model, training is cyclical, repeatedly beginning in controlled, often simulated environments and gradually proceeding to more realistic or natural settings. In this model, trainees learn about a simple skill in a classroom from textbooks, manuals, or verbal instructions. Such simple skills are then practiced in a laboratory or simulated setting. The same skill is then practiced in a work-like setting. Due to the "spiral" nature of this model, trainees subsequently return to the initial instruction phase to repeat the process with additional or more complex skills.
Hudgins (1974) also proposes that training proceed from controlled environments toward natural experiences. However, Hudgins emphasizes the need to help trainees develop conceptual understanding of a skill. In this model, trainees are helped to understand the skill before learning to perform it. Hudgins notes that skill development is enhanced when trainees are first provided information relating: the purposes of the skill (What will be accomplished by performing it?), the specific elements of the skill (What are the specific behaviors that must be performed?), the sequence or options of sequence that may be employed in the use of the skill (How do the individual behaviors go together?), and the nature of final performance (What should skilled performance look like?).

Another important aspect of Hudgins' conception relates to the self contained nature of training. Hudgins believes that training materials should be designed in such a way that trainees are able to perform or accomplish the majority of training on their own time and outside the formal classroom. Implicit is the importance of written or other programed learning materials.
Behavioral Modelling. Latham and Saari (1979) support a training system making use of behavior modelling. In this design, trainees are first introduced to a component skill through written or verbal description, much as suggested by Hudgins. Next, trainees view a film which lists component behaviors of the skill, then demonstrates use of the skill while textually labelling each component behavior as it occurs, and again lists component behaviors. Next, group discussion is focused on the demonstration and component behaviors. Finally, trainees practice using the skills through role playing and are provided feedback from their peers.

Summary. A general framework for the design of training programs can be established by synthesizing the four conceptions above. A composite training regimen would make use of the systems approach incorporating definition of specific and behaviorally stated objectives, controlled learning experiences, performance criteria, and evaluation. To the extent possible, training materials would be designed to allow trainees to complete much of their training outside the formal classroom.

In this synthesized framework, trainees would first receive information about the skill or skills to
be mastered and the process of training. This information would be provided in a classroom or laboratory setting. Trainees would then view a demonstration of the skill(s) which included listing and labelling of each component of the skill. Group discussion of the demonstration would follow. Skill development would include practice of the skill, first in simulated, controlled settings and gradually changing the context of training to natural work settings. In the case of complex skills, trainees would master a small number of the component skills in each of several cycles from simulated to natural settings.

Trainee performance would frequently be evaluated. The information gained would be used to establish trainee mastery, and to monitor and when necessary modify components of the regimen.

**Training Practices and Techniques**

Within this general framework, specific techniques can be incorporated which have research support. These techniques can be organized into three aspects of training: establishing and communicating objectives, developing trainees’ conceptual understanding, and developing trainees’ performance skill.
Establishing and Communicating Objectives

Current training literature frequently refers to the importance of establishing clear training goals (Glaser, 1962; Goldstein, 1986; Ribler, 1984; and others). As noted earlier, these goals or objectives are derived from analysis of the skill to be developed and must be stated in behavioral terms. The objectives guide the selection of instructional experiences and serve as performance criteria in trainee evaluation.

Research suggests that skill development is enhanced when learners are made aware of the objectives of training before initiating skill development exercises. In four experiments, Kemler-Nelson (1984) found that learners who received prior and explicit indications of what they were expected to master performed significantly better and with fewer errors than learners given vague or no such indications. Similarly, research by Manderlink and Harackiewicz (1984) found that intrinsic motivation, or self motivation, is positively affected when learners are helped to understand the long term objectives of instruction. Thus, the likelihood of skill transfer from training to work settings is increased.
Developing Conceptual Understanding

Kieras and Bovair (1986) state,

The initial acquisition of a procedure is determined by a comprehension process that is required until skilled performance can be expected successfully" (p. 522).

After trainees have been informed of the objectives of training, and prior to entering into performance skill development, early phases of training must address the development of trainees' understanding of the skill to be learned, and when and why it is to be used (Hudgins, 1974). Training literature suggests three important techniques that promote conceptual understanding and subsequent performance skill: instructions, remindings, and demonstrations.

Instructions. Instructions provide trainees with information that enables them to understand the skills to be developed through descriptions. Presented in verbal or written form, instructions should convey only basic information (e.g., rationale, etc.). Halding (1965) points out that in early training, detailed instructions are less effective than basic, practical information. Complex instructions may actually inhibit skill development. The trainee
learning to perform or use particular skills need not be informed of the psychological or theoretical concepts upon which the skills are based. Consequently, early instructions are best kept directly relevant to the skill to be mastered.

Reminding. Research by Ross (1984) indicates that learners' application of past experience to new situations is most likely in the early phases of training. This tendency can be used to promote understanding when information provided trainees suggests and encourages (i.e., reminds) them to compare new techniques or skills to known techniques and experience. Further, the rationale for using the new skill should be based on outcomes that trainees value, and the behaviors constituting the skill related to behaviors with which learners are familiar.

Demonstration. Demonstration of the skill to be developed is an important aspect of conceptual training (Goldstein, 1986; Latham and Saari, 1979). Demonstration (either live or recorded) should include identification and labelling of component behaviors of the task (Ellis, cited in Goldstein, 1986; Friedman, 1986). Relatedly, Latham and Saari (1979) found listing of component skills before and after a demonstration, in combination with labelling of
component behaviors during demonstration to significantly enhance skill acquisition.

Latham and Saari (1979) also suggest group discussion following demonstration of a skill. Research supports this approach indicating that a series of questions to be addressed following the demonstration and guided discussion of the demonstration facilitate trainees’ cognitive understanding of the skill (Swenson and Kulhaney in Friedman and Yarbrough, 1985).

Development of Performance Skill

The usefulness of teacher training practices lies in their ability to help teachers master skills which are most effective in classrooms and in the degree to which trainees transfer these skills from the training setting to use in natural classrooms. A third phase of training is intended to develop proficiency in performing and utilizing skills. Training research suggests particular techniques and methods which optimize skill acquisition, and promote generalization and transfer of learned skills from the training setting to the work setting. Manipulation of three elements (practice, knowledge of results, and context of training) can result in more desirable training outcomes.
**Practice.** After cognitive understanding of a skill has been achieved, the trainee must begin to develop performance of the behaviors which make up the skill. Large amounts of practice of component skills are necessary to achieve proficiency (Gagne, 1984; Goldstein, 1986; Hudgins, 1974; Lung and Dominowski, 1985; O'Sullivan and Pressley, 1984; and others). The use of practice has been found not only to increase the level of performance, but also to enable maintenance of performance level during periods of emergency and stress (Goldstein, 1986); and to promote relearning after periods of little or no practice (Hagman and Rose, 1983). The importance of practice is evidenced in Hudgins' (1974) call for teacher training materials to make clear "the amounts of practice necessary to attain the required level and smoothness of the skill" (p. 52).

Research supports a "progression method" of practice (Goldstein, 1986; Halding, 1965; Hudgins, 1974; Naylor cited in Goldstein, 1986). In this method, the trainee first learns about and practices a single skill or set of related component behaviors in controlled, laboratory settings. Then the skills are practiced in gradually more work like settings. When these component behaviors are mastered, training
returns to the laboratory, simulated setting where new components of the skill are added to the trainee's repertoire. This progression is repeated until all components of the task have been cumulatively mastered in work like settings.

To summarize briefly, practice would seem to be a critical component of training. In order that sufficient practice be undertaken, it may be advisable to design practice activities that can be engaged in by the trainee on an individual basis (Hudgins, 1974). Further, progressive training in which the learner is gradually helped to use and combine component skills in increasingly natural settings appears to have the strongest empirical base. By incorporating such procedures, trainees are more likely to attain and maintain desirable levels of performance even under disruptive conditions.

Knowledge of Results. The research base relating to the effects of knowledge of results is well documented (Chhoker and Walling, 1984; Goldstein, 1986; Halding, 1965; Hudgins, 1974; Komaki et al., 1980; and others). Halding (1965) states, "One of the most effective ways in which the trainer can influence the cause of learning is by manipulating knowledge of results" (p. 15).
Komaki et al. (1980) are among those who have found that practice alone is not sufficient to substantially improve or maintain skilled performance, but when trainees are provided feedback regarding their performance, significant effects result.

Three aspects of knowledge of results have been investigated and can be manipulated to enhance skill development. Training may control: (1) the type of feedback provided, (2) the frequency with which feedback is provided, and (3) the immediacy of provision of feedback.

According to Adams (1971), feedback or knowledge of results can be of two types: Informational (quantitative) or motivational (qualitative). Informational feedback conveys to the learner only a "score" or measure of performance, for example, the number of times the trainee performed a behavior. More effective in skill development is motivational feedback. Motivational feedback provides the trainee with information about the quality of performance. Specifically, aspects which were performed well and those which were performed poorly. Motivational feedback also provides specific information that will enable the trainee to improve performance. Sturgess (1972) indicates that, training is most effective when
knowledge of results is such that learners receive information about their performance that is most relevant to its improvement.

Additionally, Waldrop, Justen, and Adams (1985) report that feedback after incorrect responses has a greater effect on performance than feedback informing the learner only of correct responses. In fact, feedback which emphasizes correct responses may actually interfere with learning. Wyer and Frey (1983) found that learners who were given feedback regarding negative or poor performance achieved much greater retention than learners presented only with feedback regarding correct performance. They note, however, that learners who mostly received knowledge of negative performance were less satisfied with the learning experience.

As with the type of feedback, the frequency with which trainees are provided knowledge of results is most effective when it systematically varies according to trainee progress. Generally, as performance level increases, feedback can and should occur less frequently (Glaser, 1962). Early in training, feedback is best provided after nearly every performance (Lung and Dominowski, 1985). By doing so,
novices come to understand the critical aspects of their performance of the developing skill.

As trainee mastery of the skill increases, knowledge of results is best provided less frequently (Chhoker and Walling, 1984; Hammerlie, 1985). This approach has been found to increase self motivation and to promote learner use of naturally occurring environmental stimuli (Adams, 1971; Hayes, Mant, Karn, Welfert, Rosenfarb, & Zettle, 1986). According to Halding (1965), this self monitoring process, fostered by decreasing the frequency of feedback, is further enhanced by providing trainees with a method of systematically analyzing their own performance, such as viewing recorded performance attempts and utilizing systematic self-evaluation forms.

The immediacy with which knowledge of results follows trainee performance has also been found to influence learning. Research indicates that the level of trainee skill mastery determines the most effective schedule for providing feedback. Waldrop et al. (1986) and Lung and Dominowski (1985) report that immediate feedback is critical to the individual who is performing at a low mastery level, for example, early in the training process. For these learners, little delay should occur between trainee performance
and provision of knowledge of results. After feedback is provided, however, it is most advantageous when there is a delay before the trainee's next performance (Adams, 1971). A delay between feedback of performance and a new attempt allows the trainee to assimilate information provided as knowledge of results and to incorporate this into subsequent performance.

As trainees become more skillful and knowledgable about their performance, the delay between performance and provision of feedback should be gradually expanded (Adams, 1971). Sassenrath and Yonge (1969) found that long term retention was significantly enhanced when feedback was delayed. Similarly, Baer, Williams, Osnes, and Stokes (1984) found that delayed feedback enhances transfer of learned skills to non-training settings. Glaser (1962) explains that a delay between performance and provision of feedback promotes self evaluation in the advanced trainee, ergo, transfer of skills.

In summary, effective training requires that trainees be provided feedback regarding their performance which is: (1) qualitative in nature, (2) frequent in early stages of training but gradually decreased, and (3) provided soon after trainee
demonstration of the skill in early attempts but subsequently more delayed. Training should include methods which allow trainees to self-analyze their performance, and should encourage trainees' use of environmental cues to monitor their use of the desired skill.

**Context of Training**

A third major component of training which can be manipulated is the context in which training and practice take place. Evidence regarding the most efficacious method of manipulating context is inconsistent. Some evidence seems to indicate that training is most effective when similarities between the learning environment and the work setting are maximized (Goldstein, 1986; Kemler-Nelson, 1984). In contrast, Glaser (1962) and Halding (1965) suggest that training occur in a variety of diverse settings in order to enhance the generalization (i.e., transfer) of learned skills to dissimilar environments. Relatedly, Halding indicates that the effects of training in which context is not varied are diminished.

In lieu of substantive empirical evidence with regard to the most efficacious setting or context of
training, the "reality continuum" proposed by Hudgins (1974) and Turner (1973) may be useful.

A controlled context early in the training process would allow learners to develop skill in a relatively safe setting. This environment would most easily allow for the provision of frequent and immediate feedback, and large amounts of practice noted earlier as important. As training proceeds and learned skill mastery increases, the context of training might be gradually moved toward work-like settings. This shift in context would be concurrent with increasingly delayed and diminished provision of knowledge of results. Such a progression would be congruent with research on practice and knowledge of results, and would be most likely to produce desirable training effects.

A "Model" Regimen for Development of Professional Skill

Drawing upon conceptions of training proposed by scholars of training and research of effective training techniques, a research/theoretically-based training regimen can be designed which may serve as a model of optimal training. Within this regimen, training is conducted in such a manner as to gradually shift the training context from controlled, simulated...
environments to increasingly natural settings, eventually occurring in the work-setting. Three principal components are emphasized in this model: establishment of objectives, development of trainees' conceptual understanding of the skill, and development of performance skill.

(1) Establishment of Training Objectives

The specific component behaviors necessary for proficient performance of the skill to be developed are delineated, clearly stated in behavioral terms, and indicate the minimum acceptable level of trainee performance. Component behaviors may be derived from task analysis or from research which explicates low-inference behaviors, such as research into teacher clarity. These objectives guide the selection of controlled learning experiences (e.g., lecture, role playing, discussion, etc.), are used to evaluate the effectiveness and efficiency of components or elements of training, and serve as performance criteria for trainee evaluation.

(2) Development of Conceptual Understanding

Initial training provides learners with information about the nature of the skill to be developed; when, how, and why to use the skill; and what skilled performance entails. This information is
first provided in written or verbal form, presenting practical aspects of the skill and helping trainees relate new skills to previous experiences. Then this information is supplemented by demonstrations of the skill. Demonstrations are prefaced by listing component skills. Component skills are labelled as they are used in the demonstration, and are again listed following the demonstration. Then group discussion is focused on the demonstration, particularly on the use of component skills.

(3) Development of Performance Skill

Performance skill is developed by controlling practice, knowledge of results, and context. Practice is substantial throughout, while knowledge of results and the context of training are adapted to learner skill level.

Significant amounts of practice in a variety of contexts are included in the regimen through a progression method. Trainees spend much time practicing a skill or set of component skills first in simulated settings and gradually moving to more work-like settings as mastery improves. Next, they practice these mastered component skills with a new set of component skills, repeating the progression from simulated to natural settings. This cycle is
continued until all component skills have been cumulatively mastered.

Knowledge of results is provided frequently and immediately following trainee performance in the early phases of skill mastery. As the context of training moves from controlled, simulated settings to more natural settings, knowledge of results is provided less frequently and is increasingly delayed after trainee performance. Additionally, trainees are provided a systematic method of analyzing and evaluating their own performance.

Summary

To conclude, this section has addressed literature and research which might inform the development of a teacher training regimen. Although little research is available which explicitly addresses training or training components, a desirable, largely research-based training regimen is suggested. Such a system of training is more likely than current practice to produce desirable, significant, and lasting changes in teachers' behavior. Of most direct interest to the study at hand, this regimen may provide an effective medium for answering the question, can teachers be taught to be more clear.
Summary

This chapter has reviewed literature in three areas in an attempt to present the background, rationale, and importance of the present study. First, research was described which originally identified clarity as a teacher variable related to student learning. Also in this section studies were reviewed which attempted to answer eight specific questions regarding the nature and characteristics of teacher clarity. A second section of the chapter discussed ten studies in which inservice teachers were trained to make greater use of teacher behaviors drawn from research of effective teaching. A final section described literature which might inform the design of skill development regimens. Several important conclusions can be drawn from each section of this review.

Regarding research on teacher clarity: Teacher clarity has been identified as an important aspect of effective teaching. Following Rosenshine and Furst's review identifying teacher clarity as strongly related to desirable pupil outcomes, many began directly investigating the nature and characteristics of teacher clarity. Subsequent research has been directed toward eight questions about the attributes
and usefulness of the high-inference variable teacher clarity. Most of these questions have provided reasonably consistent answers, however, some remain unanswered or answered only in part.

Research indicates that (1) teacher clarity can be described and defined by a number of low-inference, specific behaviors. Whether reported by students or by so-called experts in teaching, a number of specific behaviors are consistently attributed to clear teachers more often than to unclear teachers. Among other things, clear teachers tend to be more proficient at and devote much energy to explaining things to their students. They monitor their students understanding by asking questions and by pausing to allow students to ask questions. When students do not understand, clear teachers repeat things, and they stress important points by writing them on the board.

Research has also revealed that (2) several of these low-inference behaviors are best able to discriminate between teachers who are clear and those who are unclear. About twenty-nine specific behaviors are performed more frequently by clear than unclear teachers. For example, clear teachers more often give explanations students understand, describe work to be done and how to do it, ask students if they
understand, answer student questions, teach step-by-step, and teach at an appropriate pace.

(3) The low-inference constituents of teacher clarity can also be organized into categories or groups of similar behaviors. Cruickshank, Myers and Moenjak (1975) originally used subjective methods to organize 110 specific behaviors into thirteen categories. More recent research has used statistical procedures such as factor analysis and discriminant analysis to objectively identify intermediate dimensions of teacher clarity. Low-inference behaviors constituting clarity can be organized into at least two and possibly four moderate-inference categories. Most low-inference behaviors are subsumed by such moderate-inference activities as explaining and demonstrating, logically structuring instruction and instructional content, and providing for student assimilation and understanding.

(4) Teacher clarity as perceived by students is relatively generalizable across geographical locations. Students in Ohio, Tennessee, and Australia were found to have quite similar views of clear teaching.

(5) Teacher clarity is also generalizable across at least junior high, high school, and college levels.
Research by Larsen (1985) found that preservice mathematics teachers exhibited little consistency in clarity from one lesson to another. However, Williams (1983) and Holland (1979), based upon the findings of more valid experiments, report that clarity is highly consistent across different groups of learners, different lesson topics, different subjects, and different lessons. Teacher clarity is generalizable, and would seem to be relatively stable. Although further study is desirable, it would seem that a teacher who is clear is likely to remain so in a variety of instructional situations.

The relationship between teacher clarity and desirable student outcomes such as achievement and satisfaction is consistent and well established. Studies in which teacher clarity and student learning and satisfaction are assessed reveal that (6) teachers who are clear have students who consistently and significantly achieve at higher levels than students of teachers who are less clear. Interestingly, this holds true whether teacher clarity is judged by learners, by teachers themselves, or by trained observers. However, these findings are the result of correlational research. Future teacher clarity research must incorporate experimental research.
designs which may establish a cause-effect relationship between clarity and student achievement and/or satisfaction.

The findings of investigation into the relationship between demographic and presage variables and teachers' clarity are also inconsistent. Individual studies have reported a relationship between a teacher's clarity and such variables as teacher age, subject matter taught, college entrance examination scores, and teacher grade point average. However, none of these findings has been replicated. (7) There is no evidence that the presage variables examined to date are consistently and significantly related to a teacher's ability to be clear.

(8) The question, can teachers be taught to be more clear in their presentations remains unanswered and bothersome. Three attempts to train preservice teachers to be more clear in their instruction have met with mixed and inconsistent results. Gloeckner (1983) found significant differences between pre-training lessons and post-training lessons favoring trained versus untrained subjects. However, in a second phase, he failed to find significant effects when these same trained teachers were compared to a different group of untrained teachers. Larsen (1985)
found that trained teachers were rated as more clear than untrained teachers when observed in their natural classrooms, but that these differences were not significant. Gliessman and associates (1989) found that conceptual training produced significant effects on preservice teachers' use of six broadly defined teacher clarity skills when they were coached by the investigators in preparing observed lessons. The findings of both Gloeckner and Larsen are marred by serious flaws in research design and in their conceptions of training. Further, although Gliessman et al. utilize carefully controlled experimental procedures, the definition of teacher clarity used in the study and the continual training provided throughout data collection limit the usefulness of their findings. More thorough, carefully conceived study of this question wherein teacher clarity and the parameters of training are firmly established is critical.

Teacher clarity represents a teacher behavior, or cluster of several specific teacher behaviors, that has been shown to consistently and significantly relate to desirable student outcomes. It can be described in behavioral terms, reliably observed and measured. It is generalizable across several
instructional levels and geographic locations, and it appears stable across time, content and groups of learners. If teachers can be trained to be more clear, it is incumbent upon those who train teachers to incorporate such training into programs of teacher education.

Regarding attempts to train teachers:

Investigation of the efficacy of training teachers to use research-based instructional behaviors indicates that such training can be effective. Of twelve reported attempts, eleven met with at least reasonable success. In most of these studies, inservice teachers were trained in behaviors drawn from correlational research of effective teachers in such areas as classroom management, instructional behavior, organization, and planning. Following training, these teachers used significantly more of the desired behaviors than untrained teachers. Additionally, desirable student outcomes such as more on-task behavior and increased levels of student achievement were often found to result.

In spite of reasonable success, training in these attempts was primarily limited to providing teachers with descriptions and explanations of desirable skills or behaviors through written materials and
discussion. The single unsuccessful study attempted to train teachers using a "minimal" training regimen which included little or no direct contact between the investigators and trainees, and little provision of structured, supervised practice.

Little is known about the effects of training preservice teachers to make use of such research-based skills. The work of Copeland (1975, 1977, 1982) and others would indicate that training preservice teachers may be much more involved and require much more systematic and rigorous training than that required for inservice teachers. Further, complex and multidimensional skills, such as teacher clarity, necessitate more thorough skill development procedures.

Review of relevant training literature indicates a notable lack of explicit research into the effectiveness of training and training processes. However, a model of an effective training regimen can be constructed from literature in the fields of occupational, industrial, and cognitive psychology. In this model, behavioral objectives are met through systematic manipulation and control of such components as provision of knowledge of results, substantial amounts of practice, setting or context in which
training takes place, and thorough evaluation. Components of the model have been shown to enhance transfer of skills from training to work settings, an important consideration in the training of preservice teachers.

From the current review, several broad conclusions can be drawn.

1) Helping teachers become more clear in their presentations is likely to result in desirable student outcomes.

2) Teachers can be trained to make increased use of research-based behaviors.

3) A training regimen can be designed which makes use of research-based principles of training and which should result in the most efficacious method of training.

The present study, which will examine the effects of training on preservice teachers' ability to make clear presentations, is important in several ways. First, the study represents an unique attempt to train preservice teachers to make increased use of a set of research-based teaching skills using a research-based regimen of skill development. Second, the results of this investigation can serve to answer the question, can teachers be taught to be more clear, thus
furthering inquiry into teacher clarity. Third, the present study may serve to establish the contribution teacher clarity makes in causing increased student achievement and satisfaction. Fourth, should the training regimen developed for this study be found effective in promoting desirable changes in preservice teachers' instructional behavior, it may serve as a useful medium in the conduct of teacher education.
CHAPTER III
RESEARCH PROCEDURES

This chapter describes specific research procedures used in investigation of the question, can preservice teachers be trained to be more clear. Described are (1) objectives of the study (in the form of research questions), (2) sample, (3) research design and methodology, (4) instrumentation, and (5) data analysis procedures.

Objectives

The primary purpose of this study is to investigate the effectiveness of a clarity training regimen on preservice teachers' use of behaviors indicative of teacher clarity. A secondary purpose is to examine the effects such clarity training may have on student learning and satisfaction. Specifically, the following three research questions and three subquestions are addressed:

1. Can preservice teachers be trained to be more clear in instructional presentations?

This question is chosen to resolve the inconsistent findings of Gloeckner (1983) and Larsen
(1985). (Although trained teachers in these studies increased their use of clarity behaviors, they did not make significantly greater use of them than untrained teachers.) The answer to this question is critical in establishing the practical utility of teacher clarity in teacher education. If teacher clarity is a desirable teacher characteristic, and if teachers can be trained to be more clear, clarity should be included in the curriculum of teacher education. If teachers cannot learn to be more clear, the findings of teacher clarity inquiry will be more useful in selecting and admitting students to teacher education programs.

Specific subquestions of number one above which will be examined are:

a. Will trained preservice teachers make more frequent use of low-inference indicators of clarity than untrained preservice teachers?

b. Will trained preservice teachers make more frequent use of intermediate-inference indicators of clarity than untrained teachers?
c. Will trained preservice teachers be rated by trained observers as more clear than untrained teachers?

2. Will students of clarity trained preservice teachers perform better than students of untrained teachers on tests of lesson content?

This question will be addressed in an attempt to substantiate correlational research indicating a strong, positive relationship between teacher clarity and student learning. The experimental design of this study can provide evidence that increased clarity causes increased student learning, whereas previous correlational research has been unable to do so.

3. Will students of clarity trained preservice teachers report greater satisfaction with teaching than students of untrained teachers?

This question, like question two, has been selected to corroborate correlational findings of a strong, positive relationship between teacher clarity and student satisfaction.

Sample

The target population for this study consists of preservice teacher education students at The Ohio State University. Most of these students are working
to complete a baccalaureate degree in education and obtain Ohio Teacher Certification. With few exceptions, these students are required to complete a two course twelve quarter-hour sequence entitled the Professional Introduction program. Students enrolled in this program are mostly junior and senior level undergraduates representing all subject areas and grade levels.

The Professional Introduction program provides students with general or "generic" teacher education. A first course (ED:T&P 450) incorporates content regarding human growth and development, theories of learning, standardized testing, and pupil diversity and exceptionality. The second course (ED:T&P 451) is intended to help preservice teachers develop understanding of and skill in such areas as planning and organizing teaching, managing the classroom, presenting instructional content, and evaluating students.

The sample for this study is drawn from students enrolled in the latter course (ED:T&P 451). This course was selected for several reasons. Of primary importance is the standardized curriculum and experiences which all sections of this course are to include. Enrolled students, regardless of section,
receive didactic instruction in college classrooms, participate in laboratory experiences such as microteaching (Allen and Ryan, 1969) and Reflective Teaching (Cruickshank, Holton, Faye, Williams, Kennedy, Myers, and Hough, 1981), and are provided regular opportunities for practice teaching in natural classrooms. Additionally, the course is required and, as a result, students can be assumed to be representative of preservice teachers at the university.

For the purposes of this investigation, the sample consists of students enrolled in each of four sections of ED:T&P 451 which were randomly selected from eight sections taught during Spring Quarter, 1989. Each section generally contains 22-24 students, however, enrollments in selected sections during the period of investigation ranged from 14 - 24. Student self-enrollment into sections is done without knowledge of section or instructor and is considered random.

**Research Design & Methodology**

The principle research design for this study is the Solomon Four Group Design (Campbell and Stanley, 1967) and is diagrammed as shown.
In this design, subjects, in this case sections, are randomly assigned to either control (C) or treatment (X) conditions. Then, within each condition, half of the subjects are pretested. Next, treatment group subjects are presented with a treatment. Lastly, all subjects are posttested. This design combines benefits of the pretest/posttest/control group design and the posttest only control group design. In so doing, the Solomon Four Group Design effectively controls for all known threats to internal validity (Gay, 1987). Should significant training effects be observed, they can be assumed to have resulted from the training intervention.

In this study, each randomly selected section of ED:T&P 451 is randomly assigned to one of four conditions as depicted below.

Group A - Pretest, Clarity training, Posttest
Group B - Clarity training, Posttest
Group C - Pretest, Posttest
Group D - Posttest
In order to address the principal research question, preservice teachers in Groups A and B receive clarity training and are compared to preservice teachers in Groups C and D who do not receive such training. The resulting two factor matrix is shown below.

<table>
<thead>
<tr>
<th></th>
<th>Pre and Posttest</th>
<th>Posttest only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>14 subjects</td>
<td>23 subjects</td>
</tr>
<tr>
<td>No Training</td>
<td>18 subjects</td>
<td>23 subjects</td>
</tr>
<tr>
<td></td>
<td>(N=32)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1

Pretest and Posttest

A measure of teacher clarity was obtained from an analysis of subjects' behavior while they engaged in Reflective Teaching (Cruickshank, 1987), a form of on-campus laboratory teaching. Briefly, in Reflective Teaching, preservice teachers are organized into small groups of three to five. One person in each group is designated teacher and is assigned or selects one of about thirty-two prescribed Reflective Teaching Lessons (RTL's). Lesson content is such that designated teachers and their peer students are unlikely to be familiar with it prior to Reflective
Teaching. Designated teachers prepare and then teach a ten to fifteen minute lesson to their small peer group. Upon completion of the lesson, learners are administered a brief test of their understanding of lesson content and complete an instrument which assesses learner satisfaction with teaching.

Reflective Teaching was chosen as an appropriate medium for determining teacher clarity in this study for several reasons. First, Reflective Teaching has been used successfully in earlier studies of teacher clarity (Gloeckner, 1983; Hines, 1981; Williams, 1983). Second, Reflective Teaching Lesson content is unfamiliar, and as a result, preservice teachers need not "pretend" to be teaching or learning, genuine teaching and learning may take place. As a result, student learning can be assessed. Third, each Reflective Teaching lesson provides standardized lesson content, thus, controlling for differences in teaching which might result from variations in lesson content. As a result, Reflective Teaching Lessons allow comparisons between and among teachers. Fourth, each Reflective Teaching Lesson includes a prescribed test of content and an instrument which assesses learner satisfaction.
Twelve Reflective Teaching Lessons were used in the present study. The following characteristics were common to the lessons:

(1) All lessons represent content from the cognitive domain.

(2) Each lesson is fifteen minutes in length.

(3) Lessons are matched on cognitive level in order that lessons and tests used in posttraining sessions are similar to those in pretraining sessions. Lessons and their respective tests were categorized according to Bloom's taxonomy of educational objectives (1956). For each type or level of lesson used in pretesting (knowledge, comprehension, application, analysis, synthesis, or evaluation), a lesson of similar cognitive level is also used in posttesting.

For pretesting and posttesting, random assignment of students to Reflective Teaching groups and of designated teachers to lessons was conducted by course instructors using forms provided by the investigator. This form randomly assigns students to groups and to the role of designated teacher for specific Reflective Teaching Lessons. Course instructors were asked to alphabetically list the names of their students on these forms. Computer generated numbers appearing on
each form indicate the group to which a particular student was assigned and the Reflective Teaching Lesson for which the student was to serve as designated teacher.

In order to minimize the time required to complete pre- and posttraining lessons and to standardize Reflective Teaching Lessons, the following Reflective Teaching format was used:

1. Four designated teachers, each assigned the same Reflective Teaching Lesson, were allowed fifteen minutes to simultaneously teach the assigned lesson to their small peer group. Each lesson was video-taped.

2. After fifteen minutes, all designated teachers were required to end their lesson, and to administer the test of lesson content and learner satisfaction forms to their learners.

3. Learners were allowed three minutes to complete these materials.

4. After this three minute period, designated teachers collected the tests and the learner satisfaction forms and returned them to the college instructor.
5. Five minutes were then available to allow the next set of designated teachers to prepare to teach.

**Pretest lessons.** Before training was implemented, pretest lessons were conducted. On Wednesday of the first week of Spring Quarter, 1989, students in pretest sections were randomly assigned to Reflective Teaching groups and to be designated teacher for one of six Reflective Teaching Lessons: The Arrowhead Task, The Good Teacher Task, The Vocabulary Task, The Chemopatetics Task, The Survivors' Task, or The Memory and Forgetfulness Task (Copies of these Reflective Teaching Lessons appear in Appendices B to G). At this time, teachers were given information about the content and objectives of their lesson, the format of Reflective Teaching, and the time constraints under which they were to teach. They were then instructed to prepare to teach their lesson on Monday of the following week. All pretest lessons were conducted on Monday April 3, according to the format described earlier.

**Posttest lessons.** Posttest lessons were conducted on Tuesday May 30 and Wednesday May 31 of the final week of Spring Quarter, 1989. Each preservice teacher was randomly assigned to a
Reflective Teaching group and to be designated teacher for one of six Reflective Teaching Lessons: The John Dewey Task, The Discipline in Elementary Classrooms Task, The Spelling Demon, The Castle Task, The Drug Task, or the Clerihew Task (Copies of these Reflective Teaching Lessons appear in Appendices H through M). As with pretest lessons, designated teachers received materials and information regarding their lesson one week in advance, and were told to prepare a lesson to be presented the following week. All posttest lessons were then conducted as before.

