

THE RELATIONSHIP OF BELIEF-DISBELIEF SYSTEMS OF
PRE-SERVICE TEACHERS AND DIFFERENTIATED
INSTRUCTION IN INTERACTION ANALYSIS
SYSTEMS TO CHANGE IN ATTITUDE
TOWARD TEACHING SITUATIONS

by

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CHAPTER I

THE PROBLEM AND OBJECTIVES

Statement of the Problem

The study reported herein attempted to provide some empirical evidence to the growing body of knowledge about teaching by inquiring experimentally into a dimension of undergraduate pre-service teacher education using selected classroom verbal interaction analysis systems as substantive content for instruction.

In recent years, many researchers in the field of education have been attending to the study of the act of teaching in situ. The need to make observations systematically has led to the development of instruments which is enabling descriptive analyses of segments of the complex phenomenon of teaching. In the main, these instruments have been restricted to the analyses of the verbalized dimension of teacher and student classroom transaction.

Some educators have claimed that a few of these instruments possess practical utility as instructional content in pre-service and in-service teacher education programs in order to effect change in attitude toward teaching situations and in classroom verbal behavior patterns. Prominent over the last decade have been studies in

which Flanders' Verbal Interaction Analysis System (IAS) or its modifications have been used as substantive content for instruction.

The specific point of departure for this study were the findings of an investigation conducted by J. B. Hough and E. J. Amidon involving pre-service secondary-school teachers in which they sought relationship between a selected personality construct of the subjects and change in attitude toward teaching situations.¹ In their study, two groups were equated in terms of several factors among which was the factor of personality, defined as an individual's belief-disbelief system, a construct developed by Milton Rokeach. When a comparison was made between reaction change of the experimental group who underwent instruction and supervision using interaction analysis and that of the control group who underwent conventional instruction and supervision without contact with interaction analysis, they found a positive relationship between the experimental treatment and attitude change. They found no significant difference in attitude change scores between the experimental and control groups, but

¹ John B. Hough and Edmund J. Amidon, Behavioral Change in Pre-Service Teacher Preparation: an Experimental Study. Philadelphia: College of Education, Temple University, n.d.

when a comparison was made of the high, middle, and low categories of the two groups as measured by Rokeach's Dogmatism Scale (D-Scale), they found a significant difference in change scores only between the low categories of the two groups, i.e., between the relatively open-minded subjects of the two groups.

In their attempt to interpret their findings, Hough and Amidon were compelled to admit that

the limitation on the experimental design of this study makes it impossible to make a definitive statement of the causes of superiority of the experimental group.²

However, their findings, that the experimental group indicated significant change in attitude toward teaching situations and that this change occurred primarily in subjects who scored well below the mean on the D-Scale, suggested differential effects of treatment on those scoring above and below the mean. This investigator entertained the possibility that this difference noted by Hough and Amidon may be explained, at least in part, by invoking selected findings of Rokeach in his study of belief-disbelief systems.³

²Ibid., p. 16.

³Milton Rokeach, The Open and Closed Mind. New York: Basic Books, Inc., 1960.

He found that open-minded and closed-minded individuals did not vary in the performance of analytic tasks. He attributed this lack of variance to the relatively non-threatening situation of tasks involving analysis. On the other hand, he found that they varied significantly in performing synthetic tasks. He attributed this variance to the different ways in which closed-minded and open-minded individuals react to synthetic tasks, the former regarding such tasks more threatening to their belief-disbelief system than do open-minded individuals.

These theoretical conceptions on the relationships among personality, cognitive functioning, and affective functioning pointed up the possibility of a conceptual and procedural extension of the investigation conducted by Hough and Amidon. These considerations and the practical consideration of accessibility to this investigator of pre-service secondary-school social studies teachers as subjects established the direction and bounds of this investigation.

Thus, this study investigated the problem: What is the relationship of belief-disbelief systems of pre-service secondary-school social studies teachers and instruction in classroom verbal interaction analysis systems differentiated in terms of assigned tasks to changes in attitude toward teaching situations?

Definition of Key Terms

The statement of the problem included two independent variables, belief-disbelief system and differentiated instruction, and one dependent variable, change in attitude toward teaching situations. These key terms of the problem together with others pertinent to the study are defined below.

Belief-disbelief system. --For this study belief-disbelief system was defined as an individual's total structure of beliefs and disbeliefs which can be positioned on a linear continuum ranging from the extreme of high dogmatism (closed-mindedness) to the extreme of low dogmatism (open-mindedness) as determined by the degree of dogmatism. Dogmatism was defined as a relatively closed organization of beliefs and disbeliefs, related to intolerance and organized around central beliefs about absolute authority.⁴ The degree of dogmatism was measured by a Likert-type, scaled instrument called the Dogmatism Scale Form E (D-Scale) developed by Rokeach. A copy of this instrument is found in Appendix A.

Differentiated Instruction. --For this study instruction was defined as the control exercised by the instructor in assigning tasks

⁴Milton Rokeach, op. cit.

to the subjects. The two treatments, Instruction Analytic and Instruction Synthetic, given to the groups were differentiated according to the kinds of tasks assigned.

Instruction Analytic. -- The treatment referred to as Instruction Analytic was designed so that the tasks assigned were mainly at the level of analysis. Analysis was defined as "the breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas are made explicit."⁵ Specifically these tasks involved analysis of parts or whole of taped and typescript lessons using conceptual schemes which subjects were trained to use.

Instruction Synthetic. -- The treatment referred to as Instruction Synthetic was designed so that the tasks assigned included synthesis as well as analysis. In this study, synthesis was defined as the putting together of elements and parts to form a whole. This involved "the process of working with pieces, parts, elements, etc., and arranging and combining them in such a way as to constitute a

⁵ Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives, Handbook I: Cognitive Domain. New York: David McKay Co. Inc., 1956, p. 205.

pattern or structure not clearly there before."⁶ Specifically, synthesis tasks referred to those in which subjects were guided in formulating concepts of category systems, in the planning of lesson plans integrating content and interaction systems, in teaching these lessons to colleagues in simulated teaching situations, and in relating the lessons taught to intent.

The detailed summary of instruction is found in Appendix B.

Change in Attitude Toward Teaching Situations. --For this study, attitude toward teaching situations was defined as the subject's reaction to classroom oriented problem situations as measured by the Teaching Situation Reaction Test (TSRT) developed by James K. Duncan and John B. Hough.⁷ Change in attitude toward teaching situations was computed as the difference between pre-test and post-test measures on the TSRT. A copy of this test is found in Appendix C.

Pre-service Secondary-School Teachers. --For this study the term pre-service secondary-school teachers referred to undergraduate students enrolled during the academic year 1968-1969 in a course entitled Curriculum and Instruction in Secondary School Social

⁶ Ibid., p. 206.

⁷ James K. Duncan and John B. Hough, Technical Review of the Teaching Situation Reaction Test. September 15, 1966, (mimeographed).

Studies offered in the Faculty of Education, the University of Alberta.

Verbal Interaction Analysis Systems. -- For this study the verbal interaction analysis systems were defined as category systems used to analyze classroom discourse. The three selected for this study were as follows:

- (1) Classroom Verbal Interaction Analysis System developed by Ned A. Flanders,⁸ referred to as IAS or Flanders IAS in this study,
- (2) The Taxonomy of Educational Objectives, Cognitive Domain,⁹ referred to as The Taxonomy or Bloom's Taxonomy in this study,
- (3) Evaluative Operations Analysis System developed by Milton Meux,¹⁰ referred to as the EOAS in this study.

The set of criteria governing the selection of the above are given in Chapter III.

⁸ Ned A. Flanders, Teacher Influence, Pupil Attitudes, and Achievement. Cooperative Research OE-25040. Washington: U.S. Office of Education, 1965, p. 20. See Appendix D for copy of Flanders' Verbal Interaction Analysis System.

⁹ Benjamin S. Bloom (ed.), op. cit. See Appendix E for a copy of the condensed version of the taxonomy.

¹⁰ B. Othanel Smith, et al., A Study of the Strategies of Teaching. Project No. 1640. U. S. Office of Education. Urbana, Illinois: Bureau of Educational Research, College of Education, University of Illinois, 1967, pp. 308-310. See Appendix F for a copy of the Evaluative Operations Analysis System.

Objectives

The theoretical assumptions and research findings underlying this study enabled the investigator to state four directional hypotheses.

In their study, Hough and Amidon found that change in attitude toward teaching situations was related to training and supervision in Flanders IAS and the belief-disbelief construct of individuals. Rokeach demonstrated that the open-minded and closed-minded individuals' cognitive functioning involving conceptual systems new to their belief-disbelief system differed not in analytic tasks but in synthetic tasks. These considerations led to the formulating of the following two hypotheses:

- H-1 If pre-service secondary-school social studies teachers are given Instruction Synthetic, then there will be a difference in change in attitude between the open-minded and closed-minded individuals in favor of the former.
- H-2 If pre-service secondary-school social studies teachers are given Instruction Analytic, then there will be no difference in change in attitude toward teaching situations between the open-minded

and closed-minded individuals.

Hough and Amidon found no significant difference in change in attitude toward teaching situations between their two groups, the experimental group taught Flanders IAS and the control group taught conventionally, i. e., without contact with IAS. In the present study, the two groups were both given instruction in interaction analysis systems though the tasks assigned were differentiated. Hence, it was considered that there was less likelihood of difference in change in attitude between the two groups. Therefore, the following prediction was made:

H-3 If groups of pre-service secondary-school social studies teachers are given instruction in interaction analysis systems differentiated in terms of analytic and synthetic tasks assigned, there will be no difference between the instruction groups in change in attitude toward teaching situations.

Hypothesis 1 predicted a significant difference in change of attitude toward teaching situations between open-minded and closed-minded individuals both given Instruction Synthetic. A sub-group of closed-minded individuals were given Instruction Analytic. It was assumed that the analytic nature of the task would not threaten

their belief-disbelief systems. Hence, there was no reason to believe that their change in attitude toward teaching situations, if any, would exceed their counterparts given Instruction Synthetic. Therefore, the following hypothesis was entertained:

- H-4 If the change in attitude toward teaching situations of open-minded pre-service secondary-school social studies teachers given Instruction Synthetic and that of the closed-minded given Instruction Analytic are compared, then there will be a difference in favor of the open-minded individuals.

The formation of four sub-groups in the experimental design permitted the testing of other relationships, which, because of lack of theoretical or research bases, were posed in the form of questions.

- Q-1 Is there any significant difference in change in attitude toward teaching situations between the combined open-minded sub-groups, one given Instruction Synthetic and the other given Instruction Analytic, and the combined closed-minded sub-groups, one given Instruction Synthetic and the other given Instruction Analytic?
- Q-2 Is there any significant difference in change in attitude between the open-minded individuals given Instruction

Analytic and the open-minded individuals given
Instruction Synthetic?

Q-3 Is there any significant difference in change in
attitude between the open-minded individuals given
Instruction Analytic and the closed-minded individuals
given Instruction Synthetic?

Q-4 Is there any significant difference in change in attitude
between the closed-minded individuals given Instruction
Analytic and the closed-minded individuals given
Instruction Synthetic?

Limitations of the Study

(1) The population for this study was a body of undergraduate students registered in a course offered in the Faculty of Education, the University of Alberta. The subjects for the experiment were drawn from this population. Thus, the generalizability of the findings was limited to this population.

(2) The practical considerations of a field experiment set a limitation on the duration of the experimental treatment. Because student teaching began in the ninth week of the term, the experiment was restricted to the first eight weeks of the term, limiting the length of the treatments given to 23 hours.

(3) Newness of the interaction analysis systems to the subjects was an assumption underlying this experiment. This assumption was recognized as a limitation of this study.

(4) The criterion measures used in this study were at best ordinal. Moreover, some of the assumptions underlying the parametric analysis of variance were considered difficult to meet. Thus, a non-parametric statistical procedure was adopted in order to analyze the data. It is acknowledged that non-parametric tests are not as robust as are parametric tests.

(5) Attitude toward teaching situations was measured indirectly using the TSRT, a paper and pencil test. Thus, there was present the possibility of a discrepancy between the responses made and how the subjects may have performed in a non-simulated situation. This possible discrepancy was recognized as another limitation.

Summary

This chapter included a brief statement of the conceptual considerations underlying this study, the statement of the problem for investigation, definition of terms, the hypotheses and questions that constituted the objectives of the study, and the limitations of the study.

The remainder of the report is presented in the following chapters:

Chapter II Review of Related Literature and Research

Chapter III Procedure

Chapter IV Analysis, Interpretations and Implications

Chapter V Summary and Recommendations

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

In this chapter, conceptual and theoretical formulations found in literature and in research reports related to this study were considered under the following headings:

- ✓(1) Concepts Relating Teaching and Learning,
- (2) New Approaches to the Study of Teaching,
- (3) The Study of Teaching in Teacher Education,
- ✓(4) Descriptions of Selected Classroom Verbal Interaction Analysis Systems,
- (5) Rokeach's Concept of Belief-Disbelief System,
- ✓(6) Recent Research Using Classroom Interaction Analysis Systems.
- (7) Summary

Concepts Relating Teaching and Learning

A central concern in teacher education is the study of teaching. However, approaches to this study have varied accordingly by the ways in which teaching has been conceptualized.

Typically, teaching has been construed in terms of the classroom setting wherein the teacher and his students are engaged in some activity. Philip W. Jackson, concerned about this restrictive

view of teaching, claimed:

. . . it would be a mistake, conceptually, to view the teacher's behavior during class as representing all that is involved in the complex business of teaching.¹

To extend this restrictive view of teaching, he conceptualized teaching in terms of two phases, the preactive and interactive, and divided these further into sub-phases. Jackson's conception has permitted the recognition of variations in a teacher's quality of thought operations from phase to phase and from sub-phase to sub-phase, thus indicating inadequacies of a single model of teaching, such as the problem-solving or the decision-making model, assumed to be applicable to both the interactive and preactive phases. This study, involving pre-service teachers, was conducted during what Jackson has labelled as the preactive phase, but the content of instruction during this preactive phase was concerned with the interactive phase of teaching.

Another commonly accepted view of teaching has been that teaching and learning are reciprocally related, a view that is entailed

¹Philip W. Jackson, "The Way Teaching Is," In ASCD, The Way Teaching Is. Washington: ASCD, 1966, p. 10.

in the hyphenated expression, "teaching-learning process." One perspective of this view, held by those who have regarded teaching as a moral enterprise, has been aptly described by Jackson in the following way:

The teacher (whether he admits it or not) is out to improve things, to make the world a better place and its inhabitants better people. He may not succeed, of course, but his intention, nonetheless, is to benefit others.²

There is nothing inherently objectionable about this view. But given this moral cast, many researchers in their effort to improve teaching have attempted to identify the characteristics of good teachers or good methods, but, as Jackson pointed out, these "noble crusades . . . have returned empty handed." He added, bluntly:

The few discoveries to date . . . are pitifully small in proportion to their cost in time and energy. For example the few drops of knowledge that can be squeezed out of a half century of research on personality characteristics of good teachers are so low in intellectual food value that it is almost embarrassing to discuss them.³

²Ibid., p. 8.

³Ibid., p. 9. See also Donald M. Medley and E. Mitzel, "Measuring Classroom Behavior by Systematic Observation." In N. L. Gage, (ed.), Handbook of Research on Teaching. Chicago: Rand McNally & Co., 1963, pp. 257-258.

Lawrence M. Stolurow supported this view and called for a new approach in the following way:

Neither the observation of master teachers nor that of a large number of effective teachers has led to findings that are either substantial or sufficient for the understanding of teaching as a process. Thus, an alternative approach is needed.⁴

B. Othanel Smith carried Jackson's and Stolurow's views a step forward and stated:

We do not believe that it is possible to formulate a theory of teaching applicable to the classroom situation by inference from philosophical ideas.⁵

Another perspective of the reciprocal conception of teaching and learning, that teaching necessarily entails learning, has also been subjected to criticism. Smith took issue with this view when he stated:

It is fashionable in educational circles to say that if the student has not learned, the teacher has not taught. . . . It requires no great amount of reflection to see that a teacher can teach any part of a subject without the student learning what the teacher

⁴Lawrence M. Stolurow, "Model the Master Teacher or Master the Teaching Model," In J. D. Krumboltz, (ed.), Learning and the Educational Process. Chicago: Rand McNally & Co., 1965, p. 226.

⁵B. Othanel Smith, "Toward a Theory of Teaching," In A. A. Bellack, (ed.), Theory and Research in Teaching. N. Y.: Bureau of Publications, Teachers College, Columbia University, 1963, p. 2.

is trying to teach. Just as one can learn without being taught so can one be taught without learning.⁶

This separatist concept of teaching and learning implies that the deduction of theories or principles of teaching directly from theories of learning is conceptually inadequate. This view points up the inadequacy of the underlying rationale of many methods books on teaching that by focussing almost solely on learning theories reflect the reciprocal concept of teaching and learning. Reviewing past research on teaching, B. F. Skinner substantiated Smith's contention by stating:

Pedagogy is not a prestigious word. Its low estate may be traced in part to the fact that . . . educational psychologists spent half a century measuring the results of teaching while neglecting teaching itself.⁷

The separatists have held that the activities of the teacher, whether or not they resulted in student learning, are what constitute teaching and their view has led to an advance in research about teaching by allowing for the study of teaching independently.

Donald M. Medley and Harold E. Mitzel have attributed to the separatist concept the shift of the researchers' focus in recent years

⁶Ibid., p. 3.

⁷B. F. Skinner, "Why Teachers Fail," Saturday Review, XLVIII, No. 42, Oct. 16, 1965, p. 80.

from psychological considerations of learning and from the moral stance of teaching to a direct approach to teaching. They stated that currently many investigators have recognized the limitations of research characterized by

the manipulation or study of antecedents and consequents of whatever happens in the classroom while the teaching itself is going on, but never once looking into the classroom to see how the teacher actually teaches or how the pupils actually learn.⁸

However, the separatist concept has not been free of criticism. Elliott W. Eisner, while recognizing the contribution of Smith's separatist concept, pointed up the need to consider the contribution of the reciprocal concept of teaching and learning. In an attempt to reconceptualize the relationship between teaching and learning, at the same time giving recognition to the merits of both points of view, Eisner introduced a third term, "instruction," in his paradigm to explain the relationship between teaching and learning. This relationship, shown diagrammatically in Figure 1, has been described by Eisner as follows:

⁸Donald M. Medley and Harold E. Mitzel, "Measuring Classroom Behavior by Systematic Observation." In N. L. Gage, (ed.), Handbook of Research on Teaching. Chicago: Rand McNally & Co., 1963, p. 247.

