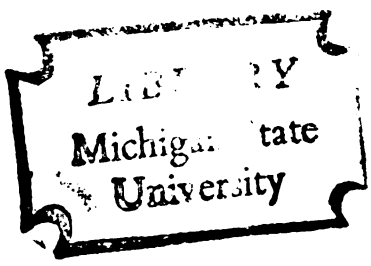
RELATIONSHIPS
BETWEEN INDIRECT - DIRECT TEACHING,
TEACHER CHARACTERISTICS AND SCHOOL
CLIMATE

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
RONALD K. LIMBERG
1971



This is to certify that the

thesis entitled

RELATIONSHIPS BETWEEN INDIRECT-DIRECT TEACHING, TEACHER CHARACTERISTICS, AND SCHOOL CLIMATE

presented by

Ronald K. Limberg

has been accepted towards fulfillment of the requirements for

Ph. D. **degree in** Education

William L. Boyle
Major professor

Date August 20, 1970

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ABSTRACT

RELATIONSHIPS BETWEEN INDIRECT-DIRECT TEACHING, TEACHER CHARACTERISTICS, AND SCHOOL CLIMATE

By

Ronald K. Limberg

The purpose of the study was to investigate: (1) the relationship between the measured dogmatism of intern teachers and their measured classroom verbal behavior, (2) the relationship between the measured organizational climate in which interns were teaching and their measured classroom verbal behavior, (3) the relationship between the grade level of interns' teaching assignments and their measured classroom verbal behavior, and (4) the relationship between the grade point average of interns and their measured classroom verbal behavior.

The research sample was comprised of thirty-five intern teachers randomly drawn from the entire population of interns enrolled in Michigan State University's Elementary Intern Program (EIP), who were teaching in regular classrooms, grades one through six.

The general research model was one of correlation, with verbal interaction designated as the dependent

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variable, and the independent variables of dogmatism, school climate, grade point average, and grade level of teaching assignment.

Data were obtained for verbal interaction by use of Flander's Interaction Analysis, for the analysis of five ten-minute taped segments of actual classroom teaching of interns. The investigator analyzed the tapes according to a detailed outline of procedures. Measures of dogmatism of interns were obtained by the use of the Rokeach Dogmatism Scale (Short Form-E). Measures of organizational climate were obtained from the School Climate Scale, an instrument developed by the investigator for use in this investigation. This was administered to intern teachers and intern consultants for reliability. Only the consultants' ratings were used in the computation of the correlation coefficients for testing the hypotheses.

Multiple-regression techniques were employed in statistical analysis of the data. The .05 level of confidence for rejection or acceptance of the hypotheses was selected.

Within the limitations of this study, the following conclusions were drawn:

1. The measured dogmatism of intern teachers were not related to their measured classroom verbal behavior.

2. The grade point average of intern teachers earned at Michigan State University were not related to their measured classroom verbal behavior.
3. There was a "trend" for the grade level of the teaching assignment of intern teachers to be related to their measured classroom verbal behavior, but not significantly so. This relationship was in a negative direction.
4. The school climate in which interns were teaching was found to be positively related to their classroom verbal behavior. The more open the measured school climate, the more indirect the measured classroom verbal behavior of the interns.
5. The set of four independent variables included in the study was of higher predictive value than any single variable.
6. The correlation coefficient (R) of the overall regression, or prediction rule, was not sufficiently high to insure meaningful predictive information in regard to the classroom verbal behavior of intern teachers.
7. The correlation coefficient (r) computed for the ratings of school climate by intern teachers and intern consultants, indicated

that individual perceptions of the situation in which the intern was teaching were quite similar, considering the fact that the backgrounds and professional experiences of these two groups were considerably different.

8. The measurement of the dependent variable, labeled Indirect-Direct Teaching Ratio (IDTR) produced a distribution of scores with a range of .25 to 1.62, a mean of .81 and a SD of .38. Perhaps accurate estimates of the correlations between IDTR and the other variables were not obtained due to the restrictive nature of the distribution of the IDTR's.