Training

Subjects in all sections received regular ED: T&P 451 course content and experiences as described earlier. Preservice teachers in sections assigned to receive training in clarity also participated in The Clarity Training Program (Cruickshank and Metcalf, 1989). Training sections incorporated clarity training into regular course activities, particularly laboratory and field experiences. Hence, clarity training represents the only difference in course material between control sections and training sections.
The Clarity Training Program (CTP). As explained above, preservice teachers in treatment groups received training in The Clarity Training Program (CTP). The CTP is a regimen of training built on research of effective training and is designed to help teachers become more clear in their instructional presentations. More specifically, the CTP is intended to help teachers develop their use of seventeen behaviors indicative of teacher clarity which have been identified as prime discriminators in earlier research (Bush, 1976; Bush, Kennedy, and Cruickshank, 1977; Hines, 1981; and others).

Development of the training regimen was begun in the summer of 1987 and was conducted in several phases. As suggested in Chapter Two, a very early phase of program development was devoted to identifying techniques and practices of effective training from research. These practices were then assimilated into a conceptual model or framework of training (see Chapter Two).

In a second phase of program development, clarity skills which were to be developed were identified from the research of Bush et al. (1977) and Hines (1981). Low- and moderate-inference behaviors identified in these studies were selected as the objectives of
training. These behaviors were then critically examined in an effort to reduce the number of specific skills to be developed and to combine behaviors which might be difficult for trainees to discriminate. Behaviors which were believed to be difficult to describe in behavioral terms were eliminated (e.g., provides for assimilation and synthesis of content, explained the content of instruction). Remaining behaviors which were deemed to be quite similar or related were combined (e.g., pauses to allow students to ask questions was combined with answers student questions). The resulting seventeen low-inference behaviors were organized into units of related skills identified through factor analysis in earlier research (Bush, 1976; Bush, Kennedy, & Cruickshank, 1977; Bush, Kennedy, Cruickshank, & Myers, 1979; Hines, 1981; Hines, Kennedy, & Cruickshank, 1985). The skills and the units into which they are organized are as follows:

**Unit One:** *The teacher logically organizes instruction and instructional content.*

1. Informs students of lesson objectives in advance.
2. Presents content in a logical manner.
Unit Two: The teacher emphasizes important aspects of instruction and instructional content.

4. Points out what is important for students to learn.

5. Repeats things that are important.

6. Writes important things on the board/chart.

7. Summarizes the material presented in class.

Unit Three: Explains/demonstrates how to do the work by using examples.

8. Examples are used.

9. Works examples and explains them.


11. Shows similarities and differences between things.

12. Explains something and then pauses to allow students time to think.

Unit Four: Provides for student understanding and assimilation of instructional content.

13. Repeats things when students do not understand.

14. Asks questions to find out if students understand.

15. Allows time (pauses) for students to ask questions and answers student questions.
16. Provides opportunities for students to practice (or work examples).

17. Examines student work.

After skills were identified and organized into units, a next phase of development focused upon the development of specific materials which would enable trainees to master the component skills. A manual was developed which serves as the primary instructional tool, and a 35 minute video taped demonstration was designed and produced.

The resultant Clarity Training Program (CTP) helps trainees develop their use of constituent or component clarity behaviors through a combination of the "progression method" of practice, extensive amounts of practice in a variety of settings, and structured feedback regarding their performance of component skills (see Chapter Two).

Briefly, the Clarity Training Program begins by introducing learners to the seventeen skills through written descriptions and definitions, and group discussion. Then the thirty-five minute videotape is presented which lists, demonstrates, labels, and again lists the seventeen component skills in use. Group discussion follows this demonstration and is guided by nine questions intended to help trainees develop
further understanding of the rationale, purpose, components, and performance of clarity behaviors. At the conclusion of this initial session, learners are presented a manual which serves as the basis of subsequent training. A copy of the instructor's manual appears in Appendix N.

The 120 page Clarity Training Manual is designed to incorporate the statement of objectives, development of trainees' conceptual understanding of the skills to be developed, guided performance skill development, and systematic evaluation and feedback. The manual provides learners with descriptions, rationales, and definitions of skills for each of the four units noted on pages 176-177; scripts of Unit skills in use; written exercises requiring learners to identify, discriminate, and generate examples of Unit skills; practice exercises with lesson guides and self evaluation forms; and systematic procedures for peer and instructor evaluation. Further, the manual is designed to allow most of training to be completed by learners outside the regular classroom, however, in class peer teaching and natural classroom teaching episodes are suggested.
Learners begin The Clarity Training Program by working with skills in Unit One (related to organizing and logically presenting instructional content). First, they read about the skills from the manual, read a classroom vignette which demonstrates the unit skills, and complete the written exercises. Next, they practice using the Unit One skills in simulated self-practice lessons which are audio-taped. Using systematic self-evaluation sheets in conjunction with recordings, they analyze each trial. Then, they practice using the skills in peer teaching lessons which are video taped. Each of these lessons is evaluated by peer learners using structured evaluation forms, and by the trainee using similar forms and the video recording. Some of these peer teaching lessons are also evaluated by the instructor. Unit One skills are then practiced in natural classroom lessons, which are recorded when possible, and systematically evaluated by the college instructor.

When trainees have demonstrated mastery of Unit One skills, they begin learning about Unit Two skills, combining new skills with those previously mastered. Unit One and Unit Two skills are then practiced concurrently, first in self-practice, then peer
teaching, then in natural classrooms as before. This process is repeated until all seventeen skills (four Units) have been cumulatively mastered.

Field testing. The Clarity Training Program was field tested in sections of ED: T&P 451 during Winter and Spring Quarters, 1988. Following completion of ten weeks of training, forty-three preservice teachers and their instructor were asked to note problems with the materials, and to respond to five questions listed below.

1) Did you enjoy your participation in the Clarity Training Program?
2) What are strengths of the Clarity Training Program?
3) What are weaknesses of the Clarity Training Program?
4) Do you believe that participation in the CTP has helped you become a better teacher?
5) Would you recommend the CTP to a friend who was a teacher?

Students reported a high degree of satisfaction with the CTP (100%), noted that they felt the seventeen clarity skills were valuable (97%), that the CTP helped them develop the component skills and become better teachers (97%), and would recommend the
CTP to friends who were studying to become teachers (100%). The most commonly noted flaws in training were the lack of a table of contents in the manual and the complexity of self and peer evaluation forms. During Summer Quarter, 1988, a table of contents was added and evaluation forms were completely revised and simplified. Typographical and editorial errors identified during field testing were also corrected. The present study makes use of this revised program.

Instructor training. For this study, clarity training was conducted as a regular part of course activities in two target sections of ED:T&P 451. Prior to the implementation of training, instructors of training sections met with the investigator in three two hour sessions wherein they received copies of the instructor's manual and guidance in conducting the Clarity Training Program. Clarity training was implemented following pretraining lessons, in week two of Spring Quarter, and continued through week nine. Instructors were responsible for implementing and conducting training in their sections with guidance from the investigator. From the onset of training until the conclusion of posttraining lessons, the investigator monitored implementation of the CTP by observing training classes on a regular basis.
Further, bi-weekly meetings between the investigator and instructors were used to provide guidance or advice, to answer instructors’ questions, and to insure consistent implementation and conduct of the training program.

**Observational Procedures**

Teacher clarity was assessed by trained observers using a version of Hines (1981) Clarity Observation Instrument which is modified for this study and will be discussed later. A copy of this new instrument appears in Appendix 0.

In preparation for observation of videotaped lessons, each lesson was coded and randomly assigned to one of four trained observers. No tapes were assigned until the completion of all pre- and posttraining lessons, and observers were not informed of the training or testing condition of the teacher whose lesson they observed. Three taped lessons were assigned to and observed by all raters in order to monitor observer agreement and consistency. Scott’s coefficient ($\phi$) was computed on low-inference frequency coding and Ebel’s (1951) intraclass correlation formula ($r$) used to estimate inter-rater reliability of low-, moderate-, and high-inference ratings. Reliability measures for low-inference
behaviors which were counted ranged from .81 to .97 and are presented in Table 2. Mean observer ratings for low-, moderate-, and high-inference ratings are presented in Tables 3-5.

Table 2
RELIABILITY OF LOW-INFEERENCE FREQUENCIES
BY OBSERVER AND LESSONS
AS COMPUTED BY SCOTT'S COEFFICIENT (h)

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Observer</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#1</td>
<td>#2</td>
</tr>
<tr>
<td>Early</td>
<td>.85</td>
<td>.89</td>
</tr>
<tr>
<td>Middle</td>
<td>.86</td>
<td>.91</td>
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<tr>
<td>End</td>
<td>.81</td>
<td>.88</td>
</tr>
<tr>
<td>Mean</td>
<td>.84</td>
<td>.89</td>
</tr>
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</table>
Table 3
MEAN OBSERVER RATINGS FOR RATED LOW-INFERENCE CLARITY BEHAVIORS

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Observer #1</th>
<th>Observer #2</th>
<th>Observer #3</th>
<th>Observer #4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
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<td>4.40</td>
<td>4.00</td>
<td>4.60</td>
<td>4.30</td>
</tr>
<tr>
<td>Middle</td>
<td>3.20</td>
<td>3.40</td>
<td>3.20</td>
<td>3.60</td>
<td>3.35</td>
</tr>
<tr>
<td>End</td>
<td>1.40</td>
<td>3.60</td>
<td>2.80</td>
<td>2.60</td>
<td>2.60</td>
</tr>
</tbody>
</table>

Mean 2.93 3.80 3.33 3.60 3.42

Reliability of ratings r = .73

Reliability of average ratings r = .91
<table>
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<tr>
<th>Lesson</th>
<th>Observer</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>#2</td>
</tr>
<tr>
<td>Early</td>
<td>4.75</td>
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<td>3.50</td>
</tr>
<tr>
<td>Mean</td>
<td>3.50</td>
<td>4.42</td>
</tr>
</tbody>
</table>

Reliability of ratings $r = .75$

Reliability of average ratings $r = .92$
Table 5
MEAN OBSERVER RATINGS FOR
HIGH-INFERENCE CLARITY BEHAVIORS

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Observer</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#1</td>
<td>#2</td>
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<tr>
<td>Early</td>
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<tr>
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<td>4.00</td>
</tr>
<tr>
<td>Mean</td>
<td>3.33</td>
<td>4.67</td>
</tr>
</tbody>
</table>

Reliability of ratings $r=.68$
Reliability of average ratings $r=.90$

Observations were conducted in similar fashion to Hines (1981). The following steps were followed by each observer:

1. The entire videotaped lesson was viewed and teacher use of sixteen low-inference behaviors was coded and recorded. Observers were instructed to stop, rewind, or review portions of the videotape at any time.
2. The observer then viewed the entire lesson again and checked their coding of the behaviors.

3. Next, the observer tallied the frequency with which the teacher made use of the low-inference behaviors and recorded this in Section One of the modified observation instrument (Appendix 0).

4. The observer then rated teacher performance of low-inference behaviors contained in Section Two of the instrument.

5. Next, observers rated the teacher's use of moderate-inference behaviors based in part on the frequency with which low-inference constituents of the behavior were performed and in part on the appropriateness of the teacher's use of the behavior.

6. Observers then rated the teacher's overall clarity.

**Observer Training.** During Spring Quarter, 1989, all observers received training in the observation of teacher clarity and the use of the observation instrument. Training was conducted by the investigator with guidance by Dr. E. Jane Williams. Dr. Williams has been deeply involved with research of
teacher clarity and has frequently been asked to provide training in the observation thereof.

Observer training was primarily conducted in five group sessions over a three week period. This was supplemented by individual sessions with the investigator, and self practice exercises. The amount of time spent in formal training was observer specific and ranged from 14 to 22 hours. Observers reportedly spent from 8 to 20 additional hours in self practice.

Prior to the first group session, each observer was provided materials intended to familiarize them with the sixteen low-inference behaviors to be recorded. Materials included a copy of the observation instrument, written behavioral definitions for each behavior, written examples of each behavior, and a videotaped lesson in which the behaviors are demonstrated and labelled. Observers were instructed to make use of the materials, to become comfortable with their ability to recognize each behavior, and to memorize the sixteen behavioral codes.

The initial group training session was spent discussing the sixteen behaviors, the observation instrument, and examples and non-examples of each behavior. Then observers began practicing coding and recording behaviors in short (one to three minute)
lesson segments. This practice included: (1) observing a short lesson segment, (2) coding low-inference behaviors as they occurred, (3) reviewing the segment and self-checking coding, (4) group discussion and comparison of behavioral coding in the segment, (4) group review of the segment, and (5) summary discussion of the lesson segment.

Subsequent group and individual sessions were devoted to further refining observer proficiency through lengthened lesson segments and further discussion.

At the conclusion of each group session, observers were given written materials regarding suggestions for observation and recording of behaviors which were generated during the session, and two short videotaped lessons with which they were to practice.

Observer reliability was regularly checked during this period. After the fourth session, and when observers consistently reached reliability of .80 or better on Section One of the instrument, they were allowed to begin observing their assigned tapes.

When an observer failed to meet reliability during the formal observation period, the observer and investigator met to discuss problems in coding, missed behaviors, and miscoded behaviors. When both the
investigator and the observer felt comfortable, the observer coded a new lesson and reliability was again checked. In every case, this procedure resulted in acceptable observer reliability. Following this, the observer reviewed all previously coded videotaped lessons, recoding when necessary. The investigator also viewed and coded randomly selected lessons to insure reliability.

Instrumentation

Observations. Observation was conducted using a modified version of Hines (1981) Clarity Observation Instrument. The new instrument (Appendix 0) draws from the prime discriminators identified by Bush, Kennedy, and Cruickshank (1977) and Hines (1981), and was designed to reflect the skills of the Clarity Training Program. The instrument materials provide: (a) instructions for completing the instrument, (b) twenty-six behavioral items representing low-, moderate-, and high-inference constituents of teacher clarity; (c) operational definitions of all low-inference behavioral items, and (d) the instrument proper.

As with Hines (1981), Hamilton (1988), Gloeckner (1983) and Williams (1983), the instrument is organized into two major sections: Section One
includes sixteen low-inference behaviors grouped into four subsets; Section Two includes five low- and four moderate-inference behaviors, and a single high-inference global rating of clarity.

Section One requires observers to tabulate the frequency with which a teacher uses each of the sixteen low-inference prime discriminators. In order to increase the content validity of the new instrument with skills developed in The Clarity Training Program, the original eighteen behaviors used in Section One by Hines (1981) and the twenty-five subsequently included by Hamilton (1988) were reduced. This was done by eliminating two items (Shows students how to remember things, Reviews what has already been taught) and by combining two items (Has individual students work publicly and Examines students' work privately are represented in the single statement Examines student work).

Section Two contains nine low- and moderate-inference behavioral statements, and a single high-inference statement of teacher clarity. In Section Two, observers are asked to rate the frequency and proficiency with which a teacher utilizes each of the nine behaviors, and the teacher's overall clarity on a Likert type scale. All moderate-inference behavioral
statements from the original Hines instrument were included in Section Two. This was done under the assumption that the validity of these behaviors in relation to the more global clarity variable supported their inclusion. High-inference statements used by Hines (1981) and Hamilton (1988) which required observers to rate the teacher's organization and content coverage were eliminated.

**Student learning and satisfaction.** Measures of student learning and satisfaction with teaching were obtained at the conclusion of each lesson. Peer learners completed a test of lesson content prescribed for the particular Reflective Teaching Lesson they received. These tests were collected by the designated teacher and returned to the college instructor. All tests were scored by the investigator using the objective criteria provided with each Reflective Teaching Lesson. Each learner received a score representing proportional achievement, i.e., number correct divided by number possible. Mean learner proportional achievement was then computed for each teacher.

Additionally, each learner rated satisfaction with teaching on a six point Likert-type scale. These
ratings were converted to a mean learner satisfaction rating for each teacher.

Data Analysis Procedures

Upon completion of posttraining lessons, data were collected and organized for statistical analysis. This section describes the data analysis techniques which were employed to address research questions.

Data to be analyzed were obtained from the available materials (videotaped lesson, student achievement measure, and learner satisfaction measure) of randomly selected teachers from each section. This was done in order to equalize group and cell frequencies, thus, facilitating statistical analyses and interpretation of results. Additionally, minor technical problems were anticipated (e.g., problems with video tapes, with recording equipment, etc.) which precluded use of some videotaped lessons for analysis. By attempting to record all lessons, and then randomly selecting an equal number of lessons from each section for analysis, this loss of data was made less problematic. The use of fourteen observations per cell reflects the number of preservice teachers enrolled in the smallest participating section of ED: T&P 451.
Research Question One:

Can preservice teachers be trained to be more clear in their instructional presentations?

a. Will trained preservice teachers make more frequent use of low-inference indicators of clarity than untrained teachers?

b. Will trained preservice teachers make more frequent use of intermediate-inference indicators of clarity than untrained teachers?

c. Will trained preservice teachers be rated by trained observers as more clear than untrained teachers?

In order to address these questions, measures of clarity were organized and computed for each randomly selected teacher. Data from the observation instrument provided the following four measures of clarity for each teacher:

(1) A total low-inference score computed by summing across all sixteen low-inference behaviors (Items 1-16).
(2) A low-inference mean rating obtained by computing the mean rating of the five low-inference behaviors in Section Two (Items 17-21).

(3) A moderate-inference mean rating obtained by computing the mean of the four low- and moderate-inference behavioral ratings in Section Two (Items 22-25).

(3) A high-inference rating of overall teacher clarity provided by the single high-inference clarity statement (Item 26).

Determination of Effects of Training on Teacher Behavior

In order to determine changes in teachers' clarity from pretraining to posttraining, a one between subjects - one within subjects multivariate analysis of variance (MANOVA) was performed. The design matrix for this analysis is depicted in Figure 2 below. This analysis provides information regarding the significance of overall between groups differences (training versus control) across time of testing, within groups differences across training groups (overall pretraining versus overall posttraining), and the interaction of training and time of testing. A significant interaction effect combined with
posttraining differences in clarity favoring trained teachers would suggest that training positively affected teacher clarity.

**DESIGN MATRIX FOR ONE BETWEEN SUBJECTS - ONE WITHIN SUBJECTS MULTIVARIATE ANALYSIS OF VARIANCE ON TEACHER CLARITY**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining Clarity (4 measures)</th>
<th>Posttraining Clarity (4 measures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Group (n=14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Training Group (n=14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2

The principal purpose of this study is to investigate posttraining differences in instructional clarity between trained and untrained teachers. A two-factor multivariate analysis of variance (MANOVA), as depicted in Figure 3 below, was employed to address this issue (Stevens, 1986). Such an analysis provides information regarding the effects of training, the effects of pretesting, and the interaction effects of training and pretesting on subsequent teacher clarity.
## DESIGN MATRIX FOR TWO FACTOR MULTIVARIATE ANALYSIS OF VARIANCE ON TEACHER CLARITY

<table>
<thead>
<tr>
<th></th>
<th>Pretest (n=28)</th>
<th>No Pretest (n=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untrained Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=28)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 3**

The primary independent variable: training condition, was crossed with a second independent variable: pretest condition. As noted, four measures of teachers' clarity were provided by observation of posttraining lessons using the observation instrument (low-inference total, low-inference mean rating, moderate-inference mean rating, and high-inference rating). When multivariate analysis revealed significant differences, univariate analysis of variance and modified Bonferroni procedures (Dunn, 1961) were employed.
Determination of the Effects of Training on Pupil Achievement

Research Question Two:
Will students of clarity trained preservice teachers perform better than students of untrained teachers on tests of lesson content?

In order to investigate this question two analyses were performed. First, a one between-one within subjects analysis of variance (ANOVA) was employed (Kennedy and Bush, 1985). This analytic procedure enables the investigator to examine the effects of clarity training on mean student achievement, the effects of teacher pretesting on student achievement, and the interaction effects of training and testing on student achievement. The analysis was performed on data obtained from randomly selected subjects who taught both pretraining and posttraining lessons (N=28).

Variable A, the between subjects variable, was training condition; variable B, the within subjects variable, was time of testing (pretraining or post training). The dependent variable was mean proportional student score in both the pretraining lesson and in the posttraining lessons of each teacher.
Follow-up procedures proposed by Dunn (1961) were employed when analysis of variance revealed significant differences.

It should be noted that significant pretraining differences were found in both student learning \((F=11.04, p<.002)\) and student satisfaction \((F=18.80, p<.0002)\). These differences can likely be explained by an error committed by the instructor of the pretested control section. Designated teachers in this section, but in no others, received copies of the student content test with their Reflective Teaching Lesson materials. Thus, these teachers were able to and did point out to students what was to be on the test. This prior knowledge of the test was evident in pretraining lessons of the control group and must be considered the result of this procedural error. However, greater student learning and satisfaction produced by control group teachers in pretraining lessons was actually found to reverse in posttraining lessons.
Determination of the Effects of Teacher Training on Learner Satisfaction With Teaching

Research Question Three:

Will students of clarity trained preservice teachers report greater satisfaction with teaching than students of untrained teachers?

The twenty-eight randomly selected teachers who had conducted both pretraining and posttraining lessons served as subjects in this analysis (N=28). A one between subjects - one within subjects analysis of variance (ANOVA) was used to examine this question. Again, the effects of training, testing condition, and interaction of these variables were assessed by this analysis.

As with research question two, training condition of the teacher represented the single between subjects independent variable. Testing condition (pretraining or posttraining) represented an independent variable which is within-subjects. Mean ratings of student satisfaction with teaching were computed for both pretraining and posttraining lessons and served as the dependent variable.

Modified Bonferoni procedures were employed when analysis of variance revealed significant differences.
Summary

This chapter has presented the research procedures employed in the present study. Research questions to be addressed, sample selection and characteristics, research design and methodology, training methods used, and instrument development and use have been described.

Briefly, in order to determine the effects of training on preservice teachers' clarity, randomly selected sections of ED:T&P 451 were assigned to training and no-training conditions. Preservice teachers in these sections conducted Reflective Teaching Lessons prior to and/or following a period of training in instructional clarity for half of them. Observation of teachers' videotaped Reflective Teaching Lessons was performed by trained raters and provided four measures of teachers' clarity. Multivariate analysis of variance (MANOVA) was then used to determine the significance of group differences.

The effects of clarity training on students' subsequent learning and satisfaction with teaching were also assessed. Post-lesson measures of achievement and satisfaction were subjected to univariate analysis of variance procedures in order to
identify existing differences between students of teachers who completed clarity training and students of teachers who had not.
CHAPTER IV
RESULTS

Introduction

This chapter reports the results of data analysis related to the three principle research questions examined in this study. The following are presented for each question: (1) descriptive statistics, (2) the results of analyses of variance, and (3) a brief explanation of the manner in which the results answer the particular question.

Research Question Number One

Research question number one asked, can preservice teachers be trained to be more clear in instructional presentations? Three specific subquestions were also asked:

a) Will trained preservice teachers make more frequent use of low-inference indicators of clarity than untrained teachers?
b) Will trained preservice teachers make more frequent use of intermediate-inference indicators of clarity than untrained teachers?
c) Will trained preservice teachers be rated by trained observers as more clear than untrained teachers?

Prior to multivariate analysis for research question number one, data were examined in order to determine the likelihood that low-inference clarity behaviors might relate to overall clarity in a curvilinear rather than linear manner, a concern forwarded by Hines (1981) and others. In other words, it is possible that increasing the frequency with which a teacher makes use of low-inference behaviors may work to enhance overall instructional clarity only to a point. Beyond this point, excessive use of these low-inference behaviors may impinge upon rather than enhance overall clarity.

Procedures proposed by Stevens (1986) were used to address this issue. Regression analysis incorporating low-inference frequency as the single predictor variable and the global rating of teachers' clarity as the outcome variable was performed. Then, predicted values of global ratings and standardized residual values were computed and plotted. In the resultant distribution, standardized residual values were found to be randomly distributed when plotted against predicted values of global clarity. Subsequent regression analysis
validated this finding. On the basis of these results, it was concluded that the relationship between low-inference clarity behaviors and overall, global clarity was not curvilinear for this sample. However, this does not imply that such a relationship may not exist in the larger population, or in other unique samples.

Following this procedure, research question number one was investigated by way of two multivariate analysis of variance procedures. In each analysis, four dimensions of teacher clarity (low-inference frequency, mean rating of five low-inference behaviors, mean rating of four moderate-inference dimensions of clarity, and a single, global rating of clarity) were dependent variables (p=4). These multivariate analyses allowed examination of the general research question. Subsequent univariate analyses were then employed to address specific subquestions.

The first analysis incorporated a mixed model multivariate analysis of variance performed on clarity data for each of twenty-eight randomly selected teachers who had participated in both pretraining and posttraining Reflective Teaching Lessons (cell n=14). The second and primary analysis was a two factor multivariate analysis of variance of posttraining
clarity data for fifty-six randomly selected subjects (cell n=14), which included the twenty-eight subjects noted above.

Within Groups Analysis

To examine changes in teachers' clarity from pretraining to posttraining, a one between subjects - one within subjects multivariate analysis of variance was performed. Clarity data (p=4) for twenty-eight teachers participating in pre- and posttraining Reflective Teaching Lessons were analyzed. Descriptive statistics for each dependent variable (i.e., clarity dimension) are presented in Tables 6-9.

Table 6
DESCRIPTIVE STATISTICS FOR LOW INFERENCE CLARITY FOR PRE- AND POSTTESTED SUBJECTS (N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>45.79</td>
<td>16.80</td>
<td>72.00</td>
</tr>
<tr>
<td>Control</td>
<td>64.07</td>
<td>28.16</td>
<td>51.57</td>
</tr>
<tr>
<td>Total</td>
<td>54.93</td>
<td>24.59</td>
<td>61.79</td>
</tr>
</tbody>
</table>
Table 7
DESCRIPTIVE STATISTICS FOR RATED LOW INFERENCE CLARITY FOR PRE- AND POSTTESTED SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>2.94</td>
<td>.79</td>
<td>3.69</td>
</tr>
<tr>
<td>Control</td>
<td>3.60</td>
<td>.80</td>
<td>2.76</td>
</tr>
<tr>
<td>Total</td>
<td>3.27</td>
<td>.85</td>
<td>3.22</td>
</tr>
</tbody>
</table>

Table 8
DESCRIPTIVE STATISTICS FOR RATED MODERATE INFERENCE CLARITY FOR PRE- AND POSTTESTED SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>2.89</td>
<td>.81</td>
<td>3.66</td>
</tr>
<tr>
<td>Control</td>
<td>3.86</td>
<td>.91</td>
<td>2.84</td>
</tr>
<tr>
<td>Total</td>
<td>3.38</td>
<td>.98</td>
<td>3.25</td>
</tr>
</tbody>
</table>
Table 9
DESCRIPTIVE STATISTICS FOR RATED HIGH INERENCE CLARITY FOR PRE- AND POSTTESTED SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean  S.D.</td>
<td>Mean  S.D.</td>
<td>Mean  S.D.</td>
</tr>
<tr>
<td>Training</td>
<td>3.00  1.18</td>
<td>3.86  1.10</td>
<td>3.43  1.20</td>
</tr>
<tr>
<td>Control</td>
<td>3.93  1.07</td>
<td>2.79  .89</td>
<td>3.36  1.13</td>
</tr>
<tr>
<td>Total</td>
<td>3.46  1.20</td>
<td>3.32  1.12</td>
<td>3.39  1.15</td>
</tr>
</tbody>
</table>

Descriptive Statistics. Similar patterns of mean performance can be seen on each dimension of clarity. In each case, control teachers' clarity exceeds that of training group teachers in pretraining lessons. This difference is reversed in posttraining lessons. Further, control teachers' clarity on each dimension decreases from pretraining to posttraining while improving for training group teachers.

More specifically, Table 6 reveals that control teachers' use of low-inference indicators of clarity is more frequent than training group teachers' in pretraining lessons ($\bar{x}=64.07$ and 45.79 respectively).
Control teachers' frequency of use declines to $X=51.57$ in posttraining lessons while trained teachers' frequency of use increases markedly ($\bar{X}=72.00$).

Table 7 depicts mean performance on rated low-inference indicators of clarity. As with frequency, control teachers' performance of the five behaviors is rated as more frequent than training group teachers prior to training ($\bar{X}=3.60$ and 2.94 respectively). This difference is reversed and expanded in posttraining lessons. In these lessons, trained teachers are rated as performing the low-inference behaviors more frequently than control teachers ($\bar{X}=3.69$ and 2.76). Posttraining differences reflect an increase in rated frequency for trained teachers and a concurrent decrease for untrained teachers.

Table 8 indicates a similar pattern in ratings of teachers' use of intermediate-inference clarity behaviors. Mean rating of pretraining lessons is greater for control group teachers than for those in the training group ($\bar{X}=3.86$, 2.89). In posttraining lessons, intermediate dimensions of trained teachers' clarity are rated more highly than those of untrained teachers ($\bar{X}=3.66$, 2.84). Again, posttraining differences result from an increase in mean rating for trained teachers and a decrease for control teachers.
Descriptive statistics for ratings of teachers' overall, global instructional clarity are presented in Table 9. Once more, control teachers are rated as more clear than training group teachers in pretraining lessons ($\bar{X}=3.93$ and 3.00). An increase in trained teachers' rated clarity from pretraining to posttraining (posttraining $\bar{X}=3.86$), and a concurrent decline in control teachers' rated clarity (posttraining $\bar{X}=2.79$) closely resemble the patterns described earlier.

In sum, these table 9 indicate marked changes in teachers' clarity on all four dimensions. Control teachers' instructional clarity consistently declines from pretraining to posttraining, while improving for trained teachers.

Correlations. The similarity of patterns on each clarity dimension suggests strong relationships between and among the four dimensions of instructional clarity. Indeed, these relationships are substantiated by high, positive correlations between and among the clarity dimensions. Tables 10-12 present Pearson Product Moment Correlations among clarity dimensions for pre- and posttraining lessons.
Table 10
OVERALL CORRELATION MATRIX FOR DIMENSIONS OF CLARITY
FOR PRE- AND POSTTESTED SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th></th>
<th>LOW1</th>
<th>LOWR1</th>
<th>MOD1</th>
<th>HIGH1</th>
<th>LOW2</th>
<th>LOWR2</th>
<th>MOD2</th>
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<tbody>
<tr>
<td>LOW1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR1</td>
<td>.53+</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOD1</td>
<td>.62*</td>
<td>.84*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH1</td>
<td>.48+</td>
<td>.77*</td>
<td>.86*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOW2</td>
<td>-.09</td>
<td>-.31</td>
<td>-.32</td>
<td>-.35</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR2</td>
<td>-.05</td>
<td>-.11</td>
<td>-.20</td>
<td>-.11</td>
<td>.61*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>MOD2</td>
<td>.02</td>
<td>-.22</td>
<td>-.29</td>
<td>-.27</td>
<td>.67*</td>
<td>.81*</td>
<td>1.00</td>
</tr>
<tr>
<td>HIGH2</td>
<td>.07</td>
<td>-.14</td>
<td>-.22</td>
<td>-.20</td>
<td>.58*</td>
<td>.87*</td>
<td>.87*</td>
</tr>
</tbody>
</table>

* p<.001
+ p<.01
Table 11
CORRELATION MATRIX FOR DIMENSIONS OF CLARITY
FOR PRE- AND POSTTESTED TRAINING GROUP SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th></th>
<th>LOW1</th>
<th>LOWR1</th>
<th>MOD1</th>
<th>HIGH1</th>
<th>LOW2</th>
<th>LOWR2</th>
<th>MOD2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR1</td>
<td>0.56#</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MOD1</td>
<td>0.54#</td>
<td>0.84*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH1</td>
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<td>0.68+</td>
<td>0.82*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOW2</td>
<td>0.19</td>
<td>-0.08</td>
<td>-0.12</td>
<td>-0.17</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR2</td>
<td>0.22</td>
<td>0.08</td>
<td>0.08</td>
<td>0.07</td>
<td>0.70+</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>MOD2</td>
<td>-0.05</td>
<td>-0.27</td>
<td>-0.25</td>
<td>-0.23</td>
<td>0.66+</td>
<td>0.86*</td>
<td>1.00</td>
</tr>
<tr>
<td>HIGH2</td>
<td>0.16</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.06</td>
<td>0.64+</td>
<td>0.96*</td>
<td>0.93*</td>
</tr>
</tbody>
</table>

* p<.001
+ p<.01
# p<.05
Table 12
CORRELATION MATRIX FOR DIMENSIONS OF CLARITY
FOR PRE- AND POSTTESTED CONTROL GROUP SUBJECTS
(N=28)

<table>
<thead>
<tr>
<th></th>
<th>LOW1</th>
<th>LOWR1</th>
<th>MOD1</th>
<th>HIGH1</th>
<th>LOW2</th>
<th>LOWR2</th>
<th>MOD2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR1</td>
<td>.41</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOD1</td>
<td>.56*</td>
<td>.79*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH1</td>
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<td>.79*</td>
<td>.86*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOW2</td>
<td>-.05</td>
<td>-.36</td>
<td>-.27</td>
<td>-.36</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWR2</td>
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<td>.26</td>
<td>.19</td>
<td>.30</td>
<td>.27</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>MOD2</td>
<td>.38</td>
<td>.15</td>
<td>.03</td>
<td>-.01</td>
<td>.58*</td>
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<td>.46</td>
<td>.17</td>
<td>.05</td>
<td>.06</td>
<td>.31</td>
<td>.61*</td>
<td>.73+</td>
</tr>
</tbody>
</table>

* p<.001
+ p<.01
# p<.05
The correlation matrix presented in Table 10 represents correlations between and among the four dimensions of clarity (LOW=low-inference frequency, LOWR=rated low-inference behaviors, MOD=moderate-inference dimensions, HIGH=rated global clarity) for pretraining and posttraining lessons (1=pretraining, 2=posttraining) across groups. Correlations among dimensions of clarity are found to be strong, positive and statistically significant. However, it is interesting to note that the clarity dimensions are not highly or positively correlated between pretraining and posttraining lessons (mean r=-.17). For example, the strongest correlation is a negative relationship between pre- and posttraining measures of moderate-inference clarity (r=-.29).