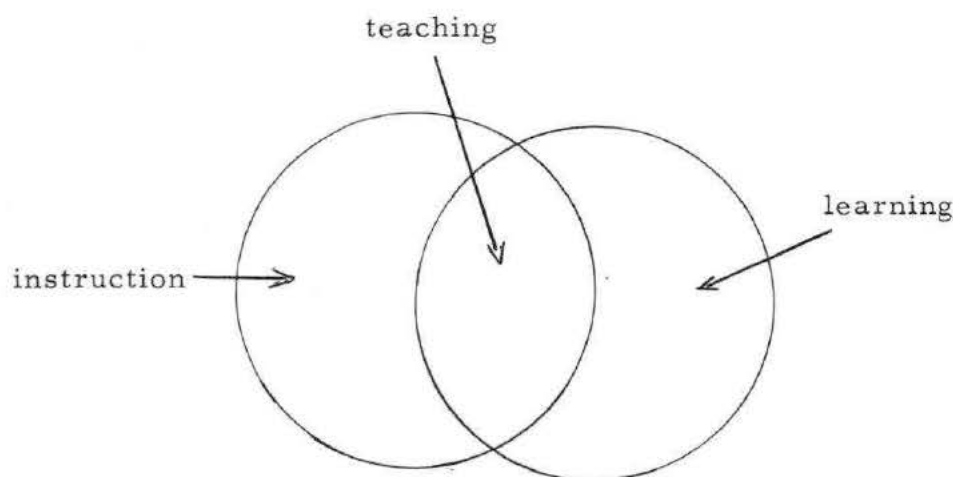


Fig. 1.--A paradigm of teaching, instruction and learning

Teaching activities might be described as that portion of instructional activities which is effective in moving pupils toward the attainment of educational objectives and which, therefore, results in learning. . . . In this sense the concept of teaching described here is similar to that held by Dewey and Kilpatrick and by progressive writers. Instruction is that group of activities planned and executed which are intended to result in learning. In this sense the concept of instruction is related to the concept of teaching developed by Smith and others. While it is possible to study instruction without studying teaching, it is not possible to study teaching without examining instruction. Instruction is a necessary condition for teaching but not for learning.⁹

⁹ Elliot W. Eisner, "Instruction, Teaching and Learning, an Attempt at Differentiation," Elementary School Journal. The University of Chicago Press, Vol. 65, Dec. 1964, p. 119.

Eisner placed in his configuration both the reciprocal and separatist concepts of teaching and learning, each deemed valid in its own terms. Thus, he retained the twin foci of what a teacher may consider "what ought to be," i. e., his intent, and "what is" in instructional performance, but advanced beyond these concepts by postulating the interact between the two. Nevertheless, the key point to be observed in this argument is that Eisner's conception allowed for a direct study of teaching.

New Approaches to the Study of Teaching

The theoretical considerations considered in the previous section have led many educational researchers to make a fresh start, setting aside for the moment "what teaching ought to be" and focussing more on "what teaching is." Because of the newness of the research frontier, the bulk of recent studies have been limited to what N. L. Gage has described as "analytic and descriptive in the natural history sense."¹⁰ Despite the complexity of the phenomenon of teaching, it is possible, as Stolurow has pointed out, "to study the

¹⁰ N. L. Gage, "Research on Cognitive Aspects of Teaching." In ASCD, The Way Teaching Is. Washington: The Association, 1966, p. 34.

variables in conceptual isolation while operating in situ"¹¹ providing models of the teaching act can be formulated. Thus, researchers, sharing a desire to understand the nature of teaching and feeling that it can be best understood by studying it directly in the classroom, have made thrusts in diverse ways, the variety stemming, as Kliebard noted,

from the predilections and interests of the investigators, but more particularly from three basic decisions that they have been called upon to make in determining: (1) the range of behaviors to be observed, (2) the setting and population to be observed, and (3) the observational technique or procedure.¹²

In spite of the apparent multiplicity of direction, these studies can be distinguished by the cognitive or affective emphasis that has been given in their conceptual underpinning. Some of the more notable contemporary researchers who have emphasized the cognitive dimension are B. Othanel Smith and his associates who have viewed classroom discourse in terms of logical operations,¹³ A. A. Bellack

¹¹Lawrence M. Stolurow, op. cit., p. 224.

¹²Herbert M. Kliebard, "The Observation of Classroom Behavior." In ASCD, The Way Teaching Is. Washington: The Association, 1966, p. 46.

¹³B. Othanel Smith, et al., A Study of the Logic of Teaching. Washington: U.S. Department of Health, Education and Welfare, Office of Education, Cooperative Research Project No. 258 (7257). Urbana: Bureau of Educational Research, College of Education. University of Illinois, 1962.

and his associates who have sought the meaning of language used in classroom verbal activity,¹⁴ Hilda Taba and her associates whose main concern in their tri-dimensional analytical construct was cognitive skill development,¹⁵ James J. Gallagher and Mary Jane Aschner whose observational system rested basically on Guilford's conception of the structure of the intellect,¹⁶ and John R. Ginther¹⁷ whose conceptualization included a higher-lower mental process dimension suggestive of the applicability of Bloom's classification system as outlined in the Taxonomy of Educational Objectives: Handbook I, Cognitive Domain.¹⁸

¹⁴Arno A. Bellack et al., The Language of the Classroom: Meanings Communicated in High School Teaching. Washington: U.S. Office of Education, Cooperative Research Project No. 1947. New York: Institute of Psychological Research, Teachers College, Columbia University, 1963.

¹⁵Hilda Taba et al., Thinking in Elementary School Children. Washington: U.S. Office of Education, Cooperative Research Project No. 1574. San Francisco: San Francisco State College, 1964.

¹⁶James J. Gallagher and Mary Jane Aschner, "A Preliminary Report on Analysis of Classroom Interaction," Merrill Palmer Quarterly of Behavior and Development. IX, 1963.

¹⁷John R. Ginther, "Conceptual Model for Analyzing Instruction," Paper presented to the Conference on Programmed Instruction in Medical Education, Rochester, New York, June, 1964.

¹⁸Benjamin S. Bloom, (ed.), Taxonomy of Educational Objectives, Handbook I: Cognitive Domain. New York: David McKay Co., Inc., 1956.

Another line of inquiry into teaching in the classroom has emphasized the affective dimension. Prominent among contemporary researchers with this orientation have been Ned A. Flanders, E. J. Amidon, Marie M. Hughes, John B. Hough, and D. Medley all of whom have developed observational coding systems reflecting the psycho-social conceptual frame of reference. Gage has considered this approach as a very active and productive line of research on teaching, "well exemplified by Flanders' research in classroom interaction."¹⁹ In spite of their limitation to a single dimension, studies based on Flanders IAS or its modification have yielded a body of knowledge about the phenomenon of teaching.

The Study of Teaching in Teacher Education

A notable outgrowth of this initial research orientation has been the recognition by some educators of the utility of a select number of these schemes as substance of instruction in teacher education. This manifestation is in keeping with the following prediction made by Ned A. Flanders:

Teacher education will become increasingly concerned with the process of teaching itself

¹⁹N. L. Gage, op. cit., pp. 31-32.

during the next few decades. Instead of emphasizing knowledge which we think teachers will need in order to teach effectively, as we have in the past, we will turn more and more to an analysis of teaching acts as they occur in spontaneous classroom interaction.²⁰

Norma Furst also visualized the significance to teacher education of the use of these schemes. She advocated that

colleges of education . . . seriously consider the type of experience which gives the pre-service teacher training in the use of an observational system for self-analysis. The possibilities seem almost limitless for effective pre-service training which close [sic] the gap between conceptualizations of teaching and operational performances in class.²¹

Donald M. Medley has suggested its utility in one aspect associated with teacher education. He suggested that

the classroom visits made by undergraduate students in connection with foundations or methods courses can . . . be made more useful by providing the students

²⁰Ned A. Flanders, "Intent, Action and Feedback: A Preparation for Teaching." In E. J. Amidon and J. B. Hough, Interaction Analysis: Theory, Research and Application. Reading, Massachusetts: Addison-Wesley Publishing Co., 1967, pp. 293-294.

²¹N. Furst, "The Effects of Training in Interaction Analysis on the Behavior of Student Teachers in Secondary Schools." In Edmund J. Amidon and J. B. Hough, Interaction Analysis: Theory, Research and Application. Reading, Massachusetts: Addison-Wesley Publishing Co., 1967, p. 328.

with observation schedules to guide their observations and assist them in interpreting what they see. Such records might be a help in the subsequent class discussions of the observations as well.²²

In recent years, in light of the emphasis being given to curriculum development in almost all subject areas, much of the effort has been and is being directed in both pre-service and in-service teacher education towards epistemic concerns such as the structuring of knowledge and inquiry processes, which are goals of instructional activities in which typically learners are engaged. Curriculum makers have tended to assume that as long as the curriculum package is constructed well, when it is unpackaged, teachers will utilize it effectively. It was to this kind of assumption that James J. Gallagher addressed himself, when, after investigating teacher variation in concept presentations in the Biological Sciences Curriculum Study program, he deplored the tendency of new curriculum developers to place instructional strategies in a secondary role. He stated:

Most of the new curriculum movements have been impressed in their first contacts with content area teachers as to how deficient these teachers were in

²²Donald M. Medley, "Experiences with the OScAR Technique," Journal of Teacher Education, Vol. 14, September 1963, p. 273.

basic understanding of their subject area. Much of the emphases of the training programs were therefore centered on learning the "new math" or the "new biology" or what have you. Other instructional goals such as teaching for inquiry or stimulating creative abilities of students were given second place and presented, if at all, through the observation of a master teacher at work.²³

In light of the above and in recognition of the fact that the proper study in teacher education is teaching, he made the following observation:

A substantial trend in teacher education has been in the direction of careful self-analysis of one's own performance through study of videotapes or recordings using such tools as the Topic Classification System. . . . In this way, they can plan the kind of topics they wish to teach, the style in which they wish to present them and the level of abstraction at which they expect the work to occur. A re-examination of their performance, through analysis of their own performance, provides the medium through which instructional strategies can be effectively modified and through which such goals as increasing student inquiries can be systematically attained.²⁴

This observation made by Gallagher has been supported by E. Amidon and A. Simon who at a symposium sponsored by the

²³James J. Gallagher, "Teacher Variation in Concept Formation in BSCS Curriculum Program." In BSCS Newsletter. Boulder: BSCS, January, 1967, p. 17.

²⁴Ibid.

American Education Research Association held in 1965 reported from their survey that:

interaction analysis is being or has been used in teacher education programs at Glassboro State College, N. J., University of Wisconsin, Milwaukee, Ohio State University, University of Illinois, Syracuse University, Temple University, and several universities and colleges in Oregon. Interaction Analysis has also been used at several other institutions in graduate and undergraduate courses and on a limited scale in intern and student teaching programs.²⁵

The complexity of the phenomenon of teaching and the limitations of any single analytical system bound by the conceptual structure imposed upon it, pointed up a problem of selection in determining which analysis system or systems should be utilized for instruction and supervision. Recognizing such a problem, John H. Hansen indicated that:

one instrument, one checklist or one system is not sufficient to encompass all the varied types of teaching acts; consequently, a number of different instruments focussing on different aspects of teaching should be in the supervisor's repertoire of tools. . . . Several researchers in Education have developed systems for gathering data about the quality of classroom content (Marie Hughes, Gallagher, and

²⁵Edmund Amidon and Anita Simon, "Implications for Teacher Education of Interaction Analysis Research in Student Teaching." Paper presented at a symposium on Interaction Analysis at the AERA, February 1965, in Chicago, Illinois, (mimeographed).

Aschner, Hilda Taba) but these techniques are not adaptable for in-class supervision followed immediately by conferences.²⁶

Hansen's concern was primarily for supervision in student teaching, but his advice was considered appropriate for inclusion among criteria used for the selection of interaction analysis systems adopted for this study.

Descriptions of Selected Classroom Verbal Interaction Analysis Systems

In this study three analytical tools were selected as substantive content for instruction. Two of them, Flanders IAS and Meux's EOAS, were developed to analyze classroom discourse. The third, Bloom's Taxonomy was developed to classify educational objectives in the cognitive domain, but because of its utility in the analysis of segments of classroom discourse, it was also labelled in this study as an interaction analysis system. These three systems are described below.

²⁶ John H. Hansen, "Content Analysis." School of Education, University of Oregon, n.d., (mimeographed), p. 2.

Flanders Verbal Interaction Analysis System (IAS)

Flanders Verbal Interaction Analysis System was designed as a research tool to enable systematic observation of the verbal behavior of teachers and students. In this system are three major categories. The first of these, teacher talk, is classified as either indirect or direct, giving central attention to the amount of freedom the teacher gives to students. Indirect statements, which maximize the freedom of students to respond, are sub-divided into (1) accepting feeling, (2) praising or encouraging, (3) accepting ideas, and (4) asking questions. Direct statements, which minimize the freedom of students to respond are sub-divided into (5) lecturing, (6) giving directions, and (7) criticizing or justifying authority. The second major category, that of student talk, is sub-divided into (8) responding to teacher, and (9) initiating talk. The third major category--silence or confusion--provides for behavior not classifiable under the first two categories. There are in all ten categories. A summary of these categories are given in Appendix D.

In using the Flanders' IAS, the observer encodes sequentially the number of the category which best represents the verbal behavior during each three second interval. The list of numbers so obtained is entered on a 10 by 10 matrix. The procedures and matrix construction and

interpretation are given by Amidon and Flanders in The Role of the Teacher in the Classroom.²⁷

The IAS is based on a social-psychological construct and was designed to measure classroom climate which Flanders refers to as "generalized attitudes toward the teacher and the class that the pupils share in common in spite of individual differences."²⁸ It stands directly in the tradition of earlier studies of Bales, Anderson, Withall and the well known Lewin, Lippitt and White study.²⁹

Flanders IAS has received considerable attention among researchers. Some of the ways in which it has been used are indicated in a later section of this chapter.

²⁷ Edmund J. Amidon and Ned A. Flanders, The Role of the Teacher in the Classroom. Minneapolis: Association for Productive Teaching, Inc., 1967, pp. 86-88.

²⁸ Ned A. Flanders, "Teacher Influence in the Classroom." In Arno A. Bellack, Theory and Research in Teaching. New York: Bureau of Publications, Teachers College, Columbia University, 1963, p. 38.

²⁹ R. F. Bales, Interaction Process Analysis, Cambridge, Massachusetts: Addison Wesley, 1950; H. H. Anderson and J. E. Brewer, "Studies of Teachers' Classroom Personalities." Psychological Monographs, No. 8, 1946; J. Withall, "The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms," Journal of Experimental Education, 17, 1949, pp. 347-361. K. Lewin, R. Lippitt, and R. K. White, "Patterns of Aggressive Behavior in Experimentally Created Social Climates," Journal of Social Psychology. X, 1939, pp. 271-299.

Meux's Evaluative Operations Analysis System

In contrast to Flanders IAS, which has a social-psychological orientation, Meux's EOAS has a cognitive orientation. Milton Meux, instrumental in developing the EOAS, was associated with a team directed by B. Othanel Smith who examined the logical operations in classroom discourse in an effort to study the control exercised by the teacher in dealing with the substance of instruction. They assumed that

if the teacher is aware of logical operations and knows the rules by which they are performed, he will be able to monitor his behavior insofar as these operations are involved in it.³⁰

Upon investigating tapes of classroom discourse, they identified eight ventures, classified as to their cognitive import, one of which was identified as evaluative. A venture was defined as a segment of discourse consisting of a set of utterances dealing with a single topic and having a single overarching content objective. An evaluative venture was defined as a unit of classroom discourse in which the objective

³⁰ B. Othanel Smith, "Toward a Theory of Teaching." In Arno A. Bellack, Theory and Research in Teaching. New York: Teachers College, Columbia University, 1963, p. 8.

is a rating of an action, object, event, policy, or practice; or a rating of a class of such things with respect to its worth, correctness, and the like. Discussion in ventures of this type usually attempts to determine whether or not some action, etc., is to be placed in a particular value category.³¹

Meux analyzed evaluative ventures in terms of the following moves: identifying, describing, rating, criterial, relating, and tangential. An identifying move is concerned with the identification of either the object to be valued or the value term to be applied to or withheld from the value object as the rating is made. Descriptive moves characterize the value object in ways that are relevant to the judgment that an evaluator will make about it. A rating move seeks to link a value term or terms to the value object. Criterial moves are concerned with the explication of the meaning of the value term or with the related process of explicitly stating the criteria that govern the use of the term in the particular rating. Relational moves are those which bear upon the justification of a rating and are extraneous to the criteria. Tangential moves provide supplementary information about the value object which is not directly relevant to its rating. A complete taxonomy of moves and sub-moves in evaluative ventures which constitute the EOAS is found in Appendix F.

³¹ B. Othanel Smith et al., A Study of the Strategies of Teaching. op. cit., p. 26.

These moves in themselves do not indicate correctness or incorrectness. Though they are derived from a logical model of evaluation, these moves are viewed as pedagogical maneuvers in the process of structuring instructional content.

Meux analyzed classroom discourse in a variety of school subjects for distribution of evaluative ventures and found the highest frequency in social studies. In one study, he reported that of 37 evaluative ventures identified, 20 were in Social Studies, 13 in English, 4 in Science, and 0 in Geometry.³² He concluded that

evaluative ventures are more likely to be associated with school subjects that emphasize normative content than those that consist largely of descriptive subject matter. . . . Normative and hence evaluative elements are likely to occur in the instructional content of the humanities and social sciences.³³

He further analyzed typical difficulties which occurred in evaluative discussions and reported the following:

Difficulties arising in evaluative discussions can usually be traced to ambiguities in the value object, misinterpretations of value terms, uncertainties in resolving implications of descriptions, and disagreement on importance of criteria.³⁴

³²Milton Meux, "A Model of Evaluative Operations in the Classroom." Paper presented at the Annual Conference of the National Council for the Social Studies, Miami Beach, 1966.

³³B. O. Smith, et al., op. cit., pp. 161-162.

³⁴Milton Meux, op. cit., p. 7.

The above findings strongly suggested the utility for social studies teachers of an analysis system such as the one Meux developed, not only to diagnose the classroom discourse involving evaluation, but also to enable teachers to control the maneuverable operations involved in classroom evaluative ventures.

Bloom's Taxonomy

The Taxonomy of Educational Objectives, Handbook I: Cognitive Domain is popularly known as Bloom's Taxonomy. It was developed by a team of American educational psychologists mainly concerned with increased precision in communication among educators in their discourse concerning instructional objectives. They identified three domains within which educational goals may be categorized: cognitive, affective, and psychomotor. Bloom's Taxonomy, concerned solely with educational objectives in the cognitive domain, contains two major categories: (1) recall and recognition of knowledge and (2) intellectual skills and abilities, the latter sub-divided into comprehension, application, analysis, synthesis, and evaluation. A summary description of the major categories and the sub-categories are found in Appendix E.

The authors claimed that the Taxonomy is not merely a classification system but that it is ordered in two ways: in order of

hierarchy from the simple to the complex, competence at a higher level subsuming competence at the lower level, and in order of hierarchy from the concrete to the complex.

Bloom's Taxonomy has had a variety of uses. An early group of educators to make effective use of the Taxonomy were test-makers. In line with this development, the Department of Education of the Province of Alberta, responsible for the final province-wide examinations in Grades 9 and 12, has made use of the Taxonomy in past years in several subjects, including the Social Studies.³⁵ J. Good, in designing lesson plans, used the Taxonomy to develop lesson objectives.³⁶ Sanders illustrated the use of the Taxonomy in developing classroom questions in Social Studies.³⁷ The foregoing illustrations reflect the multiple uses to which the Taxonomy has been put. Within the framework of this study, another use is suggested. It is conceivable that selected segments of classroom discourse, that

³⁵ Department of Education, Province of Alberta, Summary Description of Grade Nine Social Studies Objectives and Test Items. Edmonton: The Department, 1966.

³⁶ Edwin Fenton, Teaching the New Social Studies in Secondary Schools an Inductive Approach. New York: Holt, Rinehart and Winston, Inc., 1966.

³⁷ Norris M. Sanders, Classroom Questions, What Kinds? New York: Harper and Row, 1966.

is, segments of interactive teaching, can be analyzed by using the Taxonomy. Flanders IAS contains a category for teacher-posed questions, but in no way does this category, by itself, distinguish the quality of the questions. Although it may be assumed that not all questions can be classified, those directed towards the cognitive aspect of the lesson can be distinguished by using Bloom's Taxonomy, reflecting to some extent the cognitive orientation of the classroom discourse.