RELATIONSHIPS BETWEEN INDIRECT-DIRECT TEACHING, TEACHER CHARACTERISTICS AND SCHOOL CLIMATE

By

Ronald K. Limberg

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Elementary and Special Education

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ACKNOWLEDGMENTS

It is indeed a difficult task to extend thanks to the people who have contributed to this undertaking, since so many offered support and constructive criticism. The nature of doctoral research demands the involvement of persons with expertise in a number of different areas.

First, I would like to thank the Center Directors of the Elementary Intern Program of Michigan State University, and the Acting Director of the EIP, Dr. Richard Marquard, without whose cooperation and approval this research could not have been done. My sincere thanks go also to the Intern Consultants of the EIP who served as data gatherers for me.

Secondly, I want to recognize the assistance and guidance afforded me by my Doctoral Guidance Committee members, Dr. Charles Blackman, Dr. Bruce Cheney, Dr. Richard Marquard, Dr. Ann Olmsted, and in particular, my committee chairman and advisor, Dr. William W. Joyce. It was Dr. Joyce's unselfish giving of his time and his continued advice that made it possible for me to complete this research.

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fices,

Last, sincere thanks to my wife, Margie, and our four children for their support and understanding throughout the year. Of itself, the doctoral program is formidable; without a family that is willing to make sacrifices, it would be impossible.

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CHAPTER I

THE NATURE OF THE INVESTIGATION

Introduction to the Study

Traditionally elementary schools have been concerned with the product of their endeavor instead of the process. Teachers in the skill subjects of reading, mathematics and language arts have emphasized the development of skills basic to each of these areas of the curriculum, but they have been less willing to concentrate on the more complete understanding of the behavioral and physical sciences. Although instruction in the sciences has supposedly been concerned with the development of critical thinkers and investigators, in actuality it has been more successful in helping children amass a factual knowledge base. Due to the rapid obsolescence of knowledge this is not adequate.

However, in the last two decades the realization of the dynamic nature of the world in which the children as future citizens will be living, and the many complex domestic and international social problems which they will face, has prompted change. There is widespread agreement among educators that children should be

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encouraged to reflect critically on the ideas generated by themselves and others, and to engage in problem-solving activities at the higher cognition levels.[1] This implies an emphasis upon the process in learning instead of upon learning material by rote.

One approach to the development of critical thinking and problem-solving abilities in children appears to be through inquiry-based teaching techniques. John Dewey in 1933 was one of the earlier advocates of "reflective thinking"[2] and later, of the development of intelligence through inquiry.[3] Since then, many others have posited models of inquiry which are generally similar to Dewey's well-known five-step model. Among the most influential have been the theoretical models of Jerome S. Bruner.[4] Bruner, sharing Dewey's views, asserts that coping with problems within a discipline is a productive way of learning to think, and that inquiry is as important as

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[1]Benjamin J. Bloom, Taxonomy of Educational Objectives, Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956). Additional discussion of this is found in Frederick R. Smith and C. Benjamin Cox, New Strategies and Curriculum in Social Studies (Chicago: Rand McNally and Co., 1969), pp. 27-39.

[2]John Dewey, How We Think (New York: D. C. Heath, 1933).

[3]John Dewey, Logic: The Theory of Inquiry (New York: D. C. Heath, 1935), p. 104.

[4]Jerome S. Bruner, The Process of Education (Cambridge, Mass.: Harvard University Press, 1961).

a careful and logical appraisal of the subject matter's elements.[5]

These models of inquiry assume much different roles for the teacher than is commonly ascribed to him. The range of these roles in promoting inquiry lies on a continuum with the teacher and the learner functioning as co-inquirers according to the Massialas and Cox[6] model at one extreme, and with the teacher as director of discovery as assumed by Bruner's[7] model, at the other extreme. Formerly didactic in nature the teacher's role now assumes dialectic dimensions with his primary responsibility becoming the establishment of a classroom environment that not only would allow for inquiry on the part of the student but serves to encourage it.