Tables 11 and 12 present correlations between and among clarity dimensions for the training group and control group, respectively. Similar relationships are revealed, although the magnitude of these relationships varies between groups. Perhaps most surprising is the small number of statistically significant correlations between low-inference frequency and higher-inference ratings for either group in pretraining lessons, and for the control group in posttraining lessons.
**Analysis of variance.** Within group data were analyzed by way of a one between subjects - one within subjects multivariate analysis of variance. The results of this analysis are presented in Table 13.

| Table 13 |
| ONE BETWEEN SUBJECTS - ONE WITHIN SUBJECTS |
| MULTIVARIATE ANALYSIS OF TEACHER CLARITY |
| (N=28) |

<table>
<thead>
<tr>
<th>Source</th>
<th>F*</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>.59</td>
<td>.6748</td>
</tr>
<tr>
<td>Within</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>.61</td>
<td>.6578</td>
</tr>
<tr>
<td>Testing x Training</td>
<td>4.33</td>
<td>.0093</td>
</tr>
</tbody>
</table>

* as computed by Pillai's Trace

Multivariate analysis reveals no significant main effects for training or testing. However, a significant interaction is found between the two independent variables. In an attempt to substantiate this finding, data were reanalyzed by performing a one factor
multivariate analysis on change scores (posttraining minus pretraining) for each clarity dimension. As expected, analysis of change scores revealed significance between group differences among the four clarity dimensions, thus supporting the interaction found in the mixed model analysis. In order to explicate the specific nature of differences, univariate analyses were performed for each dimension. The results of these analyses are presented in Tables 14-17.
Table 14
MIXED MODEL UNIVARIATE ANALYSIS OF VARIANCE
FOR LOW-INFORMATION FREQUENCIES OF CLARITY
(N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>19067.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>16.07</td>
<td>16.07</td>
<td>.02</td>
<td>.8834</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>19051.79</td>
<td>732.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>23187.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>658.29</td>
<td>658.29</td>
<td>.99</td>
<td>.3288</td>
</tr>
<tr>
<td>Testing x Training</td>
<td>1</td>
<td>5245.79</td>
<td>5245.79</td>
<td>7.89</td>
<td>.0093</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>17282.93</td>
<td>664.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>42254.86</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 15
MIXED MODEL UNIVARIATE ANALYSIS OF VARIANCE FOR
RATED LOW-INFERENCE DIMENSIONS OF CLARITY
(N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>16.50</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>.26</td>
<td>.26</td>
<td>.41</td>
<td>.5262</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>16.24</td>
<td>.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>20.78</td>
<td></td>
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</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.04</td>
<td>.04</td>
<td>.08</td>
<td>.7847</td>
</tr>
<tr>
<td>Testing X Training</td>
<td>1</td>
<td>8.80</td>
<td>8.80</td>
<td>19.16</td>
<td>.0002</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>11.94</td>
<td>.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>37.28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16
MIXED MODEL UNIVARIATE ANALYSIS OF VARIANCE FOR 
MODERATE-INERENCE DIMENSIONS OF CLARITY
(N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>18.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>.07</td>
<td>.07</td>
<td>.10</td>
<td>.7536</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>18.46</td>
<td>.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>33.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.22</td>
<td>.22</td>
<td>.25</td>
<td>.6193</td>
</tr>
<tr>
<td>Testing \times Training</td>
<td>1</td>
<td>11.16</td>
<td>11.16</td>
<td>12.90</td>
<td>.0013</td>
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<tr>
<td>Error</td>
<td>26</td>
<td>22.50</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>52.41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17
MIXED MODEL UNIVARIATE ANALYSIS OF VARIANCE FOR
HIGH-INFERENCE DIMENSIONS OF CLARITY
(N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>29.36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Training</td>
<td>1</td>
<td>.07</td>
<td>.07</td>
<td>.06</td>
<td>.8032</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>29.29</td>
<td>1.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>44.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.29</td>
<td>.29</td>
<td>.25</td>
<td>.6213</td>
</tr>
<tr>
<td>Testing x Training</td>
<td>1</td>
<td>14.00</td>
<td>14.00</td>
<td>12.25</td>
<td>.0017</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>29.71</td>
<td>1.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>73.36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 14 depicts the results of a one between subjects - one within subjects univariate analysis of the frequency with which teachers made use of low-inference clarity behaviors. A highly significant interaction between training and testing is revealed. This interaction is graphically depicted in Figure 4.

INTERACTION OF TRAINING AND TIME OF TESTING
ON LOW-INERENCE FREQUENCIES

![Graph showing interaction of training and time of testing on low-inference frequencies]

Figure 4
The interaction of training and testing is clearly seen in Figure 4. As described earlier, trained teachers' frequency of use of low-inference clarity behaviors increases from pre- to posttraining, while declining for control teachers. Modified Bonferroni (Dunn's) procedures were performed to further investigate this interaction (overall $\alpha=.05$). The single statistically significant difference is found to be the increase in trained teachers' use of low-inference behaviors from pre- to posttraining ($\bar{X} = 45.79$ to 72.00, $p<.0125$). The difference between trained and untrained teachers in posttraining low-inference clarity ($\bar{X} = 72.00$ and 51.57) was large but did not reach significance ($p=.0459$). The large pretraining difference favoring control teachers ($\bar{X} = 64.07$ and 45.79) was not significant ($p=.0719$). The slight decrease in control teachers use of the clarity behaviors ($\bar{X} = 64.07$ to 51.57) also fails to reach statistical significance ($p=.2109$).

Table 15 presents the results of univariate analysis of ratings of teachers' low-inference clarity. Again, no significant main effects are found for training or for testing, but a significant interaction is revealed. This interaction is diagrammed in Figure 5.
INTERACTION OF TRAINING AND TIME OF TESTING:
RATINGS OF LOW-INERENCE FREQUENCY

![Graph showing interaction of training and time of testing for ratings of low-inference frequency.](image)

Figure 5

The pattern of interaction seen in Figure 5 was further analyzed by way of Modified Bonferoni procedures. Several significant differences are found. Control teachers' pretraining use of rated low-inference clarity behaviors significantly exceeds that of the training group ($\bar{X}=3.60$ to $2.76$, $p<.0500$). Further, control teachers' use of these behaviors is seen to decrease significantly from pretraining to posttraining.
(\(\bar{x}=3.60\) to 2.76, \(p<.0167\)), while increasing significantly for trained teachers (\(\bar{x}=2.94\) to 3.69, \(p<.0250\)). Posttraining performance of trained teachers is also found to be significantly greater than that of control teachers (\(\bar{x}=3.69\) to 2.76, \(p<.0125\)).

Table 16 presents results of univariate analysis of rated moderate-inference dimensions of clarity. As expected, this analysis reveals no significant main effects for training or testing. However, a highly significant interaction effect is found. This interaction is depicted in Figure 6.
INTERACTION OF TRAINING AND TIME OF TESTING:
RATINGS OF MODERATE-INFEERENCE FREQUENCY

Post hoc procedures were used to further examine this interaction, and reveal two statistically significant differences. The decline from pretraining to posttraining in control teachers' moderate-inference clarity rating produces the greatest and most significant difference ($\bar{X}=3.86$ to 2.84, $p<.0125$). Pretraining differences between groups significant favor control teachers over training group teachers ($\bar{X}=3.86$ to
2.89, p<.0167). Trained teachers' moderate-inference clarity ratings are found to improve considerably from pretraining to posttraining lessons (\(\bar{X} = 2.89\) to 3.66), but this and posttraining differences between groups (\(\bar{X} = 3.66\) and 2.84) are not statistically significant (\(p = .0382\) and .0109 respectively).

The results of univariate analysis of ratings of teachers' global clarity are presented in Table 17. Once again, no significant main effects are found for training or for testing, but a significant interaction is present. Figure 7 graphically presents this interaction.
INTERACTION OF TRAINING AND TIME OF TESTING:
RATINGS OF GLOBAL CLARITY

Modified Bonferroni procedures were used to examine differences among mean group ratings of global clarity. A highly significant difference is found between control teachers' pre- and posttraining clarity ($\bar{X}=3.93$ to 2.79, $p<0.0125$) indicating a significant decline in ratings of global clarity. Further, posttraining ratings of global clarity differ significantly between trained and untrained teachers ($\bar{X}=3.86$ and 2.79, $p<0.0167$), with
trained teachers outperforming control. The pretraining between group difference in ratings of global clarity (control $\bar{X}=3.93$, training group $\bar{X}=3.00$) is not significant ($p=.0299$), nor is the marked improvement in trained teachers clarity from pre-to posttraining lessons ($\bar{X}=3.00$ to 3.86, $p=.0436$).

**Summary.** The results of one between - one within subjects analyses are consistent across the four clarity dimensions, and indicate statistically significant effects for clarity training. Multivariate analysis indicates significant interaction between training and time of testing, an effect which is to be expected in a pretest-posttest design. Subsequent univariate analyses and post hoc procedures were used to further examine the nature of this interaction as evidenced in each of the four dimensions of clarity investigated. The results of these analyses support the effectiveness of clarity training in enhancing teachers' instructional clarity on all measured dimensions of the clarity construct.

Univariate analysis of teachers' use of low-inference constituents of clarity indicates that trained teachers use the behaviors significantly more frequently after training than before. Further, while trained teachers evidence this significant increase, control
teachers' use of the behaviors undergoes a marked, although not statistically significant decline.

Analysis of ratings of teachers' use of low-inference indicators of clarity similarly reveals significant improvements in trained teachers' use of these behaviors from pre- to posttraining, and a concurrent and statistically significant decline for control teachers. Additionally, ratings of trained teachers posttraining lessons are significantly higher than those of untrained teachers, reversing a significant pretraining difference.

Ratings of moderate-inference dimensions of teachers' clarity evidence a similar effect. While ratings of control teachers' moderate-inference clarity are significantly greater than those of training group teachers in pretraining lessons, posttraining differences significantly favor trained teachers.

Ratings of high-inference, global clarity are also found to be positively affected by training. Again, pretraining ratings of clarity significantly favor control group teachers. However, this difference is reversed in posttraining lessons, wherein ratings of trained teachers' clarity significantly exceed those of untrained teachers.
Trained teachers consistently demonstrate marked improvement in their instructional clarity from pretraining to posttraining. These improvements appear in the face of substantial declines in clarity for control teachers and most are statistically significant. From these secondary analyses, it seems possible to tentatively reject the omnibus null hypothesis of no overall training effect, and, relatedly, to reject null hypotheses for specific subquestions. It appears that preservice teachers can be trained to improve their instructional clarity, and that this effect is consistent across all dimensions of the clarity construct.

**Between Groups Analysis**

A two factor multivariate analysis of variance (p=4) served as the primary analysis addressing research question number one. To examine between group differences in posttraining clarity, data for fifty-six randomly selected preservice teachers was analyzed (cell n=14). Descriptive statistics for each dimension of clarity are presented in Tables 18-21.
Table 18
DESCRIPTIVE STATISTICS FOR POSTTRAINING CLARITY:
LOW-INFORMATION FREQUENCY
(N=56)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretested</th>
<th>Pretested</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>72.00</td>
<td>32.39</td>
<td>63.36</td>
</tr>
<tr>
<td>Control</td>
<td>51.57</td>
<td>25.89</td>
<td>54.29</td>
</tr>
<tr>
<td>Total</td>
<td>61.67</td>
<td>30.60</td>
<td>58.82</td>
</tr>
</tbody>
</table>

Table 19
DESCRIPTIVE STATISTICS FOR POSTTRAINING CLARITY:
RATED LOW-INFORMATION DIMENSIONS
(N=56)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretested</th>
<th>Pretested</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>3.69</td>
<td>.76</td>
<td>3.84</td>
</tr>
<tr>
<td>Control</td>
<td>2.76</td>
<td>.57</td>
<td>2.94</td>
</tr>
<tr>
<td>Total</td>
<td>3.22</td>
<td>.81</td>
<td>3.39</td>
</tr>
</tbody>
</table>
Table 20
DESCRIPTIVE STATISTICS FOR POSTTRAINING CLARITY:
MODERATE-INFERENCE DIMENSIONS
(N=56)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretested</th>
<th>No Pretest</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>3.66</td>
<td>.91</td>
<td>4.07</td>
</tr>
<tr>
<td>Control</td>
<td>2.84</td>
<td>.91</td>
<td>2.86</td>
</tr>
<tr>
<td>Total</td>
<td>3.25</td>
<td>.99</td>
<td>3.46</td>
</tr>
</tbody>
</table>

Table 21
DESCRIPTIVE STATISTICS FOR POSTTRAINING CLARITY:
HIGH-INFERENCE DIMENSIONS
(N=56)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretested</th>
<th>No Pretest</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>3.86</td>
<td>1.10</td>
<td>4.00</td>
</tr>
<tr>
<td>Control</td>
<td>2.79</td>
<td>.89</td>
<td>2.86</td>
</tr>
<tr>
<td>Total</td>
<td>3.32</td>
<td>1.12</td>
<td>3.43</td>
</tr>
</tbody>
</table>
Descriptive statistics. Tables of descriptive statistics for measures of posttraining clarity reveal highly similar patterns across the four dimensions of clarity. On each dimension, trained teachers' clarity exceeds that of untrained teachers.

Table 18 depicts means and standard deviations of teachers' frequency of use of low-inference clarity behaviors. Mean frequency for trained teachers ($\bar{X}=67.68$) is greater than that for untrained teachers ($\bar{X}=52.93$). Likewise, a difference favoring trained over untrained teachers is observed for teachers who participated in pretraining Reflective Teaching Lessons ($\bar{X}=72.00$ and $51.57$ respectively) as well as for those who did not ($\bar{X}=63.36$ and $54.29$). A very slight difference is seen between the performance of pretested teachers ($\bar{X}=61.76$) and unpretested teachers ($\bar{X}=58.82$). The most frequent use of low-inference clarity behaviors is demonstrated by pretested training group teachers ($\bar{X}=72.00$), while most infrequent use is attributed to pretested control group teachers ($\bar{X}=51.57$).

Comparable statistics are seen in Table 19 for rated low-inference indicators of clarity. Ratings of trained teachers ($\bar{X}=3.76$) better those of untrained teachers ($\bar{X}=2.85$) across pretested and unpretested subjects. Greatest low-inference ratings are those of
trained teachers who did not participate in pretraining Reflective Teaching Lessons (\(\bar{X}=3.84\)) and poorest ratings are those of pretested untrained teachers (\(\bar{X}=2.76\)).

Ratings of teachers' moderate-inference clarity are presented in Table 20, and also favor trained teachers over control teachers (\(\bar{X}=3.87\) and 2.85 respectively) whether pretested or not.

Table 21 depicts means and standard deviations for ratings of teachers' overall instructional clarity. Again, ratings of trained teachers exceed those of untrained teachers (\(\bar{X}=3.93\), \(\bar{X}=2.82\)).

These four tables indicate that trained teachers' clarity is consistently greater than that of untrained teachers. Further, this holds true across all four dimensions of teachers' clarity.

**Correlations.** The strong correlations among dimensions of clarity, seen earlier in the within subjects analysis, are also seen in the analysis under discussion. Tables 22, 23 and 24 present the overall correlation matrix, the correlation matrix for trained teachers, and the correlation matrix for untrained teachers, respectively.
Table 22
OVERALL CORRELATIONS BETWEEN CLARITY DIMENSIONS
(N=56)

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>RATED LOW</th>
<th>MODERATE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RATED LOW</td>
<td>.49**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATE</td>
<td>.53**</td>
<td>.83**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>.45*</td>
<td>.87**</td>
<td>.88**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p<.0006
** p<.0001

Table 23
CORRELATIONS BETWEEN CLARITY DIMENSIONS
BY GROUP: TRAINING GROUP
(N=28)

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>RATED LOW</th>
<th>MODERATE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RATED LOW</td>
<td>.57*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATE</td>
<td>.50*</td>
<td>.79**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>.47*</td>
<td>.89**</td>
<td>.87**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p<.01
** p<.0001
Table 24
CORRELATIONS BETWEEN CLARITY DIMENSIONS
BY GROUP: CONTROL GROUP
(N=28)

<table>
<thead>
<tr>
<th></th>
<th>LOW</th>
<th>RATED LOW</th>
<th>MODERATE</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RATED LOW</td>
<td>.24</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODERATE</td>
<td>.42*</td>
<td>.75**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>.27</td>
<td>.79**</td>
<td>.84**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p<.05
** p<.0001

Table 22 presents correlations between and among the four dimensions of clarity across training and control group subjects. All clarity dimensions are highly, significantly correlated with one another (mean r=.68). It should be noted that low-inference frequency, although significantly correlated with all other dimensions, demonstrates somewhat lower correlations with these variables (mean r=.49) than is seen among the three remaining dimensions (mean r=.86). The weakest relationship is that between low-inference
frequency and high-inference rating \((r = .49)\). This pattern resembles that found earlier in within subjects analysis.

Table 23 depicts correlations between and among the dimensions of clarity for trained teachers. Relationships are highly similar to those reported in Table 22. All clarity dimensions are positively and significantly correlated with one another \((\text{mean } r = .68)\), and again, lowest correlations are found between low-inference frequency and all other dimensions \((\text{mean } r = .51)\).

Correlations presented in Table 24 represent correlations among the four dimensions of clarity for untrained teachers. It is interesting to note that the strong relationships between and among rated low-inference behaviors, rated moderate-inference behaviors, and global clarity are again found to be strong, positive, and statistically significant \((\text{mean } r = .79)\). However, the relationships between low-inference frequency and these dimensions are not found to be as strong for untrained teachers as for trained teachers \((\text{mean } r = .31)\).

**Analysis of variance.** The principle analysis used to address research question number one, and related subquestions, was a two factor multivariate analysis of
variance (p=4) performed on data from fifty-six randomly selected teachers (cell n=14). This number includes twenty-eight subjects also used in one between - one within analyses described earlier. The results of between groups analysis are presented in Table 25.

Table 25
TWO FACTOR MULTIVARIATE ANALYSIS OF VARIANCE:
POSTTRAINING CLARITY

<table>
<thead>
<tr>
<th>Source</th>
<th>F*</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>6.70</td>
<td>.0002</td>
</tr>
<tr>
<td>Testing</td>
<td>.96</td>
<td>.4368</td>
</tr>
<tr>
<td>Training x Testing</td>
<td>1.07</td>
<td>.3792</td>
</tr>
</tbody>
</table>

* as computed by Pillai's Trace

The results of multivariate analysis reveal significant main effects for training, while indicating no significant effects for either testing or interaction of training and testing. In order to investigate the nature of between group differences on each of the four
clarity dimensions, separate univariate analyses were conducted. The results of these analyses are presented in Tables 26-29.

Table 26

UNIVARIATE ANALYSIS OF VARIANCE FOR POSTTRAINING LOW-INFRINGEMENT FREQUENCY

(N=56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>3045.88</td>
<td>3045.88</td>
<td>4.63</td>
<td>.0362</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>123.02</td>
<td>123.02</td>
<td>.19</td>
<td>.6673</td>
</tr>
<tr>
<td>Training x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>451.45</td>
<td>451.45</td>
<td>.69</td>
<td>.4114</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>34237.50</td>
<td>658.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>37857.84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 26 reports results of analysis of the frequency with which teachers made use of low-inference clarity behaviors. As can be seen, a significant main effect is found for training, whereas, no significant effects are found for testing or for the interaction of training and testing. This analysis indicates that trained teachers use the low-inference constituents of
clarity with significantly greater frequency than untrained teachers ($\bar{X}=67.68$ and 52.93 respectively).

Table 27
UNIVARIATE ANALYSIS OF VARIANCE FOR POSTTRAINING RATED LOW-INFERENCE CLARITY DIMENSIONS (N=56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>11.70</td>
<td>11.70</td>
<td>24.58</td>
<td>.0001</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.41</td>
<td>.41</td>
<td>.86</td>
<td>.3569</td>
</tr>
<tr>
<td>Training x Testing</td>
<td>1</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.9386</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>24.76</td>
<td>.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>36.88</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of univariate analysis of ratings of low-inference behaviors are presented in Table 27. Again, no significant effects are found for testing or for the interaction of training and testing, but a highly significant main effect is found for training. With regard to ratings of teachers' use of low-inference
constituents of clarity, those of trained teachers consistently and significantly exceed those of untrained teachers ($\bar{x} = 3.76$ and 2.85 respectively).

Table 28

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>14.50</td>
<td>14.50</td>
<td>18.78</td>
<td>.0001</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.64</td>
<td>.64</td>
<td>.83</td>
<td>.3659</td>
</tr>
<tr>
<td>Training x Testing</td>
<td>1</td>
<td>.54</td>
<td>.54</td>
<td>.70</td>
<td>.4069</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>40.17</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>55.86</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 28 presents the results of univariate analysis of ratings of teachers' use of moderate-inference dimensions of teacher clarity. The results of this analysis are highly similar to those for ratings of teachers' low-inference clarity. No significant effects for testing or for interaction are present, however, highly significant training effects are indicated.
Ratings of trained teachers' use of moderate-inference dimensions of clarity are consistently greater than those of untrained teachers ($\bar{X}=3.87$ and $2.85$). Further, this difference in performance is highly statistically significant.

Table 29
UNIVARIATE ANALYSIS OF VARIANCE FOR POSTTRAINING
HIGH-INERENCE CLARITY DIMENSIONS
(N=56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>17.16</td>
<td>17.16</td>
<td>13.56</td>
<td>.0005</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.16</td>
<td>.16</td>
<td>.13</td>
<td>.7230</td>
</tr>
<tr>
<td>Training $\times$ Testing</td>
<td>1</td>
<td>.02</td>
<td>.02</td>
<td>.01</td>
<td>.9059</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>65.79</td>
<td>1.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>83.13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 29 presents the results of univariate analysis of ratings of teachers' overall, global clarity. Once again, no significant effects are seen for testing or for interaction, but a highly significant training effect is present. The results of this
analysis indicate that trained teachers are rated as significantly more clear in their lesson presentations than untrained teachers (\(\bar{X}=3.93\) and 2.82).

**Summary**

Research question number one asked, can preservice teachers be trained to be more clear in their instructional presentations? Three related subquestions addressed the effects of training on specific low-, moderate-, and high-inference dimensions of the clarity construct. In order to answer these questions, two analyses were performed. A mixed model multivariate analysis was performed on clarity measures for twenty-eight randomly selected teachers to examine changes in teachers' clarity from pre to posttraining. The principal analysis for research question number one consisted of a two factor multivariate analysis of variance amenable to analysis of data obtained from the Solomon Four Group Design employed in the present study, and intended to examine posttraining differences. The results of these analyses support the effectiveness of clarity training in improving teachers' instructional clarity.

One between subjects - one within subjects analysis revealed highly significant interactions between time of testing (pretraining or posttraining) and training
condition on each of four measured clarity dimensions. On each dimension, control teachers' pretraining clarity is markedly greater than that of training group teachers. However, posttraining measures reveal that trained teachers' clarity increases substantially and often significantly on each dimension, while untrained teachers' clarity concurrently declines.

Training is effective not only in precluding a decline in teachers' instructional clarity, but affects substantial, often statistically significant improvements in teachers' ability to make clear presentations. Importantly, the effects of training are found to apply to all dimensions of teachers' clarity. Specifically, training is found to: (1) increase the frequency with which teachers make use of sixteen low-inference constituents of clarity; (2) improve ratings of teachers' use of five low-inference clarity behaviors; (3) improve ratings of teachers' moderate-inference clarity; and (4) improve ratings of teachers' overall instructional clarity.

The results of two factor multivariate analysis of variance, and subsequent univariate analyses, substantiate the results described above. Posttraining
instructional clarity of trained teachers is found to significantly exceed that of untrained teachers on each of four dimensions of clarity.

Findings regarding each research subquestion indicate: (1) trained teachers make use of low-inference constituents of clarity with significantly greater frequency than untrained teachers; (2) trained teachers' use of low-inference indicators of clarity is consistently and significantly rated as greater than that of untrained teachers; (3) trained teachers are consistently rated as significantly more clear than untrained teachers on moderate-inference dimensions of clarity; and (4) overall instructional clarity of trained teachers is consistently rated as significantly greater than that of untrained teachers.

On the basis of these analyses, it is possible to reject the omnibus null hypothesis, and related specific hypotheses, in favor of alternative hypotheses. Preservice teachers can be trained to be more clear in their instructional presentations. Further, clarity training affects significant, positive changes in teachers' instructional clarity on each of four specific dimensions of the clarity construct.
Research Question Number Two

Will students of clarity trained preservice teachers perform better than students of untrained teachers on tests of lesson content?

Two analytic procedures were employed to address research question number two. First, a one between subjects - one within subjects analysis of variance examined changes in mean student achievement from pretraining to posttraining for twenty-eight subjects. The primary analytic procedure examined posttraining mean learner achievement to investigate differences between trained and untrained teachers (N=56).

Each teacher's ability to produce student learning was reported as mean proportional achievement of their learners. Prior to analysis, achievement data were observed to be positively distributed. As a result, tests prescribed by Kirk (1982) were performed to determine the appropriateness of data transformations. The results of these tests indicated that data analyses would be most accurate following an angular transformation of proportional achievement scores (Winer, 1962). By way of this procedure, mean proportional student achievement for each teacher was transformed using the formula:

\[ Y_{ijk} = 2 \times \arcsin X_{ijk} \]  

(Eq. 1)
where $X_{ijk}$ is an original mean proportional achievement score and $Y_{ijk}$ represents the transformed achievement score.

**Within Groups Analysis**

A mixed model univariate analysis of variance was performed on teachers' pre- and posttraining transformed achievement data. Descriptive statistics for learner achievement for the twenty-eight teachers participating in both pre- and posttraining lessons are presented in Table 30.

**Table 30**

DESCRIPTIVE STATISTICS FOR LEARNER ACHIEVEMENT FOR PRE- AND POSTTESTED SUBJECTS

(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>2.45</td>
<td>.39</td>
<td>2.28</td>
</tr>
<tr>
<td>Control</td>
<td>2.78</td>
<td>.42</td>
<td>2.17</td>
</tr>
<tr>
<td>Total</td>
<td>2.61</td>
<td>.43</td>
<td>2.22</td>
</tr>
</tbody>
</table>
These statistics reveal an interesting pattern. As can be seen, pretraining mean learner achievement is slightly greater than that of posttraining for both groups (control $\bar{X}=2.78$ to 2.45, trained $\bar{X}=2.45$ to 2.28). Although mean learner achievement decreases from pre- to posttraining for both trained and untrained teachers, a smaller decrease is seen for teachers in the training group. Further, while pretraining student achievement for control group teachers is much greater than for training group teachers ($\bar{X}=2.78$ and 2.45 respectively), this difference is reversed in posttraining lessons ($\bar{X}=2.28$ trained, $\bar{X}=2.17$ control).

It is also interesting to note that correlations between teachers' pre- and posttraining mean learner achievement were not strong. The overall correlation coefficient, as computed by Pearson Product Moment Correlation, between pre- and posttraining achievement ($r=.01$, $p<.99$) is surprisingly small.

**Analysis of Variance.** A one between subjects-one within subjects univariate analysis of variance was performed on transformed mean learner achievement data, to examine changes in teachers' student achievement from pre- to posttraining lessons. The results of this analysis are presented in Table 31.
Table 31
ONE BETWEEN - ONE WITHIN SUBJECTS ANALYSIS OF VARIANCE FOR LEARNER ACHIEVEMENT (N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>5.2433</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>.1550</td>
<td>.1550</td>
<td>0.79</td>
<td>.3817</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>5.0883</td>
<td>.1957</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>7.2441</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>2.1577</td>
<td>2.1577</td>
<td>12.70</td>
<td>.0014</td>
</tr>
<tr>
<td>Training X Testing</td>
<td>1</td>
<td>.6691</td>
<td>.6691</td>
<td>3.98</td>
<td>.0579</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>4.4173</td>
<td>.1699</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>12.4874</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 31 reveals no significant overall difference between groups in mean learner achievement. The results indicate that the most significant differences are within group differences between pre-and posttraining lessons and a strong interaction between training and testing.

In order to more fully understand these results, pretraining and posttraining mean learner achievement
for both groups was plotted. Figure 8 depicts mean learner achievement for pretraining and posttraining lessons.

**MEAN LEARNER ACHIEVEMENT ACROSS PRE- AND POSTTRAINING LESSONS**

Follow-up procedures proposed by Dunn (1961) revealed the existence of significant differences in pretraining learner achievement with control group teachers producing greater mean student achievement than
training group teachers ($\bar{X}=2.78$, 2.45, $p<.0167$).

Further, the decrease in learner achievement from pre-to posttraining is statistically significant for control teachers ($\bar{X}=2.78$ to 2.17, $p<.0125$). Trained teachers’ posttraining learner achievement is greater than that for control teachers, however, this difference and slight decrease from pretraining to posttraining lessons are not statistically significant.

The results of this analysis indicate that training in clarity does not enable preservice teachers to significantly increase the level of their students’ achievement. However, procedural flaws leading to large pretraining differences are likely to have contributed to these results (see Chapter Three, p. 204). From this analysis alone the null hypothesis, that of no significant training effects, can not be rejected.

**Between Groups Analysis**

The principal analytic procedure addressing research question number two was a two factor univariate analysis of variance performed on posttraining mean learner achievement for fifty-six randomly selected teachers. Descriptive statistics for learner achievement data (transformed) are presented in Table 32.
Table 32

DESCRIPTIVE STATISTICS FOR POST-TRAINING LEARNER ACHIEVEMENT
(N=56)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>No Pretest</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>2.28</td>
<td>.39</td>
<td>2.47</td>
</tr>
<tr>
<td>Control</td>
<td>2.17</td>
<td>.50</td>
<td>2.07</td>
</tr>
<tr>
<td>Total</td>
<td>2.22</td>
<td>.44</td>
<td>2.28</td>
</tr>
</tbody>
</table>

Table 32 reveals that learners of clarity trained teachers achieve at higher levels than learners of untrained teachers. This holds true for teachers who have participated in pretraining Reflective Teaching Lessons, as well as for those who have not. Interestingly, teachers who participate only in posttraining lessons evidence slightly greater learner achievement than pretested teachers.