Rokeach's Concept of Belief-Disbelief System

Underlying this study, in part, is the concept of belief-disbelief system as defined by M. Rokeach in which ideological orientations of individuals are construed to be related to personality, thought processes, and behavior. According to him, a belief-disbelief system has two components, a belief system and a disbelief system, described by Rokeach as follows:

The belief system represents all the beliefs, sets, expectancies, or hypotheses, conscious or unconscious, that a person at a given time accepts as true of the world he lives in. The disbelief system is composed of a series of sub-systems and contains all the disbeliefs, sets, expectancies, conscious or unconscious, that to one degree or another a person at a given time rejects as false.³⁸

³⁸M. Rokeach, The Open and Closed Mind. New York: Basic Books, Inc., 1960, p. 33.

In this context, dogmatism refers to an individual's structure of beliefs and disbeliefs related to intolerance and organized around central beliefs about authority. A high dogmatic (close-minded) individual not only perceives the world as being relatively threatening, but also has a tendency to judge ideas in terms of the authority of the source of ideas and the degree to which these ideas correspond to his own belief-disbelief system. A low dogmatic (open-minded) individual, in contrast, views the world as being relatively friendly and tends to evaluate ideas on their own intrinsic worth. Extreme closed-mindedness and extreme open-mindedness are assumed to be poles along a linear continuum.

In an attempt to seek possible differences in cognitive functioning of open-minded and closed-minded individuals, Rokeach postulated that cognitive performance and threat to one's own belief-disbelief system are related. He hypothesized that:

. . . to the extent a person is said to be characteristically dogmatic or closed in his thinking, the preservation of his total system will be at stake. . . . Analysis, by itself if not followed up by synthesis, cannot topple a person's total belief system. Nor should synthesis in thinking topple it, so long as new beliefs can be readily integrated into the belief system. But what if a person in the course of solving a problem were to push his synthesizing or integrative thinking to the point where he begins to see the outlines of another system? As he approaches this point, we should expect the synthesizing processes of thinking to slow down or be

disrupted to the extent that his belief system is dogmatic or closed.³⁹

Experiments that he himself conducted confirmed his hypotheses. He demonstrated that open-minded and closed-minded individuals encountering conceptual systems new to their belief-disbelief systems do not differ with respect to performance in analytical tasks but they do differ with respect to performance on synthetic tasks. This distinction in the cognitive performance of open-minded and closed-minded individuals was a crucial dimension of this study, and was a determining factor in the design of the qualitative differences made in the treatment given.

Another concept posited by Rokeach was that of a basic congruence between cognitive and affective functioning. This position is reflected in the following statement:

we should be able to reach down into the complexities of man's emotional life via a study of his cognitive processes. . . . If we know something about the way a person relates himself to the world of ideas, we may also be able to say in what way he relates himself to the world of people and to authority.⁴⁰

In this sense, attitude can be considered as a function of the structure of an individual's belief and disbelief system, and change in attitude as

³⁹ Ibid., pp. 183-184.

⁴⁰ Ibid., p. 8.

a function of the change in the structure of that system.

F. Kerlinger in his study of attitudes toward education adopted much the same posture for he conceived attitude in terms of its criterial referent, a structured standard on which attitude is based.

Attitude according to Kerlinger, is a function of

a construct that stands for a set of category of social objects, ideas, or behavior that can be the focus of an attitude.⁴¹

This construct corresponds to Rokeach's concept of belief-disbelief system.

Based on the foregoing, this study postulated that open-minded and closed-minded individuals differ in the way in which they regard new conceptual systems as threats to their belief-disbelief systems; that they differ in their disposition to tasks involving synthesis of new conceptual systems with their established systems, but that they do not differ in their disposition to tasks involving analysis of conceptual systems new to their belief-disbelief system; and that change in attitude is a function of the nature of the belief-disbelief

⁴¹F. Kerlinger, "The First- and Second-Order Factor Structures of Attitudes toward Education," American Educational Research Journal, IV, No. 3, May, 1967, p. 192.

system which embodies the referents that are criterial for the individual.

Recent Research Using Classroom Interaction Analysis Systems

The focus of this study was the investigation of the relationship of instruction in verbal interaction analysis systems as a part of a teacher education program, the belief-disbelief systems of subjects and change in attitude toward teaching situations. Hence, research studies relevant to this focal concern are reviewed here. Of the three interaction analysis systems of concern to this study, the one with research tradition, in the sense that it has been used in the study of teaching in pre-service teacher education courses, is Flanders IAS together with its modifications.

H. H. Anderson in an early study in which he analyzed teaching behavior assessed the integrative and dominative behavior of teachers in their contacts with pupils. He found that the dominative and integrative contacts of the teacher set a pattern of behavior that spread throughout the classroom; that the behavior of the teacher, more than any other individual, set the climate of the classroom; and further, that when a teacher had a high proportion of integrative contacts, pupils showed more spontaneity and initiative, voluntary social contributions and acts of problem solving, whereas when the

teacher demonstrated a high proportion of dominative contacts, the pupils were more easily distracted from schoolwork, and showed greater compliance to, as well as rejection of, teacher domination.⁴² Anderson's findings and his basic classification into integrative and dominative acts appear to be precursors of Flanders' conception of indirect and direct influence.

Another study which appears to have had an influence on Flanders was the classic study by Lewin, Lippitt, and White⁴³ in which leadership influence was construed in terms of the autocratic-democratic dichotomy. Although their laboratory study was conducted in a context removed from the formal classroom situations, their basic findings supported the general conclusions of Anderson.

John Withall,⁴⁴ considered to be the first of the early researchers of classroom climate to measure classroom interaction,

⁴²H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teachers' Contacts with Children," Child Development, 10, 1939, pp. 73-89.

⁴³Kurt Lewin, Ronald Lippitt, and Ralph K. White, "Patterns of Aggressive Behavior in Experimentally Created 'Social Climates,'" Journal of Social Psychology, 10, 1939, pp. 271-299.

⁴⁴John Withall, "The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms," Journal of Experimental Education, 17, 1949, pp. 347-361.

demonstrated the possibility of describing classroom climate by means of a category system. Although he did not directly observe the classroom behavior of teachers and students, Morris Cogan⁴⁵ analyzed students' perception of their teachers in order to develop a conceptual framework of teacher behavior. He found that there was a definite relationship between the quantity of self-initiated work pupils reported they are doing and the way they perceived the teacher's behavior.

Robert Bales,⁴⁶ who has contributed much to the development of a theory of social-emotional climate, used interaction process analysis as a research technique in studying the relationship between the behavior of members of a group and group productivity, and in so doing contributed both to the development of a theory of classroom climate and to the practicality of systematic observation of teaching in the classroom.

These research studies, which demonstrated that over a period of time more integrative than dominative teacher-pupil

⁴⁵Morris L. Cogan, "Theory and Design of a Study of Teacher-Pupil Interaction," The Harvard Educational Review, 1956, pp. 315-342.

⁴⁶Robert Bales and Fred L. Strodbeck, "Phases in Group Problem-Solving," Journal of Abnormal and Social Psychology, 46, 1951, pp. 485-495.

interaction will establish desirable pupil attitudes and pattern of work, provided Flanders with a theoretical basis for relating teacher influence and verbal behavior and classroom attitudes of pupils. Flanders, in a two-year study⁴⁷ involving students in two countries, used his IAS as an observational instrument and tested relationships among teacher influence and the achievement and attitudes of students. He found that indirect teaching rather than direct teaching was more effective in terms of achievement when students' perception of goals was ambiguous; that in general students of the more indirect learned more as measured by written achievement tests than students of direct teachers; that all types of students learned more working with indirect teachers than with the more direct teachers. A significant contribution of this study was Flanders' concept of flexibility of teachers which he found was more predictive of teaching success than was the concept of direct-indirect influence.

More recently, but still in keeping with the tradition of Flanders and his predecessors, a series of related studies, reported by Edmund J. Amidon and Ned A. Flanders,⁴⁸ investigated the

⁴⁷ Ned A. Flanders, Teacher Influence, Pupil Attitudes and Achievement. Cooperative Research monograph, No. 12. Washington: U.S. Government Printing Office, 1965.

⁴⁸ Edmund J. Amidon and Ned A. Flanders, op. cit., pp. 86-88.

relationship between teacher influence and student achievement in various subjects. These studies indicated that indirect teacher influence was positively related to achievement in written language, biological science, reading comprehension, creativity, science, and arithmetic. All of these studies provided consistent evidence that indirect teaching and direct teaching were related to achievement in subject areas. However, because of the limitations set by the theoretical construct of teaching underlying these studies, causal relationship could not be inferred.

Whereas the above studies indicated the use of Flanders IAS as an observational instrument in research, another series of studies conducted over the last decade indicated its utility in the training of in-service and pre-service teachers. Flanders in a study involving a group of in-service teachers found that teachers trained in interaction analysis tended to become more indirect although those who were more direct at the outset did not change as much compared with those who were more indirect at the outset.⁴⁹

⁴⁹Ned A. Flanders, "Teacher Behavior and In-Service Programs." In Edmund J. Amidon and John B. Hough, (eds.), Interaction Analysis: Theory, Research and Application. Reading, Massachusetts: Addison-Wesley Publishing Company, 1967, pp. 256-261.

Hough and Amidon initiated in 1964, a series of studies in which pre-service teachers were trained in interaction analysis. In these studies the criterion measure of effectiveness was attitude, attitude change and/or the verbal behavior of the subjects. Taken together these studies provided replicated support for the effectiveness of the training of pre-service teachers in interaction analysis.

The study by Richard D. Zahn was designed to examine the relationship between training in interaction analysis and openness and closedness of elementary-school student teachers to attitude change as measured by the TSRT. He found that attitude change was related to both the openness or closedness of belief-disbelief systems of the student teachers and to training in interaction analysis.⁵⁰ Jeffery Kirk investigated two matched groups of elementary-school student teachers, the experimental group taught interaction analysis and the control group taught conventionally without contact with interaction analysis. Interaction analysis data revealed that training in interaction analysis did have an effect on the

⁵⁰ Richard D. Zahn, "The Use of Interaction Analysis in Supervising Student Teachers." In Edmund J. Amidon and John B. Hough, (eds.), op. cit., pp. 295-298.

verbal behavior of student teachers.⁵¹ Norma Furst also conducted a study of student teachers using interaction analysis data as a dependent variable. Secondary-school education student teachers trained in Flanders IAS evidenced attitude change as measured by the TSRT and verbal behavior change as measured by the Verbal Interaction Category System, a modification of Flanders IAS. In her study, the timing of training given was differentiated. Some subjects received training before student teaching, others during student teaching. She found that the timing of the training had no effect on behavioral changes. This finding was considered pertinent for this present study for instruction in interaction analysis systems was given prior to student teaching.⁵²

The research in which this present study was grounded was the experiment conducted by John B. Hough and Edmund J. Amidon who

⁵¹Jeffery Kirk, "Elementary School Student Teachers and Interaction Analysis." In Edmund J. Amidon and John B. Hough, (eds.), op. cit., pp. 299-306.

⁵²Norma Furst, "The Effects of Training in Interaction Analysis on the Behavior of Student Teachers in Secondary Schools." In Edmund J. Amidon and John B. Hough, (eds.), op. cit., pp. 315-328.

investigated the behavioral change of pre-service teachers at Temple University in 1963-64.⁵³ In one segment of this study, Hough and Amidon examined the relationship between the relative openness or closedness of the belief-disbelief systems and training in interaction analysis.⁵⁴ The experimental group was taught interaction analysis whereas the matched control group was taught conventionally without contact with interaction analysis. They found that the experimental group demonstrated a significant pre- to post-test change in a positive direction as measured by the TSRT, whereas the control group did not show this gain. But a comparison of the difference of the mean change scores for the two groups did not indicate a significant difference. When change scores for the lowest scoring third (open-minded) as measured by the D-Scale of the two groups were compared, they found a significant difference, but a similar comparison of those who scored in the middle and upper

⁵³ John B. Hough and Edmund J. Amidon, Behavioral Change in Pre-Service Teacher Preparation: An Experimental Study. Philadelphia: College of Education, Temple University, (n.d.).

⁵⁴ Ibid. See also John B. Hough and Edmund J. Amidon, "The Relationship of Personality Structure and Training in Interaction Analysis to Attitude Change during Student Teaching." Paper presented at the annual meeting of the American Educational Research Association, Chicago, Illinois, February, 1965.

third on the D-Scale indicated no significant difference. These findings suggested that the significant difference between pre- and post-test change scores for the experimental group was a function primarily of training in interaction analysis, and that a significant difference between gain scores of only the open-minded groups was a function of the nature of the belief-disbelief systems of the subjects examined. These findings suggested a differential effect of the treatments on the personality construct of the subjects treated.

In interpreting their findings, Hough and Amidon assumed that the change in attitude of student teachers was a function of the internalization of personal meaning the subjects gave to the ideas they were learning. If by internalization is meant the accommodation of ideas into the individuals' value system, then a partial explanation for the differential effect may be attributed to the way in which the open-minded and closed-minded individuals vary in their reaction to the cognitive tasks in which they were engaged. It was in this regard that Rokeach's theory of cognitive functioning of open-minded and closed-minded individuals was invoked to examine the effects that Hough and Amidon reported.

Summary

The six sections of this chapter attempted to bring together conceptual and theoretical formulations found in literature and research reports related to the problem investigated in this study.

The first section identified several concepts of teaching. The concept of preactive and interactive phases of teaching enunciated by Philip W. Jackson enabled the investigator to show the relationship between the content of instruction in this study and the timing of the instruction of this content. A review of the reciprocal and the separatist concept of learning and teaching pointed out the consequences in research based on these conceptions. It also presented Eisner's attempt to integrate the reciprocal and separatist conceptions of teaching and learning.

Following the theoretical considerations given above, in the second section, a review was given of some descriptive studies of the classroom in actual operation. These were examined from the perspective of the emphasis given to cognitive and social-psychological conceptions. Section three reviewed statements regarding the current trend towards the study of teaching as substantive content for instruction in pre-service teacher education. These statements revealed some educators' concern for a need to emphasize self-analysis tools as a key to improvement in teaching performance.

In section four, three classroom verbal interaction analysis systems used in the study were described. These included Flanders IAS, Meux's EOAS and Bloom's Taxonomy. Section five discussed Rokeach's theoretical formulation of the relationship between the open-mindedness and closed-mindedness of individuals and cognitive and affective functioning of individuals which form a central part of the conceptual design of this study.

The final section focussed on reports of recent studies which used interaction analysis systems as independent and/or dependent variables in their design. These studies provided not only the context but also an indication of the point of departure for this study.

CHAPTER III

PROCEDURE

Population and Sample

The population for this study were 87 pre-service teacher education students registered in the fall of 1968 in a course entitled Curriculum and Instruction in Secondary-School Social Studies in the Department of Secondary Education, Faculty of Education, University of Alberta, Edmonton, Canada. The students enrolled in this course were undergraduates in their second or third year of the Bachelor of Education program.

This population was administered the D-Scale Form E. To prevent the possibility of bias arising from knowledge of the subjects' scores, the investigator obtained the services of graduate students to mark and score the scale and to assign the subjects to the groups and sub-groups. As Figure 2 indicates, the scores ranged from 79 to 190, with a mean score of 143.07 and a standard deviation of 23.06. The subjects were rank ordered according to their scores ranging from low to high, and then assigned to two groups, the lowest group of 32 constituting the low (open-minded) group and the highest group of 32 constituting the high (closed-minded)

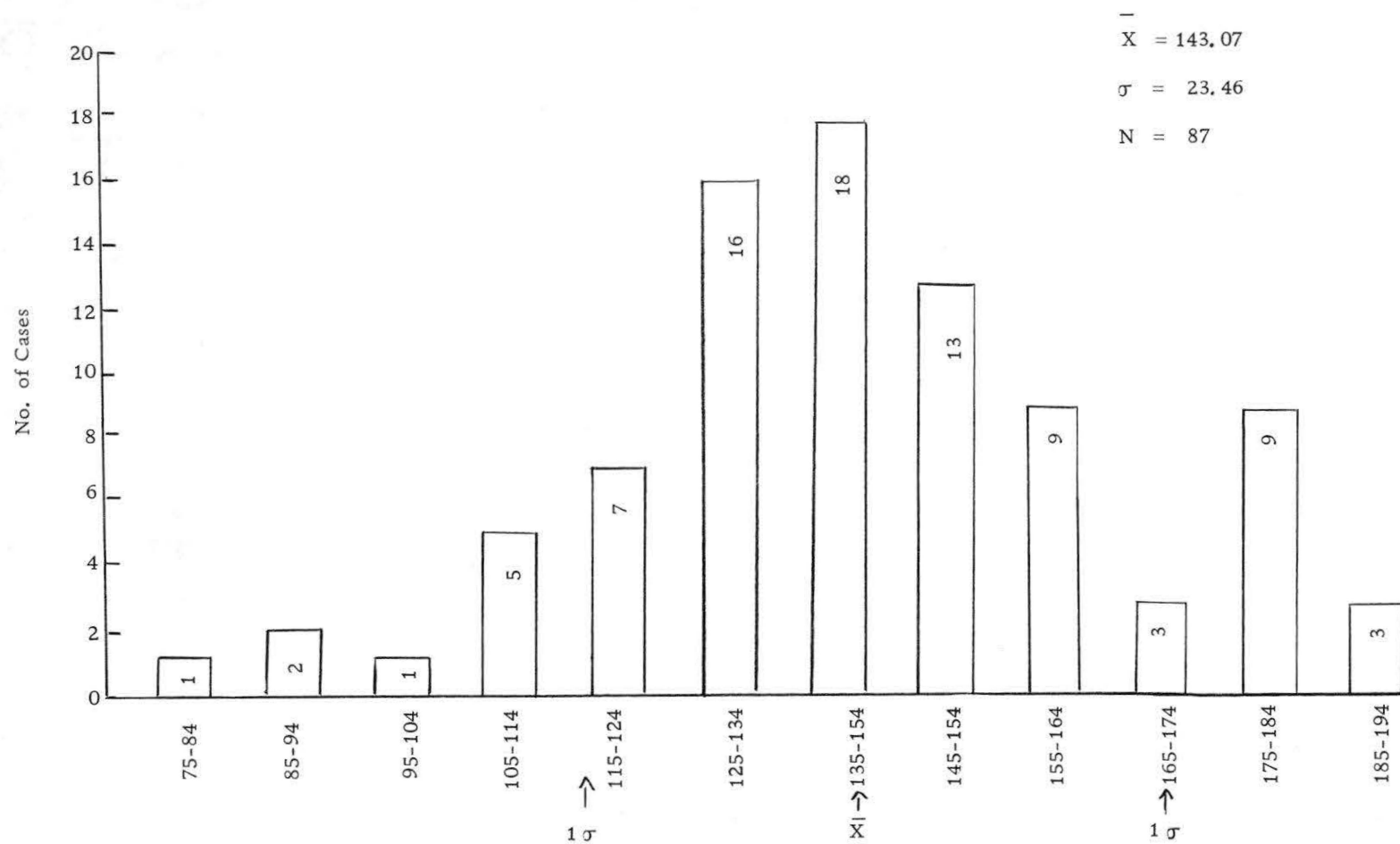


Fig. 2. --Range, mean and standard deviation for the dogmatism scale for pre-service secondary-school social studies teachers

group. Thus, these groups represented a sample from the tails of the distribution of the population from which they were drawn. As Table 1 indicates, the mean and the standard deviation of the open-minded group were 118.69 and 13.59 respectively; of the closed-minded, 166.87 and 11.31 respectively.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF THE D-SCALE
SCORES OF THE OPEN-MINDED AND
CLOSED-MINDED GROUPS

	(n = 32) Open-minded		(n = 32) Closed-minded	
	$\bar{x}$	σ	$\bar{x}$	σ
D-Scale Scores	118.69	13.59	166.87	11.31

The 32 subjects scoring the lowest were then randomly assigned, using a table of random numbers,¹ to the two treatment groups, forming sub-groups OA (Open-minded, Instruction Analytic) and OS (Open-minded, Instruction Synthetic); the 32 subjects scoring the highest were randomly assigned to the same treatments, forming sub-groups CA (Closed-minded, Instruction Analytic) and CS (Closed-minded, Instruction Synthetic).