Smith and Cox[8] cite the intellectual climate of the classroom as being critical to the conduct of inquiry, and they suggest that the verbal performance of the teacher is the primary ingredient in the development of this type of classroom. The teacher's ability to engage

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[5] Ibid., p. 92.

[6] Byron G. Massialas and C. Benjamin Cox, Inquiry in Social Studies (New York: McGraw-Hill Book Co., 1966), p. 21.

[7] Jerome S. Bruner, Toward a Theory of Instruction (Cambridge, Mass.: Belhanp Press, 1966).

[8] Smith and Cox, Strategies in Social Studies, p. 36.

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students in meaningful investigatigations is closely related to the verbal behavior of himself and the pupils. This is often described or referred to as, "classroom verbal interation." Meux and Smith write, "Teaching behavior is primarily verbal."[9] Storlurow and Pohl state that ". . . teaching is fundamentally a social process involving communication and interation between at least two people, a teacher and a pupil."[10] Flanders uses verbal interaction as the primary mode of teacher influence, ". . . a series of acts along a time line, most often expressed as verbal communication . . . or verbal interaction."[11]

Flanders distinguishes between teachers' acts that restrict students' freedom of action ("direct teaching"), from those acts that increase students' freedom of action ("indirect teaching").[12] Indirect influence

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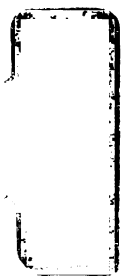
[9]Milton Meux and B. O. Smith, "Logical Dimensions of Teaching Behavior," in Contemporary Research on Teacher Effectiveness, ed. by B. J. Biddle and W. J. Ellena (New York: Holt, Rinehart and Winston, Inc., 1964), p. 129.

[10]L. Storlurow and K. Pohl, "Letter to the Editors," Harvard Educational Review (Summer, 1963), 384.

[11]Ned A. Flanders, Teacher Influence, Pupil Attitudes and Achievement, Cooperative Research Monograph No. 12, Office of Education, U.S. Dept. of Health, Education and Welfare (Washington, D.C.: Government Printing Office, 1965), pp. 1-23.

[12]Ibid., p. 111.



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increases students' learning when goals are ambiguous, such as is true of many inquiry-centered programs, because less disabling dependence develops. Also, there may be less response to authority and more attention directed to problem-solving requirements, which again is true of most inquiry-centered programs.

An indirect teaching style, for the purpose of this study, is selected as being necessary to the inquiry-centered classroom, and this is measureable using the Flanders Interaction Analysis system. The use of an indirect teaching style may indeed result in advancing classroom inquiry, but what variables allow some teachers to operate successfully in this indirect manner, while others remain primarily direct in their style?

Dogmatism, a generalized personality trait, which is a set of organized beliefs and expectancies, provides a framework for the acceptance or non-acceptance of new ideas, and for tolerance and intolerances toward others. Rokeach[13] asserts that the degree a person's belief system is "open" or "closed" is measureable in terms of his dogmatism. (His investigations led to the development of a scale which is purported to measure this construct). The present study is predicated on the assumption that the

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[13]Milton Rokeach, The Open and Closed Mind: Investigations into the Nature of Belief Systems and Personality Systems (New York: Basic Books, 1960), p. 50.

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degree of a teacher's open-or-closed-mindedness may be instrumental in his ability to teach in the more ambiguous, inquiry style, because of the tolerance that the teacher must display towards the feeling and attitudes of others. Smith and Cox[14] write that, "He must withstand the temptation to interfere in the pupil's search for the solutions to issues, which are before the class."

In this study the writer is also concerned with the organizational climate of the schools in which the intern teachers are working. It may well be that a teacher is markedly open and inwardly encouraged to attempt inquiry methods in his classroom, but that the school situation in which he is working is so constricting as to make this untenable. Corman and Olmsted[15] write, "It is abundantly clear that the pressures to conform, exerted by other teachers and/or the principal, have forced many new teachers to a state of acquiescence."