Analysis of variance. In accordance with the Solomon Four Group Design, a two factor univariate analysis of variance was performed on transformed posttraining learner achievement data (N=56). The results of this analysis are presented in Table 33.
Table 33
TWO-WAY ANALYSIS OF VARIANCE ON POST-TRAINING LEARNER ACHIEVEMENT
(N=56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>.8638</td>
<td>.8638</td>
<td>4.20</td>
<td>.0455</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.0430</td>
<td>.0430</td>
<td>0.65</td>
<td>.6496</td>
</tr>
<tr>
<td>Training x Testing</td>
<td>1</td>
<td>.2555</td>
<td>.2555</td>
<td>1.24</td>
<td>.2705</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>10.6948</td>
<td>.2057</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>11.8667</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of posttraining data indicates that trained teachers produce significantly greater learner achievement than untrained teachers (X̄=2.37, 2.12). Participation in pretraining Reflective Teaching Lessons is not found to affect teachers' ability to produce student learning. Further, no significant interaction between participation in pretraining lessons and training is found. From this analysis, the null hypothesis, that of no difference in achievement between students of trained versus untrained teachers, may be rejected.
Summary

Research question number two asked whether students of trained teachers would perform better on tests of lessons content than students of untrained teachers. Two analyses were performed in order to address this question. First, a mixed model, one between subjects - one within subjects analysis of variance failed to reveal statistically significant improvements in teachers' ability to produce learner achievement before clarity training and after clarity training. However, teachers who had completed clarity training produced greater student learning than untrained teachers. A highly significant effect is found for testing condition, with all teachers producing decreased learner achievement in posttraining lessons.

The principal analysis used to address this question was a two factor univariate analysis of variance. Solely based on mean posttraining learner achievement, trained teachers are found to produce significantly greater learner achievement than untrained teachers. No significant effects for testing condition or interaction of testing and training are found.

On the basis of these results, it seems possible to tentatively reject the null hypothesis. Students of
teachers who are trained in the use of clarity behaviors perform better than students of untrained teachers on tests of lesson content.

Research Question Number Three

Will students of clarity trained preservice teachers report greater satisfaction with teaching than students of untrained teachers?

In order to address this question, learner satisfaction data for each of the randomly selected teachers was subjected to analysis. Two analyses were performed. A one between subjects - one within subjects univariate analysis of variance was conducted to determine the extent of change in learner satisfaction between pretraining lessons and posttraining lessons (N=28). The second and principal analysis for this question was a two factor univariate analysis of variance intended to examine posttraining differences in mean learner satisfaction between trained and untrained teachers (N=56).

Mean learner satisfaction was computed for each teacher using data from post lesson learner satisfaction forms. Raw learner satisfaction scores were highly positively distributed and, as a result, tests prescribed by Kirk (1982) were performed to determine the appropriateness of data transformations prior to
analysis. On the basis of these tests, it was determined that the most useful and appropriate analyses would make use of untransformed mean learner satisfaction scores.

Within Groups Analysis

A mixed model univariate analysis of variance was first employed to address this question. Mean learner satisfaction data for each of the twenty-eight teachers participating in pre- and posttraining lessons was analyzed. Mean group satisfaction and standard deviations for both pre- and posttraining lessons are presented in Table 34.

Table 34
DESCRIPTIVE STATISTICS FOR LEARNER SATISFACTION FOR PRE- AND POSTTRAINING LESSONS

(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretraining</th>
<th>Posttraining</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>5.15</td>
<td>.73</td>
<td>5.78</td>
</tr>
<tr>
<td>Control</td>
<td>5.74</td>
<td>.25</td>
<td>5.44</td>
</tr>
<tr>
<td>Total</td>
<td>5.45</td>
<td>.61</td>
<td>5.61</td>
</tr>
</tbody>
</table>
Table 34 reveals that pretraining mean learner satisfaction is greatest for students of untrained teachers. However, while a decrease in mean learner satisfaction from pretraining to posttraining lessons is observed for untrained teachers, mean learner satisfaction improves for teachers who completed clarity training.

The correlation between teachers' pretraining and posttraining mean learner satisfaction is not found to be statistically significant (r=-.02, p<.94).

Analysis of variance. Mean learner satisfaction for these twenty-eight teachers was analyzed by way of a mixed model univariate analysis of variance. The results of this analysis are depicted in Table 35.
Table 35

ONE BETWEEN – ONE WITHIN SUBJECTS ANALYSIS OF VARIANCE FOR PRE- AND POSTTRAINING LEARNER SATISFACTION

(N=28)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>27</td>
<td>8.2159</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>.2379</td>
<td>.2379</td>
<td>.78</td>
<td>.3866</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>7.9780</td>
<td>.3068</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>28</td>
<td>8.8398</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.3729</td>
<td>.3729</td>
<td>1.79</td>
<td>.1929</td>
</tr>
<tr>
<td>Training x Testing</td>
<td>1</td>
<td>3.0411</td>
<td>3.0411</td>
<td>14.57</td>
<td>.0008</td>
</tr>
<tr>
<td>Error</td>
<td>26</td>
<td>5.4258</td>
<td>.2087</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>17.0557</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of this analysis provide no evidence of overall main effects of clarity training on teachers' ability to produce enhanced student satisfaction or of differences solely due to testing condition. However, a highly significant interaction effect is evident between training and time of testing. As noted earlier, pretraining learner satisfaction is greatest for untrained teachers. However, this is reversed in
posttraining lessons. The magnitude of this interaction is depicted in Figure 9.

**MEAN LEARNER SATISFACTION ACROSS PRE- AND POSTTRAINING LESSONS**

![Graph showing pre- and posttraining lessons satisfaction](image)

Modified Bonferoni procedures were employed to evaluate the significance of within and between group differences. Differences in mean group performance prior to training are found to be statistically significant ($\bar{X}=5.74$ and 5.15, $p<.0167$) with teachers in
the control group producing significantly greater learner satisfaction than trained teachers. Also, trained teachers' mean learner satisfaction increases at a significant level from pretraining to posttraining \((\bar{X}=5.15\text{ to }5.79, p<.0125)\). The large Posttraining between group difference favoring trained teachers \((\bar{X}=5.78\text{ and }5.44)\) is not statistically significant \((p>.0250)\), while mean learner satisfaction for control teachers decreases at a sizable, but not statistically significant rate \((\bar{X}=5.74\text{ to }5.44, p>.05)\).

Although significant main effects of clarity training are not evident in overall between groups differences, training affects improvements in teachers' ability to produce student satisfaction. This, considered with the potential confounding of findings by control teachers' awareness of test material in pretraining lessons (see Chapter Three, p. 204), enables us to conclude that teachers who undergo training in clarity are positively affected in their ability to promote learner satisfaction. Teachers who undergo clarity training improve their ability to promote student satisfaction. However, the results of this mixed model analysis do not allow us to clearly reject the null hypothesis of no training effect.
Between Groups Analysis

A two factor univariate analysis of variance served as the principal analytic procedure for research question number three. Data consisted of posttraining mean learner satisfaction for fifty-six randomly selected preservice teachers.

Means and standard deviations for posttraining learner satisfaction are depicted below in Table 36.

Table 36
DESCRIPTIVE STATISTICS FOR POST-TRAINING LEARNER SATISFACTION
(N=28)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>No Pretest</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Training</td>
<td>5.78</td>
<td>.31</td>
<td>5.14</td>
</tr>
<tr>
<td>Control</td>
<td>5.44</td>
<td>.58</td>
<td>5.55</td>
</tr>
<tr>
<td>Total</td>
<td>5.60</td>
<td>.49</td>
<td>5.35</td>
</tr>
</tbody>
</table>

In Table 36, it can be seen that learners of untrained teachers report greater satisfaction with teaching than those of trained teachers (\(\bar{X}=5.49\) and 5.46, respectively), although this difference is slight.
An interesting interaction also appears. Of teachers who participate in pretraining lessons, those in the training group evidence greater student satisfaction than those in the control group ($\bar{X}=5.78, 5.42$), whereas, this pattern is reversed for teachers who only participate in posttraining Reflective Teaching. In the later instance, control teachers evidence greater learner satisfaction than trained teachers ($\bar{X}=5.55$ and 5.14). It is also interesting to note that, regardless of training condition, learner satisfaction is greatest for teachers who participate in pretraining Reflective Teaching Lessons ($\bar{X}=5.60$ and 5.35).

**Analysis of variance.** The results of univariate analysis on posttraining learner satisfaction are presented in Table 37, and further substantiate the interactions described above.
Table 37
TWO-FACTOR ANALYSIS OF VARIANCE ON POSTTRAINING LEARNER SATISFACTION
(N=56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
<td>.0114</td>
<td>.0114</td>
<td>.06</td>
<td>.8126</td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>.8901</td>
<td>.8901</td>
<td>4.42</td>
<td>.0403</td>
</tr>
<tr>
<td>Training x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing</td>
<td>1</td>
<td>2.0829</td>
<td>2.0829</td>
<td>10.35</td>
<td>.0022</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td>10.4661</td>
<td>.2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>13.4505</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results in Table 37 indicate that clarity training does not cause significant differences in teachers' ability to produce increased learner satisfaction. However, significant effects for pretesting are apparent. As noted above, learners of teachers who participate in pretraining Reflective Teaching Lessons report greater satisfaction than those of teachers who only participate in posttraining lessons. The strongest and most significant effects are found for the interaction of training and testing. This disordinal pattern is depicted in Figure 10.
The highly significant interaction between training condition and testing condition can be clearly seen in Figure 10. In order to explicate the nature of this interaction, cell means were compared by way of the Modified Bonferoni (Dunn's) procedure. The single statistically significant difference is that between pretested and unpretested training group teachers ($\bar{X}=5.78$ and 5.14 respectively, $p<.0125$). The large difference in learner satisfaction between trained and
untrained teachers who were only posttested ($\bar{X}=5.14$ and 5.55 respectively) is not statistically significant ($p>.0167$), however, it approaches significance. The sizable difference between trained and untrained teachers who were pretested is not significant ($\bar{X}=5.78$ and 5.42, $p>.0250$).

**Summary**

The results of these analyses indicate that clarity training alone does not necessarily improve teachers' ability to produce greater learner satisfaction. While trained teachers who were both pre- and posttested evidence a significant increase in learner satisfaction after training, two-factor analysis of variance fails to substantiate the effects of training. On the basis of these analyses, the null hypothesis can not be rejected. Trained teachers, generally, do not produce greater satisfaction among their learners than do untrained teachers.
CHAPTER V
SUMMARY AND DISCUSSION

This chapter is devoted to a summary and discussion of the results of the present study. Methods, procedures, and findings will be briefly reviewed. Implications and conclusions drawn from the findings will be discussed, followed by a series of research questions recommended for future research.

Summary

The broad purposes of the present study have been twofold. The primary objective of this investigation has been directed at furthering inquiry on teacher clarity. Most notably, the study has attempted to answer the question, can preservice teachers be trained to be more clear in their instructional presentations? This question was addressed by evaluating teachers' clarity across four dimensions: low-inference frequency, rated performance of low-inference behaviors, rated performance of moderate-inference indicators of clear teaching, and ratings of global, high-inference clarity.
Relatedly, two questions were asked with regard to the effects of clarity training on teachers' subsequent ability to produce increased student learning and/or satisfaction.

A second broad purpose of this study was to examine the efficacy of a research-based regimen of training in helping preservice teachers develop proficiency in using a complex teaching skill (e.g., clarity).

Specifically, the objectives of this study were: (a) to develop a research-based regimen of skill development, (b) to provide training in the use of low-inference constituents of teacher clarity to preservice teachers, (c) to compare instructional clarity of trained versus untrained teachers across the four dimensions of clarity, (d) to investigate the effects of clarity training on teachers' ability to produce increased student learning, and (e) to investigate the effects of clarity training on teachers' ability to produce increased pupil satisfaction.

A research-based regimen of training, The Clarity Training Program, was developed over a fifteen month period. The regimen incorporates techniques and procedures of training shown to be most effective in the development of complex skills. The program materials
include extensive learner and instructor manuals, prescribed classroom, laboratory, and field experiences, and formal evaluation sheets.

Preservice teachers enrolled in four randomly selected sections of ED:T&P 451 during Spring Quarter, 1989 served as subjects. In accordance with the Solomon Four Group Design, two sections were randomly assigned to incorporate The Clarity Training Program into regular course activities. Remaining sections served as control groups. Further, one training section and one control section were randomly selected for pretesting.

During week one of the quarter, subjects in pretest groups taught selected Reflective Teaching Lessons to small groups of their peers while being videotaped. At the conclusion of each lesson, learners completed a short test of lesson content, and rated their satisfaction with the lesson.

Subjects enrolled in training groups then began clarity training. During the remainder of the quarter, training groups included didactic, written, and experiential clarity activities into the regular course curriculum. Students in these sections were also encouraged to work through the Clarity Training Manual outside of class, and to complete written and practice exercises included therein. Additionally, evaluation of
students' peer and natural classroom teaching experiences was based in part on demonstration and appropriate use of the clarity skills. Aside from the incorporation of clarity training, course activities and content were identical for control and training groups.

During the final week of Spring Quarter, 1989, subjects in all participating sections of ED:T&P 451 taught prescribed Reflective Teaching Lessons to small groups of their peers while being videotaped, their learners completed tests of lesson content, and rated their satisfaction with teaching.

Measures of teachers' clarity were obtained from trained, reliable observers making use of an observation instrument developed for this study. This instrument provided four measures of clarity: a low-inference frequency, a mean rating of teachers' use of low-inference behaviors, a mean rating of teachers' use of moderate-inference behaviors, and a single, global rating of teachers' overall clarity. Learner achievement was calculated by obtaining the mean proportional achievement of each teachers' learners. Learner satisfaction was similarly calculated for each teacher.

In order to address the question, can preservice teachers be trained to be more clear, two multivariate
analyses were performed. One between subjects - one within subjects analysis revealed substantial improvements in trained teachers' clarity from pretraining to posttraining lessons and across all dimensions of clarity. Trained teachers significantly increased the frequency with which they used low-inference constituents of clarity. Ratings of trained teachers' use of low-inference clarity behaviors was also found to increase significantly from pre- to posttraining. Ratings of teachers' use of moderate-inference indicators of clarity and overall clarity of instruction also increased markedly, although not statistically.

Two factor multivariate analysis served as the principal analytic procedure for this question and revealed consistent and highly significant differences between trained and untrained teachers' clarity across all four dimensions of the clarity construct. Trained teachers were found to make significantly more frequent use of low-inference constituents of clarity than untrained teachers. Trained teachers were rated as significantly more clear than untrained teachers in their use of low-inference and moderate-inference
dimensions of clarity. Further, global ratings of teachers' overall instructional clarity significantly favored trained over untrained teachers.

The results of analyses directed at answering the question, can preservice teachers be trained to be more clear, are consistent. The instructional clarity of preservice teachers can, indeed, be improved through training. Additionally, this improvement will be manifested in all dimensions of clear teaching.

The findings of univariate analyses addressing the effects of clarity training on subsequent student achievement are less clear. Within groups analysis of variance revealed significant interaction between training and time of testing, with trained and untrained teachers' mean learner achievement declining from pre- to posttraining. This decline was substantial and statistically significant for control teachers, less so for trained teachers. Posttraining mean learner achievement favored trained teachers, but this difference was not found to be statistically significant.

Two factor, between groups analysis revealed significant but marginal (p=.05) differences in mean learner achievement between trained and untrained
teachers. Students of trained teachers did perform better than students of untrained teachers on tests of lesson content.

The results of these analyses indicate that clarity training positively affects teachers' ability to produce increased student learning. Training seemed to mediate a decline in mean learner achievement from pre- to posttraining, and to enable trained teachers to produce significantly greater learner achievement than untrained teachers. However, due to the moderate strength of this finding (p=.0362), this question should be considered in future inquiry.

The effects of clarity training on teachers' ability to produce greater student satisfaction are still more confounding. Within groups analysis revealed no significant main effects for training. Further, the most significant effects were found for the interaction between training and time of testing. Whereas control teachers evidenced greater learner satisfaction than training group teachers in pretraining lessons, posttraining learner satisfaction was considerably greater for trained teachers than for untrained. This reversal results from both a significant improvement in training group teachers' learner satisfaction from pre- to posttraining, and a marked decline in control
teachers' mean learner satisfaction over the same period. Posttraining differences favoring trained teachers were large, but not statistically significant.

Two factor between groups analysis similarly failed to provide evidence of positive effects of clarity training on teachers' subsequent learner satisfaction. No significant main effects were found for either training or time of testing. However, a significant interaction between training and pretesting was revealed. Trained, pretested teachers exhibited greater mean learner satisfaction than untrained teachers who were pretested. Conversely, untrained teachers who were only posttested produced greater mean student satisfaction than unpretested, training group teachers. Interestingly, post hoc analyses indicate the only significant difference in mean learner satisfaction to be that between pretested and unpretested training group teachers.

From the results of these analyses, it can not be concluded that clarity training enables teachers to produce increased learner satisfaction. Although training enabled teachers to increase their students' satisfaction, it did not do so to a statistically significant extent.
Discussion

The findings of this study do much to substantiate and further research of teacher clarity.

Most notably, this study supports the efficacy and effectiveness of training in the development of preservice teachers' instructional clarity. Preservice teachers who had been trained in clarity were found to be more clear than their untrained counterparts on all dimensions of teacher clarity. Clarity training appeared to most affect ratings of teachers' use of low and moderate-inference clarity behaviors. Highly significant differences were also found in ratings of trained versus untrained teachers' overall instructional clarity.

Training appears to have a lesser, although still significant effect on the frequency with which teachers make use of low-inference clarity behaviors. However, this may be more attributable to variations in lesson content than to diminished effects of training. In viewing tape recorded lessons and low-inference frequency data, it is obvious that the frequency with which teachers utilize low-inference behaviors is greatly impacted by the lesson content being presented. For example, lessons which had little explicit content, but rather required that learners create a product
(e.g., Clerihew Task) necessitated and allowed for limited use of low-inference clarity behaviors. In contrast, lengthy, highly didactic lessons (e.g., John Dewey Task) were more amenable to frequent use of low-inference behaviors.

It is encouraging to note, however, that in spite of this mediating effect on teachers' use of low-inference behaviors, trained teachers demonstrated significantly more frequent use of the low-inference behaviors than untrained teachers.

Relatedly, it is encouraging that training not only fostered more frequent use of the clarity behaviors, but that it also seemed to enable teachers to use the behaviors in ways that made their lesson presentation more clear. The observed increase in instructional clarity across all dimensions indicates that trained teachers are indeed more clear. Further, this finding validates the seventeen skills developed within The Clarity Training Program as causing or leading to instructional clarity. Teachers who develop skill in using these behaviors effectively enhance their instructional clarity in all dimensions.

Clear teachers can be made, not just born. This finding is both encouraging and notable. Previous attempts at training preservice teachers to be more
clear have met with inconsistent, often marginal results (Gloeckner, 1983; Larsen, 1985). The present study, utilizing a more systematic and intensive training regimen, provides evidence that instructional clarity can be improved through skill development activities.

The present study also provides limited support for a causal relationship between teacher clarity and student achievement. Trained teachers produced greater student learning than untrained teachers, although the statistical significance of this effect is marginal. This finding extends earlier correlational findings of a strong, positive relationship between clarity and achievement (Rosenshine and Furst, 1971; Williams, 1983; Hines, 1981, and others). Whereas trained teachers who were pre- and posttested evidenced a slight decrease in learner achievement, analysis of posttraining learner achievement for all teachers indicates a moderately significant difference favoring trained teachers ($p=.0455$).

It is the view of the investigator, however, that the results of this analysis are likely to have been diminished by the context in which learner achievement was assessed, and differences in lesson content. First, it must be remembered that control group teachers were
erroneously allowed to see the tests of lesson content prior to teaching their pretraining lessons. This was not the case for remaining teachers and lessons. Second, the tests of lesson content accompanying the Reflective Teaching Lessons may not represent the most appropriate, valid, or reliable measures of student learning of content. Third, although instructors were asked to closely monitor the administration of post lesson tests, it is reasonable to believe that cheating may have occurred. Learners were familiar with one another and the designated teachers, and the setting in which lessons were presented was somewhat relaxed. To the extent that cheating occurred, the findings of this portion of the study are open to question.

This study provides no evidence of the effects of clarity training on teachers' ability to produce increased learner satisfaction. This is somewhat surprising in view of strong correlations between teacher clarity and higher levels of student satisfaction (Hines, 1981; Rosenshine and Furst, 1971; Williams, 1983, and others).

It is possible that clarity does not, in fact, cause increased learner satisfaction. However, it is the view of this investigator that a causal relationship may indeed exist, but that the instrument used to assess
learner satisfaction in this study was not sufficiently sensitive to reliably measure this variable. Most learners rated their satisfaction at the optimal level for all teachers, thus indicating that the instrument did not require learners to make fine discriminations in their satisfaction between teachers. Further, there is evidence that learners' familiarity with teacher clarity may impinge upon their satisfaction with teaching. Unsolicited, handwritten statements on the satisfaction forms submitted by training group learners note problems in the clarity of the teacher whose learner satisfaction was being rated. This being the case, trained teachers' ratings of learner satisfaction, made by clarity trained learners, may necessarily be incomparable to those of untrained teachers whose learners have not experienced clarity training. Additionally, differences in Reflective Teaching Lesson content must be considered to have contributed to variations in learner satisfaction.

Although not intentional, the results of this study indicate that teachers' knowledge of the content test positively and often significantly affects teachers' instructional clarity, learner achievement, and learner satisfaction. Pretraining Reflective Teaching Lessons, due to a procedural error, compared teachers who were familiar with the tests of content (control group
teachers) and teachers who were unfamiliar with the tests (training group teachers). None of these teachers had received clarity training and, as a result, it may be assumed that the only difference between them was knowledge of the test they were to administer to their learners. As described in Chapter Four, control group teachers (those who had knowledge of the tests) consistently outperformed training group teachers in all dimensions of instructional clarity, student achievement, and learner satisfaction in pretraining lessons. The dramatic decline in these measures from pretesting to posttesting for control teachers provides additional evidence that knowledge of the test lead to pretraining differences. This was not an a priori purpose of the present study, and the formulation of definite conclusions is inappropriate. However, further research of the effects of teacher knowledge of the test are warranted.

In a different vein, this study provides support for the efficacy of The Clarity Training Program and the training model upon which it is based. The training model appears to be effective in promoting the development of complex teaching skills. Further, it does so within the constraints of a regular ten week teacher education course, and with a minimum of class
time. The Clarity Training Program was effective in developing preservice teachers' use of the complex clarity skills when incorporated as only one part of total course content and activity. Such a model holds promise for more effective skill development within teacher preparation.

Lastly, this study provides empirical evidence to those who argue for the inclusion of complex skill development in programs of preservice teacher preparation. The results of this study indicate that it is possible, within existing programs of teacher preparation, to help preservice teachers develop complex, research-based teaching skills prior to certification. Opponents argue that past attempts at skill development in teacher education have never been useful or effective, and sadly, this is often true. Further, they argue, it is neither reasonable nor possible to expect that preservice teacher education programs can develop every skill needed during a teacher's career, and that, as a result, skill development has no place in teacher education. However, the results of this study indicate that it is unreasonable to conclude that teacher education must forego complex skill development due to constraints of time and lack of effectiveness. Systematic and
sustained skill development activities, incorporated into the existing structure of preservice teacher education can be effective in developing teachers' use of complex teaching skills. As teacher educators, we need not totally abdicate our role in the development of professional skill to the capricious effects of extended field experiences.

**Recommendations for Future Research**

The present study, while extending the line of systematic inquiry into teacher clarity and professional skill development, also raises several questions which deserve further investigation.

1. Does clarity training *cause* differences in teachers' ability to produce student learning? Shortcomings of the present study diminish the validity and strength of findings regarding this question. Future study should attempt to investigate this question making use of validated, reliable tests of lesson content and under more closely monitored testing conditions. Further, attempts should be made to empirically equate lessons taught, or to build lessons into the experimental design as an independent variable.
2. Does clarity training cause differences in teachers' ability to produce increased learner satisfaction? Future research would do well to expand learner satisfaction measures to enhance their discriminatory power.

Questions one and two might be investigated in a setting wherein lessons were taught to students with whom neither training nor control group teachers were familiar, and who have not been trained in the clarity skills. Such a design would serve to formalize the Reflective Teaching setting and provide more reliable measures of student learning and satisfaction. Further, differences in reported satisfaction due to learners' familiarity with clarity skills would be reduced or eliminated.

3. Do preservice teachers who master and demonstrate clarity skills in laboratory teaching experiences transfer these skills to use in natural classroom teaching?

4. Do teachers who master clarity skills during their preservice coursework continue to utilize the skills during their student teaching experience?
5. Do teachers who master clarity skills during preservice coursework continue to utilize the skills inservice?

6. Can teachers be readily helped to regain previously mastered clarity skills if these skills are lost after an extended period of disuse?

Questions 3, 4, 5 & 6 address the long term effects and transfer of clarity training. Future research should be directed at following up this and subsequent studies by assessing the clarity of trained teachers at intervals beyond the conclusion of training. Similarly, research should address the efficacy of reinstating clarity skills after periods of extended disuse.

7. How intensive must training be to develop significant teacher mastery of the clarity skills? Could the Clarity Training Program be useful in the scope of a shortened, workshop format?

8. Can inservice teachers be helped to develop increased skill in clarity by way of the Clarity Training Program?
9. What would be the efficacy of integrating dimensions of teacher clarity into the evaluation process of teachers?

10. Is the research-based model of training on which The Teacher Clarity Program is based, also effective in the development of other complex, research-based teaching skills?

11. Are there differences between clear and unclear teachers, not just in the frequency with which they use low-inference constituents of clarity, but in the patterns or chains of behaviors into which these are incorporated.

12. How well do the three low-inference and moderate inference dimensions of clarity predict independent ratings of a teacher's global instructional clarity? Strong correlations between each dimension indicate that the lower-inference dimensions are good predictors of high-inference clarity in the present study. However, the high-inference rating cannot be considered independent from lower-inference ratings. Using the video taped lessons from the present investigation, future study might proceed by asking independent observers, untrained in clarity,
to rate each teacher's global clarity. Multiple regression techniques could then be employed to examine the relationship between these independent, global ratings and the three lower-inference dimensions assessed by trained observers.

13. How well do the four dimensions of teacher clarity predict the broad construct "effective teaching?" This question might easily be investigated utilizing data available from the present study. Videotaped lessons could be viewed by an independent set of observers who would rate the overall "effectiveness" of each teacher. Multiple regression techniques could be employed to examine the degree to which the dimensions of clarity can predict a given teacher's effectiveness.

14. To what extent does teacher knowledge of the test affect instructional clarity, student achievement, and student satisfaction? The results of this study, vicariously and unintentionally, indicate that teachers' knowledge of the test positively and significantly affects each of these variables. Systematic study of this issue is warranted.
REFERENCES


APPENDIX A

SKILLS DEVELOPED IN SELECTED RESEARCH-BASED
TEACHER TRAINING STUDIES
The investigators do not explicitly state skills to be developed, however, they do present the following classroom activities which are addressed in the training regimen.

A. Instructional Methods
   - Pupil self instruction
   - Focused instruction from the teacher
   - Specific instructional techniques

B. Classroom Rules

C. Grouping and Instructional Organization
   - Use of large group, small group, or individual instruction
   - Instructional organization

D. Discipline and Management
   - Pupil negative affect
   - Teacher reaction to disciplinary problems
   - Teacher monitoring, movement, and checking

E. Instructional Materials

F. Teacher Questioning and Student Responding
   - Teacher academic instructions
   - Pupil academic responses
   - Non-academic interactions
   - Quality (correctness) of pupil responses
   - Selection of pupils for questions

G. Teacher Feedback
   - Teacher praise
   - Teacher criticism
   - Teacher acceptance of pupil comments and opinions
   - Teacher feedback that terminates the interaction
   - Teacher feedback that sustains the interaction
   - Brief feedback
   - Extended feedback

(Adapted from Gage, et al., 1978)
ANDERSON, EVERTSON, AND BROPHY (1979)

The following recommended principles of teacher behavior are to be developed through training.

1. The teacher should use a standard and predictable signal to get the children's attention.

2. Once in the group, the children should be seated with their backs to the rest of the class; the teacher should face the class.

3. The introduction to the lesson should give an overview of what is to come in order to mentally prepare the students for the presentation.

4. It is also at the beginning of the lesson that new words or sounds should be presented to the children so that they can use them later when they are reading or answering questions.

5. The teacher should have the children repeat new words or sounds until they are said satisfactorily.

6. After moving into the lesson, but before asking the children to use new material or undertake new tasks, the teacher should present a demonstration or an explanation of any new activity.

7. The teacher should work with one individual at a time in having the children practice the new skill and apply the new concept, making sure that everyone is checked and receives feedback during the lesson.

8. The teacher should use a pattern (such as going from one end of the group to the other) to select children to take turns reading in the group or answering questions (rather than calling on children randomly and unpredictably).

9. To keep each member of the group alert and accountable at all times between turns, the teacher should occasionally question a child about a previous response from another child.

10. Calling on volunteers should be restricted chiefly to parts of the lesson in which children are contributing personal experience or opinions.
ANDERSON, ET AL. (CONT'D)

11. When call outs occur, the teacher should remind the child that everyone gets a turn and he must wait his turn to answer.

12. The teacher should avoid leading questions or rhetorical questions asked for effect with no answer expected. Other questioning patterns to be avoided are answering one's own questions and repeating questions.

13. At some point during the lesson, the teacher must make a fundamental decision about whether the group as a whole can or cannot meet the objectives of the lesson.

14. If the teacher decides that the group as a whole cannot reach the objectives at the same time, because of large differences in comprehension of the material, she should teach the more able students through to the end of the lesson, dismiss them, and keep in the group those who need extra help.

15. Sometimes the teacher may wish to use one or more children who have mastered the objectives to serve as models for the others.

16. If one or more children still do not meet the objectives within the time available for the lesson, tutorial assistance should be provided.

17. After asking a question, the teacher should wait for the child to respond. She should also make sure that other children wait and do not call out answers. If the child does not respond within a reasonable time, the teacher should indicate that some response is expected. She should then simplify according to Principle 19.

18. When the child is incorrect, the teacher should indicate that the answer is wrong. She should then simplify according to Principle 19.
ANDERSON, ET AL. (CONT'D)

19. The appropriate simplification procedure is determined by the type of question: If the question deals with factual knowledge that cannot be reasoned out, the teacher should give the child the answer and then move on. If the question is one that the child could reason out with help, the teacher should provide clues or simplify the question. If the clues still do not help the child, he should be given the answer. The teacher should never ask another child to supply the answer.

20. If the student answers correctly, the teacher should acknowledge the correctness and make sure that everyone else hears and understood the answer.

21. Praise should be used in moderation. The teacher should praise thinking and effort more than just getting the answer. Praise should be as specific and individual as possible.

22. Criticism should also be as specific as possible and should include specification of desirable or correct alternatives.

(Anderson, et al., 1979, pp. 196-198)
GOOD AND GROUWS (1979 AND 1981)

The following is a summary of key instructional behaviors of the system of mathematics instruction advocated by Good and Grouws.

I. **Daily Review**
   - Review the concepts and skills associated with the homework.
   - Collect and deal with homework assignments.
   - Ask several mental computation exercises.

II. **Development**
   - Briefly focus on prerequisite skills and concepts.
   - Focus on meaning and promoting student understanding by using lively explanations, demonstrations, process explanations, illustration, etc.
   - Access student comprehension
     - using process/product questions
     - using controlled practice
   - Repeat and elaborate on the meaning portion as necessary.

III. **Seatwork**
   - Provide uninterrupted successful practice
   - Momentum - keep the ball rolling, get everyone involved, then sustain involvement.
   - Alerting - let students know their work will be checked at end of the period.
   - Accountability - check the students' work

IV. **Homework Assignment**
   - Assign on a regular basis at the end of each math class except on Fridays.
   - Should involve about 15 minutes of work to be done at home.
   - Should include one or two review problems.
GOOD AND GROUWS, (CONT'D)

V. Special Review
   - Weekly review/maintenance
     - Conduct during first 20 minutes each Monday
     - Focus on skills and concepts covered during the previous week
   - Monthly review/maintenance
     - Conduct every fourth Monday
     - Focus on skills and concepts covered since the last monthly review

(From Good and Grouws, 1979, p. 357)
STALLINGS, NEEDELS, AND STAYROOK (1980)

The following are adapted from tables presented by the investigators, and represent areas of teacher classroom behavior addressed by training. The investigators do not explicitly state the specific skills which are developed within each area.