¹J. F. Kenny and E. S. Keeping, Mathematics of Statistics. Princeton: D. Van Nostrand Co., Inc., 1954, pp. 330-333.

The N for the study was 64, with an n of 16 for each of the four sub-groups. The sub-groups were designated as follows:

Sub-group OA (Open-minded, Instruction Analytic) n = 16

Sub-group CA (Closed-minded, Instruction Analytic) n = 16

Sub-group OS (Open-minded, Instruction Synthetic) n = 16

Sub-group CS (Closed-minded, Instruction Synthetic) n = 16

The two treatments, Instruction A and Instruction S, were assigned randomly to the sub-groups. There was no attrition of subjects during the course of the experiment.

Design

The hypotheses and questions of this study suggested a need to test for (1) differences in change scores between categories of the independent variable, the belief-disbelief system, and (2) differences in change scores between categories of another independent variable, instruction. They further called for testing for differences in change scores among the following sub-groups: OA, CA, OS and CS. The dependent variable was change in attitude toward teaching situations in which the measures used were scores on the TSRT. The experimental design adopted, therefore, included a crossbreak of two categories of belief-disbelief system and two categories of

instruction. In Table 2 is found a summary of this experimental design.

Instruments

The following instruments were selected for use in this study:

(1) Rokeach's Dogmatism Scale Form E, and (2) the Teaching Situation Reaction Test.

1. Rokeach's Dogmatism Scale Form E (D-Scale)

The D-Scale developed by M. Rokeach is an instrument which measures degrees of dogmatism. It is a summated rating scale in which items measure the characteristics of open and closed belief systems. Form E, which is the fifth revision, contains forty items, each marked by the subject according to the following scale:

- | | |
|--------------------------|-----------------------------|
| +1: I agree a little | -1: I disagree a little |
| +2: I agree on the whole | -2: I disagree on the whole |
| +3: I agree very much | -3: I disagree very much |

This scale ranging from -3 to +3 was subsequently converted for scoring purposes into a 1 to 7 scale by adding a constant of 4 to each item. The sum of the scores for all items was considered to be the total score. The theoretical range was, therefore, from 40 to 280. High scores indicated relative closed-mindedness; low scores

TABLE 2

SUMMARY OF THE EXPERIMENTAL DESIGN SHOWING
THE COMPOSITION OF THE MAIN AND SUB-GROUPS
AND DESCRIPTION OF INSTRUCTION GIVEN

(N = 64) Belief-Disbelief System		(N = 64) Instruction	
		IA Group (Instruction-Analysis)	IS Group (Instruction-Synthesis)
	Open-minded Group	<u>OA Sub-group</u> (n = 16) Open-minded sub-group assigned at random from 32 lowest scoring subjects on D-Scale, Form E. Instruction: tasks assigned were analytic.	<u>OS Sub-group</u> (n = 16) Open-minded sub-group assigned at random from 32 lowest scoring subjects on D-Scale, Form E. Instruction: tasks assigned were synthetic as well as analytic.
	Closed-minded Group	<u>CA Sub-group</u> (n = 16) Closed-minded sub-group assigned at random from 32 highest scoring subjects on D-Scale, Form E. Instruction: tasks assigned were analytic.	<u>CS Sub-group</u> (n = 16) Closed-minded sub-group assigned at random from 32 highest scoring subjects on D-Scale, Form E. Instruction: tasks assigned were synthetic as well as analytic.

indicated relative open-mindedness.

In administering this form, the investigator indicated to the subjects that the test had no bearing on the grades for the course. They were given verbal assurance of anonymity.

Rokeach has reported empirical evidence demonstrating that the D-Scale is not related to intelligence as measured by the American Council on Education Test, the Ohio State Psychological Examination Test and Wonderlic Test.² Further, a study by Eldridge Erickson revealed that it is not correlated with sex,³ and John Croft has shown that it is not correlated with age.⁴ Rokeach himself undertook an extensive series of investigations aimed at testing both his theory and validity of his scale.⁵ His evidences provided justification for accepting the validity of both his theoretical formulation and the instrument he devised therefrom.

In testing for reliability, Rokeach utilized English workers, English college students, American college students and residents of a New York Veterans' Administration domiciliary as subjects and

²M. Rokeach, The Open and Closed Mind. New York: Basic Books, Inc., 1960, pp. 404-407.

³E. Erickson, Dissertation Abstracts, 1962.

⁴J. C. Croft, Dissertation Abstracts, 1965.

⁵M. Rokeach, op. cit.

found reliability indices ranging from .68 to .93 using the odd-even formula and in some cases, a test-retest method.⁶ Rokeach concluded that in light of the fact that the D-Scale

contains quite a strange collection of items that cover a lot of territory and appear on the surface to be unrelated to each other, the reliabilities found can be considered satisfactory.⁷

The scale is so constructed that it can be administered to subjects in groups. In this study, the subjects were requested not to place their names, but to enable later identification of subjects for grouping, they were asked to record their sex, birthdate, place of birth, high school matriculated, undergraduate level, and major interest in the social sciences. This information was matched with course registration forms to identify each of the subjects.

To control investigator bias that might have arisen from knowledge of the subjects' scores on the D-Scale, the investigator received the assistance of graduate students to score the scale and to assign the subjects to sub-groups as required by the experiment.

2. Teaching Situation Reaction Test (TSRT)

The criterion measures for this study were scores on the

⁶Ibid.

⁷Ibid., p. 90.

Teaching Situation Reaction Test, 1966 revision, which is a fourth revision of a test designed initially in 1957 by J. K. Duncan and J. B. Hough. It is a 48 item forced-choice instrument in which subjects were asked to rank four possible options ranging from most desirable to least desirable. Designed primarily for use with pre-service teachers, this test confronted subjects with problems related to ongoing classroom situations. The authors of the test stated that "these situations are intentionally subject matter neutral" and that the reactions "have to do with such common aspects of teaching as planning, classroom management, teacher pupil relationships."⁸

The construct of the test included the following dimensions:

(a) the type of control a teacher would use in the classroom, i. e., direct and indirect, (b) the relationship the teacher would have with students in the classroom, i. e., empathetic or self-oriented, (c) the approach a teacher would take to classroom problems of instruction and control, i. e., objective or subjective and (d) the approach the teacher would have to classroom methodology, i. e., experimental or conservative.⁹

⁸James K. Duncan and J. B. Hough, "Technical Review of the Teaching Situation Reaction Test." Unpublished manuscript, September 15, 1966, (mimeographed).

⁹John B. Hough and Edmund J. Amidon, Behavioral Change in Pre-Service Teacher Preparation: An Experimental Study. Philadelphia: College of Education, Temple University, n.d., pp. 25-26.

Studies lent support to the TSRT's construct and predictive validity. It has been shown that it is not significantly related to intelligence as measured by the California Test of Mental Maturity, nor to attitude as measured by the Minnesota Teacher Attitude Inventory, nor to critical thinking as measured by the Watson-Glaser Critical Thinking Appraisal.¹⁰ Two studies indicated the test's resistance to faking.¹¹ Further, the authors have provided evidence that the T.S.R.T. is not related significantly to age, sex, number of years of teaching experience, hours of training in the subject area, and degrees held.¹² They report a reliability index of .94 using a split-half procedure.¹³ Duncan and Hough have indicated that studies have provided evidence

that the T.S.R.T. has good reliability, is resistant to faking, has validity, and is appropriate as a research tool in the study of pre-service teacher education courses.¹⁴

The scoring procedure for rank ordering four options of each item was considered to be composed of six paired options, making six instead of four, the maximum possible score for each item. The

¹⁰James K. Duncan and J. B. Hough, op. cit.

¹¹Ibid. ¹²Ibid., p. 13. ¹³Ibid., p. 36.

¹⁴John B. Hough and Edmund J. Amidon, op. cit., p. 10.

theoretical range of this test with 48 items was 0 to 288. High scores were considered to be "good" scores and low scores "poor" scores. This unique scoring system is described by the authors in the technical review of the test,¹⁵ and in the "Scoring Instructions for TSRT" which the investigator received from the authors in conjunction with the test key. In deference to the authors' request, the key is not included in this report.

As in the case of the D-Scale, the investigator obtained the aid of graduate students to score the TSRT to prevent possible bias arising from the investigator's knowledge of the subjects' scores. The subjects were advised that the test had no bearing on their grades for the course and that anonymity would be preserved. Subjects were asked not to place their names, but to enable later identification, they were asked to record the same demographic information requested when D-Scale Form E was administered. Again, this information was matched with course registration forms to identify each of the subjects.

The TSRT was administered twice, at the outset as a pre-test immediately upon assignment of subjects to the sub-groups and prior

¹⁵James K. Duncan and J. B. Hough, op. cit., p. 30.

to any treatment. It was readministered immediately upon completion of the treatment period. The test was considered to be sufficiently complex to prevent the influence of practice over the eight week interval. This assumption is lent support by the claim made by Duncan and Hough, who in a report of a reliability study with an interval of four days, stated that

it is reasonable to believe the response pattern is sufficiently complex to warrant such a short interval between testings.¹⁶

Instruction Analytic and Instruction Synthetic

A crucial variable for this study was instruction in which the substantive content was held constant but in which the control exercised by the instructor was differentiated in terms of kinds of tasks assigned to the treatment groups. The two treatment groups were designated in this study as the IA group, those assigned tasks involving primarily analysis, and the IS group, those assigned tasks involving both analysis and synthesis. For both groups the investigator was the instructor.

The substantive content of instruction was selected according to the following criteria:

¹⁶John B. Hough and Edmund J. Amidon, op. cit., p. 36.

- (1) the content of instruction should be systems that permit analysis of the whole or segments of classroom verbal interaction,
- (2) the systems should be usable by the subjects in developing lesson plans and in analyzing lessons given,
- (3) at least two analysis systems should be selected, one with a cognitive orientation, and the other with an affective orientation,
- (4) the systems selected should enable immediate feedback of data of lessons analyzed,
- (5) the instructor should be sufficiently knowledgeable of the details of the systems used in instruction,
- (6) instructional materials and equipment necessary to instruction in the interaction analysis systems must be available.

Based on the above guidelines, three analysis systems were selected:

- (1) The Classroom Verbal Interaction Analysis System (IAS)

developed by Ned A. Flanders,¹⁷

- (2) The Taxonomy of Educational Objectives: Cognitive Domain developed by Benjamin S. Bloom et al. (Bloom's Taxonomy),¹⁸

- (3) The Evaluative Operations Analysis System (EOAS) developed by Milton Meux.¹⁹

It was assumed that these systems were conceptually new to the subjects, at least in the context of teaching.

A brief description of the two instructional modes follows:

Instruction A: Two sub-groups (OA and CA) combined into a single IA treatment group were assigned tasks to analyze, using interaction analysis systems, audio-taped lessons, typescript lessons, filmed lessons and video-taped lessons. The tasks focussed on the use of the conceptual schemes of Flanders, Bloom and Meux to analyze

¹⁷ Ned A. Flanders, Teacher Influence, Pupil Attitudes, and Achievement. Washington: U.S. Office of Education, Project # 25040, 1965.

¹⁸ Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives, Handbook I: Cognitive Domain. New York: David McKay Co., Inc., 1956.

¹⁹ B. O. Smith, et al., A Study of the Strategies of Teaching. Urbana, Ill., Bureau of Educational Research, College of Education, University of Illinois, 1967, Chapter IX, pp. 144-174.

lessons and segments of lessons taught by others. Assignment did not include development of lesson plans nor the giving of lessons.

Instruction S: The other two sub-groups (OS and CS) combined into a single IS treatment group were also assigned analytic tasks similar to the ones listed for the IA group but for a shorter duration. But beyond these tasks, this group was assigned synthetic tasks such as the following:

(1) guided building of Flanders IAS, Bloom's Taxonomy, and Meux's EOAS from selected segments of typescripts of lessons. In effect, this task corresponded to concept formation, progressing from data discrimination and identification, to classifying and labelling, and ordering of categories;

(2) designing micro-lessons synthesizing content and selected components and/or patterns derived from the three interaction analysis systems and teaching according to the micro-lessons to a group of colleagues in simulated classroom situations;

(3) relating the intent in micro-lesson plans with data assembled by colleague observers.

It was expected that in treatment situations that questions would be raised by subjects. Analytic questions in both groups were entertained and discussed. Questions involving synthesis were not

encouraged in the IA group whereas they were entertained and discussed in the IS group.

During each instruction session a graduate student observer recorded a general description of assigned tasks. Following the instruction session, the instructor and the graduate student jointly compiled a summary of instruction (see Appendix B). This summary indicated that Instruction A and Instruction S conformed to the distinctions made earlier in this chapter.

The two treatment groups attended a three hour single evening session per week for the duration of the experiment. The IA group met on Tuesdays and IS group on Wednesdays. Each group met during the experiment for 23 hours spread over eight weeks prior to their first field experience in student teaching. The instructional content and instruction were considered to be part of the course, and at no time were the subjects given indication that an experiment was being conducted.

Methodological Considerations

This study was guided by four directional hypotheses and four questions, which for statistical testing were converted into the following eight null hypotheses:

- NH-1 There is no significant difference in change in attitude between open-minded and closed-minded sub-groups both given Instruction S.
- NH-2 There is no significant difference in change in attitude between open-minded and closed-minded sub-groups both given Instruction A.
- NH-3 There is no significant difference in change in attitude between Instruction A group and Instruction S group.
- NH-4 There is no significant difference in change in attitude between the open-minded sub-group given Instruction S and the closed-minded sub-group given Instruction A.
- NH-5 There is no significant difference in change in attitude between the combined open-minded sub-groups given Instruction S and Instruction A and the combined closed-minded sub-groups given Instruction S and Instruction A.
- NH-6 There is no significant difference in change in attitude between the open-minded sub-group given Instruction A and the open-minded sub-group given Instruction S.
- NH-7 There is no significant difference in change in attitude between the open-minded sub-group given Instruction A and the closed-minded sub-group given Instruction S.

NH-8 There is no significant difference in change in attitude between the closed-minded sub-group given Instruction A and the closed-minded sub-group given Instruction S.

An Initial Analysis

This present study was grounded in an investigation reported by Hough and Amidon in which they defined change scores as the mean pre-test to post-test gain scores. Concerning the analysis of such change scores, Campbell and Stanley indicated that because procedures using pre-test scores as covariate yields greater precision in analysis, the method of analysis of covariance is preferable to gain score comparisons.²⁰ Thus, initially, the pre-test scores on the TSRT were considered as covariate and the method of analysis of covariance was adopted.

However, an internal check contained in the analysis of covariance revealed that the within sub-groups regressions were not homogeneous and that the regression line was not linear, thus violating fundamental assumptions underlying parametric analysis of

²⁰ Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally and Co., 1963, p. 23.

covariance. These findings together with other considerations compelled the investigator to reject this procedure and to adopt a non-parametric statistical test.

The Kruskal-Wallis One-Way Analysis of Variance by Ranks

The scores on the TSRT are basically ordinal for the subjects of the study were asked to rank order four options in each of the 48 items. Furthermore, in scoring the rank orders, the number of decisions involved in rank ordering was considered. The intervals between decisions cannot be regarded as being equal. Both the ordinality of data and the inequality of intervals supported the use of non-parametric statistical procedure. At the same time, its use removed the necessity of assuming normality of distribution of the scores or homogeneity of variances.

The Kruskal-Wallis one-way analysis of variance is a rank order test. S. Siegel has indicated the high level of the power-efficiency of this test in the following statement:

The Kruskal-Wallis test seems to be the most efficient of the non-parametric tests for k independent samples. It has power-efficiency of . . . 95.5 per cent, when

compared with the F test, the most powerful parametric test.²¹

The above considerations led the investigator to judge the Kruskal-Wallis one-way analysis of variance by ranks as appropriate in the analysis of data for this study.

It was recognized that the conversion of scores into ranks meant a loss of some qualitative information, but it was deemed more efficient than the median test which simply dichotomizes data as above or below the median.

The data for this study were considered to be continuous, an assumption required in the Kruskal-Wallis test. Furthermore, since the subjects in each treatment group were originally selected from the same parent population on the basis of the measures on the D-Scale scores only, it was assumed that the selection was random with reference to all other factors for any given value of the D-Scale.

In this study, analyses were done in two phases. In the first phase, an overall analysis testing for significant differences in change score ranks among the OA, CA, OS, and CS sub-groups was made. Since the test revealed an overall significant difference among

²¹Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Co., Inc., 1956, pp. 184-194.

sub-groups, they were further analyzed in pairs. In the second phase, analyses were made of change score ranks (1) between the open-minded and closed-minded groups, and (2) between the Instruction A group and the Instruction B group.

The H statistic used in the Kruskal-Wallis test was checked against the critical value of chi-square to determine whether or not an observed H indicated significant sample population differences. In all tests, the level of significance was pre-set at .05.

The formula and procedure used to compute the H is found in Siegel's book.²²

Summary

In this chapter procedural considerations relevant to this study were reported. The population was first described and the procedures used to establish the four sub-groups necessary to the study were then indicated. A brief description was then given of the design adopted. The two key instruments, Rokeach's D-Scale Form E and the TSRT, were detailed and supporting evidences as to their validity and reliability were provided. This was followed by a description of the differentiated instruction given to the treatment

²²Ibid., p. 188.

groups of the study. The chapter was concluded by reporting on an initial attempt to analyze the data and the subsequent decision to utilize the non-parametric Kruskal-Wallis one-way analysis of variance by ranks.

CHAPTER IV

ANALYSIS, INTERPRETATIONS AND IMPLICATIONS

In this chapter are reported in separate sections (1) the findings resulting from statistical analysis, (2) interpretation of these findings, and (3) implications to teacher education. The specific data for each set of analysis is found in the tables in Appendix G.

Findings

To test for possible overall significant differences among the four sub-groups, the Kruskal-Wallis analysis by ranks of the TSRT change scores was made. As shown in Table 3, the analysis yielded an observed H of 8.13. The critical value of chi-square disclosed that the probability associated with the occurrences under the null hypothesis, that there is no overall significant difference in change scores among the sub-groups OA, OS, CA, and CS of a value of H as large as 8.13, df of 3, is significant at the .05 level of confidence. The rejection of the null hypothesis necessitated further analyses between sub-groups taken in pairs to test null hypotheses 1, 2, 4, 6, 7, and 8.

TABLE 3

COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
OA, OS, CA, AND CS*

	(n = 16)	(n = 16)	(n = 16)	(n = 16)		Level of signifi- cance**
	OA	OS	CA	CS	H	
(N = 64)						
Sum of Ranks of TSRT change scores	508.5	691	479	401.5	8.13	.05

* See Appendix G, Table I (Part A and Part B)

**
df = 3

To test null hypotheses 3 and 5, similar analyses were made between groups.