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[14]Smith and Cox, Strategies in Social Studies, pp. 37-38.

[15]Bernard Corman and Ann G. Olmsted, The Internship in the Preparation of Elementary School Teachers (East Lansing, Mich.: Bureau of Educational Research, M.S.U. These authors conducted a study of pre-teachers occupying intern roles in the Michigan State University Student Teacher Experimental Program (STEP).

Need for the Study

Clearly there is a need for study of the relationship between the classroom verbal performances of "beginning teachers" and the variables of dogmatism and organizational climate. That there is a discrepancy between how teachers are taught to teach in most teacher preparation programs, and their actual classroom performance is a recognized fact. Presumably, empirically based information will provide possible reasons for this phenomenon.

Also a look to the future provides credence for this study. Joyce[16] in his review of the more recent social studies projects, states, ". . . most tend to possess several common characteristics, including . . . extensive reliance upon instructional activities involving inquiry-centered teaching methods, in which pupils are encouraged to attack problems. . . ." Many teachers in the near future will have to assume new roles in order to accomplish the stated goals of these programs, since they will have to be less concerned with information-giving and more concerned with process-oriented teaching.

Purpose of the Study

The purpose of the study was to investigate two basic questions:

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[16]William W. Joyce, Robert G. Oana, and W. Robert Houston, Elementary Education in the Seventies (New York: Holt, Rinehart and Winston, 1970), p. 246.

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1. Is the degree of a teacher's dogmatism related to his classroom verbal behavior?
2. Is the organizational climate of the school in which a person is teaching related to his classroom verbal behavior?

Information concerning two other variables was also sought since the investigators' search of the literature yielded contradictory findings. These were:

1. What is the relationship between the grade level of the teaching assignment and the classroom verbal behavior of the teacher?
2. What is the relationship between a teacher's undergraduate grade point average and his classroom verbal behavior?

These questions, based on the rationale and need cited above, were central to this investigation of the teacher's ability to teach in an inquiry, or indirect style.

Intern teachers (interns) enrolled in the Elementary Intern Program (EIP) of Michigan State University comprised the research population of this study. These are not to be confused with student teachers, but rather they are teachers who as students with senior college rank have assumed the major responsibility for their own classrooms for an entire school year. They are intensively assisted by a consultant who is an experienced teacher employed by the local school district and working under

the direction of an off-campus Michigan State University Center director. The rationale for the use of interns as subjects in the present study is included in Chapter III.

Research Hypotheses

This study was designed to test the following four hypotheses:

1. There will be a relationship between the dogmatism of intern teachers as measured by Rokeach Dogmatism Scale, and the verbal behavior of intern teachers as measured by Flander's Interaction Analysis; this relationship will be that the higher the dogmatism of the teacher, the more direct[17] the teacher's verbal behavior.
2. There will be a relationship between the social-psychological, school climate as measured by the School Climate Scale, and the verbal behavior of intern teachers as measured by Flander's Interaction Analysis;

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[17]The terms direct and indirect used in the description of teaching styles were terms suggested by Flanders. They were used similarly in this study referring to the degree of controlling influence exerted by the teacher.

this relationship will be that the more open[18] the organizational climate of the school, the more indirect the intern teacher's verbal behavior.

3. There will be a relationship between the undergraduate Grade Point Average of intern teachers as earned at Michigan State University, and the verbal behavior of the intern teachers as measured by Flander's Interaction Analysis; this relationship will be that the higher the GPA, the more indirect the intern teacher's verbal behavior.
4. There will be a relationship between the grade level of the intern teachers' present teaching assignments and the verbal behavior of the intern teachers as measured by Flander's Interaction Analysis; this relationship will be that the higher the grade level of the teaching assignment, the more indirect the verbal behavior of the intern teacher.

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[18] Open and closed are the extremes of a continuum on which the construct organizational climate is measured. These terms which are explained in Chapter II, refer to the feeling or working environment of schools.

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Definition of Terms

Several terms require definition owing to their specialized use in this study. These terms are defined below.