I. Interactive Instruction (Table 7)

Following training, teachers should spend more time in the following:
- Instructional activities
- Instructional interaction
- Teacher questions: reading
- Student responses: reading
- Praises/support: reading or task
- Corrective feedback: reading
- Probing questions
- Teacher interacts: different students
- Tests or quizzes
- Students reading aloud
- Reading aloud activity
- All interactions: reading

II. Non-interactive Instructions (Table 8)

Following training, teachers should spend less time in the following:
- Silent reading
- Written assignments
- Teacher without student
- Teacher: manager - no students

III. Off-task Activities (Table 9)

Following training, teachers should spend less time in the following:
- Social comments
- Interactions: behavior
- Students uninvolved in tasks
- Class instructions
STALLINGS, ET AL. (CONT'D)

IV. Organization and Grouping. (Table 10).

Following training, teachers should spend less time in the following:
- Making assignments
- Interactions: assignments and organization
- Student comments: assignments
- Total class management
- Teacher with individual students
- Teacher with individual
- Offer student choices

Following training, teachers should spend more time in the following:
- Teacher movement
- Teacher instructs group
- Teacher with group
- Teacher with total class

EMMER, SANFORD, CLEMENTS, AND MARTIN (1981)

The following list has been drawn from the investigators' description of training and presents areas of classroom behavior which are emphasized therein. The investigators do not explicitly state skills to be developed.

- Organization of classroom space and materials
- Establishing consequence systems
- First week activities
- Adjusting instruction for special groups of students
- Whole class instruction
- Student participation in class discussion
- Student movement in the room
- Routines for opening and closing the class period
- Communicating assignments
- Checking and collecting work
- Monitoring student progress
- Providing feedback to students about their work
- Describing objectives clearly
- Clear directions
- Getting students' attention
- Monitoring students' understanding
- Avoiding digressions
- Readiness of materials
- Good pacing of lessons
- Planning sufficient quantities of appropriate work
- Activities for the first week of school
- Teacher stays in charge of students
- Materials are ready
- Procedures and rules are generally well taught
- Rewarding appropriate behavior
- System of consequences is appropriate, sufficient, and effective
- Definition of and use of negative consequences

(From Emmer et al., 1981)
The following are behaviors identified as desirable, although, the investigators do not explicitly state skills to be developed in training.

1. The teacher frames a question before calling on pupil.
2. The teacher alerts pupils that they may be called on or that their work may be checked.
3. The teacher asks students about work plans or work progress.
4. The teacher asks pupils to show work or demonstrate a skill.
5. The teacher asks students to respond to other students' recitation or work activity.
6. Teacher reprimand or desist statements are communicated privately.
7. When disruptive behavior occurs, the teacher diverts the student by suggesting he or she engage in an alternate, incompatible behavior.
8. The teacher states relevant class rules or describes how a disruptive pupil should behave.
9. When a student exhibits disruptive, or off-task behavior, the teacher praises on-task behavior of other students.
10. The teacher identifies the specific student whose academic behavior being praised.
11. The teacher identifies the specific student whose non-academic behavior being praised.
12. A teacher statement conveys approval without identifying the specific student behavior being praised. The statement is rendered with emotion or enthusiasm and appropriate facial expression (e.g., smiling).
13. The teacher gives nonverbal attention, privilege, or a concrete reward to pupils because of desirable behavior.
COLADARCI AND GAGE (1984)

The investigators present the following as a summary of teaching recommendations.

Behavior Management and Classroom Discipline

1. Teachers should have a system of rules that allows pupils to attend to their personal and procedural needs without having to check with the teacher.

2. Teachers should prevent misbehavior from continuing long enough to increase in severity or spread to and affect other children.

3. Teachers should attempt to direct disciplinary action accurately - that is, at the child who is the primary cause of a disruption.

4. Teachers should keep overreactions to a minimum (even though overreactions are probably effective in stopping the misbehavior).

5. Teachers (and aides, if present) should move around the room a lot, monitor pupils' seatwork, and communicate to pupils an awareness of their behavior, while also attending to their academic needs.

Instructional Methods

6. When pupils work independently, teachers should ensure that the assignments are interesting and worthwhile and still easy enough to be completed by the pupil working without teacher direction.

7. Teachers should keep to a minimum such activities as giving directions and organizing the class for instruction. They can do this by writing the daily schedule on the board, insuring that pupils know where to go and what to do, and so on.

8. Teachers should spend at least one-third to one-half of their time teaching large groups of pupils (more than eight children). When they do teach smaller groups or individuals, they should take steps to make sure that the other pupils in the class have work to which they can attend.
9. Teachers should make abundant use of textbooks, workbooks, and other pencil-and-paper activities. These have been shown to be related to high pupil achievement. But the use of games, toys, and machines has not been found to be associated with higher pupil achievement.

10. Teachers should provide visual demonstration and phonics exercises in conjunction with reading activities.

11. Teachers should frequently conduct public (i.e., addressed to a large group or the whole class) question-and-answer sessions concerned with the academic subject matter at hand. With less academically oriented pupils, teachers may find it helpful to initiate some brief private discussions concerning personal matters.

Specific Methods for Asking Questions and Providing Feedback

12. In selecting pupils to respond to questions, teachers should use the technique of calling on a child by name before asking the question, as a means of insuring that all pupils are given an equal number of opportunities to answer questions.

13. Teachers should avoid calling on volunteers more than 10 or 15% of the time during question-and-answer sessions. It is also advisable to discourage pupil "call outs" to questions asked of other children (except possibly for less academically oriented children who may benefit from this type of activity).

14. In the interest of providing smooth, task-oriented discussion, teachers should not encourage large numbers of pupil-initiated questions and comments. It is important for teachers to listen carefully to pupils' opinions and, if a disagreement is called for, to express such disagreement to the child.
15. With less academically oriented pupils, teachers should ask easier questions that can almost always be answered correctly. When questioning more academically oriented pupils, teachers should ask more difficult questions - questions that are answered incorrectly about one-fourth of the time.

16. Teachers should give praise only for really outstanding work; also, praise is more likely to be effective with less academically oriented pupils. Mild criticism is effective in communicating high expectations ("you can do better") to more academically oriented pupils.

17. With less academically oriented pupils, teachers should always aim at getting the child to give some kind of response to a question. Rephrasing, giving clues, or asking a new question can be useful techniques for bringing forth some answer from a previously silent pupil or one who says "I don't know" or answers incorrectly.

18. With more academically oriented pupils who generally become actively involved in discussions, teachers should concentrate on getting the correct response. Therefore they should redirect questions to other pupils if the more academically oriented pupil answers incorrectly.

19. Teachers should give the answer (to both more and less academically oriented students) if the response is at least partly correct. Teachers should not simply repeat the same questions if any pupil (either more or less academically oriented) answers incorrectly, says "I don't know," or remains silent.

20. With more academically oriented pupils, teachers should use brief feedback extensively (80% or more of the time) during private, one-to-one discussions. When dealing with less academically oriented pupils, teachers should use approximately equal amounts of brief and longer feedback, tailoring their reactions to the needs of the child in each situation.
21. During reading group instruction, teachers should give a maximal amount of brief feedback, and provide fast-paced activities of the drill type.

22. During public question-and-answer sessions, teachers should occasionally give a detailed "why" explanation in answer to a question.

(From Coladarci and Gage, 1984, pp. 551-553)
The following are drawn from the observation form used to assess teachers' enthusiasm.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vocal Delivery</td>
<td>Great and sudden changes from rapid, excited speech to a whisper. Varied lilting, uplifting, intonation. Many changes in pitch.</td>
</tr>
<tr>
<td>2. Eyes</td>
<td>Characterized as dancing, snapping, shining, lighting up, frequently opening wide, eyebrows raised.</td>
</tr>
<tr>
<td>3. Gestures</td>
<td>Quick and demonstrative movements of body, head, arms, hands, and face, i.e., sweeping motions, clapping hands, head nodding rapidly.</td>
</tr>
<tr>
<td>4. Body movements</td>
<td>Large body movements, swings around, walks rapidly, changes pace. Unpredictable, energetic.</td>
</tr>
<tr>
<td>6. Word selection</td>
<td>High descriptive, many adjectives, great variety.</td>
</tr>
<tr>
<td>7. Acceptance of ideas and feelings</td>
<td>Quick and ready to accept praise, encourage or clarify. Many variations in response. Vigorous nodding of head when agreeing.</td>
</tr>
<tr>
<td>8. Overall energy</td>
<td>Exuberant. Maintains high degree of energy and vitality. Highly demonstrative. Great and sudden changes in voice, tone, pitch, and in eye, head, arm, and body movements.</td>
</tr>
</tbody>
</table>
APPENDIX B

PRETRAINING REFLECTIVE TEACHING LESSON:

THE ARROWHEAD TASK
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

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PRETRAINING REFLECTIVE TEACHING LESSON:

THE GOOD TEACHER TASK
APPENDIX E

PRETRAINING REFLECTIVE TEACHING LESSON:

THE CHEMOPATETICS TASK
APPENDIX F

PRETRAINING REFLECTIVE TEACHING LESSON:

THE SURVIVORS' TASK
APPENDIX G

PRETRAINING REFLECTIVE TEACHING LESSON:

THE MEMORY AND FORGETFULNESS TASK
ANSWER KEY
THE DISCIPLINE IN ELEMENTARY CLASSROOMS TASK

Key
Answers may be in any order.
1. Withitness
2. Overlapping
3. Smoothness
4. Momentum
5. Group alerting
6. Accountability
7. Valence and challenge arousal
8. Variety

SCORING BOX

Directions
Give each learner:
1 point for each correct answer.
The perfect test would be scored 8.

<table>
<thead>
<tr>
<th>Learner's Name</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
</tr>
<tr>
<td>TOTAL (add down)</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX J

POSTTRAINING REFLECTIVE TEACHING LESSON:

THE SPELLING DEMON TASK
APPENDIX K

POSTTRAINING REFLECTIVE TEACHING LESSON:
THE CASTLE TASK
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THE CLARITY TRAINING STUDY:
INSTRUCTORS' MANUAL
THE CLARITY TRAINING PROGRAM

Instructor's Manual

Developed by
Kim K. Metcalf
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Introduction

If a primary goal of communication is clarity of presentation, it follows that the education and training of those whose primary role is communicating must attend to engendering the ability to be clear. The Clarity Training Program (CTP) is designed to do just that; to enhance presentational clarity.

CTP derives from two sets of literature; first the literature on clarity itself and second the literature on skill training. The first is drawn from the work of numerous academics but mainly researchers at The Ohio State University who have studied the clarity of teachers for over a decade. The second set of literature emerges from the fields of occupational and industrial psychology. References to both sets of literature are found in the appendices.

Uppermost in the minds of the developers has been a determination to produce a system that would be useful to persons educating educators and trainers from both the public and private sectors. However, since the authors are preservice and inservice teacher educators, the examples contained herein are from that arena.

Donald R. Cruickshank
Kim K. Metcalf
Included in the Instructors' Manual are materials and information intended to make use of CTP successful. To the extent possible, in order to ensure the validity of the program, use the materials and exercises as suggested. Teacher educators and staff developers as well as others using CTP will find the authors have taken into account the paucity of available classroom time and consequently have made provisions for student out-of-class activities.

Most important to successful use of the Clarity Training Program is your stance. If you accept and support research findings that preparing clear communicators is important to pupil learning and satisfaction and you are enthusiastic about engendering such skills in communicators, you are well on your way toward providing a more valuable teaching experience.
The importance of clarity in teaching was heralded by Rosenshine (1971). He collected and reviewed fifty-one studies of teaching effectiveness wherein certain teacher attributes were found to be regularly associated with learner achievement and satisfaction when the socio-economic status of learners was taken into account. Said another way, Rosenshine looked for teacher abilities that might account for their being able to bring about greater pupil learning than would normally be expected of a given class of pupils. The distinguishable abilities that were most regularly associated were the teachers' clarity, variability and enthusiasm, their business-like approach to learning and their insistence on their pupils studying the content for which they would be held accountable.

Following Rosenshine's discovery, researchers in the Ohio State University College of Education, among others, have sought to determine precisely what teachers do who are perceived by their pupils as most clear. Twenty-seven specific behaviors were identified that seemed to be most important regardless of level of teaching (middle schools through university), or school subject being taught.

The twenty-seven clarity behaviors have been distilled to a more manageable seventeen subskills by combining those seemingly related and retaining only those determined through research to be most closely associated with increased pupil learning and satisfaction. In order to further promote the development of these 17 subskills, the training program has grouped these subskills into four units. As learners (trainees) progress from Unit One through Unit Four, they will work to develop three, four, five different subskills respectively.

The Units are intended to be cumulative. In other words, progression from one Unit to another implies that learners are developing new skills, and are expected to add these to their existing or previously developed repertoire.
Understanding the Clarity Training Program

As mentioned earlier, the Clarity Training Program is based upon the most recent research in effective skill training. The system itself is made up of several empirically based components to produce the most effective and efficient learning and mastery of the Clarity skills.

In order that you are familiar with the Clarity Training Program, it is suggested that you take the time to work through the student program yourself. Using this manual and the demonstration tapes, you can examine the materials in a relatively short amount of time. This will help you gain some degree of familiarity with the materials.

It is not mandatory that you perform the written exercises, however, you may find it helpful to do so. Most especially you are encouraged to perform the Skill Discrimination and Recognition exercises for each Unit. You will find that this will help you become more proficient in evaluating your students performance lessons.

When you are prepared to do so, take this manual and work through the tapes and exercises. When you feel comfortable in your own knowledge of the skills and materials, return to this introduction section of the manual.

You have now had an opportunity to become familiar with the training materials. The following sections are provided to help you understand the training program itself. Information regarding materials and their use are included. You may also find it helpful to refer to particular portions of the student manual as they are being discussed.
Overview of the Teacher Clarity Program

The Teacher Clarity Program represents a system of skill training designed upon the most recent studies of effective training practices. The program is extremely flexible to the needs and constraints of particular settings, however, the effectiveness of the training program will be diminished as utilization becomes further removed from the recommended program.

As you have seen, the training program is made up of five distinct but interrelated phases. Much of the program can be accomplished by your students outside of class, however, some in-class time will be required. The following outlines and explains the phases of the training program in the order in which they will be utilized.

Phase 1
Mode: In class, whole group
Method: Verbal and written introduction of Teacher Clarity
- Use of manual
  * Demonstration tape of Teacher Clarity
  * Group discussion of demonstration and skills
  - Teacher led, discussion questions in student manual
  * Examination of Units and skills
  - All Units and skills listed in Student Manual under "Objectives"
  * Explanation of Clarity Training Program
Materials: Student Manual, whole skill demonstration tape, video player
Time: Approximately one hour

Phases Two, Three, and Four
Note - Each of the four Units will make use of a skill development program as follows.

Introduction to the Unit
Mode: Self instruction
Method:
  * Student reads material regarding Unit from Manual
  * Student views demonstration lesson or script of lesson making use of particular Unit skills
  - Exercises in manual
  - Practice Analysis of demonstration lesson
Materials: Student Manual, Video, audio tape player or script from Student Manual
Time: (Dependent upon Unit)
  Approximately one hour but will lengthen somewhat as Unit skills become more complex

Self Practice
Method: Student plans lessons using materials included in the Student Manual

-M5-
* Student practices using skills by presenting lessons and evaluating performances
  - Audio or video tape recording of performances
  - Self Analysis Sheets from Manual
  - Students should be expected to provide the instructor with some samples of lessons and planning materials for feedback

Materials: Tape recorder (audio or video), Student Manual

Time: (Varies according to Unit)

Peer Teaching

Method:
* Student plans lessons using guidelines and materials in Student Manual
* Student teaches small group of classmates
  - May be recorded to allow student to Self Analyze
  - Peers serving as 'learners' evaluate the student
* Instructor should evaluate (using Sheets provided) and provide specific feedback regarding student performance

Materials: Tape recorder, Student Manual, Duplicated Peer and Instructor Evaluation Sheets (in Instructors' Manual)

Time:
  - Class time: two class periods per Unit (suggested)
  - Student preplanning time: approximately one hour
  - Each student should be allowed at least one peer teaching experience during each Unit

Actual Classroom Practice

Method:
* Student plans lessons to be taught to a class of natural pupils
  - Should be incorporated into field based coursework (where available)
  - Short lessons are recommended
* Student teaches lesson(s) in natural classroom
  - Should be recorded for Student Self Analysis
* Performance is evaluated and critiqued by the instructor
Evaluative Sessions

Each Unit requires an Evaluative Session to determine students' ability to adequately perform the Unit skills. The following outlines this evaluative process.

1. Students should request to take the Evaluative Session
   - You should feel that they are prepared. If you do not feel that a student is adequately prepared, have them practice until you do.

2. The student is informed of the time and setting of the session
   - This session may be either peer teaching or natural classroom teaching
   - Lesson length will vary according to the Unit
     One: 5-10 minutes
     Two: 10-15 minutes
     Three: 10-20 minutes
     Four: 15-25 minutes

3. The Evaluative Session performance using the Instructor Evaluation sheets provided
   - The student should bring and turn in all preplanning materials for this lesson

4. The instructor evaluates the lesson performance using the Instructor Evaluation sheets provided
   - This evaluation may be done as the lesson is presented or making use of the video tape
   - The student should be allowed to view the tape with the instructor and should complete a Self Analysis Sheet

5. The required Overall Score necessary for mastery of each Unit is printed on the Instructors' Evaluation sheet
   - Based upon this score, students are either to begin on the next Unit or are to continue to practice the present Unit skills until they are mastered

6. Each Unit builds upon previous Units. As a result, Evaluative Sessions assess the cumulative skills from all previous Units.
   - Skill demonstration should be clearly mastered before students are progressed to following Units.
Keys to the Role of the Instructor

The Teacher Clarity Program requires a great deal of participation by the instructor. It is absolutely necessary that you provide all students with as much feedback on their performances as possible. Evaluation practice tapes, peer teaching session, actual classroom sessions and written exercises are details that will enable the training program to work at optimum efficiency. In addition, you must oversee student practice and participation in training components. Checksheets are provided to aid you in determination of participation. You should also expect written and practice materials to be turned in on occasion.

Remember that your participation is critical to the effectiveness of the program. You must provide feedback to the students regarding both written and performance exercises. If you suspect that a student is not participating to a degree sufficient to develop skilled performance, be certain that the feedback you provide makes this clear. Relatedly, be certain that all feedback includes information telling the student exactly how to improve.

Program effectiveness will also be enhanced by frequent assessment of student practice work. Request that a number of the manual exercises not only be completed, but be turned in to you. Written worksheets (lessons plans, pre-lesson plans, skills discrimination and recognition sheets, etc.) should be evaluated using the guidelines contained in this manual. It is suggested that you request that all written work be handed in. You may find it possible only to evaluate selected exercises, but by noting student work, you may find it less difficult to diagnose student performance difficulties.

With regard to performance exercises, you should attempt to evaluate and provide feedback on as many student performances as possible. Students who are beginning a new Unit should receive highest priority. Ideally, these students would receive feedback on each of their initial performances. Realistically, this is unlikely, however, feedback provided for several performances is necessary. For students who have progresses to the later stages of a particular Unit, feedback should be less frequent. By reducing the feedback given to these students, and selectively providing reasonably frequent feedback to student early in each Unit, the necessary work load will be much less burdensome.

Related to feedback, the Evaluative Session for each Unit becomes a summative evaluation of the student's ability to skillfully incorporate all Unit skills in the presentation of a lesson. When evaluating a student in this setting, it is extremely important that you allow the student to progress to the next Unit only if she/he is very comfortable with the use of the requisite skills. Due to the cumulative nature of the program, students who have not adequately mastered a set of early skills can be expected to perform less well as they attempt to add new skills to their repertoire. Students who
do not demonstrate skilled performance in an Evaluative Session should be directed to repeat all or part of the Unit in which they lack skill. You should guide them in determining the component skills that are not adequate and be certain that they understand why the performance was not adequate.

Additionally, it is again suggested that the Clarity Training Program be incorporated into a previously existing schedule of peer and classroom teaching. Courses making use of Reflective Teaching, microteaching, mirror teaching, etc. may find it advantageous to make use of these situations for the peer teaching exercises of the Clarity Training Program. This enables use of this training system without an increase in the amount of class time needed. For actual classroom exercises, students who are doing work in natural classrooms can merely be directed to incorporate use of the Clarity exercises into their teaching.

For programs in which no previously existing schedule of peer teaching or natural classroom teaching is available, several options may be pursued. For maximum effectiveness, the Clarity Training Program should make use of peer and natural classroom teaching. One option for situations in which this situation does not currently exist is merely to organize a schedule in which these exercises may take place. Peer teaching can be organized in any of several ways, but the Reflective Teaching format is recommended (See Cruickshank, 1986). Natural classroom visitations and teaching are somewhat more problematic, however, their importance warrants their inclusion where at all possible. If it is possible to make use of the natural classroom exercises, a high degree of program effectiveness can be maintained by increasing the number of peer teaching episodes.

The emphasis of these settings is the provision of large amounts of supervised practice in varied settings and situations, and including some practice in settings that closely resemble a work (teaching) situation. Attempts to closely follow the program guidelines should be made. Where exact replication is not possible, training should remain as much like the guidelines as possible.

You, as the instructor, can play a significant role in helping the Clarity Training Program to develop effective communication skills in your students. Through your efforts to provide frequent feedback, ensure student participation, encourage much skill practice in various settings and to evaluate objectively, your students will become more effective communicators who are comfortable in their ability to utilize and perform the skills of clarity.
STUDENT MANUAL

An Introduction to Teacher Clarity

What is Teacher Clarity?
Teacher Clarity is a set or cluster of several teacher behaviors related to student achievement and satisfaction. These behaviors may seem very common sensical to you, and they may be, but well trained teachers who are skilled and consistent in the use of these behaviors can aid their pupils to better learn course material. By being skilled in teacher clarity, it is also possible to increase the satisfaction your students feel about you and your course.

When Do I Use Teacher Clarity?
On the following page are outlined and described each of the behaviors making up Teacher Clarity. As you can see, these individual behaviors are organized into four groups called "Units". Although a teacher skilled in these behaviors makes use of them throughout a lesson, the units relate to various stages of lesson presentation.

For example, Unit One: "Logically organizes instruction and instructional content" relates to the planning and early stages of lesson presentation. You must organize your lesson presentation in such a way that it can be presented to your students in a step-by-step manner, etc. By contrast, Unit Four: "Provides for student understanding and assimilation of instructional content" must occur during and after your presentation of material.

Again, remember that Teacher Clarity will need to be used throughout your teaching practice. In pre-planning your lesson, in selecting and using examples and in constantly assessing your students' understanding making use of the skills of Teacher Clarity can enable you to provide a more productive and satisfying learning experience for your students.

Teacher Clarity Objectives

The skills making up Teacher Clarity have been organized into four units. These units relate to the order in which the behaviors are likely to be used in your lesson presentations. These behaviors or skills are the objectives of your Clarity training experience. You will be expected to know and use these skills in a variety of individual, peer teaching and natural classroom situations.

Look over the skills and their explanations. Your instructor can help you if you have questions.
TEACHER CLARITY OBJECTIVES/GOALS

Unit One: The teacher logically organizes instruction and instructional content.

1. **Inform students of lesson objectives in advance.**
   The teacher begins the lesson by informing students of the content or material to be covered. This brief introduction also includes informing students of their responsibilities with respect to the material.

2. **Presents content in a logical manner.**
   The teacher plans and implements a structure of the material that enables the material to be presented in the most logical sequence. This definition implies some degree of pre-planning and structuring of material.

3. **Teaches in a step-by-step manner.**
   The teacher presents instruction and instructional content in such a way that the relationship of concepts to one another is utilized and made obvious to the students.

Unit Two: The teacher emphasizes important aspects of instruction and instructional content.

1. **Points out what is important for students to learn.**
   The teacher deliberately draws students' attention to those aspects of the content of instruction it is important for them to learn. The teacher may say, for example, 'It is important for you to know this...'; 'You must understand this...'; 'It is important for you to learn...' etc.

2. **Repeats things that are important.**
   The teacher, during the lesson presentation, repeats (for emphasis) a specific aspect of the content of instruction (e.g., point, rule, idea, etc.).
   This behavior may be initiated by the teacher or it may occur while he/she is elaborating on some statement/comment made by a student or during the review process. It does not, however, occur as a direct response to a student question or comment indicating the student does not understand something what has been said (taught).

3. **Writes important things on the board (chart).**
   The teacher stresses important words, phrases, rules, concepts, ideas, etc. by writing them on the chalkboard (chart, overhead, etc.).

4. **Summarizes the material presented in class.**
   The teacher, upon completion of the lesson or of clearly segmented portions of the lesson, provides a summary of the instructional content that was presented.
Unit Three: Explains/demonstrates how to do the work by using examples.

1. **Examples are used.**
   The teacher makes use of verbal, written or practical examples when explaining some aspects of instructional content.

2. **Works examples and explains them.**
   The teacher works through examples of problems on the board, chart, etc. and explains the procedures involved. The emphasis is to be on demonstration and explanation of the use of instructional content to solve particular problems.

3. **Explains what unfamiliar words mean.**
   The teacher tells students the meaning of word/words with which the students are or may be unfamiliar. This may occur as a result of inquiry or comment by a student, or may be initiated by the teacher.

4. **Shows similarities and differences between things.**
   The teacher describes, explains or shows how two or more things (e.g., ideas, concepts, objects, ways of doing things, etc.) are alike and/or how they are different.

5. **Explains something and then pauses to allow students time to think.**
   The teacher explains some aspect of instructional content and then deliberately pauses to allow time for students to think about what has been said. The teacher may say, 'I want you to think about that for a moment' or may simply pause.

Unit Four: Provides for student understanding and assimilation of instructional content.

1. **Repeats things when students do not understand.**
   The teacher repeats aspects of the content of instruction (previously addressed) which students directly or indirectly communicate to the teacher that they do not understand.

2. **Asks questions to find out if students understand.**
   The teacher, after explaining, repeating or reviewing some aspect(s) of the instructional content, asks a direct question (e.g., 'Is that clear?'; 'Do you understand?') or asks questions about the content presented, to determine whether or not students understand what has been presented.

3. **Allows time (pauses) for students to ask questions and answers student questions.**
   After explaining, repeating or reviewing some aspect(s) of content, or after responding to a student's inquiry, the teacher deliberately pauses to provide time for students to ask questions. When questions are asked, the teacher answers content related questions.

4. **Provides opportunities for students to practice (or work examples).**
   The teacher, during the class period, provides specific time for students to do written or practical examples related to the content of instruction. This may take the form of individual seatwork or group work. The teacher may play an active role in the case of group work.
5. Examines student work.
The teacher checks a student's work either privately (at the student's desk or at the teacher's desk) or publicly (on the chalkboard, etc.).

THE TEACHER CLARITY MODEL

Whole Group Discussion Questions

1. Was the lesson material clear to you?
2. How did the students know what they were to do? Explain.
3. How did the teacher organize the material?
4. What kinds of things did the teacher do to make the material clear to the students?
5. How was the material presented so that students would remember?
6. How was the material presented so that students would understand?
7. What did the teacher do to reinforce his verbal instructions?
8. What kinds of things did the teacher do to determine how well the students understood the material before the test?
9. What kinds of practice did the teacher have the students do? Why?

The teacher you just watched used several specific skills in presenting his "Magic Squares" lesson. Such things as logically organizing the material, making certain the students were aware of what they were to do, allowing time for students to ask questions or think about a bit of material, using charts, working examples and other techniques were used to help make the lesson more clear to the learners. Most teachers perform some of these techniques well. Research indicates, however, that the most effective teachers use more of these techniques and use them at a more skilled level.
TEACHER CLARITY TRAINING

Over the next several sessions, you are going to be working to develop proficiency in the use of the Teacher Clarity skills. This manual and your instructor will help you to progress through the activities included for your use. It is your responsibility to practice the expected skills to an extent that enables you to perform them comfortably in your teaching.

The training program is designed to provide you with information and opportunities to help you develop a high level of skilled performance in the use of Teacher Clarity. Because Clarity is made up of numerous individual skills, you will work at developing your performance of only a few behaviors at a time. These small groups of behaviors are called Units. For each Unit of skills, your activities will follow the outline below:

* Learning about the skills contained in the Unit
  - This may include reading from this manual, presentation of the skills by your instructor or combinations of these activities

* Viewing or listening to a demonstration performance of the Unit skills
  - This model will focus only on the Unit skills you are to learn at that time

* Exercises to help you learn to recognize and evaluate the use of the skills

* Individual practice of the Unit skills.
  - Outside of your regular classroom, you will be expected to practice using the Unit skills
  - The amount of individual practice recommended for developing proficiency will be given
  - Suggested exercises, lessons or activities will be provided.
  - Self analysis sheets will be provided to help you assess your performance.
  - You will find a tape recorder or video recorder with camera to make Self Analysis more accurate and convenient.

* Peer teaching practice
  - You may be given opportunities to teach short lessons (5-20 minutes) to small groups of your classmates
  - Your proficiency in the use of Units skills will be evaluated by you, your peers and your instructor

* Natural classroom practice
  - During your regular, in school visits you will be given opportunities to practice your skills while working with regular pupils.
  - Your performance may be evaluated by you, your instructor or both.
* An Evaluative Session
  - When you feel comfortable with your ability to incorporate the Unit skills into your teaching, you will notify your instructor that you would like to participate in the Evaluative Session.
  - Your Evaluative Session may take place in a peer teaching session or during a regular school lesson.
  - Your performance will be recorded and evaluated by you and your instructor.
  - If your demonstration of the Unit skills is deemed to meet the 90% criterion (based on the objectives and skills listed on pages 1-4) you will begin working on the next Unit.
  - Should your performance fail to meet the criterion level, you may be asked to continue to develop your Unit skills before re-attempting the Evaluative Session.
UNIT ONE SKILLS

It is now time for you to begin work to develop the Clarity skills. Unit One is made up of a General Unit definition and three Specific skills. Use the written information that follows to become familiar with the Unit One skills.

General Unit definition: The teacher logically organizes instruction and instructional content.

Unit One Specific Skills
1. Informs students of the lesson objectives in advance.
Explanation: The teacher begins the lesson by informing the students of the content or material to be covered. This brief introduction also includes informing students of their responsibilities with respect to the material.
Reminding: Research has shown that students perform better when they have been made aware of what it is they are going to have to do. By informing students in advance, we help them organize and focus on material.

2. Presents content in a logical manner.
Explanation: The teacher plans and implements a structure of the material that enables the material to be presented in the most logical sequence. This definition implies some degree of pre-planning and structuring of material.
Reminding: Rather than simply presenting information, it is helpful to organize your presentation in the most reasonable and logical manner.

Explanation: The teacher presents instruction and instructional content in such a way that the relationship of concepts to one another is utilized and made obvious to the students.
Reminding: It is easier for all of us to remember things when these "things" are all related to one another. Helping students see this relationship will aid their comprehension.

In order to meet the criterion level of performance, you will be expected to exhibit the three specific Unit skills throughout several lessons. Both the number of times these skills are clearly demonstrated and the quality of skills demonstrated will be evaluated.

The following pages are intended to help you learn to appropriately use the Unit One Skills. Carefully follow the procedures and spend as much time as necessary to feel comfortable with each step in the process of your skill development.
DEMONSTRATION

Now you will begin learning to identify and perform the Unit One skills. Obtain the demonstration tape for Unit One and for your area. Be certain to sign it out on the appropriate forms.

As you watch and listen to the demonstration of Unit One, pay special attention to the three skills of Unit One. As you view the lesson, you should be able to answer the following questions.

* Did the teacher explain the lesson objectives to the students?
  - How were they explained?
  - How many objectives were presented?
  - When were these objectives presented (early in the lesson, late in the lesson)?

* Did the teacher present the content in a logical manner?
  - What organization or logic was used?
  - Was it obvious that the teacher had planned this beforehand?
  - How did the teacher make the logic of the presentation known to the students?

* Did the teacher use a step-by-step method of presenting the material?
  - How did the teacher relate each step to those before it?
  - How many times did the teacher specifically explain the relationship of one concept to another?
DEMONSTRATION

Now you will begin learning to identify and perform the Unit One skills. Obtain the demonstration tape for Unit One and for your area. Be certain to sign it out on the appropriate forms.

As you watch and listen to the demonstration of Unit One, pay special attention to the three skills of Unit One. As you view the lesson, you should be able to answer the following questions.

* Did the teacher explain the lesson objectives to the students?
  - How were they explained?
    Topic, worksheet and directions, play instruments
    Included both teacher and student responsibilities
  - How many objectives were presented?
    Four (Topic, worksheet, talk about pictures, playing instruments)
  - When were these objectives presented (early in the lesson, late in the lesson)?
    At the beginning

* Did the teacher present the content in a logical manner?
  - What organization or logic was used?
    By how the instrument families are named (made of, sound produced)
  - Was it obvious that the teacher had planned this beforehand?