Hypothesis 1

Null hypothesis 1, that there is no significant difference in change in attitude between open-minded and closed-minded sub-groups both given Instruction S, was rejected. The Kruskal-Wallis test of the ranks of change scores between the OS sub-group and the CS sub-group revealed an observed H of 7.38 (See Table 4). The test indicated that the change scores of open-minded pre-service

TABLE 4
COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS OS AND CS*

	(n = 16) OS	(n = 16) CS	H	Level of significance**
(N = 32)				
Sum of Ranks of TSRT change scores	336	192	7.38	.05

* See Appendix G, Table III.

** df = 1

secondary-school social studies teachers as compared to those of the closed-minded both given Instruction S varied significantly. Inspection of the change scores disclosed that this difference was in a positive direction in favor of the OS sub-group. Thus hypothesis 1 was upheld as predicted.

Hypothesis 2

Null hypothesis 2, that there is no significant difference in change in attitude between open-minded and closed-minded sub-groups both given Instruction A was accepted. As shown in Table 5, the Kruskal-Wallis test of ranks revealed an H of -7.66, not significant at the .05 level of confidence. This test supported hypothesis 2.

TABLE 5
COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
OA AND CA*

	(n = 16) OA	(n = 16) CA	H	Level of significance **
(N = 32)				
Sum of Ranks of TSRT change scores	260	247	-7.66	N.S.

* See Appendix G, Table 4.

**
df = 1

When open and closed-minded pre-service secondary-school social studies teachers were given Instruction Analytic, it was found, as predicted, that there was no significant difference in change in attitude toward teaching situations between the two sub-groups OA and CA.

Hypothesis 3

Null hypothesis 3, that there is no significant difference in change in attitude between Instruction A group and Instruction S group, was accepted. The Kruskal-Wallis test revealed an observed H of 0.49, which with a df of 1, was not significant (see Table 6).

Thus, hypothesis 3 was confirmed. The change scores of two groups of pre-service secondary-school social studies teachers who were given instruction in interaction analysis systems differentiated in terms of analytic and synthetic tasks assigned did not demonstrate any significant difference in their change in attitude toward teaching situations.

TABLE 6

COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN INSTRUCTION
ANALYTIC AND INSTRUCTION
SYNTHETIC GROUPS*

	(n = 32) Instruction Analytic	(n = 32) Instruction Synthetic	H	Level of significance **
(N = 64)				
Sum of Ranks of TSRT change scores	987.5	1092.5	0.49	N.S.

* See Appendix G, Table II.

**
df = 1

Hypothesis 4

Null hypothesis 4, that there is no significant difference in change in attitude between the open-minded sub-group given

Instruction S and the closed-minded sub-group given Instruction A, was accepted. The Kruskal-Wallis test indicated an observed H of 3.70, not significant at the .05 level of confidence (see Table 7). Hence, hypothesis 4 was not supported. The prediction that open-minded pre-service secondary-school social studies teachers given Instruction Synthetic and their closed-minded counterparts given Instruction Analytic will differ in their change in attitude toward teaching situations was not upheld, although the observed H approached the critical value of 3.84.

TABLE 7
COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
OS AND CA*

	(n = 16) OS	(n = 16) CA	H	Level of significance**
(N = 32)				
Sum of Ranks of TSRT change scores	315	213	3.70	N.S.

* See Appendix G, Table V.

** df = 1

Question 1

Null hypothesis 5, that there is no significant difference in change in attitude between the combined open-minded sub-groups given Instruction S and Instruction A and the combined closed-minded sub-groups given Instruction S and Instruction A, was rejected. As it is shown in Table 8, the observed H was found to be 4.59, significant at the .05 level of confidence with a df of 1. Thus question 1 was answered in the affirmative, that there is a significant difference in change in attitude toward teaching situations between the open and closed-minded groups of pre-service secondary-school social studies teachers. Inspection of the change scores indicated that the significance was in favor of the open-minded group in the positive direction.

TABLE 8

COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN THE OPEN-MINDED
AND THE CLOSED-MINDED GROUP*

	(n = 32) Open- minded	(n = 32) Closed- minded	H	Level of significance **
(N = 64)				
Sum of Ranks of TSRT change scores	1199.5	880.5	4.59	.05

*See Appendix G, Table II.

**df = 1

Question 2

Null hypothesis 6, that there is no significant difference between the open-minded sub-group given Instruction A and the open-minded sub-group given instruction S, was accepted. The Kruskal-Wallis test revealed an observed H of 3.42, not significant at the .05 level of confidence (see Table 9). Thus question 2 was answered in the negative. When the change in attitude toward teaching situations of open-minded pre-service secondary-school social studies teachers who were given Instruction A was compared to that of their counterparts given Instruction S, they did not demonstrate any significant difference. It is noted, however, that the observed H approached the critical value of 3.84.

TABLE 9
COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
OA AND OS*

	(n = 16) OA	(n = 16) OS	H	Level of significance**
(N = 32)				
Sum of Ranks of TSRT change scores	215	313	3.42	N.S.

* See Appendix G, Table VI.

** df = 1

Question 3

Null hypothesis 7, that there is no significant difference in change in attitude between the open-minded sub-group given Instruction A and the closed-minded sub-group given Instruction S was accepted. As shown in Table 10, the Kruskal-Wallis test indicated an observed H of 1.24, not significant at the .05 level of confidence. Thus question 3 was answered in the negative. The change in attitude toward teaching situations of open-minded pre-service secondary-school social studies teachers given Instruction A and that of their closed-minded counterparts given Instruction S were not significantly different.

TABLE 10

COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
OA AND CS*

	(n = 16) OA	(n = 16) CS	H	Level of significance**
(N = 32)				
Sum of Ranks of TSRT change scores	293.5	234.5	1.24	N.S.

* See Appendix G, Table VII.

** df = 1

Question 4

Null hypothesis 8, that there is no significant difference in change in attitude between the closed-minded sub-group given Instruction A and closed-minded sub-group given Instruction S, was accepted. The Kruskal-Wallis test revealed an observed H of 0.42, not significant at the .05 level of confidence (see Table 11). Thus, question 4 was answered in the negative. No significant difference was demonstrated in change in attitude toward teaching situations between the closed-minded individuals given Instruction A and their counterparts given Instruction S.

TABLE 11
COMPARISON OF RANKS OF TSRT CHANGE SCORES OF
PRE-SERVICE TEACHERS IN SUB-GROUPS
CA AND CS*

	(n = 16) CA	(n = 16) CS	H	Level of significance**
(N = 32)				
Sum of Ranks of TSRT change scores	281	247	0.42	N.S.

* See Appendix G, Table VIII.

** df = 1

These findings show that of the eight null hypotheses tested, two of them, null hypotheses 1 and 5, were rejected and the remaining six, null hypotheses 2, 3, 4, 6, 7, 8 were accepted. This fact meant that of the four hypotheses postulated for the study, three of them, hypotheses 1, 2, and 3 were supported but the fourth hypothesis was not, and that of the four questions put to test, question 1 was answered in the affirmative and the remaining three, questions 2, 3, and 4 were answered in the negative. Interpretations of the above findings follow.

Interpretations

In this section the population referent of the interpretations was a body of pre-service secondary-school social studies teachers enrolled in the Faculty of Education at the University of Alberta, who constituted the subjects of investigation in this study.

Taken together, the findings relative to question 1 and hypotheses 1 and 2 provide a meaningful context for interpretation. The answer to question 1 indicated that the independent variable of belief-disbelief system, categorized into open and closed-mindedness, was a significant factor, change scores of the open-minded group as compared to those of the closed-minded group being significantly different in a positive direction in favor of the former.

A possible explanation of this finding can be sought in the findings relative to hypotheses 1 and 2 which were concerned with comparisons of change scores between open and closed-minded sub-groups.

Analyses disclosed that whereas there was no significant difference in change scores between the open and closed-minded sub-groups given Instruction Analytic, there was, on the other hand, a significant difference in change scores between corresponding sub-groups given Instruction Synthetic.

The joint findings relative to hypotheses 1 and 2 can be explained by referring to the theoretical conception underlying these central hypotheses of the study. Reference was made to Rokeach who postulated that when open-minded and closed-minded individuals confront conceptions new to them, they differ in their cognitive functioning, i. e., they do not differ in the performance of analytical tasks because these tasks are not threatening to their belief-disbelief systems, whereas they differ in the performance of synthetic tasks because these tasks are threatening to their belief-disbelief systems. Providing the conceptual newness of the interaction analysis systems used in the study can be assumed, the results show that when open-minded and closed-minded pre-service secondary-school social studies teachers were assigned analytical tasks utilizing interaction analysis systems, they did not differ in change scores on the TSRT,

because these tasks did not impose a threat to them. However, when the corresponding counterparts were assigned synthetic tasks utilizing the same interaction analysis systems, they differed in change scores on the TSRT because the two sub-groups reacted differently to the threat imposed by the tasks on their belief-disbelief systems.

By itself, the finding relative to hypothesis 1 gives replicated support of a similar finding reported by Hough and Amidon that gain scores of the open-minded and those of the closed-minded pre-service teachers that they examined differed significantly.

In reporting the finding relative to question 1, no explanation was provided. The fact that the question was not theoretically formulated prevented such a provision. However, in light of the findings relative to hypotheses 1 and 2, a possible explanation is advanced that the overall superiority in change in attitude demonstrated by the combined open-minded subjects in comparison with the combined closed-minded subjects was mainly the effect not of the difference in change scores between the open and closed-minded given Instruction A but rather of the significant difference in change scores between the open and closed-minded given Instruction S.

The findings relative to hypothesis 3 and questions 3 and 4 taken together provide another context for further interpretation.

Hypothesis 3 was postulated based on a study by Hough and Amidon in which they found no significant difference in change scores on the TSRT between an experimental group given training and supervision in Flanders IAS, and a control group taught conventionally, i. e., without contact with the IAS. In this present study since both treatment groups were given instruction in interaction analysis systems, it was predicted that there was no likelihood of finding a significant difference in change scores between the two instruction groups. Evidences provided by this study show that there was no significant relationship between instruction, on the one hand, and on the other, differences in change scores between the group given Instruction Analytic and the group given Instruction Synthetic, between the open-minded sub-group given Instruction Analytic and the open-minded sub-group given Instruction Synthetic, and between the closed-minded sub-group given Instruction Analytic and the closed-minded sub-group given Instruction Synthetic. Instruction, in and by itself, was not related to differences in change scores between groups and between sub-groups. The above findings support the finding of Hough and Amidon referred to above. However, the lack of a theoretical basis prevented the presentation of an explanation for the above findings.

But, when the findings relative to hypotheses 1 and 2 are also

considered, the evidences, that the comparison of change scores between open and closed-minded subjects given Instruction Analytic indicated no significant difference, whereas a comparison of open and closed-minded subjects given Instruction Synthetic indicated a significant difference, suggest that instruction conjoined with the belief-disbelief system had a joint influence on differences in change scores. Instruction S and open-mindedness of the subjects seem to have operated jointly to effect a change in attitude toward teaching situations significantly different from other possible combinations. This possible interpretation deserves some support when it is noted that the difference in change scores between OS and CS was significant, and the difference in change scores between OS and OA and that between OS and CA approached the significant level.

Finally, the findings relative to hypothesis 4 and question 3 are considered together. Hypothesis 4, that there will be a significant difference in change scores between the open-minded sub-group given Instruction S and the closed-minded sub-group given Instruction A, was posited on the ground that if a significant difference can be expected in change scores between the open and closed-minded sub-groups both given Instruction S, as stated in hypothesis 1, then there is no reason to believe that the closed-minded sub-group given Instruction A who operated in a non-threatening situation would

demonstrate less change in attitude. The hypothesis was not supported. But the fact that the observed $\underline{H}$ of 3.70 approached the critical value of significance gives some credence to the prediction made.

The non-significant finding may be attributed to the possibility that the closed-minded sub-group given Instruction A had a greater positive change in attitude as compared to their counterparts given Instruction S. Another reason may be found in the possibility that the TSRT as a measuring instrument may not have accurately reflected the changes in attitude. A third possibility may be attributed to the fact that the power-efficiency of the Kruskal-Wallis test is less than the parametric $\underline{F}$ test. The difference in the power-efficiency may have been sufficient to register a non-significant difference.

Question 3 examined the converse relationship of that examined in hypothesis 4. It was answered in the negative, that is, there was no significant relationship in change scores between the open-minded sub-group given Instruction A and the closed-minded sub-group Instruction S. The nature of the design allowed the entertainment of the question, but because of the lack of a theoretical basis in the formulation of the question, no explanation for the finding is offered.

Implications to Teacher Education

The findings and the interpretations of the hypotheses and the questions of the study suggest implications for teacher education. Three of them are given here.

The Significance of Belief-Disbelief Systems

A point of departure for this study was Rokeach's socio-psychologic theory regarding the relationship between belief-disbelief systems of individuals and their cognitive functioning involving analytic and synthetic tasks. This theory was invoked in the context of pre-service teacher education. The confirmation of hypothesis 1 and 2, designed to test Rokeach's theory in an educational context, indicated the validity of this theory.

The findings of this study imply that if change in attitude toward teaching situations is a goal sought in the education of pre-service secondary-school social studies teachers, the instructor needs to give consideration to the structure of the belief-disbelief systems of his students. According to this study, to expect similar results from dissimilar personality structured individuals is unwarranted. In this regard, the instructor should find the D-Scale to be a useful tool in determining differentiated goals of instruction.

Interaction Analysis Systems as Content of Instruction

A review of studies using verbal interaction analysis systems as substantive content in teacher education has shown that they are, in the main, restricted to the use of Flanders IAS or its modifications, focussing on the socio-psychological dimension of classroom dialogue. In this study, three interaction analysis systems were utilized as content of instruction, one, socio-psychological, and the others, cognitive in orientation. The results of this study indicated, at least for the open-minded pre-service secondary-school social studies teachers, the utility of more than a single interaction analysis system. The above lends support to advocates such as Ned A. Flanders, N. Furst, D. M. Medley, J. J. Gallagher, and J. H. Hansen, who have been urging the use of interaction analysis systems as substantive material for instruction. If it is indeed accepted that a central concern in teacher education is teaching, then the findings of this study and other related studies support the contention that classroom interaction analysis systems be made a significant curricular component in pre-service teacher education.

Instruction

In this study no significant difference was found in change in

attitude toward teaching situations between instruction groups. However, it was noted that there is a strong indication that the variables of instruction and belief-disbelief system inter-related to bring about superiority in change scores of the open-minded sub-group given Instruction Synthetic. If this interpretation is accurate, it implies that an instructor in using interaction analysis systems as content material with open-minded students needs to assign not only analytic tasks but also synthetic tasks. This study strongly suggests that with open-minded pre-service students, the role of the instructor should be that of process support, that of encouraging and guiding the students' self-analysis and self-synthesis.

Summary

This chapter was divided into three sections. In section 1 were reported the findings relative to the four hypotheses and four questions of the study. Each was considered in terms of the statistical test of the related null hypothesis. In section 2, these findings were interpreted, the four hypotheses in terms of their theoretical or research bases. In section 3, main implications to pre-service teacher education were drawn.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

Summary of the Study

Purpose

The purpose of this study was to investigate experimentally the relationship, if any, of belief-disbelief systems of pre-service secondary-school social studies teachers and differentiated instruction in classroom verbal interaction analysis systems to change in attitude toward teaching situations. In order to test this relationship, four hypotheses and four questions were formulated to guide the investigation.

Review of Literature and Research

In Chapter II was presented a review of literature and research related to the study. Recent conceptions of teaching and new approaches to research in teaching were reviewed, both indicating concern for the need to investigate teaching in situ. How some of the interaction analysis systems which were developed as observational research tools came to be used as instructional content in teacher education was presented together with recent research associated

with this development. Hough and Amidon's study of behavioral change in pre-service teacher preparation formed the main point of departure and Rokeach's theory concerning the cognitive functioning of open and closed-minded individuals undergirded the study.

Procedure

The population for this study were undergraduate pre-service secondary-school social studies teachers registered in the Faculty of Education, University of Alberta, during the academic year 1968-1969. They were administered Rokeach's D-Scale Form E and samples drawn, those with 32 lowest scores designated as the open-minded group and those with 32 highest scores designated as the closed-minded group. The 32 in each group were assigned randomly to two modes of instruction, Instruction Analytic and Instruction Synthetic. The experimental design consisted of an N of 64, divided into four sub-groups, each with an n of 16.

The three verbal interaction analysis systems selected as the substantive content of instruction were Flanders Verbal Interaction Analysis System, Bloom's Taxonomy of Educational Objectives in the Cognitive Domain, and Meux's Evaluative Operations Analysis System. The investigator served as instructor to both groups.

Data were gathered using the fourth revision of the Teaching

Situation Reaction Test which was administered as pre-test and post-test, the difference between the two operationally defined as the change score. The change scores were subjected to the Kruskal-Wallis analysis of variance by ranks. For each test the level of significance was set at .05.

Results

Of the four hypotheses formulated, three of them were supported and one was rejected.

Hypothesis 1, that if pre-service secondary-school social studies teachers are given Instruction Synthetic, then there will be a difference in change in attitude toward teaching situations between the open-minded and closed-minded individuals in favor of the former, was supported. Hypothesis 2, that if pre-service secondary-school social studies teachers are given Instruction Analytic, then there will be no difference in change in attitude toward teaching situations between the open-minded and closed-minded individuals, was also supported. The findings relative to the above two hypotheses, which were considered central to this study, substantiated Rokeach's theory and indicated the applicability of his theory to studies in teacher education.

Hypothesis 3, that if two groups of pre-service secondary-school

social studies teachers are given instruction in interaction analysis systems differentiated in terms of analytic and synthetic tasks assigned, there will be no significant difference between the groups in change in attitude toward teaching situations, was confirmed. The support of this hypothesis provided replicated evidence to a similar finding by Hough and Amidon in their investigation of behavior change in pre-service teacher preparation.

Hypothesis 4, that if the change in attitude toward teaching situations of open-minded pre-service secondary-school social studies teachers given Instruction Synthetic and that of the closed-minded given Instruction Analytic are compared, then there will be a difference in favor of the open-minded individuals, failed to receive support. The experimental design permitted the testing of four other relationships, which, because of the lack of theoretical or research bases, were posed in the form of questions.

Question 1 was answered in the affirmative, i. e., there was a significant difference in change in attitude toward teaching situations between the combined open-minded sub-groups and the combined closed-minded sub-groups. This finding indicated the significant role of the belief-disbelief system in relation to change in attitude toward teaching situations.

Question 2 was answered in the negative, i. e., there was found no significant difference in change in attitude between the open-minded individuals given Instruction Analytic and open-minded individuals given Instruction Synthetic. This finding is supportive of the finding relative to hypothesis 3.

Question 3 was also answered in the negative, i. e., there was no significant difference in change in attitude toward teaching situations between the open-minded individuals given Instruction Analytic and the closed-minded individuals given Instruction Synthetic.

Question 4 was also answered in the negative, i. e., there was no significant difference in change in attitude toward teaching situations between the closed-minded individuals given Instruction Analytic and the closed-minded individuals given Instruction Synthetic. This finding, as also that relative to question 2, was supportive of the finding relative to hypothesis 3.

Implications to Teacher Education

The findings of this study suggested the following implications to teacher education.

- (1) The belief-disbelief system of pre-service secondary-school social studies teachers is a significant factor to consider in giving instruction in verbal interaction

analysis systems. The instructor should expect dissimilar results from open-minded and closed-minded students.