Dogmatism.--The extent to which a person can receive, evaluate, and act on relevant information received from the outside on its own merits, unencumbered by irrelevant factors in the situation.[19] Levels of this psychological construct are ordered on a continuum with the extremes represented by Open--and Closed--Mindedness. This is measured by the Rokeach Dogmatism Scale.

School Climate.--A construct representing the organizational atmosphere of a school, viewed on the dimensions of participant involvement, characteristics of the group, and behavior of the leader. Levels of this construct are ranked on a continuum with the extremes represented by Open and Closed, measured by the School Climate Scale.

Elementary Intern Program.--A four-year teacher preparation program of Michigan State University, which features a one-year teaching internship in which the intern has full responsibility as the teacher of a

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[19]Rokeach, Investigations into Systems, p. 50.

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classroom, and is assisted by an intern consultant for approximately five hours per week.

Intern Teacher.--A person occupying the role cited above.

Intern Consultant.--An experienced teacher assigned to supervise intern teachers on a full-time basis. Normally a consultant spends about 85 per cent of his time working with five or six intern teachers, on an individual basis.

Inquiry.--A process in which pupils focus on a problem and in their search for a solution go through a number of steps ranging from hypothesizing to formulating conclusions. This is sometimes referred to as a type of discovery learning.

Inquiry--centered instruction.--Instruction which has as its basic strategy the involvement of the learners (and teacher) in a searching process, one in which solutions to problems are sought, tested and evaluated. The basic purpose of this instruction is to develop in the learners the ability to systematically search for, and evaluate ideas. This can be contrasted to instruction which seems to have for its objective, the acquisition of knowledge.

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Summary of Procedures

Population Defined

The population consists of all intern teachers who had been teaching since the beginning of the school year, fall, 1969, in the eleven Elementary Intern Program centers in the state of Michigan. The following classifications were exempted from this study: (1) special education, (2) kindergarten, (3) junior high school, and (4) special assignments such as art and music. The population, therefore, consisted of those intern teachers who were teaching in "regular" classrooms, grade one through six. (N=208)

A random sample of thirty-nine intern teachers, was drawn from the population of interest. Four were lost from the sample leaving an N of thirty-five.

Instrumentation

The Dogmatism Scale,[20] developed by Rokeach, was selected to measure the degree of open-and-closed-mindedness of the sample intern teachers. The short form of the Dogmatism Scale used in this study was developed by

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[20] Ibid.

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Troldahl and Powell.[21] It was selected over other instruments because of its high reliability and ease of administration. (Reliability = .79 computed using the split-halves technique.)

Interaction Analysis,[22] developed by Flanders, was selected on the basis of its high reliability (.84) in measuring direct and indirect teaching styles, and the investigator's knowledge of the system.

The School Climate Scale[23] was developed by the investigator, using the organizational climate dimensions as set forth by Haplin[24] in his study of elementary schools, and their leaders. Its purpose was to measure the organizational climate of schools, ranking them on a continuum with the extremes represented by Open and Closed.

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[21]Verling C. Troldahl and Frederick A. Powell, "A Short Form Dogmatism Scale for Use in Field Studies," Social Forces, XLIV, No. 2 (December, 1965), 211-14. This instrument appears as APPENDIX A, under the title: Personal Opinion Questionnaire.

[22]Flanders, Influence, Attitudes and Achievement, p. 20. The categories of verbal interaction and accompanying descriptions are found as APPENDIX B.

[23]This instrument appears as APPENDIX C, under the title: School Situation Questionnaire.

[24]Andrew W. Halpin, Theory and Research in Administration (New York: The MacMillan Company, 1966), pp.

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Data Collection and Analysis

The Dogmatism Scale and the School Climate Scale were completed by intern teachers under the supervision of the intern consultants. In addition, the intern consultants, independently completed the School Climate Scale.