  - How did the teacher make the logic of the presentation known to the students?
    By explaining how instrument families get their names
* Did the teacher use a step-by-step method of presenting the material?
  - How did the teacher relate each step to those before it?
    By continuing to relate how the instrument families were named to each particular instrument.

  - How many times did the teacher specifically explain the relationship of one concept to another?
    Six
Teacher: We’re going to spend the time today learning about the families of instruments. I have pictures of the instruments that we can talk about and a worksheet that I want you to fill in as we go along. At the end of class, I will let each of you play some of the instruments I have here.

***************

Teacher: The first thing to remember is that the families of instruments get their names in one of two ways. Either the way the sound is made, or the type of material used to make the instrument.

(pause)

There are five families of instruments. These are listed on your worksheet. They are Strings, Brass, Percussion, Woodwinds and Keyboards. If instruments get their names either by the way the sound is made, or by the material the instrument is made of, how do you suppose the family of Strings get their name? Stephen?

Stephen: Because they have strings.

Teacher: Okay, they have strings. What about the strings, though?
Stephen: That's how the sound is made.

Teacher: Good. Strings get their names because the sound is made by the strings on the instrument.

(pause)

Look at these pictures of the instruments. Which instruments look like they would be members of the String family?

Students: Violins!

Teacher: Alright, the violin makes sound using the strings so it is a member of the String family. What others?

Student: The string bass.

Teacher: That's a giveaway! The string_bass. What others?

Student: The harp.

Teacher: Good. The harp, see the strings?

Student: What about the guitar?

Teacher: Is the sound made by the strings?

Student: Yeah.

Teacher: Right, so the guitar is a member of the String family.

************
Okay. We've talked about the Strings, Brass, Woodwind and Keyboard families. The family we have left is the Percussion family. Does anyone know what the Percussion family is?

(pause)

What instruments have we not yet named?

Student: Drums?

Teacher: Right, Darla. Drums are a member of the Percussion family. Percussion instruments get their name from the way the sound is produced. How is the sound made on a drum?

Student: You hit it with a stick!

Teacher: Right. You hit the drum with a drumstick or mallet to make the sound. So how do the Percussion instruments get their name?

Students: You hit them to make the sound.

Teacher: So what other instruments in our picture are in the Percussion family?

Teacher: So we have five families of instruments. How do they get their names? John?

John: By what they're made of or what makes the sound.
Teacher: Alright. The families get their names from the material that they are made of, like brass, or by the way the sound is made, like Strings, Percussion, Keyboard and some Woodwinds...

********

Now return to page 8 and write answers to the questions.
SKILL DISCRIMINATION

For each skill presented, identify the teacher statement that best exemplifies the skill by circling the letter preceding the statement. After you have selected the most appropriate answer, use the space provided to explain your answer.

1. Skill: Presents content in a logical manner.
   A. "I'll have them analyze the symbolism Steinbeck uses in the first two chapters and then we'll talk about the plot."
   B. "I think I should begin by talking through what they have read, then I'll begin relating that to the plot."
   C. "I'd better start by explaining the plot and then we'll analyze the symbolism Steinbeck uses."

2. Skill: Informs students of objectives in advance.
   A. "The reading for today was about the layers of the skin. We're going to talk through it and then I have a short worksheet for you to do and turn in."
   B. "The assignment today was to read the section on the skin. The outer layer of the skin is called what?..."
   C. "You were to read the section on the skin for today. During class I'll be reviewing the for you."
SKILL DISCRIMINATION

For each skill presented, identify the teacher statement that best exemplifies the skill by circling the letter preceding the statement. After you have selected the most appropriate answer, use the space provided to explain your answer.

1. Skill: Presents content in a logical manner.
   A. "I'll have them analyze the symbolism Steinbeck uses in the first two chapters and then we'll talk about the plot."
   B. "I think I should begin by talking through what they have read, then I'll begin relating that to the plot."
   C. "I'd better start by explaining the plot and then we'll analyze the symbolism Steinbeck uses."

   Excerpt B uses logic of what they possess related to what the teacher wants them to gain. More complete than A or C.

2. Skill: Informs students of objectives in advance.
   A. "The reading for today was about the layers of the skin. We're going to talk through it and then I have a short worksheet for you to do and turn in."
   B. "The assignment today was to read the section on the skin. The outer layer of the skin is called what?..."
   C. "You were to read the section on the skin for today. During class I'll be reviewing that for you."

   A is most complete. B is not adequate and C lacks the objectives of student responsibility.
3. **Skill: Presents material in a step-by-step manner.**

A. "In singles, you begin each point by serving diagonally into the small service court on the other side... after the serve is returned, a shot is good if it is within or on the inside white lines... You play to fifteen points..."

B. "For singles badminton matches, you play to fifteen points... Any shot is good if it is on or within the inside lines... You have to serve diagonally into the small service court..."

C. "You serve diagonally across into the service court on the other side of the net... You play to fifteen points, but only the server can score... Any shot that is on or within the inside lines is good..."

A is the most orderly sequence. C is close but the "15 points" should be last in the sequence.

4. **Skill: Teaches in a step-by-step manner.**

A. "... and you follow through with the shooting hand. You do all that with your feet behind the free throw line and square to the basket."

B. "You line up with your feet behind the free throw line and square to the basket, like this. When you shoot, you follow through with the shooting hand. Usually its a good idea to bounce the ball a couple times and take a slow breath before you shoot to help yourself relax."

C. "... I line up with my feet behind the free throw line and square to the basket. Usually its a good idea to bounce the ball a couple times and take a slow breath to relax, I set myself for the shot, and follow through with the shooting hand."

C is the most clearly sequential.
5. Skill: Teachers in a logical manner.

A. "I want them to learn to write the numbers '1', '2' and '3.' I'll start with '1' and work to '3' because '1' is the easiest to write and they already know to count starting with '1'."

B. "I want them to be able to write the numbers '1, 2 and 3'. Most of them enjoy making squiggle marks so '3' would be fun for them. I'll start there, go to '1' because it's easy and then to '2'."

C. "I want them to learn to write the numbers '1, 2 and 3'. I'll show them all three and let them make whichever they choose. Then we'll learn the order."


A. "We're going to learn to draw three dimensional figures today."

B. "Today, we're going to learn about three dimensional drawings. I have several examples that we can look over and then I'll show you how to go about making a three dimensional drawing."

C. "We're going to learn to draw three dimensional figures today. I have some examples of three dimensional drawings for us to look at and then I'll show you how to make a three dimensional drawing. The last portion of class, you will
5. **Skill: Teaches in a logical manner.**

A. "I want them to learn to write the numbers '1', '2' and '3'. I'll start with '1' and work to '3' because '1' is the easiest to write and they already know to count starting with '1'."

B. "I want them to be able to write the numbers '1', '2' and '3'. Most of them enjoy making squiggle marks so '3' would be fun for them. I'll start there, go to '1' because it's easy and then to '2'."

C. "I want them to learn to write the numbers '1', '2' and '3'. We always start with '1' when we count, so I'll start with it now."

A makes use of previous knowledge and ease of production. As such, it is the most logical.

---

6. **Skill: Informs students of objectives in advance.**

A. "We're going to learn to draw three dimensional figures today."

B. "Today, we're going to learn about three dimensional drawings. I have several examples that we can look over and then I'll show you how to go about making a three dimensional drawing."

C. "We're going to learn to draw three dimensional figures today. I have some examples of three dimensional drawings for us to look at and then I'll show you how to make a three dimensional drawing. The last portion of class, you will make a simple three dimensional drawing of a house."

C is the best example because it is the most complete.
7. **Skill:** Teaches in a step-by-step manner.

A. "You should have selected a good piece of wood with no knots. When you get to this stage, you sand with the grain, back and forth, until all the plane marks are gone."

B. "When you sand the piece of wood, you need to sand with the grain until you get out all of the plane marks. So you see, it's important that, before you do any of that, you need to select a good piece of wood."

C. "You're going to have to sand all the marks out of the wood, sanding with the grain. That's why we selected a good piece of wood for the planer."

8. **Skill:** Informs students of objectives in advance.

A. "Watch carefully as I show you how to prepare the mushrooms because you will have to do this for yourselves in a few minutes."

B. "...and that's how they are prepared. Now each of you select a partner, get the materials from the counter, and prepare the sauce as I just showed you."

C. "We're making spaghetti sauce today. There are a few points, preparing the mushrooms, for instance, that I want to show you. Then, you will group into pairs and prepare the sauce yourselves."

A. "You need to select a good piece of wood with no knots. When you get to this stage, you sand with the grain, back and forth, until all the plane marks are gone."

B. "When you sand the piece of wood, you need to sand with the grain until you get out all of the plane marks. So you see, it's important that, before you do any of that, you need to select a good piece of wood."

C. "You're going to have to sand all the marks out of the wood, sanding with the grain. That's why you want to use a good piece of wood for the planer."

C indicates that the excerpt is taking place before other actions.

8. Skill: Informs students of objectives in advance.

A. "Watch carefully as I show you how to prepare the mushrooms because you will have to do this for yourselves in a few minutes."

B. "...and that's how they are prepared. Now each of you select a partner, get the materials from the counter, and prepare the sauce as I just showed you."

C. "We're making spaghetti sauce today. There are a few points, preparing the mushrooms, for instance, that I want to show you. Then, you will group into pairs and prepare the sauce yourselves."

C is most complete.
9. **Skill: Teaches in a logical manner.**

A. "As we talk about the Judicial system, I know we have an appellate court judge in the school district, so I'll start at the appellate court level and use him as a speaker to increase interest. Then I'll work backward from there to the local level and then up to the Supreme Court."

B. "As we talk about the Judicial system, I think I'll start with the local courts and work up through the Supreme Court. That may help them see how cases might move through the system."

C. "I'd better divide this unit up to make it more logical. The local courts have separate divisions for juvenile and adult cases and the kids know some students who were sent through the juvenile division, so I'll separate the unit into juvenile and adult."

10. **Skill: Informs students of objectives in advance.**

A. "Since you folks didn't seem to be taking notes, take out a sheet of paper. We're going to have a short quiz."

B. "I'll be presenting lots of information so pay close attention."

C. "I will be presenting a lot of information today so you should all take good, clear notes as we go along."
9. **Skill: Teaches in a logical manner.**

A. "As we talk about the Judicial system, I know we have an appellate court judge in the school district, so I'll start at the appellate level and use him as a speaker to increase interest. Then I'll work backward from there to the local level and then up to the Supreme Court."

B. "As we talk about the Judicial system, I think I'll start with the local courts and work up through the Supreme Court. That may help them see how cases might move through the system."

C. "I'd better divide this unit up to make it more logical. The local courts have separate divisions for juvenile and adult cases and the kids know some students who were sent through the juvenile division, so I'll separate the unit into juvenile and adult."

B offers the clearest development and organization.

10. **Skill: Informs students of objectives in advance.**

A. "Since you folks didn't seem to be taking notes, take out a sheet of paper. We're going to have a short quiz."

B. "I'll be presenting lots of information so pay close attention."

C. "I will be presenting a lot of information today so you should all take good, clear notes as we go along."

C is the most complete example.
Skill Recognition for Unit One

The following are short exercises intended to help you learn to recognize the use of the Unit One skills. As you progress, you are to mark your answers in this manual. This completed exercise should be turned in to your instructor. If you are having difficulty, you may wish to review the Unit skill explanations on page ?

Items 1-10 are short excerpts from or information about a teacher's lesson. For each example, mark the skill being demonstrated by circling the letter of the most appropriate response.

1. "After the incision is made, it is necessary to locate the stomach."
   

2. "The first fifteen minutes of the period, we will spend reviewing yesterday's assignment. For the remainder of the period, we will discuss the use of appropriate adverbs and adjectives."
   
   Skill: Informs students of objectives in advance.

3. The teacher examines the lesson for tomorrow. It is to include learning the cursive letters 'R' and 'T'. The teacher decides to begin by relating the new cursive letters to the block printed letters they are familiar with. Then show them how to write the letters and then have them practice writing the letters themselves.
   
   Skill: Presents content in a logical manner.

4. "In the lesson today, you will learn to recognize the appropriate uses of 'la' and 'el'. You'll have a worksheet to do and then a homework assignment for tomorrow."
   
   Skill: Informs students of lesson objectives in advance.

5. "When you have added the aluminum chloride to the solution, you will heat the solution to boiling before continuing."
   

6. "When I planned the material yesterday, it seemed to me the material could be divided into four areas each dealing with similar ideas. I will present it this way and tell the students of the four areas. Maybe that will help them organize the ideas."
   
   Skill: Presents content in a logical manner.
7. "We are learning to add three digit numbers. Remember how we added two digit numbers? We added the ones column, carried to the tens column and added, then wrote the total down here, right? In adding three digit numbers, we add the ones column, carry and add the tens column, carry and add the hundreds column."


8. "Today, we'll be working on learning to do a front dive. I'll show you how and then I'll give you time to practice. At 9:45, you'll each have to show me you are able to do a front dive."

Skill: Informs students of lesson objectives in advance.

9. "I want the children to learn to use scissors and to follow a line when cutting. I also need to start helping them learn about shapes. I'll draw some large shapes on colored paper and have them cut them out."

Skill: Presents content in a logical manner.

10. "When you do a front dive, one foot goes in front, with toes over the side. You put your arms up over your head, like this, bend at the waist, and let yourself begin to fall forward. As you do, push off with your feet."


For each of the following skills, write an example of what you, as the teacher, might do or say. Use concepts or material from your area.

1. Informs students of lesson objectives.

   Look for inclusion of student and teacher responsibilities.


   Look for sequential implications.
**Skill Analysis**

As a teacher skilled in using Teacher Clarity, it is important that you be able to accurately evaluate use of the Clarity skills. It may be helpful to you to learn to do this by using the following simple analysis sheet to evaluate the demonstration lesson you viewed earlier.

**SKILL ANALYSIS SHEET**

Unit One Skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Presented objectives in advance of content.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Notified students of their responsibilities.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Material presented in a logical manner.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Pre-planning was apparent.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Teacher used a step-by-step approach.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>New concepts were directly related to previous concepts or material.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

**OVERALL ANALYSIS SCORE**

The analysis sheet above is a simplified version of the same analysis sheet your instructor will use to evaluate your use of these skills. It is identical to the sheet you will use to evaluate your own use of the Unit One skills.

Carefully look over the sheet and the skills listed. Do you feel you can recognize them in use? Were you able to answer the questions relating to the demonstration? If not, you may wish to look back at page 7 and review the skill descriptions and exercises. When you feel comfortable recognizing the skills, go to the section on the following page.
After you have read the skills to be demonstrated, and feel comfortable with your ability to recognize the skill, look at the column at the right side of the analysis sheet.

Each skill is followed by a rating scale of 1 (very poor) to 5 (very good). This rating or judgement is made based on how well the teacher used or demonstrated each skill. After viewing or witnessing a performance, you should circle the number you feel best rates the particular skill.

The final analysis score is obtained by entering the total rating points at the bottom of the column. In order to meet the criterion level of mastery, a score of 80%, or 24 total points must be attained.

Now review the demonstration lesson or use the script on page 9. After you have reviewed the lesson, calculate the rating total from the right hand column and enter it in the space at the bottom of the column.

Did the final evaluation score meet the 80% criterion level of 24?

If you do not feel comfortable with any of the previous material, you should return to the page or pages that explain and provide practice with the information. When you do feel comfortable with all material covered up to this point, you should move on to the Skill Development section.
DEVELOPING THE UNIT ONE SKILLS

Instructions
On the following pages, several exercises and suggestions are provided to enable you to practice your use of the Unit One skills. Also provided for your practice sessions are self analysis sheets to help you evaluate your skill development. The exercises included in this section are intended to help you develop and learn to correctly use the three Unit One skills. They are provided for your benefit. You should use as many of them as necessary to achieve comfortable, consistent performance of these skills.

Guidelines
In order to best utilize the following practice exercises, several guidelines will be helpful.

* Keep lessons short
  - 5-10 minutes
  - Start with 5 minute lessons and gradually lengthen

* Pre-plan each lesson
  - Use the lesson plan and instructions provided

* Record your lesson performances
  - Use an audio tape recorder
  - Use video tape recorder with audio capabilities

* Evaluate each lesson performance
  - Use the tape you have made
  - Use the Self Analysis Sheets provided

* You should provide your instructor with copies of your lesson pre-plans and tapes to obtain feedback

* Practice several different lessons to enable yourself to perform the skills naturally
  - Try to make use of the skills any time you are presenting material to others (student teaching, speaking, etc.)
  - You may find 3-4 hours of practice in various settings is necessary for you to adequately develop your skills

* Practice your skills in as many different situations as possible
  - Practice alone using your tape recorder performances
  - Practice with a group of your classmates
  - Practice in your actual classroom placement in schools

Practice

* Choose a very basic skill or concept from your subject area and prepare a five minute lesson to teach this concept or skill
  - Be certain you can teach this lesson in the time allowed
  - Use the lesson pre-plan guidelines as a way for organizing your lesson
Remember that the three skills you need to develop are:

- Informing students of the lesson objectives in advance
  - To do this you must determine what the lesson will cover
  - You must also determine what the students will be expected to do
- Presents content in a logical manner
  - How can you best organize the material to help students understand
  - Does this organization seem logical to others (ask)
- Teachers in a step-by-step manner
  - What order of presentation builds most closely one step on another
  - What will you say to relate each step to previous steps

The lesson pre-plans on the following pages are organized in order to help you address these skills and questions.

- For each lesson you perform, use the pre-plans for organizing your thoughts
- When requested, use the format for lesson planning suggested by your instructor for actually planning your lesson
- Be sure to follow your lesson plans in order to include the three skills
Lesson Skill or Concept:

Desired lesson length:

What are the objectives of the lesson?
A. What material (aspects) will you cover?
   1.
   2.
   3.
   4.
B. What will you expect the students to do?
   1.
   2.
   3.
   4.

What is the most logical breakdown of the material?
A. What major categories?
   1.
   2.
   3.
B. What minor categories?
   1.
   2.
   3.
   4.
   5.
You have had an opportunity to pre-plan and plan your lesson. Now you are ready to practice using the three skills in presenting a lesson.

* "Teach" your lesson alone
  - Record your lesson on tape
  - Time your lesson (allow yourself only 5-10 minutes)
  - Concentrate on following your pre-lesson and lesson plan and on using the three criterion skills

* Use the enclosed self analysis sheets to evaluate your lesson
  - Score the skills as you review the tape
  - Rate the skills upon lesson completion
  - Determine your overall analysis score

* Did you reach the criterion of 28 points?
  - Complete all portions of the Self Analysis Sheet

* Do others feel your performance was skilled?

* After presenting and analyzing your lesson, you should repeat the procedure with a different skill or concept
  - Follow the same procedure of pre-planning, planning, presenting with recording and analyzing
  - As you feel more comfortable, ask others (classmates, your instructor, etc.) to evaluate your recorded performance

* When you have repeated the procedure enough to feel comfortable in your skills in a variety of situations, you may wish to attempt the Evaluative Session for Unit One with your instructor.
  - You should have practiced adequately on your own and be able to meet the criterion level of 28 points
  - You should have practiced using the Unit One skills in Peer Teaching and/or natural classroom lessons and have met the criterion level consistently
  - Your instructor must agree that you are prepared for this session
The Evaluative Session

When you are prepared to do so, you may request to participate in your Evaluative Session of the Unit One skills. The following suggestions will help you understand this session.

* You will teach a brief lesson
  - Lesson length will be specified by your instructor
  - You may be evaluated while peer teaching a group of your classmates or while teaching in a natural school classroom

* Your performance will probably be recorded

* You should follow the procedures of pre-planning your lesson using the pages provided
  - Bring your pre-lesson plan with you to your Evaluative Session
  - Be certain to address all skill areas

* Your performance will be evaluated by your instructor
  - You may also be asked to evaluate your performance via the tape
  - You and your instructor will view the recording together and discuss strengths and weaknesses

* Your instructor will recommend either that you move on to Unit Two, or that you continue to develop your skills in Unit One
  - An instructor evaluation score of at least 28 is necessary to continue on to Unit Two
  - The amount of repetition necessary on Unit One is dependent upon the degree to which you feel it helps you improve

* When you have mastered Unit One, you may begin developing your performance of the more advanced Unit Two Skills

CONGRATULATIONS!
Self Evaluation Sheet
Unit One Skills

<table>
<thead>
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</tr>
<tr>
<td>Concepts were directly related to previous concepts or material.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

1. Which skills were strongest in quality? Explain why?
2. Which skills were not of high quality? Explain.

3. What must you do differently to make your next lesson more clear?
PEER ANALYSIS SHEET
Unit One Skills

For each skill listed below, use the scale (1 to 5) to rate the demonstration of each skill (1 is weak, 5 is strong) and provide comments and suggestions regarding the teacher's performance.

1. Informs students of lesson objectives in advance.
   1 2 3 4 5

2. Presents content in a logical manner.
   1 2 3 4 5

   1 2 3 4 5
## INSTRUCTOR EVALUATION SHEET

### Unit One Skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>Presented objectives in advance of material.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>Notified students of their responsibilities.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>Presented content in a logical manner.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>Pre-planning was apparent.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>Used a step-by-step approach.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
<tr>
<td>New concepts were directly related to previous concepts or material.</td>
<td><img src="https://example.com" alt="Score" /></td>
</tr>
</tbody>
</table>

### OVERALL EVALUATION SCORE

- EVAL 1 -

### COMMENTS

1. Presents lesson objectives in advance.

2. Presents content in a logical manner.

UNIT TWO SKILLS

General Unit Definition: The teacher emphasizes important aspects of instruction and instructional content.

Specific Unit Skills:
1. Points out what is important for students to learn.
   Explanation: The teacher draws students' attention to those aspects of the content of instruction it is important for them to learn. The teacher may say, for example, "It is important for you to know this..."; "You must understand this..."; "It is important that you learn..."; etc.
   Reminding: As students, we are interested in understanding what we have to know. When using this skill, you determine the most important aspects of the lesson and deliberately help students understand their importance.

2. Repeats things that are important.
   Explanation: The teacher, during the lesson presentation, repeats (for emphasis) specific aspects of the instructional content (a point, a rule, an idea, etc.).
   Reminding: You may use this skill because you feel a point, rule, etc. bears repeating or you may repeat this material as a result of a comment by a student. For example, you have presented a rule and a student applies it to an example. You could include repetition of the rule in an elaboration of the student's response.
   This skill is not intended to be used in response to a student question or comment indicating that the student does not understand the rule, idea, etc.

3. Writes important things on the board (chart).
   Explanation: The teacher stresses key points, words, phrases, rules, concepts, ideas, etc. by writing them on the chalkboard (chart, etc.).
   Reminding: We have all had teachers who stood at the lectern or desk and merely lectured. When they presented important or significant aspects of content, they made no change in their presentation. Often, it is difficult, as a student in a class like this, to determine what is important: names, key terms, and so forth. By writing these things on the board, you (the teacher) can make these things clearer to your students.

4. Summarizes the material presented in class.
   Explanation: At the conclusion of a lesson, or at appropriate points within the lesson, the teacher provides a summary or reviews material that was covered.
   Reminding: Clear teachers help students check themselves and their notes by reviewing or summarizing important aspects of the lesson. This helps to reinforce the students retention of and recognition of important content.
For Unit Two performance, you will be expected to exhibit the four skills of this Unit and the previous three skills from Unit One. Remember that both the number of times you use the skills and the quality of your skill performance will be evaluated.
DEMONSTRATION

Obtain the Unit Two tape for your area and level or use the script provided on page 33. As you view the demonstration lesson, watch and listen for the four new skills to be utilized. You should answer the following questions to help you recognize the skills.

*Did the teacher point out what was important for students to learn?

- What kinds of statements were used?
  "You need to remember..."

- Did the students seem to respond?

*Did the teacher repeat things that were important?

- Do you remember any of the points that were repeated?
  Setting, characters

- Was this repetition teacher initiated or used to elaborate on a student's response?
  Both were used.

*Did the teacher write important things on the board?

- Were there things that you felt should have been written on the board that were not?

*Did the teacher summarize material?

- Did this happen within the lesson?

- Was it too detailed, not detailed enough or appropriate?

*Were the three Subgroup One skills used?

  Yes. All three were demonstrated.
Teacher: "I want to help the students get ready to write a story using the four story elements we've been talking about, so I'll begin by helping them recall the elements themselves and what they mean. Before they have to begin writing on their own, I'm going to have them develop a story as a group about a picture and then we'll identify the particular elements. The next step to preparing them to write will be to have them make lists of various settings and characters they might use in their own story. This will give them a head start on their story and give me a chance to see if they understand what characters and setting are.

**********

Teacher: "We've been spending the last few days talking about the parts or elements of a story. Does anyone remember what the elements are?"

(pause)

What is one part...Damon?

Damon: The plot.

Teacher: Good, Damon. The plot is one part."
(writing PLOT on the board)

What is another part?
Kathy?

Kathy: Characters.

Teacher: (writing CHARACTERS on the board)

Right, Kathy. We have to have characters in our story.

What is another part we have to have in a story? Lori?

*************

Teacher: There's one more part of a story we haven't listed yet. What is that?

(pause)

What else do we have to have in a story? Jeremy?

Jeremy: Sentences.

Teacher: Okay, Jeremy, we have to have sentences, but that isn't one of the parts of the story we talked about. What was the other part of the story we talked about? Tony?

Tony: The setting?

Teacher: Right! (writing SETTING on the board) We have to have a setting. So, we have plot, characters, an ending and a setting.

Writes important things on the board (chart).

Summarizes the material presented in class.
What we're going to do today is: I have a picture here (pulls out a large picture of a boy and girl playing marbles). We're going to make up a story about this picture. We'll start up here with LeAnn and LeAnn will tell the first sentence of our story. Then we'll go right down the rows and everyone will give a sentence, so we build our story. Then, we'll go back and decide what the part or elements, like plot or setting, of our story are. Then you are each going to begin writing your own story. Okay, LeAnn, what's the first sentence of our story going to be?

Teacher: Alright, now that we've made up our story, we're going to go back and decide what each of the parts of our story are. First of all, who are the characters in our story? Jason?

Jason: The boy and the girl.

Teacher: The boy and the girl. Wasn't there another character? Damon?

Damon: The cat.

Teacher: Right. So the characters, the characters of our story, are the boy, the girl and the cat.
Now, what is the setting? Jason?

Jason: The forest.

Teacher: Good, the forest. Where else? Kathy?

Kathy: The lake where they went swimming.

Teacher: Okay, you told us part of the plot too, but the lake is part of the setting. What else about the setting?

(pause)

Remember the setting has to tell us when and where. Jason?

Jason: A sunny day.

Teacher: Good, Jason. A sunny day. Anything else about the setting? Tony?

Tony: It was peaceful.

Teacher: Right. Remember, Shari said it was a peaceful day in the forest.

Okay. The setting was a peaceful forest and a lake on a sunny day. Right? The setting tells us when and where, when and where.

Now, what was the plot to our story (pointing to 'plot' on the board). Shari?

*******************************
Teacher: So, in our story, we have a plot: which told us what happened, we have a setting: telling us where and when the story took place, we have characters: the boy, the girl and the cat, and we have an ending: telling us that "they lived happily ever after."

(pauses)

Alright? We've talked about the parts of the story. Be sure you remember we have to have four parts: (pointing to the board) the plot, the characters, the setting and the ending.

(pause)

Now, I want each of you to take a sheet of paper, and each of you is getting ready to write your own story. I want you to write five characters (pointing to the board) that you might use in your story and I want you to write five settings (pointing again) where and when your story might take place. I'll be walking around to see how you're doing and if you have a question, I'll help you...

Now return to page 32 and write your answers to the questions. When you have completed that, use the spaces provided on the script to label the skills demonstrated from earlier Subgroups.
SKILL DISCRIMINATION

For each skill labelled below, identify the teacher statement that best exemplifies the skill by circling the letter preceding the statement. For each selection, you should use the space provided to explain your answer.

1. Skill: Repeats things that are important.
   A. "Shoes are called 'zapatos'. 'Zapatos'."
   B. "'Zapatos' is the word for shoes. Okay, for shoes."
   C. "No, Brian. 'Zapatos' is the word for shoes."

   A repeats the new term 'zapatos' which is the important aspect.

2. Skill: Points out what is important for students to learn.
   A. "The lesson today is pretty important, so make sure you pay close attention."
   B. "This is kind of important."
   C. "This is important for you to remember."

   C is the most directive statement indicating what students need to learn.

3. Skill: Summarizes the material presented in class.
   A. "So, up to this point, we have discussed three types of radiation: Alpha, Beta and Gamma, and how they differ."
   B. "Up to now, we have been talking about radiation."
   C. "Remember from the last chapter that there are three types of radiation? Well, today we're going to learn more about each type."

   A represents the most specific statement of review.
4. Skill: Writes important things on the board (chart).
   A. "The upper number is called the numerator. (Writing) N-U-M-E-R-A-T-O-R."
   B. "The upper number is called the numerator (Writing) U-P-P-E-R."
   C. "The upper number is called the numerator (pointing to the upper number of a fraction already on the board)."

   Numerator is the aspect that must be pointed out. Therefore, A is the best choice.

5. Skill: Points out what is important for students to learn.
   A. "The industrial capacity of the North was an important factor in the outcome of the war."
   B. "The applications must be turned in by Tuesday, it's very important."
   C. "You must understand that the industrial capabilities of the North played a major role in the outcome of the war."

   C is the only statement that actually directs attention to the important aspects.

6. Skill: Writes important things on the board (chart).
   A. "The scientific notation of water is (Writing) 'H-2-O'."
   B. "The president most often associated with ending slavery was Abraham Lincoln. (Writing) S-L-A-V-E-R-Y."
   C. "It's important to remember to carry the number to the 'tens' column when adding."

   A makes use of writing to focus attention on the most important aspect.
7. **Skill:** Summarizes the material presented in class.

   A. "So remember, the instrument families get their names either from the material they are made of, like brass, or how they produce sound, like strings, percussion, keyboards or woodwinds."
   
   B. "So, we have talked about the families of instruments."
   
   C. "So, we have covered chapters 6, 7 and 8."

   A is the most specific review statement.

---

For the following statements, rewrite the excerpt to more clearly demonstrate the particular skill.

8. **Skill:** Repeats things that are important.

   "In Spanish, words that end in 'o' are usually masculine. Words that end in 'a' are usually feminine...Masculine, feminine."

   This is incomplete repetition. To be clear, the repetition must include not only the 'masculine/feminine' but also the vowels to which they relate.

9. **Skill:** Writes important things on the board (chart).

   "An adjective modifies a noun (Writing) 'N-O-U-N'."

   This statement implies that the important word is 'adjective'. It is the word that should be written on the board.
10. Skill: Points out what is important for students to learn.

"It's important that you remember everything from today's lesson."
10. Skill: Points out what is important for students to learn.

"It's important that you remember everything from today's lesson."

This statement needs to be more specific.
**Skill Recognition for Unit Two**

The exercises below are intended to help you recognize the use of skills from Unit Two and the previous skills from Unit One. The excerpts for each of these exercises is taken from actual classroom lessons. For each excerpt, write in the skill that is being used.

1. "It's important that you remember the three forms: gasses, liquids and solids."

   **Skill:** Points out what is important for students to learn.

2. "The three branches of government, in order, are the Executive, the Legislative and the Judicial...the Executive, Legislative and Judicial."

   **Skill:** Repeats things that are important.

3. "These animals are called 'mammals'. Let me write that on the board. 'M-A-M-A-L-S'. Mammals."

   **Skill:** Writes important things on the board (chart).

4. "So far we've talked about the reasons for Poe's strange stories. Remember he was accused of being an alcoholic, and an opium addict. Some people even believed he was somewhat neurotic. But we don't know any of that for certain."

   **Skill:** Summarizes the material presented in class.

5. "This is a circle, a circle. And this is a square, a square. Alright?"

   **Skill:** Repeats things that are important.

6. "You put your right thumb on the piano key 'middle C'. Now play that note with your thumb. Now play the five consecutive white keys, beginning with your thumb and going up."

   **Skill:** Teaches in a step-by-step manner.
7. "We've been talking about the causes of child abuse. So far we have mentioned: parents who were abused as children, children who may not live up to parents expectations, and parents who are emotionally unstable."

Skill: Summarizes the material presented in class.