- (2) The findings of this study imply, at least for the open-minded pre-service secondary school social studies teachers, that the use of more than one interaction analysis system as substantive content for instruction is feasible and useful in effecting change in attitude toward teaching situations.
- (3) Although this study revealed no significant difference in change scores between pre-service secondary-school social studies teachers given Instruction Analytic and those given Instruction Synthesis, there was strong evidence to suggest that instruction in combination with the belief-disbelief system bears a relationship with change in attitude toward teaching situations. If this interpretation is accurate, it implies that at least for the open-minded pre-service teachers, synthetic as well as analytic tasks be assigned.

Recommendations

Below are given some recommendations for future studies in

teacher education extending selected dimensions of this study.

- (1) Because the population of this study was limited to a body of pre-service secondary-school social studies teachers registered in a single course in a single school of education, the generalizability of the findings was restricted. In order to increase the level of generalizability, it is suggested that studies be replicated involving pre-service secondary-school teachers in social studies and in other subject areas. It is also suggested that studies be replicated involving pre-service elementary-school teachers in social studies and in other subject areas.
- (2) This study relied on a paper and pencil test, the Teaching Situation Reaction Test, to measure the subjects' reaction to teaching situations. It is recommended as an extension of this study that investigations including the measurement of the subjects' reaction to actual classroom teaching situations be conducted.
- (3) Although the findings of this study strongly suggested interaction effects of belief-disbelief systems and differentiated instruction on change in attitude toward

teaching situations, the nature of the statistical design did not permit the making of conclusive statements regarding such interaction. It is recommended as a methodological extension of this study that studies be conducted which will allow for the direct testing for interaction.

- (4) This study was restricted in time to 23 hours of instruction extended over a eight week period because of conditions beyond the investigator's control. It is recommended that similar studies extended over a longer period of time, such as a full term or semester, be conducted, thus introducing the variable of length of treatment.

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APPENDIX A

D-SCALE FORM E

(Copy of D-Scale Form E used in this study)

PLEASE DO NOT WRITE YOUR NAME

In the section below, you are requested to provide the following information:

Sex: _____ Date of Birth: _____
Day Mo. Year

Place of Birth: _____

High School Matriculated: _____

Undergrad level (encircle): _____
First Second Third Fourth

Major interest in the social sciences: _____

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one.

Write +1, +2, +3, OR -1, -2, -3, depending on how you feel in each case.

- | | |
|--------------------------|-----------------------------|
| +1: I AGREE A LITTLE | -1: I DISAGREE A LITTLE |
| +2: I AGREE ON THE WHOLE | -2: I DISAGREE ON THE WHOLE |
| +3: I AGREE VERY MUCH | -3: I DISAGREE VERY MUCH |

- _____ (1) The United States and Russia have just about nothing in common.
- _____ (2) The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.
- _____ (3) Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.
- _____ (4) It is only natural that a person would have a much better acquaintance with ideas he believes in than with ideas he opposes.
- _____ (5) Man on his own is a helpless and miserable creature.

- ____ (6) Fundamentally, the world we live in is a pretty lonesome place.
- ____ (7) Most people just don't give a "dam" for others.
- ____ (8) I'd like it if I could find someone who would tell me how to solve my personal problems.
- ____ (9) It is only natural for a person to be rather fearful of the future.
- ____ (10) There is so much to be done and so little time to do it in.
- ____ (11) Once I get wound up in a heated discussion I just can't stop.
- ____ (12) In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.
- ____ (13) In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.
- ____ (14) It is better to be a dead hero than to be a live coward.
- ____ (15) While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein, or Beethoven, or Shakespeare.
- ____ (16) The main thing in life is for a person to want to do something important.
- ____ (17) If given the chance I would do something of great benefit to the world.
- ____ (18) In the history of mankind there have probably been just a handful of really great thinkers.
- ____ (19) There are a number of people I have come to hate because of the things they stand for.
- ____ (20) A man who does not believe in some great cause has not really lived.

- ____(21) It is only when a person devotes himself to an ideal or cause that life becomes meaningful.
- ____(22) Of all the different philosophies which exist in this world there is probably only one which is correct.
- ____(23) A person who gets enthusiastic about too many causes is likely to be a pretty "wishy-washy" sort of person.
- ____(24) To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.
- ____(25) When it comes to differences of opinion in religion we must be careful not to compromise with those who believe differently from the way we do.
- ____(26) In times like these, a person must be pretty selfish if he considers primarily his own happiness.
- ____(27) The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.
- ____(28) In times like these it is often necessary to be more on guard against ideas put out by people or groups in one's own camp than by those in the opposing camp.
- ____(29) A group which tolerates too much differences of opinion among its own members cannot exist for long.
- ____(30) There are two kinds of people in this world: those who are for the truth and those who are against the truth.
- ____(31) My blood boils whenever a person stubbornly refuses to admit he's wrong.
- ____(32) A person who thinks primarily of his own happiness is beneath contempt.
- ____(33) Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

- ____ (34) In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.
- ____ (35) It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.
- ____ (36) In the long run the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.
- ____ (37) The present is all too often full of unhappiness. It is the future that counts.
- ____ (38) If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."
- ____ (39) Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.
- ____ (40) Most people just don't know what's good for them.

APPENDIX B

SUMMARY OF INSTRUCTION

SUMMARY OF INSTRUCTION

Session 1

The investigator met all sections of curriculum and Instruction in Secondary-School Social Studies and administered to them Rokeach's D-Scale Form E. Three graduate students scored this scale and from this population established the experimental sample of four sub-groups according to a pre-set design. For instructional treatment, the sub-groups were collapsed into two groups, one given Instruction Analytic and the other given Instruction Synthetic. The former was assigned randomly to meet Tuesday evenings from 7:00 to 10:00 p.m.; the latter to meet Wednesday evenings from 7:00 to 10:00 p.m.

IA GROUP

IS GROUP

Session 2

Administered TSRT as pre-test.

Administered TSRT as pre-test.

Handed out summary sheet on Flanders IAS and lectured on the 3 main categories and the sub-categories of the IAS.

Gave handout of typescript of segment of Social Studies lesson and assigned students task of discriminating and identifying kinds of statements made. Guided students to discriminate and identify teacher statements. After grouping and labelling them, set task of ordering these labelled categories, soliciting from them criterion of ordering.

Showed Flanders' filmstrip #3 with accompanying audio-tape (Studying Teacher Influence, A-V Education Service, University of Minn.), describing the 10 categories.

Gave summary sheet on Flanders IAS and had students compare their own formulation with Flanders 1-7 categories.

Gave handout of typescript of a Social Studies lesson segment and assigned task to analyze it using IAS. Discussed problems encountered in categorizing.

IA GROUP

IS GROUP

Showed Flanders' filmstrip #3 accompanied by audio-tape (Studying Teacher Influence, A-V Education Service, University of Minnesota) describing the 10 categories.

Assignment:

- (1) Memorize the 10 categories of Flanders IAS.
- (2) Analyze handout (two-paged typescript of a Social Studies lesson segment with 3 second intervals marked) using Flanders IAS.
- (3) Study Chapters 1 and 2 of Amidon and Flanders, The Role of the Teacher in the Classroom. Minn.: Ass'n. for Productive Teaching, 1967.

Assignment:

- (1) Memorize the 10 categories of Flanders IAS.
- (2) Analyze handout (two-paged typescript of a Social Studies lesson segment with 3 second intervals marked) using Flanders IAS.
- (3) Study Chapters 1 and 2 of Amidon and Flanders, The Role of the Teacher in the Classroom. Minn.: Ass'n. for Productive Teaching, 1967.

Session 3

Administered short test on Flanders IAS categories.

Using IAS, students began direct tallying, listening to

- (1) Amidon and Flanders' Training Tape, Level 1, first exercises,
- (2) Flanders' training tape of Episode 1 (U-2 incident).

Asked students to sum category numbers and to calculate per cents for each category and for the three main

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- (1) Amidon and Flanders' Training Tape, Level 1, first exercises,
- (2) Flanders' training tape of Episode 1 (U-2 incident).

Asked students to sum category numbers and to compute per cents for each category and for the three main

IA GROUP

categories. Students calculated I/D ratio between categories 1 to 4 inclusive and 5 to 7 inclusive.

Interspersed tallying sessions with discussions clarifying definitions of categories.

Lectured on the tradition underlying Flanders IAS. Discussion followed on content given.

Assignment:

Review Chapter 2 of Amidon and Flanders, The Role of the Teacher in the Classroom.

IS GROUP

categories. Students computed I/D ratio between categories 1 to 4 inclusive and 5 to 7 inclusive.

Assigned students to work in small groups (2 or 3 in each group) to jointly rank order characteristics of good teachers listed on a handout. During performance of task, students were asked to make conscious use of and listen for categories 1, 2, 3, and 4 during group talk.

Lectured on the tradition underlying Flanders IAS. Discussion followed on content given.

Assignment:

Review Chapter 2 of Amidon and Flanders, The Role of the Teacher in the Classroom.

Session 4

Students were assigned tallying practice using (1) Flanders' Episodes 1 and 2, and (2) Fenton's filmed lesson on concept formation in Social Studies.

Then, assigned tasks building matrices using short lists of tallies, followed by building of a matrix using own tallies of Fenton's filmed lesson.

Students were assigned tallying practice using (1) Flanders' Episodes 1 and 2, (2) Fenton's filmed lesson on concept formation in Social Studies.

Then, assigned tasks building matrices using short lists of tallies, followed by building of a matrix using own tallies of Fenton's filmed lesson.

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After lecture on the 7 step interpretation of a matrix, students were asked (1) to analyze two pre-built matrices, and (2) to build a matrix using tallies of U-2 incident (printed) and to analyze the matrix using the 7 step interpretation system.

Assignment:

- (1) Interpret and compare two matrices on "American History."
- (2) Read and study Chapter III in The Role of the Teacher in the Classroom as review and extension of matrix building.
- (3) Read Chapter IV, "Research on Teacher Behavior" in The Role of the Teacher in the Classroom.

IS GROUP

After lecture on the 7 step interpretation of a matrix, students were asked to interpret two pre-built lessons.

Students, working in groups, were asked to postulate possible relations between indirect and direct teaching and achievement; possible differences among categories between indirect and direct teachers; possible relationship among indirect and direct teaching, student achievement and student perception (clear or ambiguous) of goals.

Assignment:

- (1) Check own hypothetical formulations re. above relationships against findings of studies reported in Chapter IV in The Role of the Teacher in the Classroom.
- (2) Re-examine Chapter III as review and extension of matrix building.
- (3) Develop two micro-lessons (5-10 minutes) with different pre-determined Flanders IAS pattern of teacher behavior.

Session 5

Students were assigned practice in tallying.

They analyzed and discussed

Students in groups were assigned task of presenting their prepared micro-lessons in a simulated teaching situation with colleagues

IA GROUP

a pre-built Senior High School mathematics lesson matrix.

Following lecture and discussion of Bloom's Taxonomy, students were assigned tasks analyzing in terms of the categories of the Taxonomy

- (1) Fenton's lesson objectives given in handout,
- (2) questions in Fenton's typescript lessons,
- (3) selected questions from Sanders' Classroom Questions, What Kinds?
- (4) selected questions from the Grade 9 Summary Description of Grade Nine Social Studies Objectives and Test Items, published by the Alberta Department of Education.

Assignment:

Analyze teacher questions in Flanders' typescript lesson (Episode 1) in terms of Bloom's Taxonomy.

IS GROUP

as students. In each group a colleague was assigned as an observer, tallying the the lesson. Then, the members discussed the lesson in terms of the intent stipulated in the objectives of the lesson.

Students were given lesson objectives selected from Social Studies lesson plans and were assigned to

- (1) discriminate and identify them,
- (2) group and label them,
- (3) structure the categories using a criterion of their own selection.

They were then asked to compare their formulation with Bloom's Taxonomy.

Using the Taxonomy, they were assigned the task of analyzing

- (1) Fenton's lesson plan objectives,
- (2) Fenton's questions in a typescript lesson,
- (3) selected questions in Flanders' episode 1.

Assignment:

For the next session, develop two micro-lesson plans incorporating

- (1) a self-designed pattern based on Flanders IAS,
- (2) and teacher questions for the same lesson labelled according to Bloom's Taxonomy.

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Session 6

Students practised tallying using

- (1) Flanders' Episode 3,
- (2) and Social Studies discussion lesson taped at Avalon Jr. High School, Edmonton.

Students analyzed a pre-built matrix on "R-Hist."

Students observed Flanders' filmstrip and tape #4.

After a lecture and discussion of a handout on Meux's EOAS, students were directed to

- (1) analyze sets of prepared questions in terms of the EOAS,
- (2) analyze a prepared segment of a typescript lesson in terms of moves designated in the EOAS.

Students practised tallying using

- (1) Flanders' Episode 3,
- (2) and Social Studies discussion lesson taped at Avalon Jr. High School, Edmonton.

Students analyzed a pre-built matrix on "R-Hist."

In a simulated teaching situation with colleagues as "students," students taught assigned micro-lesson. Two colleagues in each group acted as observers, one using Flanders IAS and the other recording all teacher questions and labelling them in terms of Bloom's Taxonomy. After each lesson, the group discussed it in terms of the lesson intent and data assembled.

Students were then given a handout and were assigned

- (1) to discriminate and identify instructor prepared lists of questions based on Meux's EOAS moves,
- (2) to group and label them,
- (3) to order them in terms of operations involved in evaluating a value object.

IA GROUP

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Students were then asked to compare their own formulations with Meux's EOAS.

Students developed their own teacher questions for each of the basic moves in the EOAS, all questions related to a single topic.

Assignment:

Students were asked to analyze a typescript lesson on "Air Pollution"
 (1) in terms of Flanders IAS,
 (2) in terms of Meux's EOAS.

Assignment:

Students were asked to plan a micro-lesson incorporating both of the following:
 (1) two components of the EOAS related sequentially,
 (2) and a self-selected social interaction pattern developed from Flanders IAS.

Session 7

Students were assigned the task to analyze a pre-built matrix using Flanders' method of analysis.

Students were asked to tally a discussion lesson on "Tanzania" using Flanders IAS, to build a matrix of the lesson and to interpret it using the seven steps.

Students were assigned the task to analyze a pre-built matrix using Flanders' method of analysis.

Students broke into groups and in a simulated teaching situation with their own colleagues as students, presented in turn their prepared micro-lessons. Two colleagues acted as

IA GROUP

Students were asked to analyze an editorial evaluating Canada's posture regarding Red China's membership in the U.N. This was done using Meux's EOAS.

Students were asked to analyze selected statements in the above editorial in terms of Bloom's categories.

Assignment:

Referring to Flanders' typescript Episode 1 identify evaluative segments and analyze these segments using Meux's EOAS.

IS GROUP

observers, one using Flanders IAS and the other using Meux's EOAS. Following each lesson, the group discussed the lesson relating lesson intent and data gathered.

Students individually developed a strategy of teacher questions in terms of Meux's EOAS on the topic, "Red China's membership in the U.N.," the lesson to be an evaluative venture. In a group situation, each in turn presented his set of questions and discussed them with his colleagues.

Assignment:

Prepare one 15 minute lesson incorporating in the teacher behavior objectives, self-selected patterns from Flanders IAS and/or Meux's EOAS and/or Bloom's Taxonomy.

Section 8

Students tallied, built a matrix and analyzed the matrix based on another film by Fenton on a lesson in history.

Fenton's lesson plan objectives were analyzed in terms of Bloom's Taxonomy.

Students formed groups of 6 or 7 and gave their prepared lessons, organizing the group so that observers designated in each lesson could seek data relative to the intent of the lesson.

IA GROUP

Then, using these objectives
as the criteria, students
evaluated the lesson viewed.

IS GROUP

Session 9

Administered the TSRT as
a post-test.

Administered the TSRT as a
post-test.

APPENDIX C

TEACHING SITUATION REACTION TEST

(Copy of Teaching Situation Reaction Test used in this study)

Directions: The case example that follows has been planned to measure your ability to work through some of the problems of handling a classroom group. You will be given certain information about the classroom group and the working situation. You will then be asked to respond to a number of questions. This will be repeated through a series of problem situations. The case study has been designed so that you can respond regardless of your teaching subject field. You do not need technical subject matter knowledge to take this test.

You are asked to indicate your first, second, third, and fourth choice under each question by inserting respectively the numbers 1, 2, 3, 4, in the spaces provided on the answer sheets under (a), (b), (c), and (d). The most desirable choice should be labeled 1, and the least desirable 4. For example if your first choice was response (c), your second choice was response (a), your third choice was response (b), and your fourth choice was response (d), you would record your responses on the answer sheet as follows:

(a)	(b)	(c)	(d)
<u>2</u>	<u>3</u>	<u>1</u>	<u>4</u>

Please do not write on the test booklet.

The Situation:

You have been employed by a school system which is engaged in a series of experimental studies. One of these studies involves an experimental class designed to improve pupils' general adjustment to their environment. A heterogeneous group (physically, mentally, socially) of twenty-five thirteen to fourteen year old youngsters have signed up for this class.

The class is scheduled to meet the last period of the day on Tuesday and Thursday during the last half year. Arrangements have been made so that the class might take trips and students might have an opportunity to meet informally with the teacher after class.

Around the first of November your principal calls you in to tell you that, if you are interested, you have been chosen to teach the experimental class. You were asked because of your background in adolescent psychology and your interest in helping youngsters with minor problems of adjustment typical of the young adolescent.

Your principal has given you pretty much of a "free hand" to develop the content of the course and the activities in which the students will be engaged. A good supply of instructional materials, books on the adolescent, and descriptions of similar programs in other schools has been made available to you. There will be no direct supervision of your work, but an evaluation by students and yourself will be requested at the middle and close of the semester. Studies will also be made of the gain in personal adjustment evidenced by your students. You know the names of the students who have signed up for your course. An experienced teacher-counselor has been asked by the principal to help you when and if you ask for help. The teacher-counselor knows well each of the youngsters who have signed up for your class.

The Group:

Some of the youngsters who have signed up for the course know each other very well, having gone through school together. Three do not know anyone else in the group. Others are only casually acquainted. Members of the group have a variety of interests and abilities, and they represent many levels of competence and come from a variety of socio-economic backgrounds. The quality of their personal adjustment varies, but none is seriously maladjusted.

A. You have about eight weeks plus the Christmas vacation to plan for your class:

1. When you begin planning the course you would:
 - (a) Ask your teacher-counselor what he thinks should be in the course.
 - (b) Examine the materials available to you and determine how they might be used by members of the class.
 - (c) Read through the copies of publications describing other school programs of a similar nature and draw ideas from them.
 - (d) Interview a randomly selected group of the young people signed up for the course and set your own tentative objectives based on these interviews.
2. During early December an important local civic group comes out against teaching sex education in the schools. Your planning had included some sex education. At this point in your planning you would:
 - (a) Continue planning as you have been.
 - (b) Ask the principal if you should include any sex education in your course.
 - (c) Remove the lessons dealing with sex education.
 - (d) Find ways to get the sex education material across without causing an issue.
3. About three weeks before your class is scheduled to meet for the first time, your principal asks you to come in and talk with him about the course. You would hope that your principal would:
 - (a) Say that if there was anything that he could do to be of help that you should feel free to call on him.
 - (b) Indicate to you what he would hope the course would accomplish during the semester.