Interaction Analysis was employed in the analysis of three twenty-minute taped segments of classroom instruction of each intern teacher included in the sample. Due to the capacity limit of the IBM-1130 Computer these twenty-minute taped segments were converted to five- to ten-minute segments. Since the Indirect-Direct Teaching Ratios obtained for each of these segments were averaged to obtain a single IDTR for each intern, this conversion had no effect on the results. Restrictions on this taping which was done by the respective intern consultants, were that the weeks during which the taping was done were selected by the investigator, and that the consultant was to "randomly" pick the particular instruction to be recorded. The consultants were instructed that social studies, science, language arts, and some reading activities be the areas of instruction from which to gather the tapes.

The analysis of the tapes was done by the investigator who had extensive training and experience with the Flander's system. The resultant tallies were then plotted and matrices constructed by means of an IBM-1130

Computer program,[25] and scores of indirect and direct teaching obtained.

The general research model was one of correlation, with Verbal Interaction as the dependent variable, and the independent variables of Dogmatism, School Climate, Grade Point Average, and Grade Level of Teaching Assignment.

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Multiple-regression techniques were employed in the statistical analysis of the data. The 5 per cent level of confidence for rejection or acceptance of the hypotheses was selected in advance as being sufficient for testing the hypotheses of this study.

Organization of the Study

Chapter II provides a summary of the related literature and research. It focuses on: (1) dogmatism and its relationship to teaching, (2) inquiry-centered instruction, (3) classroom verbal interaction, and (4) the influence of organizational climate on beginning teachers.

Chapter III deals with the design of the study. It describes the population, research sample, instruments, and procedures for collection, analysis, and presentation of data.

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[25]Developed by Douglas Fairbanks, doctoral student, Michigan State University, 1970.

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The analysis and statistical treatment of the data are reported in Chapter IV, in testing the four hypotheses set forth in the study. Chapter V summarizes the findings, and reports the implications for teacher education, inquiry-centered instruction, and future research.

Limitations of the Study

The results of this study are subject to the following limitations:

1. Due to the nature of the population from which the research was drawn, the results of this study pertain only to intern teachers of the Michigan State University Elementary Intern Program, teaching in regular classrooms, grades one through six, 1969-1970.
2. This study is limited to the extent to which the instrumentation employed produced valid and reliable results. In one instance an instrument was developed for use in the present study. This instrument, the School Climate Scale, was subjected to the usual initial tests of validity and inter-rater reliability. However, any instrument used in measuring a variable as nebulous as the organizational climate of schools probably should be subjected to more extensive testing and refining.

3. The nature of two of the variables of interest and the instruments employed for their measurement may have limited the estimation of relationships. Verbal interaction was measured using a content-free analytic system, and dogmatism was measured using a scale which was content-oriented.
4. The size of the research sample (N=35) required that strong relationships be found before they could be termed significant at the .05 level. Increasing the size of the N could have made it easier to obtain significant results.

Summary

Chapter I presents the rationale and the need for the study. The purpose of the study was to investigate two basic questions:

1. Is the degree of a teacher's dogmatism related to his classroom verbal behavior?
2. Is the organizational climate of the school in which a person is teaching related to his classroom verbal behavior?

The major working hypothesis was that the patterns of classroom verbal interaction used by intern teachers was related to the successful conduct of inquiry-centered

instruction, and that these patterns would be indirect as defined and measured by Flander's Interaction Analysis.

Four variables were designated as independent variables for the purposes of this study. These were: (1) the dogmatism of interns, (2) the organizational climate of the schools in which they were teaching, (3) their undergraduate grade point averages, and (4) the grade level of their teaching assignments.

The research procedures and data collection and analysis procedures were presented in Chapter I. Limitations of the study are presented in the final section of the chapter.

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CHAPTER II

REVIEW OF RELATED RESEARCH AND LITERATURE

This review attempts to develop a conceptual frame of reference for the study of inquiry-centered teaching. The writer assumes that factors such as the degree of open-mindedness of a teacher and the type of school climate in which he is working will be related to his ability to teach using an inquiry approach.