---

8. "Remember, Suzie, we take blue and yellow to make green."

Skill: Repeats things that are important.

---

9. "The lesson today is about our moon. As we talk, I'd like you to fill in the answers on your worksheet. At the end of class, I'll pick them up."

Skill: Informs students of lesson objectives in advance.

---

10. "You need to remember that the capital of Kentucky is Frankfort."

Skill: Points out what is important for students to learn.

---

11. "One of the most famous battles of the Civil War was fought at Gettysburg. (writing on board) 'Gettysburg'."

Skill: Writes important things on the board.

---

12. "So, words such as 'above, below, around, in, at', and so on are called prepositions."

Skill: Summarizes the material presented in class.
Repeats things that are important.

---

Write an example of each of the following skills using ideas or material from your subject area.

1. Summarizes material presented in class.

   Should be relatively specific, but brief.
2. Repeats things that are important.

   Be certain that the important aspects are what are being repeated.

3. Points out what is important for students to learn.

   Look for phrases that direct students' attention to the particular portion of the material.
**Skill Analysis**

After viewing the demonstration lesson and working through the exercises above, it is appropriate for you to practice evaluating use of these Unit skills. Once again, the analysis sheet provided is a simplified version of your instructor's evaluation form for this Unit.

Carefully look over the sheet and the skills listed on the form. Notice that this analysis sheet includes all seven skills presented up to this point. When you feel comfortable with your ability to recognize and rate each skill, proceed to the next section.

**Skill Analysis Sheet**
Unit Two Skills

<table>
<thead>
<tr>
<th>SKILL</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance.</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Presents material in a logical manner.</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Teaches in a step-by-step manner.</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Verbally points out or stresses what is important for</td>
<td>![-----]</td>
</tr>
<tr>
<td>students to learn.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>repeats things that are important.</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>writes important things on board (chart).</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Summarizes periodically.</td>
<td>![-----]</td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

**TOTAL EVALUATION SCORE**

| ![ ] |  |
|      |  |
Using the Analysis Sheet for Unit Two

It is now time for you to analyze the demonstration lesson. You may do this either by reviewing the lesson tape, or by using the Unit Two demonstration script on page 33. Using the Analysis Sheet for Unit Two, evaluate the demonstration lesson.

***

After rating the lesson total the overall Analysis score.

* Did the overall score meet the criterion level of 28 points?

* What skills were rated as being of 'excellent' quality?

* Which skills were not demonstrated at all?

* What might have been done to improve the lesson?
DEVELOPING THE UNIT TWO SKILLS

Instructions

As with the previous section, the following pages contain several suggestions and exercises to help you learn to use and improve your use of the Unit Two and Unit One skills. Evaluation sheets have also been provided for you to use in evaluating your own performance and practice lessons. Be certain to practice until you feel comfortable and consistent in your use of the skills. Remember that you must use all seven skills included in both Units.

Guidelines

In order to best utilize the following materials, these guidelines will be helpful.

* Keep lessons relatively short
  -10-20 minutes for practice
* Carefully follow the pre-planning exercises
* Practice using the skills in a variety of settings
* Practice a sufficient amount of time to enable comfortable, skilled performance of the skills

Practice

* Choose material from your subject field
  -Make sure the material can be adequately covered in the time allowed
* Use the pre-planning guides on the following pages to prepare each lesson
* Record your lesson performances
* Self analyze each practice lesson
  -Use the recording and analysis sheets provided
  -Make use of the notes on the analysis sheet to help you improve your performance of the skills
  -Note your analysis scores for each lesson and compare them to the criterion score of 28 points
* Provide your instructor with copies of some of your practice recordings to obtain increased feedback
* Practice several different lessons
  -Make use of the skills any time you are presenting material to others
  -You may find a total of 5-6 hours of practice is necessary for adequately developing your use of these skills
* Practice in as many different setting and to as many different groups as possible
Lesson skill or concept:

Desired lesson length:

Lesson Objectives (What do you want to get done?)
1.
2.
3.
4.

Student responsibilities (What are the students expected to do?)
1.
2.
3.
4.

Outline the most logical, step-by-step organization of your lesson material. You may use the space provided on the following page.

Determine the most important aspects of your lesson.
1.
2.
3.
4.

- Mark these on your outline.

How and what other aspects will you stress?

a.
b.
c.
d.

- Mark these on your outline.
What aspects or concepts will you write on the chalkboard or chart?

1.

2.

3.

4.

- Mark this on your outline.

Determine appropriate places to summarize.

- Write this into your outline.
Skill Practice

You have now had an opportunity to pre-plan and plan a lesson. You are ready to practice using the Unit skills in presenting the lesson which you have planned.

* Organize your recording equipment in a setting which will enable you to present your lesson in private and without being disturbed.

* "Teach" and record your lesson

* When you have completed this first lesson, use the Self Analysis Sheets for Unit Two to evaluate your use of the skills.
  -Rate the skills on their quality and/or strength (1=poor, 2=moderate, 3=strong)
  -Carefully answer the questions

* Did you meet the criterion of 28 points?
  -Were there any skills that were not demonstrated?
  -Were all skills of strong or high quality?
  -What skills do you need to improve?

* Repeat the entire process of self practice using different lessons
  -Follow the same procedure of pre-planning, presenting/recording and self analysis
  -You may find it helpful to ask your instructor to evaluate some of your recorded lessons

* When you have practiced enough on your own to feel comfortable using your skills, your instructor may have you practice your skills in peer teaching situations
  -Continue to use the pre-planning guides
  -Make use of the Peer and Instructor Analysis sheets from these sessions to improve your use of the skills

* You may also be given the opportunity to practice your skills in your natural classroom placement

* Practice in enough situations and as many times as necessary to develop comfort and skill in using all of the Unit One and Unit Two skills
  -At least 8 to 10 lessons will probably be necessary

Evaluative Session

When you have consistently met the 80% (28 point) level in a variety of settings and feel comfortable in your use of the Unit One and Two Skills, you may request an Evaluative Session on Unit Two. As with the previous Unit One session, the following guidelines may be helpful.
* You will teach a brief lesson (length will be specified by your instructor)
  - This may be peer teaching or in a natural classroom

* Your performance will be recorded

* Follow the pre-planning and planning procedures
  - Bring your pre-lesson plan with you to the Evaluative Session

* Your performance of the Unit One and Two skills will be evaluated by you and your instructor
  - This may be done while you are teaching and/or using the video, tape
  - You and your instructor will view the tape together and discuss strengths and weaknesses

* Your instructor will recommend either that you move on to Unit Three or that you continue to develop your skills in Unit Two

* When you have mastered Unit Two, you may move on to skill development of Unit Three

CONGRATULATIONS!!!
### SELF ANALYSIS SHEET

**Unit Two**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
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<tbody>
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<tr>
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<td>1 2 3</td>
</tr>
<tr>
<td>Verbally points out what is important for students to learn.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Repeats things that are important.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Writes important things on the board.</td>
<td>1 2 3</td>
</tr>
<tr>
<td>Summarizes periodically.</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>

**OVERALL ANALYSIS SCORE**

1. Which of the skills were strongest in quality? Explain.

2. Which of the skills were weakest in quality? Explain.

3. Were any skills not presented? Which ones?
4. Were any skills demonstrated too frequently? Explain.

5. What must you do differently to make your next lesson more clear?
For each skill or group of skills listed below, use the scale (1 to 5) to rate the demonstration of the skill. Provide written comments and suggestions for each.

1. Unit One skills
   1  2  3  4  5

2. Points out what is important for students to learn.
   1  2  3  4  5

3. Repeats things that are important.
   1  2  3  4  5

4. Writes important things on the board (chart).
   1  2  3  4  5

5. Summarizes the material presented.
   1  2  3  4  5
<table>
<thead>
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</tr>
</tbody>
</table>

OVERALL EVALUATION SCORE

COMMENTS

1. Unit One skills.

2. Points out what is important for students to learn.

3. Repeats things that are important.

-EVAL 2-
INSTRUCTOR EVALUATION SHEET
Unit Two Skills (cont'd)

4. Writes important things on the board (chart).

5. Summarizes periodically.
UNIT THREE

General Unit Definition: Explains/Demonstrates how to do the work by use of examples.

Specific Unit Skills:

1. **Examples are used.**
   Explanation: The teacher makes use of verbal, written or practical examples when explaining aspects of instructional content.
   Reminding: It is much easier for all of us to understand and remember information when it is tied to an example that we are familiar with. As a teacher, by using examples that depict or represent the information you are trying to convey, you better enable your students to understand and retain it.

2. **Works examples and explains them.**
   Explanation: The teacher works through examples of problems on the board, chart, etc. and explains the procedures involved. The emphasis of this skill is to be on demonstration and explanation of the use of instructional content to solve or as applied to particular problems.
   Reminding: Most of us have been in classes in which the teacher gave us information (formulas, concepts, procedures) to learn, but never explained how to apply it. The sense of being lost is not comfortable for any of us. As teachers, we need to help our students see how to do the work or use the information by working through examples and explaining for them.

3. **Explains what unfamiliar words mean.**
   Explanation: The teacher tells students the meaning of words with which they may be unfamiliar. This may occur as a result of inquiry or comments by a student, or may be initiated by the teacher.
   Reminding: When we sit in a class, especially out of our area of expertise, and the instructor uses words from the area that we don't know, it makes us feel frustrated. As teachers, it is often difficult to remember that you may be using words your students are not familiar with. They may not ask, so you must monitor yourself as well as responding to their questions about terminology.

4. **Shows similarities and differences between things.**
   Explanation: The teacher describes, explains or shows how two or more things (ideas, concepts, objects, ways of doing things, etc.) are alike and/or how they are different.
   Reminding: There are times when a simple example is not enough to provide understanding. Often it is helpful to provide and compare two or more examples with one another. Seeing the similarities and the differences between these examples may enable students to understand them more clearly.
5. **Explains something and then pauses to allow students time to think.**

Explanation: The teacher explains some aspect of instructional content and then deliberately pauses to allow time for students to think about what has been said.

Reminding: Many of us have been in classes in which the instructor presented facts so quickly that there was no time to think through the material you were hearing. Often, in a class like this, you only remember the material that was covered when (an if) you go back to read your notes. Students need time to process the information you are presenting if it is to have any meaning to them. You may promote this by saying, 'I want you to think about that for a moment' or something to that effect, or you may simply pause momentarily.

For mastery of Unit Three, you will be expected to demonstrate the five new skills and the seven previous skills from Units One and Two. Again, the number of times and the quality of your skill performance will be evaluated.
DEMONSTRATION

This section is devoted to helping you learn to identify and perform the Units Three skills. Obtain the demonstration tape of Units Three and/or make use of the script contained in this manual.

Before viewing the Units Three lesson, read through the following questions. You should answer them as you view the lesson.

* Did the teacher use examples?
  - Were they verbal? Written? Practical?
    Practical. Making use of a projected check register.
  - Did they seem appropriate to the material?
    Yes, very.

* Did the teacher work examples and explain them?
  - Was this done on the board or a chart?
    The teacher made use of an overhead of a simulated check register.
  - What did the example demonstrate?
    Filling in the check register with appropriate information.
  - Was the teacher's explanation to the example sufficient and understandable?
    Yes, generally.

* Did the teacher explain new or unfamiliar words?
  - Were there words that seemed unfamiliar to the students?
    Register, Debit
  - Were the explanations of these words the result of student questions or comments, or were they teacher initiated?
    Register was teacher initiated.
    Debit was also teacher initiated.
Would you have explained these words in a similar manner? Explain.

* Did the teacher show similarities and differences between things?
  -Was this done by explaining? Describing? Showing?
    Explaining. Comparing the entry of information for a deposit and entry of information for a debit.
    -Was this mostly to point out differences between things or to point out similarities?

  -How would you have done this differently?

* Did the teacher, after explaining something, pause to allow the students time to think?
  -Was this done often enough? Too often?
    The teacher did this twice. It is possible that more frequent use might have been effective.
  -Did the teacher ask the students to think about it or merely pause?
    Merely paused.
  -How long were the pauses?
(prior to planning the lesson)

Teacher: My lesson for tomorrow is on maintaining the check register of a checkbook. A lot of the students may not be familiar with this so I'll show them on the overhead, what a check register looks like and we'll talk through the information that goes in each column. I want them to be able to record transactions for themselves so I'll have them work some examples. It might be best if I would work some with them to show them how it is done. Then I'll give them some practice transactions to record on their own.

***************

Teacher: Good morning, everyone. You remember that last week we talked about the various kinds of personal accounts you might need or use. We talked about credit and credit accounts, and how to use your credit, we talked about savings accounts and how they work and we just began talking about checking accounts. Today, we're going to spend the period talking about how to properly maintain the check register of a checking account.
I have some overlays for the overhead projector that will help us as we talk about how to make entries and so forth. We will talk about the parts of the register, how to fill them in and then we'll do some checkbook register entries together so you can see what it's like. At the end of the period, I have a worksheet for you to do that gives you practice making register entries on your own. Any one have questions?

Okay. How many of you have your own checking accounts? Just raise your hand if you already have a checking account. Chris is the only one? That surprises me. Well, Chris, what is the register of the checkbook used for?

Chris: I'm not sure what the register is.

Teacher: (Holding up a checkbook and pointing to the register)

The register is this part. Not the checks, but the blank pages here.

Chris: Oh. That's where you write your checks down.

Teacher: What kinds of things do you put in the register?

Chris: Well...like when you write a check, you write it down in there so you know how much you spent and how much money you have left.
Teacher: Okay. The check register is used to keep track of all the transactions. Remember a transaction can mean a deposit, withdrawal or charges made to an account, and the register is where all of these transactions are recorded. The register (writing 'R-E-G-I-S-T-E-R' on the board) is a record of all transactions of the checking account.

(Turning on the overhead projector to project a simulated check register)

This is what the register looks like. There are places for all kinds of information and it's important to make sure you always put all the necessary information in the register so that you are always aware of the transactions having been made on this account.

(pointing to the first column on the left)

The far left hand column is used for writing the check number. Remember the other day we looked at checks and saw that each check has a number on it. That number goes in this column. (Writing on the overlay) The check
number goes in this first column. Now, if we are recording a deposit, there isn't a check number so we leave this space blank. So, we use this column to put the check number when we write a check and we leave it blank when we make a deposit.

(Pause)

In this column, (pointing to the second column from the left) we put the date of the transaction.

(Writing on overlay) To do that we use numbers and only put the month, the month, and the day. For instance, today is February 12th, so we put 2 (writing in the register) for February, slash, 12 for the day. If it was December 7th, what would we put, Allyson?

Allyson: 12 slash 7.

Teacher: Right. 12 for December, 7 for the day. So we use the second column for the date, in numbers and record the month and day. (Pointing to the overhead) Does everyone understand that?

In the next column, this larger one (Pointing to the third column from the left), we write the transaction (Writing T-R-A-N-S-A-C-T-I-O-N on the overlay). For instance, if I had written a check to Melton's Market, I would
put "Melton's Market" (Writing this in the column) in this column, so that I know this check was written to them.

If this transaction that I'm recording is a deposit and not a check, I write "deposit" (Writing this in the next space in this column) and it's a good idea to put what kind of deposit. If I'm depositing my tax refund into this account, I'll write "deposit", just like we have here, and "tax refund". That way I know this transaction was a deposit of my tax refund. So again, this column is used to record the type of transaction and it's important to do it in as much detail as possible.

(pause)

(Pointing to next column)

The next two columns, and they're labelled for you, are used to record the amount of the transaction. The first column, where it's labelled "debit", is used for recording the amount of transactions in which money is taken out of the account. Debit means money taken out or an expense. (Writing D-E-B-I-T on the board) In a checking account, what would debits usually be?...Alan?

Alan: Checks?
Teacher: Right. Most of the debits, where money is taken out, will be checks. Like our check here to Meltons' Market.

Student: Then why don't they just put "checks" or something at the top?

Teacher: Because, Aimee, this column is for any type of transaction where money is taken out of the account, and there is one that we haven't talked about yet. The bank charges us for using a checking account. If I buy more checks, the bank charges me for those checks. If I write a certain number of checks each month, they also charge me for that. So this column is used for checks, but also for bank charges taken out of this account; all debits. Any time money is taken out of this account, or withdrawn, the amount is recorded in this column. So if we go back to our "Meltons' Market example, let's say the check to Meltons' was for $24.00. Using the lines like we have been in our ledgers, we put "$24.00" (Writing this on the overlay) in here. So I can see that, let's say this was check number 514 (Writing 5-1-4 in the number column), I can see that check number 514 on February 12th was written to Meltons' Market for the amount of $24.00.
Teacher: I have several transactions written up here on the board. I have checks with the check number, amount, date and to whom it was written; I have some deposits with all the information we need and some bank charges too.

(Putting a new overlay of a blank check register on the projector)

Now, I'd like to work through recording these transactions in the check register. Remember that specific information goes in each column. (Pointing to the overhead sheet) The check number goes here, the date, transaction, debit, or withdrawal here, deposits here, and we maintain the current balance in this last column.

Let's record these transactions.

We'll say we're starting with a beginning balance of $700.00. That's the balance, Hope, so where do I put that figure?

Hope: In the right hand column.

Teacher: (Writing) Okay, the current balance of $700.00 goes in this far right hand column.

(Pointing to a transaction written on the chalkboard)
The first transaction is what, Chris?

Chris: A check to Ohio Bell for 47 dollars and 62 cents on January 24th.

Teacher: All right, what was the number of the check?

Chris: 717.

Teacher: All right, Chris, now tell me how to record all of that correctly in my check register.

Chris: Put 717 in the first column. (The teacher is writing as he explains) Put 24 slash, no 1 slash 24 in the next column...

Teacher: Is this a deposit or is it a debit, Chris?

Chris: Uh...a debit?

Teacher: So which column do I use?

**************

Teacher: See, this one (pointing to the overhead) is a deposit, so we don't have a check number and we use this column for the amount. This one (pointing again to the overhead) was a check so we do have a check number and it's amount is in this column. The other information goes in the same columns; the date, the transaction and we always keep a record of the current balance.

(pause)
See the difference?

***************

Teacher: (Passing out worksheets)

As I told you, this is a worksheet for you to do. It is just like the examples we did together. It has 10 transactions for you to record and a sample check register in which to record them. I'll be walking around to see how you're doing so if you have trouble, let me know...

********

Now return to the questions on page 56. Write in your answers for each using the script as a guide. When you have completed this, use the spaces provided in the script to label the skills that were demonstrated from previous Units.
SKILL DISCRIMINATION FOR UNIT THREE

For each skill presented, identify the teacher statement that best exemplifies the skill by circling the letter preceding the statement. After you have selected the most appropriate answer, use the space provided to explain your selection.

1. Skill: Examples are used.
   A. "A mollusk is a type of shellfish."
   B. "A clam is a type of mollusk."
   C. "A mollusk can live in fresh water too. Like a lake or a stream."

2. Skill: Explains what unfamiliar word(s) mean.
   A. "Zapatos means shoes."
   B. "The word for shoes is 'zapatos'."
   C. "The word you need to use is 'zapatos'."

   A is the only response that actually explains what the word means.

3. Skill: Explains something and then pauses to allow students time to think about it.
   A. "What do you think about that?"
   B. "What might be an example of a proper noun?"
   C. "Take a moment to think through that statement."

   C is the statement that directs students to internally process or think about prior information.

4. Skill: Shows similarities and differences between things.
   A. "The cello looks like a large violin."
   B. "The cello has four strings and looks much like a violin."
   C. "The cello has four strings and looks much like a violin. As you can see, though, it is much larger and sounds lower."

   C shows both similarities and differences. A and B only show similarities.
5. **Skill:** Works examples and explains them.

   A. "As I diagram this sentence, I underline 'Tom', and circle 'threw'."
   B. "As I diagram this sentence, I underline the subject, and circle the verb."
   C. "To diagram this sentence, I underline the noun: 'Tom', and circle the verb: 'threw'.'"

   C portrays the teacher working an example and explaining the example. A and B lack the explanation.

6. **Skill:** Shows similarities and differences between things.

   A. "A rectangle has four sides and four right angles. A square also has four sides and four right angles. The difference is, a square must have four equal sides and the rectangle doesn't have to."
   B. "The square is also a rectangle because it has four sides and four right angles."
   C. "This rectangle is not a square because all four sides are not equal."

   B and C only show one portion, either similarities (like B) or differences (like C). A demonstrates both.

7. **Skill:** Explains something and then pauses to allow students time to think.

   A. "Why would the composers of the Romantic period have made such great use of the large ensembles?" (pause)
   B. "The lesson today deals with the composers of the Romantic period. (pause) The first composer we will talk about was Wagner..."
   C. "The Romantic period made much use of size, the bigger the ensemble, the longer the work, the better. Wagner once wrote a work that lasted several hours and used over 200 musicians. (pause)"

   A is a question, not an explanation. B portrays the pause before any explanation. C provides an explanation followed by the pause.
For the following excerpts, you are to explain why they are less than clear examples of the particular skill listed.

8. **Skill: Explains what unfamiliar words mean.**

   "And you saute the mushrooms. Saute means almost the same thing as fry."

   This explanation does not provide sufficient information to enable students to understand the word 'saute'.

9. **Skill: Works examples and explains them.**

   "So I saw the board (sawing) just like this."

   This statement lacks the necessary explanation.

10. **Skill: Examples are used.**

    "A dictator is like a king, only stricter."

    This statement does not provide an example at all.
SKILL RECOGNITION FOR UNIT THREE

For each excerpt below, determine the skill being demonstrated and write the skill label in the space provided. Remember to turn this page and all previous written exercises to your instructor.

1. "When we add fractions, we must make sure that all of the denominators are the same. 'Denominator' is the number on the bottom of the fraction. It might help you remember it by thinking 'D' for down and for denominator."
   Skill: Explains what unfamiliar words mean.

2. "In the sentence, 'The brown dog quickly jumped the fence,' 'brown' describes the noun 'dog' so it is an adjective. The word 'quickly' describes the verb 'jumped' so it is an adverb. They both describe but what they describe is different."
   Skill: Shows similarities and differences between things.

3. "Everything our senses perceive is stored in the brain. Think about that for a moment."
   Skill: Explains something and then pauses to allow students to think about it.

4. "Adding three digit numbers is done by adding the ones column, carrying and adding the tens column, carrying and adding the hundreds column. For instance, 126 added to 277 (Writing on board). 6 plus 7 is thirteen, we put 3 here, carry one; 1 and 2 plus 7 equals ten, we put the 0 down here, carry the one; one plus one plus two equals 4. So the answer is 403."
   Skill: Works examples and explains them/Teaches in a step-by-step manner.

5. "The surface of the moon is covered with large craters. A crater is a big hole in the moon's surface made when a huge meteorite slams into the moon."
   Skill: Explains what unfamiliar words mean.
6. "Invertebrates are animals that have backbones. We are invertebrates: humans, dogs, cats, rabbits, because we all have backbones. Birds aren't, fish aren't because they don't have backbones."

Skill: Shows similarities and differences between things/ Uses examples.

7. "I've written a sentence on the board, but left out the verb. The sentence is: 'Tom ________ from the big dog.' What are verbs that we could put in there? What might Tom do?...How about the verb 'ran'? Tom ran from the big dog. The verb tells us what Tom did. Now I'd like you to do the worksheet in the same way."

Skill: Works examples and explains them.

8. "I want you to understand that a 'crosscut' saw is used to cut across the grain of wood, and a 'rip' saw is used to cut in the direction of the grain."

Skill: Points out what is important for students to learn.

9. "Before you start your matches, remember we talked about singles tennis using the inside lines on the court, the same person serves the entire game and you alternate from left to right service areas after each point."

Skill: Summarizes the material presented in class.

10. "So, we human beings seem to develop cognitively following the pattern Piaget has suggested. Think about what that means for teachers."

Skill: Explains something and then pauses to allow students time to think about it.

For each of the following, write an example of the requested skill.

1. Works examples and explains them.

   Look for the explanation of the example.
2. Shows similarities and differences between things.

   Look to insure that both the similarities and differences are both clearly presented.

3. Explains what unfamiliar word(s) mean.

   Be certain that the explanation fully explains the new word.
After viewing the demonstration lesson and answering the questions for that lesson, we now move to the evaluation of the Unit Three skills. The following analysis sheet is based on the Instructor's Evaluation Sheet for this Unit. Look over it carefully and be certain you understand it.

**SKILL ANALYSIS**

*Unit Three*

<table>
<thead>
<tr>
<th>SKILL</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Presents material in a logical manner.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Teaches in a step-by-step manner.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Verbally points out or stresses what is important for students to learn.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Repeats things that are important.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Writes important things on the board.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Summarizes periodically.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Makes use of examples.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Works examples and explains them.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Explains new or familiar words.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Shows similarities and differences between things.</td>
<td>![Score]</td>
</tr>
<tr>
<td>Explains things and then pauses for students to think about the material.</td>
<td>![Score]</td>
</tr>
</tbody>
</table>

**TOTAL EVALUATION SCORE**

-74-
When you feel comfortable in recognizing the skills, and with the analysis sheet itself, review the demonstration lesson and evaluate the teacher's performance of the above skills.

- Rate the skills after the lesson is completed
- Total the analysis score by adding the total rating points

* The criterion score on this Unit sheet is 48 points.
  - Did the demonstration teacher meet this criterion level?
  - What, if any, skills were not demonstrated?
DEVELOPING THE UNIT THREE SKILLS

Instructions

As with previous sections, the following pages are included to help you gain skill and comfort with the use of Unit One, Two and Three skills. Remember that you must now incorporate the use of skills from all three Units in your teaching performance. Use the following exercises and suggestions, combined with adequate practice, to master these skills.

Guidelines

* Keep practice lessons short
  - 15-25 minutes

* Continue to pre-plan and plan your lessons
  - The format used in Unit One and Two is suggested
  - Blank pre-planning guides are provided
  - Continue to include all aspects

* Determine the most important aspects of your lessons
  - Repeat for emphasis
  - Stress important aspects
  - Use the chalkboard or chart
  - Summarize

* Record your performances

* Self evaluate each performance

* Have peers evaluate your lesson performances

* Have your instructor evaluate several of your practice lessons

* Practice several different lessons in a variety of settings
Pre-planning for Unit Three

Lesson Skill or concept:

Desired lesson length:

Lesson objective (your goals)
1.
2.
3.
4.

Student responsibilities (your goals for students)
1.
2.
3.
4.

Outline the most logical, step-by-step organization of your lesson material. (Do this on a separate sheet of paper)

* Determine the most important aspects of your lesson
  - Indicate these on your outline

* Determine what you will repeat for emphasis
  - Indicate this on your outline

* Determine what you will write on the chalkboard, chart, etc.
  - Indicate this on your outline
For each important aspect, identify an example that you can employ.
-Remember to use examples showing similarities and differences

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
<td>2.</td>
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<td>3.</td>
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<tr>
<td>4.</td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
</tr>
</tbody>
</table>

* Within each major section (generally between your summaries)
  identify an example to be worked

<table>
<thead>
<tr>
<th>Section</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
</tr>
</tbody>
</table>
* Identify words or terms that you may need to explain to students

1.
2.
3.
4.

* After each major section summary, pause for students to process the material
  - Ask students to do so directly, or simply pause briefly
  - Indicate where this may be most appropriate on your outline

* An example of a Pre-lesson plan follows on page 79a.
Skill Practice

You should have written a lesson plan that makes use of information you need to perform skills from all previous Units. Using the format as before, practice your skills in several settings.

* Practice teaching your lesson alone, to your peers and in natural classrooms
* Use the Self Analysis Sheets to evaluate each lesson performance
* Repeat the process with as many different lessons as possible
* Practice sufficiently to develop smoothness in your use of the skills
  - Unit Three is considerably more difficult than previous Units
  - Students tend to fail to meet the criterion for this Unit because they have not practiced sufficiently
  - Be certain you are prepared before taking the Evaluative Session
  - 10 to 12 different lessons will probably be necessary
* When you are prepared to do so, arrange an Evaluative Session with your instructor

The Evaluative Session

If you feel comfortable with your skills and have arranged a time to take the Evaluative Session, the following guidelines may help you prepare

* The Unit Three Session lesson will be slightly longer than past Evaluative Sessions
  - Lesson length will be specified by your instructor
  - You may be peer teaching or teaching in a natural classroom
* Your performance will be recorded
* Follow the pre-planning and planning procedures
  - Remember to bring this material with you to the Evaluative Session
* You will be evaluated on your skill and ability to demonstrate skills from Units One, Two and Three
* In order that you may progress to Unit Four, you must meet the criterion score of 108 points
  - Should your score not reach this level, you will be instructed to return to the practice exercises for Unit Three to further develop your skills

CONGRATULATIONS!!!

-80-
**Self Analysis Sheet**

Unit Three

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance.</td>
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<td>1-----</td>
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<tr>
<td>Explains new or unfamiliar words.</td>
<td>1-----</td>
</tr>
<tr>
<td>Shows similarities and differences between things.</td>
<td>1-----</td>
</tr>
<tr>
<td>Explains and then pauses for students to think about the material.</td>
<td>1-----</td>
</tr>
</tbody>
</table>

**Overall Analysis Score**

-81-
1. Which of the skills were strongest in quality? Explain.

2. Which skills were weakest in quality? Explain.

3. Were any skills not presented? Which ones?

4. Were any skills demonstrated too frequently? Too infrequently?

5. What must you do differently to make your next lesson more clear?
PEER ANALYSIS SHEET
Unit Three Skills

For each skill or group of skills listed below, use the scale (1 to 5) to rate the demonstration of the skill and provide written comments and suggestions for each.

1. Unit One skills.
   1 2 3 4 5

2. Unit Two skills.
   1 2 3 4 5

   1 2 3 4 5

4. Works examples and explains them.
   1 2 3 4 5

5. Explains new or unfamiliar words.
   1 2 3 4 5

6. Shows similarities and differences between things.
   1 2 3 4 5

7. Explains things and then pauses for students to think about the material.
   1 2 3 4 5
<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSTRUCTOR EVALUATION SHEET</strong></td>
<td></td>
</tr>
<tr>
<td>Unit Three Skills</td>
<td></td>
</tr>
</tbody>
</table>

**Skill** | **very weak** | **moderate** | **strong** |
---|---------------|--------------|------------|
| Informs students of lesson objectives in advance.                    | 1 2 3 4 5   |
| Presents content in a logical manner.                                | 1 2 3 4 5   |
| Teaches in a step-by-step manner.                                    | 1 2 3 4 5   |
| Verbally points out what is important for students to learn.         | 1 2 3 4 5   |
| Repeats things that are important.                                   | 1 2 3 4 5   |
| Writes important things on the board (chart).                        | 1 2 3 4 5   |
| Summarizes periodically.                                             | 1 2 3 4 5   |
| Uses examples.                                                       | 1 2 3 4 5   |
| Works examples and explains them.                                    | 1 2 3 4 5   |
| Explains new or unfamiliar words.                                    | 1 2 3 4 5   |
| Shows similarities and differences between things.                   | 1 2 3 4 5   |
| Explains and then pauses for students to think about the material.   | 1 2 3 4 5   |

**OVERALL EVALUATION SCORE**

**COMMENTS**

1. Unit One skills.

2. Unit Two skills.

-EVAL 3-

4. Works examples and explains them.

5. Explains what unfamiliar words mean.

6. Shows similarities and differences between things.

7. Explains and then pauses for students to think about the material.
UNIT FOUR

General Unit Definition: Provides for student understanding and assimilation of instructional content.

Specific Unit Skills:

1. **Repeats things when student do not understand.**
   **Explanation:** The teacher repeats aspects of the content of instruction (previously addressed) which students directly or indirectly communicate to the teacher that they do not understand.
   **Reminding:** We have all had teachers who seemed to 'sense' when we didn't understand, and we have all had teachers that kept going on with new material even when we were lost. The difference may be that the 'sensing' teacher was watching for cues to indicate that the students did not understand. As teachers, we can watch for facial expressions, posture, or questions and comments that indicate our students may not understand. Should you detect a lack of understanding, try to improve understanding by repeating material that seems to be misunderstood.

2. **Asks questions to find out if students understand.**
   **Explanation:** The teacher, after explaining, repeating or reviewing some aspect(s) of the instructional content, asks a direct question (e.g., 'Is that clear?'; 'Do you understand?'; or asks questions about the content presented) to determine whether or not students understand what has been presented.
   **Reminding:** As a teacher you cannot always wait until an exam to find out if your students understand. By asking 'Is that clear?' you allow students an opportunity to express (verbally or non-verbally) that they do not understand. Asking direct questions about the material you have presented allows you to determine what particular aspects of material students may or may not understand.