- (c) Encourage you to talk about the purposes of your course as you see them after several weeks of planning.
 - (d) Make specific suggestions to help you in your planning, and encourage you to drop in for further suggestions if you need help.
4. The weekend before the course is to start it would be natural for you to feel:
- (a) Concern that your planning has been inappropriate.
 - (b) Anxious to get started and prove your ability to handle this rather difficult assignment.
 - (c) Hopeful that the course will prove of real value to the students.
 - (d) Confident knowing you have done the best you could under the circumstances.
- B. You will have your first meeting with the group tomorrow.
5. It will be important that you have planned for:
- (a) students to get well acquainted with each other.
 - (b) explaining your grading system.
 - (c) activities to catch student interest.
 - (d) explaining your complete program for the semester.
6. The teacher-counselor drops by your room and asks if he can be of help. You would ask him for:
- (a) his opinion about what you have planned for tomorrow.
 - (b) suggestions to help you make a good impression.
 - (c) suggestions as to what student reaction might be on the first day.
 - (d) nothing until you had an opportunity to meet with the group.

7. The more important personal information to gather at the first meeting would be:

- (a) interests of the different students.
- (b) parent or guardian, home address and phone number.
- (c) what the students would like to do in the course.
- (d) why they are taking the course.

8. Of the things you would do the evening before meeting the class, the most essential would be to:

- (a) become familiar with the notes for such presentations as you might make.
- (b) become familiar with students' names and any information you have about them from their files.
- (c) become familiar with the sequence and nature of any activities you may have planned.
- (d) be sure any materials you were to use were available and in good condition.

9. Your greatest concern on this night before the first meeting would be:

- (a) how to appear poised and at ease.
- (b) how to gain control of the group.
- (c) how to handle problem pupils.
- (d) how to get your program moving rapidly and well.

C. On meeting the group the first day a number of students come in from three to five minutes late. Following this, as you get your program underway the students get restless.

10. With the students that come in late you would:

- (a) simply acknowledge their presence and noticeably mark them present in the record book.
 - (b) inform them politely about the time at which the class starts.
 - (c) ask them politely why they were unable to get to class on time.
 - (d) make clear to the class as a whole and the late students in particular the standards you will maintain with regard to tardiness.
11. You would handle the restlessness of the group by:
- (a) presenting your program more dynamically.
 - (b) asking students why they were restless.
 - (c) speaking to the group firmly about paying attention.
 - (d) picking out one or two of the worst offenders and reprimanding them.
12. You would tell the group your name and:
- (a) the rules of conduct for your class.
 - (b) your expectations for the class.
 - (c) some of your personal adjustment problems at their age.
 - (d) some of your interests and hobbies.
13. You would, by your general behavior and manner, try to present yourself as:
- (a) firm and serious but fair.
 - (b) efficient, orderly and business-like.
 - (c) friendly, sympathetic and understanding.
 - (d) understanding, friendly and firm.

14. You would prepare for the next meeting by:

- (a) discussing with pupils what they would like to do and deciding on one or two ideas.
- (b) telling them what pages to read.
- (c) giving students a choice of two ideas and determining in which the majority is interested.
- (d) discussing your plans for the next meeting with them.

D. You have met with your class four times and have made some observations. Two boys seem particularly dirty and you have found they come from a lower class slum area. One girl seems to be withdrawn. The students do not pay any attention to her. She is a pleasant looking well dressed girl. There are four or five youngsters, apparently very good friends (both boys and girls) who do most of the talking and take most of the initiative. Students seem to continually interrupt each other and you.

15. In the interests of the two boys from the slum area you would:

- (a) find an opportunity to discuss the matter of cleanliness with the class.
- (b) speak to the boys about their need to be clean in a conference with them.
- (c) inaugurate a cleanliness competition with a prize to that half of the class with the best record, putting one boy in each half.
- (d) speak to the boys about their need to be clean and arrange facilities at school where they could clean up.

16. In the interests of the apparently withdrawn girl you would:

- (a) talk to her informally over a period of time to see if you could determine her difficulty.
- (b) call on her regularly for contributions to the discussion.

- (c) discover a skill she has and have her demonstrate for the class.
 - (d) have a conference with her and tell her to become involved with the class discussion and speak up.
17. To improve the relationship of the group to the apparently withdrawn girl you would:
- (a) determine who, if anyone, is friendly with her and arrange to have them work together on occasion.
 - (b) take the girl aside and help her see how she can establish better relations with her classmates.
 - (c) arrange to have her work with the group of boys and girls who take most of the initiative.
 - (d) allow her to work out her own problem.
18. With regard to the four or five youngsters who do most of the talking and take the initiative you would tend to believe:
- (a) they are brighter than most of the other students.
 - (b) they are the leaders of the class.
 - (c) there is considerable variation in students' ability to participate in class.
 - (d) they are a little too cocky and think they know more than the others.
19. With regard to the tendency of class members to interrupt while others are talking you would:
- (a) tell the class politely but firmly that interruptions are impolite and should not continue.
 - (b) discuss the matter with the class, determining why this happens and what should be done about it.
 - (c) organize a system of hand raising and set rules for students participation in discussion.

- (d) set rules for student participation in discussion and firmly but fairly reprimand each person who breaks the rules.
20. One of the important problems facing you now is to do something which:
- (a) will insure that no one is rejected or disliked.
 - (b) will result in everybody's being liked.
 - (c) will encourage each person's acceptance of the others.
 - (d) will guarantee that no one's feelings get hurt.
- E. At the beginning of the eighth class session (fourth week) Johnny comes into class holding on to his arm and very nearly crying. The tears are welled up in his eyes and he looks away from the others. You notice that Peter, the largest and strongest boy in the class, looks at Johnny occasionally with a sneering smile. You do not feel that you can let this pass, so you arrange to meet with Johnny and Peter separately after class.
21. You would tend to believe:
- (a) that Johnny probably did something for which this was just, but maybe severe, payment.
 - (b) that Peter is something of a bully.
 - (c) that Johnny was hit on the arm by Peter.
 - (d) that Johnny felt badly and Peter was quite aware of it.
22. When you meet with Johnny you would:
- (a) ask him if Peter hit him and why.
 - (b) engage him in conversation and lead slowly into the difficulty he had that afternoon.
 - (c) tell him you were aware that he had some difficulty and offer your help to him.

- (d) let him guide the discussion and reveal what he would about the incident.

23. When you meet with Peter you would:

- (a) tell him that Johnny was upset this afternoon and you had noticed that he (Peter) was looking strange--proceed from there.
- (b) make him aware that you know he had trouble with Johnny and proceed from there.
- (c) make him aware that he is bigger and stronger than the other boys and that he is a bully if he picks on smaller boys.
- (d) ask him if he and Johnny had had difficulty.

24. When young people get into conflict in school it would be best to:

- (a) let them resolve it themselves.
- (b) help them to establish a friendly relationship.
- (c) find the cause of the trouble and work to eliminate it.
- (d) control the school situation so that the conflicts are less likely to arise.

F. In general your program has been moving along satisfactorily.

After the eighth meeting you have a feeling that the students are beginning to lose interest. A number of students seem to be sitting through class without really getting involved. Others seem to stay interested and active. The teacher-counselor asks to see you informally over coffee.

25. When you meet with the teacher-counselor you would:

- (a) not talk about your class or its present lack of involvement.
- (b) discuss your concern with him and listen for suggestions he might have.

- (c) speak about how satisfactory the early meetings had been.
 - (d) allow the teacher-counselor to orient the discussion.
26. Your planning for the next (ninth) session would include:
- (a) some new ideas that you had not tried.
 - (b) some clarification of the importance of students doing well in their work.
 - (c) a request for ideas from students as to how to make the class more interesting.
 - (d) ways to get more students actively doing something in class.
27. During the ninth session you would:
- (a) behave much as you had in earlier sessions.
 - (b) put some stress on the importance of everybody paying attention in class.
 - (c) by careful observation determine which students seem disinterested.
 - (d) speak pointedly to those who were not paying attention.
28. You would tend to believe the loss of interest due to:
- (a) a rather natural reaction in a elective experimental course.
 - (b) failure of students to realize that they must contribute much to a course of this kind.
 - (c) a rather natural group reaction to the experience of working together on personal adjustment problems.
 - (d) your own failure in developing good human relationships in the class and stimulating the students.

G. Before the mid term (eighteenth) meeting of the class you take time out to think about the experiences you have had. The class has been good some days and poor other days. You have had no word from your principal about how your work has been. The teacher-counselor has seemed satisfied but not very much impressed with what you are doing. You have heard nothing about the young people who are being studied. You are asked to meet with the parents to discuss the experimental class in an informal way.

29. You would be most concerned about:

- (a) the failure of the principal and teacher-counselor to discuss the progress of the students before your meeting with the parents.
- (b) what you should say to the parents.
- (c) your apparent failure to impress your teacher-counselor.
- (d) what the studies of the young people are showing.

30. You would resolve to:

- (a) discuss your progress with the teacher-counselor.
- (b) ask for an appointment with the principal to find out how he feels about your work.
- (c) plan to work harder with your group.
- (d) not let the present state of affairs worry you.

31. When talking with the parents you would:

- (a) encourage them to ask questions about the program.
- (b) tell them what the program has consisted of so far.
- (c) tell them you don't know how well the program is going.
- (d) impress upon them the importance of student participation in class activities.

32. In this case you would feel that parents:

- (a) ought to be told how their children are doing in this class.
- (b) ought not to become involved in such an experimental program.
- (c) are entitled to an opportunity to question you.
- (d) ought to be referred to those in charge of the experiment.

33. At your next class meeting:

- (a) you would tell students what you told their parents.
- (b) you would not initiate any discussion about your visit with the parents.
- (c) you would discuss briefly the parents' interest in the class.
- (d) you would tell the students that you expected more cooperation from them now that their parents were involved.

H. The nineteenth and twentieth class sessions are very unsatisfactory. You leave class at the end of the twentieth session with doubts in your mind as to whether students are gaining in personal and social adjustment. You can see problems with the structure and organization of the class and believe that if these could be corrected or if you had done some things differently over the past few weeks that you would not have a problem with the class.

34. At this point you would:

- (a) decide to go to class the next day and ask your students how they feel about the progress of the course.
- (b) think through the problem carefully and start planning revisions for the course next year.
- (c) try to help yourself accept the fact that life is often filled with disappointments and redouble your efforts to make your class better in the future by spending more time in preparation and encouraging your students to work harder.

- (d) mention your concern at the next meeting of your class and encourage students to talk with you after class about the progress of the course.
35. You would feel much better regarding the accuracy of your estimate about what is wrong with the class if you:
- (a) were sure that some of the students were not being difficult on purpose to test your authority as a new teacher.
 - (b) knew more about the expectations of your students and to what extent they felt their expectations were being met.
 - (c) could have a colleague in whom you could confide and in whom you could trust, come in and observe your class and talk with you.
 - (d) were sure you understood your own needs for success and the extent to which these needs influence your feelings.
36. After the twentieth session, it would be natural for you to feel that:
- (a) you would like to relax and think about the situation over the weekend.
 - (b) you wished students accepted the fact that things that are taught them in schools are usually good for them even though they may not like what they are learning all of the time.
 - (c) things seldom go well all the time for everybody and that they couldn't be expected to always go well for you.
 - (d) it must have been wonderful to teach in the good old days when students were in school because they wanted to learn.
37. In an attempt to analyze the source of the problem you are having with your class you would:
- (a) have a conference with several of the brighter and more interested students to see if they could give you any insight into the problem.

- (b) take part of a class session to share your concerns with the class, get their reactions, and using this information, rethink the problem.
 - (c) ask the teacher-counselor to come in and observe the class several times and talk with you about his observations.
 - (d) consult the records of the students to see if you could find any clues there.
- I. At your twenty-fourth meeting you wish to make plans for a series of visits to different community health and welfare agencies. You want to be sure that the youngsters learn from the experiences and conduct themselves properly while traveling to and from and visiting in the agencies.
38. In order to assure that all youngsters learned from their first trip you would:
- (a) assign particular things for all of them to look for and listen to.
 - (b) ask each to write a brief commentary on the most important things they saw and heard.
 - (c) encourage them to ask questions while they were there.
 - (d) present them with a check sheet of items to be seen and heard and ask them to check off those that they saw or heard.
39. In preparation for the first trip you would:
- (a) tell them as much as you could about the agency to which they were going.
 - (b) tell them you were sure it would be interesting and fun and let them see and hear for themselves.
 - (c) ask them what they thought they could expect and encourage guided discussions about their expectations.

- (d) tell them about the most interesting things they would see and hear.
40. To insure that the group conducted themselves properly you would:
- (a) set out rules of conduct for them.
 - (b) ask them to behave as young ladies and gentlemen representing their school.
 - (c) ask them what rules of conduct they would propose and develop a code with the group.
 - (d) assure them that if they did not behave properly they would not go on trips in the future.
41. On the trips you would:
- (a) divide them into small groups with a leader responsible for each group and arrange their itinerary and meetings after you get to the agency.
 - (b) ask the youngsters to get your permission first and on this basis allow them to pursue their own interests.
 - (c) let the agency people take responsibility for deciding where they could go and when.
 - (d) keep them all together as a manageable group.
- J. At the close of the thirtieth class session Bob, one of the most able boys, summarizes a class discussion on boy-girl relationships with, "Well, we've talked around the subject but we never get down to the important questions." The agreement of a number of the class members is evident.
42. you would tend to believe:
- (a) the class members are too young to be dealing with important questions in this area.

- (b) you had allowed just a little too much freedom in the discussions of boy-girl relationships.
 - (c) this simply reflects a natural desire on the part of students to introduce some excitement into the class sessions.
 - (d) the class could handle important questions in this area with your guidance and support.
43. Before the thirty-first session you would:
- (a) clarify the significance and implications of Bob's statement in your own mind.
 - (b) determine what you will and will not allow to be discussed in class in this area.
 - (c) consult the principal and get direction from him.
 - (d) discuss the situation with the teacher-counselor with a view to get ideas for handling the next session.
44. During the thirty-first session you would:
- (a) propose a list of carefully selected questions you believe the students have in mind and begin discussions on the most manageable of these.
 - (b) repeat Bob's comment and draw from the class a list of what they thought should be discussed.
 - (c) suggest that some questions are not appropriate for discussion in school and that some of these fall in the area of boy-girl relationship.
 - (d) ask Bob to pick up where he left off and guide him and other class members as they clarify the directions further discussion should take.

K. Your class has at last developed into a fairly cohesive unit. The discussions are more animated and everyone participates to some degree. Disagreements on ideas begin to appear and the students give evidence of intense feelings on a number of issues. George has been particularly outspoken. He has very radical ideas that seem to provoke the other students to disagree but you know that the ideas he expresses have some support from some adolescent psychologists that you consider to be the "lunatic fringe." George seldom gives in on a point.

45. You would believe that these conditions are likely to:

- (a) ultimately strengthen the group.
- (b) do little but make it uncomfortable until George learns his lesson.
- (c) destroy the group unity unless you intervene.
- (d) make it difficult for progress to be made for some students until they learn to accept George.

46. With regard to George you would:

- (a) refer him to the teacher-counselor.
- (b) point out to George that he is intolerant of the views of other class members.
- (c) encourage him to express his ideas in ways that would not irritate other students.
- (d) politely but firmly keep him from expressing such ideas.

47. With regard to the other students you would:

- (a) encourage them in their effort to stand up to George.
- (b) help them to understand what George is doing to them and why.

- (c) help them to get onto topics and ideas where George could not disagree with them so forcefully.
 - (d) get into the discussion on their side and show George that he is wrong.
48. With regard to your concern for George as a person, you would feel that:
- (a) he is developing undemocratic traits by behaving as he does, and you would hope to help him change.
 - (b) he does not understand how to behave in a democratic setting and may need help.
 - (c) he probably has never learned certain social skills necessary for democratic group behavior and the possibilities of developing such skills should be shown him.
 - (d) he will learn sooner or later that in a democracy some ideas are undesirable because they tend to destroy the group.

APPENDIX D

FLANDERS VERBAL INTERACTION

ANALYSIS SYSTEM

FLANDERS VERBAL INTERACTION ANALYSIS SYSTEM

TEACHER TALK	INDIRECT INFLUENCE	1.*	<u>ACCEPTS FEELING</u> : accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
		2.*	<u>PRAISES OR ENCOURAGES</u> : praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included.
		3.*	<u>ACCEPTS OR USES IDEAS OF STUDENTS</u> : clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to category five.
		4.*	<u>ASKS QUESTIONS</u> : asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5.*	<u>LECTURING</u> : giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.
		6.*	<u>GIVING DIRECTIONS</u> : directions, commands, or orders to which a student is expected to comply.
		7.*	<u>CRITICIZING OR JUSTIFYING AUTHORITY</u> : statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.

FLANDERS VERBAL INTERACTION ANALYSIS SYSTEM--Continued

STUDENT TALK	8.* <u>STUDENT TALK--RESPONSE</u>: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9.* <u>STUDENT TALK--INITIATION</u>: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
	10.* <u>SILENCE OR CONFUSION</u>: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

* There is NO scale implied by these numbers. Each number is classificatory, it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale.

APPENDIX E

CONDENSED VERSION OF THE TAXONOMY OF EDUCATIONAL
OBJECTIVES, COGNITIVE DOMAIN

CONDENSED VERSION OF THE TAXONOMY OF
EDUCATIONAL OBJECTIVES:
COGNITIVE DOMAIN

Knowledge

1.00 Knowledge

Knowledge, as defined here, involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting. For measurement purposes, the recall situation involves little more than bringing to mind the appropriate material. Although some alteration of the material may be required, this is a relatively minor part of the task. The knowledge objectives emphasize most the psychological processes of remembering. The process of relating is also involved in that a knowledge test situation requires the organization and reorganization of a problem such that it will furnish the appropriate signals and cues for the information and knowledge the individual possesses. To use an analogy, if one thinks of the mind as a file, the problem in a knowledge test situation is that of finding in the problem or task the appropriate signals, cues, and clues which will most effectively bring out whatever knowledge is filed or stored.

1.10 Knowledge of Specifics

The recall of specific and isolable bits of information. The emphasis is on symbols with concrete referents. This material, which is at a very low level of abstraction, may be thought of as the elements from which more complex and abstract forms of knowledge are built.

1.11 Knowledge of Terminology

Knowledge of the referents for specific symbols (verbal and non-verbal). This may include knowledge of the most generally accepted symbol referent, knowledge of the variety of symbols which may be used for a single referent, or knowledge of the referent most appropriate to a given use of a symbol.

1.12 Knowledge of Specific Facts

Knowledge of dates, events, persons, places, etc. This may include very precise and specific information such as the specific date or exact magnitude of a phenomenon.

1.20 Knowledge of Ways and Means of Dealing with Specifics

Knowledge of the ways of organizing, studying, judging, and criticizing. This includes the methods of inquiry, the chronological sequences, and the standards of judgment within a field as well as the patterns of organization through which the areas of the fields themselves are determined and internally organized. This knowledge is at an intermediate level of abstraction between specific knowledge on the one hand and knowledge of universals on the other. It does not so much demand the activity of the student in using the materials as it does a more passive awareness of their nature.

1.21 Knowledge of Conventions

Knowledge of characteristic ways of treating and presenting ideas and phenomena. For purposes of communication and consistency, workers in a field employ usages, styles, practices, and forms which best suit their purposes and/or which appear to suit best the phenomena with which they deal. It should be recognized that although these forms and conventions are likely to be set up on arbitrary, accidental, or authoritative bases, they are retained because of the general agreement or concurrence of individuals concerned with the subject, phenomena, or problem.

1.22 Knowledge of Trends and Sequences

Knowledge of the processes, directions, and movements of phenomena with respect to time.