Specifically this review provides a summary of selected research and literature related to (1) inquiry-centered instruction and related role-demands for teachers, (2) classroom verbal interaction and its importance in teaching, (3) the personality trait, dogmatism, and its relationship to teaching, (4) the influence of organizational climate on intern or beginning teachers, and (5) the relationship of the academic achievement of teachers with their particular teaching behavior.

Inquiry-Centered Instruction and the Related Role Demands for Teachers

The literature revealed many definitions of inquiry in teaching. Manson and Williams suggest that perhaps inquiry defies defining because, "the nature of the word itself suggests continual redefining."[1] They go on to say that there is widespread agreement that if inquiry were placed on a continuum of teaching methods ranging from expository-didactic to hypothetical-heuristic, it would approximate the latter.

For the purposes of this study inquiry is viewed as a process in which pupils focus on a problem and in their search for a solution, go through a varied number of steps usually labeled hypothesizing, evidence gathering, evaluating, and formulating conclusions. The major point of agreement to be extracted from the many definitions of inquiry is that, "the focus is not on established generalizations but on the building and testing of theories."[2]

Sagle states that the basic difference among inquiry, discovery, and problem-solving were semantic

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[1]Gary A. Manson and Elmer D. Williams, "Inquiry: Does It Teach How or What to Think?", Social Education, XXXIV, No. 1 (January, 1970), 78-81.

[2]Helen Sagle, "Problem Solving, Inquiry, Discovery?" Childhood Education, November, 1966, p. 139.

in nature. Admittedly, minor differences probably exist, but in terms of this study these terms were considered as being synonymous.

Arguing for inquiry, Turner asserted, "Individualization of instruction can be more easily attained by means of inquiry methods."[3] He felt that unlike subject-centered instruction, the goals of investigation-oriented teaching are designed to reach the child as an individual learner rather than as a member of a large instructional group.[4]

Rogers also asserted that inquiry in the social studies, enables the learner's more traditional passive role to become a more individualized and active role. He envisions the learning act as, "an interaction between the learner and his world . . . that the understanding of a subject comes through a self-directed activity of the children, an activity of inventing and discovery."[5]

Further support for inquiry may be found in the rationale of the majority of the newer programs in the sciences and the social studies, in which the inquiry

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[3]Thomas N. Turner, "Individualization Through Inquiry," Social Education, XXXIV, No. 1 (January, 1970), 72-73.

[4]Ibid., p. 73.

[5]Vincent R. Rogers, "A Macrocosmic Approach to Inquiry," Social Education, XXXIV, No. 1 (January, 1970), 74-77.

process is a dominant feature. Gagné's theoretical base served as a guide in the development of "Science--A Process Approach,"[6] a series of materials prepared by the AAAS Commission on Science Education. Gagné maintains that successful inquiry required that students have a suitable background of broad generalized knowledge usable in solving problems. Also, that they have incisive knowledge, which allowed them to discriminate between good and bad ideas.[7]

Other science programs such as the Science Curriculum Improvement Study,[8] and the questioning strategies developed by Suchman[9] utilized the inquiry method. None of the above mentioned programs advocate the elimination of learning concepts or other content considerations; however, they each posited inquiry, or the process, as being an important feature.

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[6]Robert M. Gagné, "The Learning Requirements for Enquiry," Journal of Research in Science Teaching, I, No. 2 (June, 1963), 144-53.

[7]Ibid., pp. 147-48.

[8]Robert Karplus, "The Science Curriculum Improvement Study," Journal of Research in Science Teaching, II, No. 4 (1964), 293-303.

[9]Richard J. Suchman, "Rebuilding the Science Program Inquiry Teaching in the Elementary School," The Science Teacher, XXVII (November, 1960), 42-49.