3. **Allows time (pauses) for students to ask questions and answers student questions.**
   **Explanation:** The teacher, after explaining, repeating or reviewing some aspect(s) of content; or after responding to a student's inquiry, deliberately pauses to provide time for students to ask questions. When questions are asked, the teacher answers content related questions.
   **Reminding:** Remember in Unit Three that you learned to pause after explaining something. Now you are expanding this skill to be used at various times in your presentation. Not only after presenting material, but after answering a question, repeating something, etc., you pause (briefly) in order that students may ask questions.
4. **Provides opportunities for students to practice (or work examples).**

**Explanation:** The teacher, during the class period, provides specific time for students to do written or practical assignments related to the content of instruction. This may take the form of individualized seatwork or group work. The teacher may play an active role in the case of group work.

**Reminding:** Clear teachers provide students with practice. This means that time is set aside for students to practice using the material presented in the lesson. Quite often this is done by having the students solve 'problems' at their desks. However, this practice may take the form of group problem solving. In the later case, the teacher may even present the 'problem' on the board or chart and work through it with student input and responses.

5. **Examines student work.**

**Explanation:** The teacher checks on students' work either privately (at the student's or teacher's desk) or publicly (on the chalkboard, etc.).

**Reminding:** We can all remember teachers who had us write portions of our homework on the board and then talked through it with the whole class. You can probably also remember teachers who would constantly walk around the room while you were working examples or practicing. These teachers were attempting to gain knowledge as to the degree of your understanding by examining your work.

Unit Four is the final Unit included in the Clarity Training Program. Mastery of this final Unit will complete your skill training in clarity. In order to demonstrate mastery of this Unit, you will be expected to recognize and appropriately perform skills from all four Units. This is a total of seventeen separate skills ranging from pre-lesson planning and organization, to material or content presentation, to being acutely aware of and constantly assessing learner understanding. A criterion score of 60 or above is necessary to complete this Unit.
UNIT FOUR DEMONSTRATION

Before viewing the Unit Four demonstration lesson, look over the following questions to help you focus on the Unit Four skills.

- Did the teacher repeat things when the students did not understand?
  - How did the teacher determine this lack of understanding?
    - David's response to a question regarding congruency.
  - How did the teacher repeat? Exactly? Different wording?
    - Exactly.

- Did the teacher ask questions to find out if students understood?
  - What kinds of questions related directly to the content?
    "Are these line segments congruent?"
    "Are two right angles congruent?"
    "Are an acute and an obtuse angle congruent?"
  - What kinds of questions merely questioned general understanding?
    "Does everyone understand that?"

- Did the teacher allow time for students to ask questions?
  - How frequently?
    - Just once (p.93).
  - If so, were the questions related to content?
    - Yes.
  - Did the teacher answer questions?
    - Yes.

- Did the teacher provide opportunities for students to practice or work examples?
  - Were the practice exercises practical or written?
    - Practical, a worksheet.
  - Were they done in groups or individually?
    - Individually.
Was the teacher active in helping with the practice?

No.

Did the teacher examine student work?

How did the teacher check student work?

By walking around watching while they did the worksheet.
Teacher: The lesson today is going to be on congruency, which means the sameness of geometric patterns. I want to cover the congruency of line segments, angles and geometric figures. The line segments are simplest because length is the only aspect to consider, so I'll start with them. The angles and then geometric figures should come last because figures are the most difficult.

Teacher: Today we're going to learn about congruency. Congruency means 'sameness'. When two things are the same, they are congruent. We're going to take a look at congruent line segments, angles and geometric figures and I have some practice exercises for each of you to do.

As I told you, we're going to learn about congruency.

Congruency means two things are the same. When two things are the same they are congruent.

Line segments can be congruent. What is the difference between a line segment and a line? Darin?
Darin: A line goes through two points, but never ends...at either end.

Teacher: Okay, what is a line segment?

Darin: A line segment starts at a point and stops at another point.

Teacher: Alright. A line segment has two end points and goes from one to the other.

(draws a line segment on the board)

Now, if congruent means the same, how would two line segments be congruent?

(pause)

Mark?

Mark: They'd have to be the same length.

Teacher: Right. Two line segments are congruent if they are the same length. Again, two line segments are congruent when they are the same length.

(draws another line segment of approximately the same length and parallel to the first)

This segment is 15 cm and this other segment is also 15 cm. Are these segments congruent? Amy?

Amy: Yes.

Teacher: Why?

Amy: Because they're both 15 cm.

Teacher: They're both 15 cm, they're both the same length so, yes, they are congruent.
Teacher: (draws another line segment labelled 15 cm perpendicular to the first)

Are these line segments congruent?

(no response)

What is the rule for congruent line segments, David?

David: They have to be the same length.

Teacher: They have to be the same length. Are these two line segments the same length?

David: Yeah.

Teacher: Yeah, we measured them and they are the same length, so, do you think they're congruent?

David: Yeah.

Teacher: Yes they are congruent. The only rule for congruent line segments is that they are the same length. It doesn't matter what direction they may be.

(draws another pair of line segments labelled 26cm)

Are these two line segments congruent?

Students: Yes.

Teacher: (drawing another pair going different directions and labelled 8 cm)

Are these?

Students: Yes.
Teacher: (drawing another pair parallel to one another, one labelled 8cm and the other labelled 9cm)

Are these?

(slight pause)

Students: (hesitantly) No...

Teacher: Why aren't they congruent? They're going in the same direction, they're parallel. Why not congruent? Elaine?

Elaine: Because they're not the same length.

Teacher: Alright. Does everyone understand that?

(pause)

You need to remember that line segments only have to be the same length to be congruent. Direction doesn't matter.

(erasing all line segments and moving to the far end of the chalkboard)

So, the rule for line segments to be congruent is: that (writing this on the board) they must be the same length.

(pause)

Teacher: (turning back toward the class)

Congruent, we said, means the same. And for line segments, that means they must be the same length.

(pauses)

How do you suppose angles would be congruent? Sarah?
Sarah: They would be the same angle.

Teacher: Okay. How, exactly, would they be the same?

Sarah: The same degrees.

Teacher: (drawing two angles appearing to be the same and labelling the angles as 45 degrees)

Two angles are congruent when they are the same number of degrees...the same number of degrees. How do we measure the angle? Tim?

Tim: With a prot...a...a protractor.

Teacher: A pro-trac-tor. Remember last week we learned to use our protractor (holding up a large protractor for use on the chalkboard) So we measure these angles (measuring with the protractor) and if they are the same number of degrees, they are congruent.

(pause)

And these are both 45 degrees, so these two angles are congruent.

Now let me ask you a question. Are two right angles congruent? Amy?

Amy: Yes.

Teacher: How do you know that?

Amy: Because they both would be 90 degrees.

Teacher: Alright, they would both be 90 degrees, and what's the rule for congruent angles, Darin?

Darin: The same degrees.
Teacher: The same number of degrees. Another question: are an acute angle and an obtuse angle congruent? Kathy?

Kathy: No, because an obtuse angle is bigger than 90 degrees (motioning with her hands) and an acute angle is smaller than 90 degrees.

Teacher: Absolutely right, Kathy. (drawing an acute and an obtuse angle on the board)

They can't be congruent because an obtuse angle has to be bigger than 90 degrees and an acute angle has to be less than 90 degrees.

(pauses, then draws two angles, each labelled 63 degrees but facing opposite directions)

Now, I've measured these angles and they're both 63 degrees, but they're facing different directions. Are they congruent? Sarah?

Sarah: Yes.

Teacher: They are congruent because the measure of each angle is the same. Just like with line segments, they don't have to be going in the same direction to be congruent.

(moving to the end of the chalkboard where the rule for congruent line segments is written)
So, our rule to remember for congruent angles is: (writing this on the board below the earlier rule) Two angles are congruent when the measure, or number of degrees is the same.

(finishes writing and turns to class)

So we know that congruent means 'the same' and that congruent line segments must be the same length and that congruent angles must measure the same number of degrees.

(pause)

Geometric figures can also be congruent, but they are a little more difficult. How do you think geometric figures are congruent?

(pause)

Alright, there are two parts to this.

(drawing a triangle on the board)

For two geometric figures to be congruent, they have to be the same shape and they have to be the same size. So size and shape both must be the same.

(pause)

If I want to draw a figure that is congruent to this (pointing to the triangle on the board), what shape will I have to draw?

Students: A triangle.
Teacher: Okay, a triangle that is exactly like this one in shape and in ...?

Students: Size.

Teacher: Okay, and in size.

(drawing a congruent triangle)

Congruent figures must be the same shape and the same size. Tim?

Teacher: No, Tim. To be congruent, they both have to be the same shape (pointing to the two triangles) and the same size. Do you see that, Tim?

Tim: Yeah.

Teacher: (pointing to the triangles)

Are these congruent, Tim?

Tim: Yes.

Teacher: Right, they're the same size and the same shape so they are congruent.

(erases one triangle and draws another congruent triangle but turned slightly from the first)

Are these two triangles congruent? Darin?

Darin: Yeah.

Teacher: How do you know, Darin?

Darin: They're both the same shape and the same size.
Teacher: Right.

Teacher: (erases both triangles and draws a rectangle and a square)
Are these congruent? Jason?

Jason: No, 'cause one's a rectangle and one's a square.

Teacher: One is a rectangle and one is a square. They aren't the same shape so they can't be congruent.

Teacher: (erasing them and drawing a large square and a slightly smaller square)
Are these congruent? Kathy?

Kathy: No.

Teacher: Why, Kathy?

Kathy: They're not the same size.

Teacher: Alright. They aren't congruent because they're not the same size.

Teacher: (walking to the rules written on the board)

Teacher: So, for geometric figures to be congruent, they must be the same shape and the same size. Same shape and same size.

Teacher: (turning to the class)

Teacher: So, we know that line segments are congruent if they're the same length, that angles are congruent if they measure the same number of degrees, and geometric figures are congruent if they are the same shape and size.

Teacher: Shows similarities and differences between things.

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Teacher: Shows similarities and differences between things.
Teachers (pausing)

(moves to desk, grabs a stack of worksheets and begins passing them out)

These are figures, angles and line segments. On some of them the size is marked, like on number 5, the two rectangles, but some of them aren't marked, like the angles in number 1 and the line segments in number 2. You'll need your ruler and protractor, to measure the one's that aren't already marked for you, to see if they're congruent. You have about 15 minutes, so go ahead and begin working on these.

(The students begin working and the teacher begins walking around the room watching over students)

(The teacher stops at Jeremy's desk and watches for a moment)

Teacher: Jeremy, how do you know that the line segments in number 2 (pointing onto the worksheet) are not the same?

Jeremy: One's shorter and one's longer.

Teacher: Did you measure them?

Jeremy: No.

Teacher: Make sure you measure so that you're sure they're not congruent.

***************

Now return to the questions on pages 85 and 36. Using the script to help you, write your answers to the questions. When you have completed this, use the spaces provided in the script to label skills from previous units.
SKILL DISCRIMINATION

For each skill labelled below, circle the letter of the statement that most clearly demonstrates teacher use of the skill.

1. Skill: Repeats things when students do not understand.
   A. "Jason, you look puzzled. Let me repeat that. The bacteria in the culture must have sufficient nutrients to survive."
   B. "Yes, John, you're right. The bacteria must have sufficient nutrients to survive."
   C. "Jason, you look puzzled. What puzzles you about this?"

   Explain: A most clearly demonstrates the repetition.

2. Skill: Allows time (pauses) for students to ask questions.
   A. "So, the Civil War was fought for political and social reasons as much as for moral reasons." (pause)
   B. "What do you suppose was one of the major reasons for fighting the Civil War?" (pause)
   C. "So, the Civil War was fought as much for political and social reasons as for moral reasons. Do you see that?" (pause)

   Explain: C encourages students to ask questions.

3. Skill: Examines student work.
   A. "Stephanie, come up here and copy the correct work for problem 27 from my book onto the board for us."
   B. "Bob, bring your homework up here to my desk so I can see what the problem was."
   C. "Now exchange papers, grade the problems, and then give me the scores so I can see how you folks did."

   Explain: B demonstrates the teacher's desire to examine the student's work. A and C do not.
4. Skill: Provides opportunities for students to practice (or work examples).

A. "I want you to do the exercises on page 39 as homework for tomorrow."
B. "Erica, I want you to stay in during recess and work the problems on the worksheet. I think it will help you."
C. "...and that's how number one is done. I'd like for you to take the remaining fifteen minutes and begin working the rest of the problems on this page."

Explain: C portrays the opportunity, in class, for students to practice.

5. Skill: Asks questions to find out if students understand.

A. "Tonya, did you have a question?"
B. "Does anyone not understand this?"
C. "Chris, come here and help me move this, would you?"

Explain: Although it seems backward, B is the only response that actually asks if the students understand.

6. Skill: Repeats things when students do not understand.

B. "Kathy, do you understand this?"
C. "No, Darren. Remember I said the double 'e' is pronounced as a long 'e' sound."

Explain: C is the clearest example.

7. Skill: Asks questions to find out if students understand.

A. "Pat, did you bring your homework?"
B. "Hope, how does that rule apply to the use of the T-square?"
C. "Good, Jackie. You seem to understand this very well."

Explain: Again, B is the only response that asks to determine if the student understands by asking Hope to apply the rule.
9. Skill: Provides opportunities for students to practice (or work examples).
   A. "Before the exam, you may want to do the exercises on page 117 to practice."
   B. "Now, on the board is the sentence we have to translate. Let's do it together. What do we have to do first...?"
   C. "Tomorrow you will have a substitute teacher, so bring books to study."

   Explain: B provides the opportunity for the students to work an example as a group with the teacher taking an active role.

9. Skill: Examines student work.
   A. "As I walked around, I saw some people having difficulty. Allyson, would you come up and write your answer to number 17 on the board for us?"
   B. "I checked student records yesterday and found that Phil has an I.Q. of 142. Do you believe that?"
   C. "I saw your art project the other evening at the bazaar. It was really quite beautiful."

   Explain: A is the clearest example.

10. Skill: Asks questions to find out if students understand.
   A. "Alan, why didn't you bring your homework?"
   B. "Lori, how did you do on the last exam?"
   C. "Is that clear?...Everyone understands?"

   Explain: Although all are questions, only C asks to determine student understanding.
Skill Recognition for Unit Four

Correctly label each excerpt below with the skill being demonstrated.

1. "The moon's 'seas', like the Sea of Tranquility, do not have water in them. The moon is very, very dry. Do you understand?"
   Skill: Asks questions to find out if students understand.

2. "I'd like you to take the remaining 10 minutes to begin doing the worksheet on diagramming sentences. That way, if you need help I'll be here."
   Skill: Provides opportunities for students to practice (or work examples).

3. "Leeane, I'd like you to write your solution to number 23 on the board. Please include all of the steps in the process."
   Skill: Examines student work. (publicly)

4. "So, an augmented interval is a major interval expanded by one half step...No questions?..."
   Skill: Asks questions to find out if students understand.

5. "No, Mark, remember we don't want the milk to boil. Just heat it to lukewarm."
   Skill: Repeats things when students do not understand.

6. "Let's work a problem together. (writing on board) 26 multiplied by 3. What do we do first? Good, we take 3 times 6 which is 18. How do we use the 1 and the 8? Okay. We put the 8 here and carry the 1. Now what? Three times 2 is 6, plus 1 is seven. Put 7 here and the answer is 78."
   Skill: Provides opportunities for students to practice (or work examples).

7. "So, Alan, why was Lincoln's speech at Gettysburg so important?"
   Skill: Asks questions to find out if students understand.
8. (writing on the board) "Piaget called this stage 'sensorimotor'."

   Skill: Writes important things on the board (chart).

9. "Joan, you look like you're puzzled about this. Do you not understand what we've been talking about?"

   Skill: Asks questions to find out if students understand.

10. "After you have completed the balance in column A, you write the balance total in the appropriate line of column D."


11. "We spent today learning to shoot free throws. Everyone shoot 25 and let me see how you do. When you finish, you can go take a shower."

    Skill: Examines student work/ Provides opportunities for students to practice (or work examples).

12. "This is a square, this is a rectangle and this is a parallelogram. How are they similar?...How are they different?..."

    Skill: Show similarities and differences between things.

13. "It's important that you know this: the Constitution of the United States was written in 1787."

    Skill: Points out what is important for students to learn.

14. "...This means that the walls are not plumb. The word 'Plumb' means perfectly straight up and down, vertically."

    Skill: Explains what unfamiliar words mean.
From your content area, write an example demonstrating the use of each skill listed below.

1. Asks questions to find out if students understand.

2. Provides time for students to practice (or work examples).
Skill Analysis

After viewing the demonstration lesson and working through the exercises above, you should be prepared to practice evaluating a lesson using the analysis sheet for Unit Four. Use the sheet below and the lesson or script provided to analyze the lesson based upon the Subgroup Four skills.

As in the past, carefully look over the analysis sheet that follows, making notes of the skills for which it calls. When you are familiar and comfortable with all of the skills to be analyzed, practice your evaluation of Unit Four by reviewing the demonstration lesson and completing the sheet below.
# Skill Analysis

## Unit Four

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Teaches in a step-by-step manner.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Points out what is important for students to learn.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Writes important things on the board (chart).</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Summarizes material presented in class.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Examples are used.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Works examples and explains them.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Explains what unfamiliar words mean.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Shows similarities and differences between things.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Explains things and then allows time for students to think.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Repeats things when students do not understand.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Asks questions to find out if students understand.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Allows time for students to ask questions and answers student questions.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Provides opportunities for students to practice or work examples.</td>
<td>!———!———!———!———!———!</td>
</tr>
<tr>
<td>Examines student work.</td>
<td>!———!———!———!———!———!</td>
</tr>
</tbody>
</table>

## Overall Analysis Score

-104-
* Did the overall score reach or exceed the criterion level of 64 points?

- What skills seemed to be demonstrated least well?

- Which Unit did it seem this teacher knew and demonstrated most clearly?
DEVELOPING THE UNIT FOUR SKILLS

Instructions
Mastery of the Unit Four skills constitutes completion of the formalized Teacher Clarity System. By this time, you should be very comfortable with your use of all previous skills. Unit Four skills are much more complex than previous skills and require a thorough knowledge and performance of earlier skills. Because many of the Unit Four skills are intended to be interactive with students, the development phase of training for Unit Four will differ slightly from previous Units.

Guidelines
*** Due to the interactive nature of these skills, individual practice is less valuable than practice with responding pupils.

* Lessons are slightly longer
  -20 to 30 minutes

* Continue to pre-plan and plan your lessons using the format provided
  -For your benefit, be certain to include all aspects necessary for meeting the performance criterion level
  -Pre-lesson plan guides are provided on later pages

* Record your practice and lesson performances

* Self evaluate each performance
  -Self Analysis Sheets are provided on later pages

* Practice each lesson incorporating the entire set of Teacher Clarity skills

* Practice in several settings and with various groups of learners
  -Peer teaching
  -Natural classroom teaching

* Have your peers and your instructor evaluate your total use of the skills

* Due to the highly complex nature of the Teacher Clarity skills in total, much more practice will be required for mastery of this Unit
  -A total of 10 to 12 hours (including pre-planning) will be necessary

* Be quite comfortable with your skill before attempting the final Evaluative Session.
Pre-planning Guide for Unit Four Skills

You should continue to use the outline for pre-planning these lessons. Be sure to follow the format provided in earlier sections to help you.
- As you prepare for each lesson, address each of the following questions in every lesson outline
- Complete your outline on separate sheets

* Label the skill or concept to be taught
  - Include the desired lesson length

* Note the lesson objectives
  - Your goals
  - The students’ responsibilities

* Outline the most logical, step-by-step organization for your lesson
  - Include reminders of how each “step” relates to the next

* What words or terms might you need to explain?

* Determine the most appropriate places for you to summarize material

* Determine appropriate examples for aspects of your lesson and indicate them in your outline
  - Include examples to show similarities and differences
  - Identify examples that you may work through and explain and include these in your outline

* What questions might you ask to determine whether or not the students understand?
  - Where are the best places for these questions?
  - Include these in your outline

* Determine places where you wish to provide time for students’ questions
  - Include this in your outline

* Identify appropriate practice exercises or examples for students to work
  - Will you use group or individual practice?
  - Include these in your outline

* Make a note to yourself to examine student work during this procedure
  - Will this best be done publicly (at the board) or privately?
By now, writing a lesson outline using the Clarity format should nearly be second nature to you. Each time you plan, remember to include the information you have used in this outline. As you prepare to teach, you will find that, by addressing these issues before presenting your lesson, you are able to prepare your presentation in a manner that enables your learners to learn more comfortably.

Skill Practice

The lesson plan you have just completed should contain information that will help you in presenting your lesson using the Clarity skills. Using this lesson plan and additional lesson plans, you should now begin practicing your use of all the Teacher Clarity skills. Much more practice with students is necessary to achieve mastery of this final Unit. Teach several different lessons before attempting the final Evaluative Session. The following additional guidelines may help you as you develop your skills:

* Use limited individual practice
* Make much use of peer teaching and natural classroom teaching
* Use the Peer Analysis Sheets and your instructor’s Analysis Sheets to improve the level of your performance
* Practice to an extent that enables you to ‘naturally’ use all of the Clarity skills in your lesson preparation and presentation
  - You may find it helpful to review previous skill sections
* The Evaluative Session for Unit Four is extensive and difficult. Be certain you have practiced your skills in numerous settings and with several different lessons
  - You should have consistently net the 80% (60 point) level with in peer teaching and actual classroom teaching practice lessons
* When you feel you are prepared to do so, arrange an Evaluative Session with your instructor
THE FINAL EVALUATIVE SESSION

The fourth and final Evaluative Session will closely follow the format for prior sessions. It is, however, intended to determine your ability to use all of the Teacher Clarity skills in your teaching at any time and in any setting. Passing this final evaluation implies that your instructor believes you can and will make use of the entire set of Teacher Clarity skills in your own classroom. As a result, this Fourth Evaluative Session is quite significant. The following guidelines may be helpful.

* The final Evaluative Session will be longer than previous sessions
* Your instructor will inform you of the teaching situation in which you will be evaluated
  - This will likely be an actual classroom teaching experience
* Your lesson will be recorded
* You and your instructor will view the tape
* You will be evaluated on your demonstration of the entire set of Teacher Clarity Skills
  - Your instructor will evaluate the presence and quality of these skills
* Upon completion of this Evaluative Session, several recommendations can be made:
  - You may be passed and will have completed the final phase of Clarity training
  - You may be asked to continue to develop your Unit Four skills before retaking this Evaluative Session
  - You may be asked to review and practice previous Units before retaking this Evaluative Session
SELF ANALYSIS SHEET
Unit Four

<table>
<thead>
<tr>
<th>Skill</th>
<th>Very Poor</th>
<th>Moderate</th>
<th>Very Strong</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Writes important things on the board (chart).</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summarizes material presented in class.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examples are used.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Works examples and explains them.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explains what unfamiliar words mean.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows similarities and differences between things.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explains things and then allows time for students to think.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeats things when students do not understand.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks questions to find out if students understand.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allows time for students to ask questions and answers student questions.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides opportunities for students to practice or work examples.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examines student work.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OVERAL ANALYSIS SCORE

SCORE

-110-
1. Which of the skills were strongest?

2. Which of the skills were weakest?

3. Were any skills not presented? Which ones?

4. Which Unit of skills seems to be strongest?

5. Which Unit of skills seems to be weakest?

6. Were any skills presented too frequently? Not frequently enough?

7. What must you do differently to make future lessons more clear?
** CONGRATULATIONS!! **

You have completed training in the skills of Teacher Clarity. You have been trained in and are skilled in the use of the research based teaching skills making up the cluster called Teacher Clarity. If you continue to use your Clarity skills, evidence suggests that you will be a more effective and more satisfying teacher for your students.

You are encouraged to retain this manual for future reference. It is possible that you may wish to review, revise or sharpen your skills in the future. Should you choose to do so, this manual is designed to enable you to reinstate or redevelop your skills as you may see fit. Merely return to the desired Unit or Units and repeat the self training sections as necessary.

Again, congratulations. You have received training in some of the most solidly based teacher skills to date, and you have done so making use of a training system based upon the most current research available.

Good luck!
FINAL
PEER ANALYSIS SHEET
Unit Four Skills

For each skill or group of skills listed below, use the scale (1 to 5) to rate the demonstration of the skill and provide written comments and suggestions for each.

1. Unit One skills.
   1  2  3  4  5

2. Unit Two skills.
   1  2  3  4  5

3. Unit Three skills.
   1  2  3  4  5

4. Repeats things when students do not understand.
   1  2  3  4  5
1. Asks questions to find out if students understand.
   1  2  3  4  5

6. Allows time for students to ask questions and answers student questions.
   1  2  3  4  5

7. Provides opportunities for students to practice or work examples.
   1  2  3  4  5

8. Examines student work.
   1  2  3  4  5
## INSTRUCTOR EVALUATION SHEET
### Unit Four Skills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs students of lesson objectives in advance.</td>
<td>very weak</td>
</tr>
<tr>
<td>Teaches in a step-by-step manner.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Verbally points out what is important for students to learn.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Writes important things on the board (chart).</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Summarizes periodically.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Uses examples.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Works examples and explains them.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Explains new or unfamiliar words.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Shows similarities and differences between things.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Explains and then pauses for students to think about the material.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Repeats things when students do not understand.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Asks questions to find out if students understand.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Allows time for students to ask questions and answers student questions.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Provides time for students to practice work examples.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

**OVERALL EVALUATION SCORE**

---

-EVAL 4-
COMMENTS

1. Unit One skills.

2. Unit Two skills.

3. Unit Three skills.

4. Repeats things when students do not understand.

5. Asks questions to find out if students understand.

6. Allows time for students to ask questions and answers student questions.

7. Provides opportunities for students to practice or work examples.
8. Examines student work.
APPENDIX O

THE CLARITY TRAINING STUDY:

OBSERVATION INSTRUMENT
CLARITY TRAINING STUDY

Observation Instrument

Behavioral Definitions

1. **Points out what is important for students to learn.** (PI)

   The teacher deliberately draws students' attention to those aspects of the content of instruction that are important for them to learn. The teacher may say, for example, "It is important for you to know this.."; "You must understand this.."; "It is very important for you to learn.."; etc.

2. **Repeats things (terms, rules, definitions, concepts) that are important.** (RI)

   The teacher during the lesson presentation repeats (for emphasis) a specific aspect of the content of instruction (e.g., point, idea, rule, etc.).

   This behavior may be initiated by the teacher or it may occur while he/she is elaborating on some statement/comment made by a student or during the review process. It does not however, occur as a direct response to a student question or comment indicating that he/she does not understand something that has been said (taught).

3. **Writes important things (terms, rules, definitions) on the board/chart.** (WI)

   The teacher writes on the chalkboard (chart, slides, etc.) important words, phrases, rules, concepts, ideas, etc. related to the content of instruction.

   The teacher may initiate this behavior, or it may occur in response to a student's question or comment.

4. **Summarizes the material presented in the lesson.** (SUM)

   The teacher, on completion of the lesson or of clearly segmented portions of the lesson, provides a summary of the instructional content presented in the lesson.

5. **Explains things (aspects of the content).** (EX)

   The teacher explains aspects of content.

   This behavior is usually initiated by the teacher or it may occur in response to a student question or comment to further illuminate an aspect of the content of instruction not previously explained.
6. **Uses examples when explaining.** (EG)

The teacher uses verbal, written, or practical examples while explaining some aspect of the content of instruction. For example, during and explanation the teacher uses an example to illustrate a particular point.

This behavior may be initiated by the teacher, or it may occur in response to a student’s question of comment.

7. **Explains what unfamiliar words mean.** (EXWU)

The teacher tells students the meaning of a word(s) with which students are unfamiliar.

This behavior may be initiated by the teacher or it may occur in response to a student’s question or comment.

8. **Explains something and then stops (pauses) so that students can think about it.** (PST)

The teacher explains some aspect(s) of the content of instruction and then deliberately pauses to provide time for students to think about what has been said.

The teacher, after the explanation, may explicitly tell students that he/she is providing them time to think about what was said or may simply pause.

This behavior may be initiated by the teacher or it may occur in response to a student’s question or comment.

9. **Shows similarities and differences between things.** (SIM)

The teacher describes, explains, or shows how two or more things (i.e., ideas, concepts, objects, ways of doing things, etc.) are alike and/or how they differ by giving examples and nonexamples -- what it is and what it is not.

This behavior may be initiated by the teacher or it may occur in response to a student’s question or comment.

10. **Works examples/problems (e.g., on chalkboard) and explains them.** (WEG)

After explaining a total concept, the teacher works through or shows the students how to do an example. For example, the teacher may state, "Now I will work an example for you."

This behavior may be initiated by the teacher or it may be in response to a student’s question or comment.
11. **Asks questions to find out if students understand. (?)**

The teacher, after explaining, repeating or reviewing some aspects of the content of instruction, asks a direct question (e.g., "Do you have any questions?", "Do you understand?", "Is that OK?", or asks questions about the content taught), to find out if students understand what has been said (taught).

The teacher may initiate this behavior or it may occur in response to a student's question comment or some nonverbal cue from students indicating that they do not understand.

12. **Examines students' work. (SW)**

The teacher checks students' work either privately (at the student's desk or at the teacher's desk) or publicly (on the chalkboard, verbally, etc.).

13. **Allows time (pauses) for students to ask questions (PS?)**

After explaining, repeating, or reviewing some aspect(s) of content, or after responding to a student's inquiry, the teacher deliberately pauses to provide time for students to ask questions. When questions are asked, the teacher answers students' content related questions.

14. **Answers students' questions (AN?)**

The teacher answers content-related questions asked by students.

15. **Repeats things when students do not understand. (RP)**

The teacher repeats aspects of the content of instruction (previously addressed) which students directly or indirectly communicate to the teacher that they do not understand.

16. **Provides time for students to practice (e.g., work problems/examples). (SP)**

The teacher, during the class period, provides specific time for students to do written or practical assignments related to the content of instruction. This may take the form of individual seatwork or group work. The teacher may play an active role in the case of group work.
CLARITY TRAINING STUDY
Observation Form

Lesson Code:__________________ Observer:__________________

SECTION ONE

In the right hand column, indicate the total number of times you observed the teacher to use each behavior listed below.

Stresses (Emphasizes) important aspects of content

1. Points out what is important for students to learn (FI) ___
2. Repeats things that are important (RI) ___
3. Writes important things on the board/chart (WB) ___
4. Summarizes the material presented (SUM) ___

Explains the content of instruction

5. Explains things (EX) ___
6. Uses examples when explaining (EG) ___
7. Works examples/problems and explains them (WEG) ___

Provides for student assimilation/synthesis of content

8. Explains what unfamiliar words mean (EXUW) ___
9. Explains something and then pauses so that students can think about it (FST) ___
10. Shows similarities and/or differences between things (SIM) ___

Assesses and tries to ensure student understanding of content

11. Asks questions to find out if students understand (?) ___
12. Examines student work (SW) ___
13. Allows time (pauses) for students to ask questions (PS?) ___
14. Answers student questions (AN?) ___
15. Repeats things when students do not understand (RP) ___
16. Provides time for students to practice (SP) ___
SECTION TWO

Please respond to the items below with regard to your observation of this teaching episode. Circle the response which best corresponds to your perception relative to that item. (SA=strongly agree, A=agree, MA=moderately agree, D=disagree, and SD=strongly disagree)

The teacher:

17. Answered students’ questions adequately
   SA A MA D SD

18. Taught the lesson step-by-step
   SA A MA D SD

19. Provided students sufficient examples of how to do the work
   SA A MA D SD

20. Presented the lesson in a logical manner
   SA A MA D SD

21. Adequately informed students of the lesson objective(s) or what they would be expected to be able to do on completion of the lesson
   SA A MA D SD

22. Stressed (emphasized) the aspects of content it was important for students to learn (1-4)
   SA A MA D SD

23. Explained the content of instruction (5-6)
   SA A MA D SD

24. Provided for student assimilation and synthesis of content (8-9)
   SA A MA D SD

25. Assessed student understanding and provided for better understanding of content when necessary (11-15)
   SA A MA D SD

26. The teacher was:

<table>
<thead>
<tr>
<th>Very Clear</th>
<th>Somewhat Clear</th>
<th>Clear</th>
<th>Unclear</th>
<th>Very Unclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>