1.23 Knowledge of Classifications and Categories

Knowledge of the classes, sets, divisions, and arrangements which are regarded as fundamental for a given subject field, purpose, argument, or problem.

1.24 Knowledge of Criteria

Knowledge of the criteria by which facts, principles, opinions, and conduct are tested or judged.

1.25 Knowledge of Methodology

Knowledge of the methods of inquiry, techniques, and procedures employed in a particular subject field as well as those employed in investigating particular problems and phenomena. The emphasis here is on the individual's knowledge of the method rather than his ability to use the method.

1.30 Knowledge of the Universals and Abstractions in a Field

Knowledge of the major schemes and patterns by which phenomena and ideas are organized. These are the large structures, theories, and generalizations which dominate a subject field or which are quite generally used in studying phenomena or solving problems. These are at the highest levels of abstraction and complexity.

1.31 Knowledge of Principles and Generalizations

Knowledge of particular abstractions which summarize observations of phenomena. These are the abstractions which are of value in explaining, describing, predicting, or in determining the most appropriate and relevant action or direction to be taken.

1.32 Knowledge of Theories and Structures

Knowledge of the body of principles and generalizations together with their interrelations which present a clear, rounded, and systematic view of a complex phenomenon, problem, or field. These are the most abstract formulations, and they can be used to show the interrelation and organization of a great range of specifics.

INTELLECTUAL ABILITIES AND SKILLS

Abilities and skills refer to organized modes of operation and generalized techniques for dealing with materials and problems. The materials and problems may be of such a nature that little or no specialized and technical information is required. Such information

as is required can be assumed to be part of the individual's general fund of knowledge. Other problems may require specialized and technical information at a rather high level such that specific knowledge and skill in dealing with the problem and the materials are required. The abilities and skills objectives emphasize the mental processes of organizing and reorganizing material to achieve a particular purpose. The materials may be given or remembered.

2.00 Comprehension

This represents the lowest level of understanding. It refers to a type of understanding or apprehension such that the individual knows what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications.

2.10 Translation

Comprehension as evidenced by the care and accuracy with which the communication is paraphrased or rendered from one language or form of communication to another. Translation is judged on the basis of faithfulness and accuracy, that is, on the extent to which the material in the original communication is preserved although the form of the communication has been altered.

2.20 Interpretation

The explanation or summarization of a communication. Whereas translation involves an objective part-for-part rendering of a communication, interpretation involves a reordering, rearrangement, or a new view of the material.

2.30 Extrapolation

The extension of trends or tendencies beyond the given data to determine implications, consequences, corollaries, effects, etc., which are in accordance with the conditions described in the original communication.

3.00 Application

The use of abstractions in particular and concrete situations.

The abstractions may be in the form of general ideas, rules of procedures, or generalized methods. The abstractions may also be technical principles, ideas, and theories which must be remembered and applied.

4.00 Analysis

The breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit. Such analyses are intended to clarify the communication, to indicate how the communication is organized, and the way in which it manages to convey its effects, as well as its basis and arrangement.

4.10 Analysis of Elements

Identification of the elements included in a communication.

4.20 Analysis of Relationships

The connections and interactions between elements and parts of a communication.

4.30 Analysis of Organizational Principles

The organization, systematic arrangement, and structure which hold the communication together. This includes the "explicit" as well as "implicit" structure. It includes the bases, necessary arrangement, and the mechanics which make the communication a unit.

5.00 Synthesis

The putting together of elements and parts so as to form a whole. This involves the process of working with pieces, parts, elements, etc., and arranging and combining them in such a way as to constitute a pattern or structure not clearly there before.

5.10 Production of a Unique Communication

The development of a communication in which the writer or speaker attempts to convey ideas, feelings, and/or experiences to others.

5.20 Production of a Plan, or Proposed Set of Operations

The development of a plan of work or the proposal of a plan of operations. The plan should satisfy requirements of the task which may be given to the student or which he may develop for himself.

5.30 Derivation of a Set of Abstract Relations

The development of a set of abstract relations either to classify or explain particular data or phenomena, or the deduction of propositions and relations from a set of basic propositions or symbolic representations.

6.00 Evaluation

Judgments about the value of material and methods for given purposes. Quantitative and qualitative judgments about the extent to which material and methods satisfy criteria. Use of a standard of appraisal. The criteria may be those determined by the student or those which are given to him.

6.10 Judgments in Terms of Internal Evidence

Evaluation of the accuracy of a communication from such evidence as logical accuracy, consistency, and other internal criteria.

6.20 Judgments in Terms of External Criteria

Evaluation of material with reference to selected or remembered criteria.

APPENDIX F

MEUX'S EVALUATIVE OPERATIONS

ANALYSIS SYSTEM

MEUX'S EVALUATIVE OPERATIONS

ANALYSIS SYSTEM(EOAS)

1. IDENTIFICATION MOVESIdentification of Value Object and/or Value Term.

Either the value object, or the value term, or both, are named or identified. In the case of the value object being a report or action, it may be given or performed.

2. DESCRIPTION MOVES2.1 Explication of Value Object

2.11 Description. A description of the attributes, properties, etc., of the value object. When the value object is an argument or proposition, this may include discussion of the premises, assumptions, or evidence on which the argument is based.

2.12 Classification. The value object is identified as a member of some more general descriptive (not normative) class of things.

2.13 Subsidiary rating. The value object is given some rating which is different from (i.e., involves a different value term) from the rating which forms the main point of the discussion.

2.14 Instance Comparison. Instances of the value object are compared in order to illustrate or demonstrate some characteristic of the value object.

2.2 Identification of Relational Properties

2.21 Consequences. A description of the consequences, products, actions, outcomes, etc., of the value object.

2.22 Origins. A description or discussion of the antecedents origins, causes or reasons for the value object.

- 2.3 Instance Description. An instance, or subclass of the value object is named or described. Characteristics, origins, consequences, etc., may be mentioned.

3. RATING MOVES

- 3.1 Rating of the Value Object. The value object which forms the center of the discussion is rated as to its value.
- 3.2 Rating of Characteristics. Some characteristic or relational property (consequence or origin) of the value object is rated as to its value.
- 3.3 Instance Evaluation. Some instance, or subclass of the value object is rated as to its value. The instance may be either real or hypothetical.

4. CRITERIA MOVES

- 4.1 Explication of Value Term. A description or discussion of the evaluative force, or meaning of the value term.
- 4.2 Citing Criteria. A standard or rule, or some set of alternative standards or rules, by which a rating of the value object can be made, are stated or discussed. There may, or may not be discussion of the relative importance of alternative standards or rules.
- 4.3 Substantiation of Criteria. Evidence or reasons for or against some rule or standard for rating the value object, are given or discussed.
- 4.4 Irrelevance of Value Term. The irrelevance of the value term or some or all of the criteria for the value term, is asserted or discussed. Or it is asserted that the value term cannot be applied because of the lack of appropriate evidence.

5. RELATIONAL MOVES

- 5.1 Explanation of Discordant Characteristics. Evidence or explanation is given to indicate why some characteristic of the value object which is apparently discordant with a previous rating, should be discounted or ignored.

- 5.2 Citing an Alternative Value Object. An object, practice, reason, etc., having a value rating different from the value object under consideration is cited or discussed. This alternative value object may be real or hypothetical.
- 5.3 Citing an Authority. The opinion or conclusions of some authority such as a public figure or textbook writer are cited as evidence for or against a rating of the value object. Any discussion of the credibility, or expertness of such an authority, is also included in this move.
- 5.4 Implication. A rating is supported on the grounds that it does not have the same characteristics or effects as other objects which have an opposite rating.
- 5.5 Analogy. The value object is likened to another object customarily believed to be either good or bad, or widely practiced. Evidence may or may not be given to support the analogy.

6. TANGENTIAL EVIDENCE

Facts, beliefs, etc., which are relevant to the value object, but not directly relevant to the rating of the object, are cited or discussed. (Also included in this category are moves in which a value object, other than the one which is central to the discussion is rated, apparently because of misunderstanding, misinterpretation, etc.)

APPENDIX G
TABLES OF DATA

TABLE I (PART A)

RANKS OF TSRT CHANGE SCORES ACCORDED TO OA, OS, CA,
AND CS SUB-GROUPS (N = 64)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OA	1	223	225	+ 2	20	508.5
	2	218	219	+ 1	16	
	3	216	226	+10	40.5	
	4	215	222	+ 7	36	
	5	215	219	+ 4	28	
	6	214	208	- 6	6	
	7	210	223	+13	47	
	8	207	209	+ 2	20	
	9	206	213	+ 7	36	
	10	203	223	+20	55	
	11	202	202	0	13.5	
	12	201	220	+19	54	
	13	192	187	- 5	7	
	14	191	202	+11	43	
	15	189	193	+ 4	28	
	16	179	202	+23	<u>58.5</u>	
						508.5
(n = 16) OS	1	221	218	- 3	8.5	691.0
	2	207	223	+16	52	
	3	206	209	+ 3	24	
	4	205	226	+21	56	
	5	202	200	- 2	10	
	6	200	207	+ 7	36	
	7	198	209	+11	43	
	8	198	215	+17	53	
	9	195	210	+15	50	
	10	195	221	+26	62.5	
	11	194	198	+ 4	28	
	12	194	217	+23	58.5	
	13	193	202	+ 9	39	
	14	192	204	+12	45.5	
	15	183	208	+25	61	
	16	180	208	+28	<u>64</u>	
						691.0

TABLE I (PART B)

RANKS OF TSRT CHANGE SCORES ACCORDED TO OA, OS, CA,
AND CS SUB-GROUPS (N = 64)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) CA	1	217	207	-10	2	479.0
	2	212	215	+ 3	24	
	3	201	202	+ 1	16	
	4	192	198	+ 6	34	
	5	192	184	- 8	3.5	
	6	190	195	+ 5	32	
	7	188	180	- 8	3.5	
	8	186	194	+ 8	38	
	9	181	180	- 1	11.5	
	10	180	194	+14	48	
	11	175	197	+22	57	
	12	174	176	+ 2	20	
	13	173	197	+24	60	
	14	171	174	+ 3	24	
	15	168	194	+26	62.5	
	16	163	174	+11	43	
						479.0
(n = 16) CS	1	212	205	- 7	5	401.5
	2	210	198	-12	1	
	3	197	201	+ 4	28	
	4	196	197	+ 1	16	
	5	195	195	0	13.5	
	6	190	192	+ 2	20	
	7	189	194	+ 5	32	
	8	188	190	+ 2	20	
	9	187	197	+10	40.5	
	10	187	184	- 3	8.5	
	11	186	190	+ 4	28	
	12	184	196	+12	45.5	
	13	176	191	+15	50	
	14	175	174	- 1	11.5	
	15	168	183	+15	50	
	16	166	171	+ 5	32	
						401.5

TABLE II

SUMMARY OF SUMS OF RANKS OF TSRT CHANGE SCORES
ACCORDED TO SUB-GROUPS

	Sum of Ranks of Sub-Groups (N = 64)		Sum of Ranks of Open and Closed Groups
	(n = 32) IA	(n = 32) IS	
Open-minded (n = 32)	508.5	691.0	1199.5
Closed-Minded (n = 32)	479.0	401.5	880.5
Sum of Ranks of IA and IS groups	987.5	1092.5	2080.0

TABLE III

RANKS OF TSRT CHANGE SCORES ACCORDED TO OS AND
CS SUB-GROUPS (N = 32)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OS	1	221	218	- 3	3.5	336.0
	2	207	223	+16	26	
	3	206	209	+ 3	11	
	4	205	226	+21	28	
	5	202	200	- 2	5	
	6	200	207	+ 7	17	
	7	198	209	+11	20	
	8	198	215	+17	27	
	9	195	210	+15	24	
	10	195	221	+26	31	
	11	194	198	+ 4	13	
	12	194	217	+23	29	
	13	193	202	+ 9	18	
	14	192	204	+12	21.5	
	15	183	208	+25	30	
	16	180	208	+28	32	
(n = 16) CS	1	212	205	- 7	2	192.0
	2	210	198	-12	1	
	3	197	201	+ 4	13	
	4	196	197	+ 1	8	
	5	195	195	0	7	
	6	190	192	+ 2	9.5	
	7	189	194	+ 5	15.5	
	8	188	190	+ 2	9.5	
	9	187	197	+10	19	
	10	187	184	- 3	3.5	
	11	186	190	+ 4	13	
	12	184	196	+12	21.5	
	13	176	191	+15	24	
	14	175	174	- 1	6	
	15	168	183	+15	24	
	16	166	171	+ 5	15.5	

TABLE IV

RANKS OF TSRT CHANGE SCORES ACCORDED TO OA AND
CA SUB-GROUPS (N = 32)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OA	1	223	225	+ 2	10	260.0
	2	218	219	+ 1	7.5	
	3	216	226	+10	21	
	4	215	222	+ 7	18.5	
	5	215	219	+ 4	14.5	
	6	214	208	- 6	3	
	7	210	223	+13	25	
	8	207	209	+ 2	10	
	9	206	213	+ 7	18.5	
	10	203	223	+20	28	
	11	202	202	0	6	
	12	201	220	+19	27	
	13	192	187	- 5	4	
	14	191	202	+11	22.5	
	15	189	193	+ 4	14.5	
	16	179	202	+23	30	
(n = 16) CA	1	217	207	-10	1	247.0
	2	212	215	+ 3	12.5	
	3	201	202	+ 1	7.5	
	4	192	198	+ 6	17	
	5	192	184	- 8	2.5	
	6	190	195	+ 5	16	
	7	188	180	- 8	2.5	
	8	186	194	+ 8	20	
	9	181	180	- 1	5	
	10	180	194	+14	26	
	11	175	197	+22	29	
	12	174	176	+ 2	10	
	13	173	197	+24	31	
	14	171	174	+ 3	12.5	
	15	168	194	+26	32	
	16	163	174	+11	22.5	

TABLE V

RANKS OF TSRT CHANGE SCORES ACCORDED TO OS AND
CA SUB-GROUPS (N = 32)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OS	1	221	218	- 3	4	315.0
	2	207	223	+16	23	
	3	206	209	+ 3	10	
	4	205	226	+21	25	
	5	202	200	- 2	5	
	6	200	207	+ 7	15	
	7	198	209	+11	18.5	
	8	198	215	+17	24	
	9	195	210	+15	22	
	10	195	221	+26	30.5	
	11	194	198	+ 4	12	
	12	194	217	+23	29	
	13	193	202	+ 9	17	
	14	192	204	+12	20	
	15	183	208	+25	28	
	16	180	208	+28	32	
(n = 16) CA	1	217	207	-10	1	213.0
	2	212	215	+ 3	10	
	3	201	202	+ 1	7	
	4	192	198	+ 6	14	
	5	192	184	- 8	2.5	
	6	190	195	+ 5	13	
	7	188	180	- 8	2.5	
	8	186	194	+ 8	16	
	9	181	180	- 1	6	
	10	180	194	+14	21	
	11	175	197	+22	26	
	12	174	176	+ 2	8	
	13	173	197	+24	27	
	14	171	174	+ 3	10	
	15	168	194	+26	30.5	
	16	163	174	+11	18.5	

TABLE VI

RANKS OF TSRT CHANGE SCORES ACCORDED TO OA AND
OS SUB-GROUPS (N = 32)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OA	1	223	225	+ 2	7.5	
	2	218	219	+ 1	6	
	3	216	226	+10	17	
	4	215	222	+ 7	14	
	5	215	219	+ 4	11	
	6	214	208	- 6	1	
	7	210	223	+13	21	
	8	207	209	+ 2	7.5	
	9	206	213	+ 7	14	
	10	203	223	+20	26	
	11	202	202	0	5	
	12	201	220	+19	25	
	13	192	187	- 5	2	
	14	191	202	+11	18.5	
	15	189	193	+ 4	11	
	16	179	202	+23	<u>28.5</u>	
						215.0
(n = 16) OS	1	221	218	- 3	3	
	2	207	223	+16	23	
	3	206	209	+ 3	9	
	4	205	226	+21	27	
	5	202	200	- 2	4	
	6	200	207	+ 7	14	
	7	198	209	+11	18.5	
	8	198	215	+17	24	
	9	195	210	+15	22	
	10	195	221	+26	31	
	11	194	198	+ 4	11	
	12	194	217	+23	28.5	
	13	193	202	+ 9	16	
	14	192	204	+12	20	
	15	183	208	+25	30	
	16	180	208	+28	<u>32</u>	
						313.0

TABLE VII

RANKS OF TSRT CHANGE SCORES ACCORDED TO OA AND
CS SUB-GROUPS (N = 32)

Sub-Groups	Subj. No.	Pre-test	Post-test	Change Scores	Rank	Sum of Ranks
(n = 16) OA	1	223	225	+ 2	12.5	
	2	218	219	+ 1	9.5	
	3	216	226	+10	23.5	
	4	215	222	+ 7	21.5	
	5	215	219	+ 4	16.5	
	6	214	208	- 6	3	
	7	210	223	+13	27	
	8	207	209	+ 2	12.5	
	9	206	213	+ 7	21.5	
	10	203	223	+20	31	
	11	202	202	0	7.5	
	12	201	220	+19	30	
	13	192	187	- 5	4	
	14	191	202	+11	25	
	15	189	193	+ 4	16.5	
	16	179	202	+23	32	
						293.5
(n = 16) CS	1	212	205	- 7	2	
	2	210	198	-12	1	
	3	197	201	+ 4	16.5	
	4	196	197	+ 1	9.5	
	5	195	195	0	7.5	
	6	190	192	+ 2	12.5	
	7	189	194	+ 5	19.5	
	8	188	190	+ 2	12.5	
	9	187	197	+10	23.5	
	10	187	184	- 3	5	
	11	186	190	+ 4	16.5	
	12	184	196	+12	26	
	13	176	191	+15	28.5	
	14	175	174	- 1	6	
	15	168	183	+15	28.5	
	16	166	171	+ 5	19.5	
						234.5

TABLE VIII

RANKS OF TSRT CHANGE SCORES ACCORDED TO CA AND
CS SUB-GROUPS (N = 32)

Sub- Groups	Subj. No.	Pre- test	Post- test	Change Scores	Rank	Sum of Ranks
(n = 16) CA	1	217	207	-10	2	
	2	212	215	+ 3	15.5	
	3	201	202	+ 1	10.5	
	4	192	198	+ 6	22	
	5	192	184	- 8	3.5	
	6	190	195	+ 5	20	
	7	188	180	- 8	3.5	
	8	186	194	+ 8	23	
	9	181	180	- 1	7.5	
	10	180	194	+14	27	
	11	175	197	+22	30	
	12	174	176	+ 2	13	
	13	173	197	+24	31	
	14	171	174	+ 3	15.5	
	15	168	194	+26	32	
	16	163	174	+11	<u>25</u>	
						281.0
(n = 16) CS	1	212	205	- 7	5	
	2	210	198	-12	1	
	3	197	201	+ 4	17.5	
	4	196	197	+ 1	10.5	
	5	195	195	0	9	
	6	190	192	+ 2	13	
	7	189	194	+ 5	20	
	8	188	190	+ 2	13	
	9	187	197	+10	24	
	10	187	184	- 3	6	
	11	186	190	+ 4	17.5	
	12	184	196	+12	26	
	13	176	191	+15	28.5	
	14	175	174	- 1	7.5	
	15	168	183	+15	28.5	
	16	166	171	+ 5	<u>20</u>	
						247.0

Typed by: Doris Boylan
Multilith: Gilbert's Litho