Ausubel differs in his assessment of the relationship between knowledge and inquiry, in that he states that,

> There is no need to wait for the child to acquire a background of accumulated knowledge and skills before incorporating inquiry approaches in the classroom. Not only is the primary-grade child mature enough to gather data, and to evaluate it, but under the proper guidance of an adept teacher, he can make inferences and develop, analyze, and evaluate hypothesis.[10]

An examination of the new social studies curricula, as cited in Chapter One, revealed that most of these programs tended to place heavy reliance upon inquiry-centered teaching methods. In fact, some supplemental type programs such as the SRA, Social Science Laboratory Units,[11] are almost completely concerned with the process of inquiry, to the exclusion of any form of recognized content, other than certain affective considerations.

Selected Research Related to Inquiry

In a review of research focusing on inquiry, Kersh,[12] reported that studies have shown that concepts

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[10]David O. Ausubel, Educational Psychology: A Cognitive View (New York: Holt, Rinehart and Winston, Inc., 1968), pp. 175-224.

[11]This program was designed by Ronald Lippitt, Robert Fox, and Lucille Schaible.

[12]B. Y. Kersh and M. C. Wittrock, "Learning by Discovery," Journal of Teacher Education, XIII (May, 1962), 461-68.

can be effectively learned through inquiry. In addition, inquiry method tends to heighten motivation, long term retention and transfer.

Following the Suchman inquiry training technique, Butts and Jones[13] attempted to help 109 sixth grade children develop their problem-solving behaviors. To do this they used a planned guidance program based on Suchman's program, and evaluated the students by means of the TAB Inventory of Science Processes, which is a test designed to evaluate the child as an inquirer. They found a relationship between inquiry training and positive changes in problem-solving behavior.

In the area of social studies, Hardy[14] found that sixth-grade pupils who actually participated in an archaeological dig out-performed conventionally taught pupils on a final exam designed to measure knowledge of concepts, generalizations, and principles of anthropology. Also, in support of inquiry-centered instruction, Lee[15]

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[13]D. P. Butts and H. L. Jones, "Inquiry Training and Problem Solving in Elementary Science Children," Journal of Research in Science Teaching, IV (March, 1966), 21-27.

[14]Donald W. Hardy, "Inland Valley Elementary School Archaeology Project: An Experimental Comparison of Two Teaching Approaches," Dissertation Abstracts, XXIX (July, 1968), 61-A.

[15]Martha A. Lee, "Development of Inquiry Skills in Ungraded Social Studies Classes in a Junior High School," Dissertation Abstracts, XXVIII (March, 1968), 3,367-A.

concluded that students could be taught problem-solving skills without the loss of factual achievement. In this study, forty-five seventh-, eighth-, and ninth-graders were taught social studies for one semester employing a method which was based on an eight-step, problem-solving model, and then were matched against a group receiving factual instruction.

David,[16] on the basis of his study of characteristics of learning situations that generate and develop children's ability to generalize, reported that significant growth in the ability to generalize, was developed in situations where problem-solving skills were emphasized.

A significant, and closely related study was performed by Wadtke and Wallen,[17] who investigated the effects of teacher control on pupils' creativity-test gains. For the study, nineteen teachers in grades two through five were selected from a group of seventy-seven teachers on the basis of Q-Sort techniques, sorting for high and low controlling teachers. Two high and two low controlling teachers (three high controlling teachers in grade five)

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[16]David W. David, "Conditions that Foster Growth in Children's Ability to Generalize in Elementary School Social Studies," Dissertation Abstracts, XXIX (December, 1968), 1,805-A.

[17]Kenneth H. Wadtke and Norman E. Wallen, "The Effects of Teacher Control in the Classroom on Pupils' Creativity-Test Gains," American Educational Research Journal, II (March, 1965), 75-82.

were selected for each grade. The subjects for the study then, became the students in these teachers' rooms, approximately 100 at each grade level. I.Q. and creativity measures were given on a pre- and post-test basis. (No adjustment for I.Q. was needed.) Analysis of variance techniques were used to obtain F-ratios for comparison of the test scores.

The results of Wadtke and Wallen's study supported the hypothesis that an extensive degree of controlling behavior by the classroom teacher had a detrimental effect on verbal creativity. Apparently, the high controlling teacher prefers an ordered classroom, and flexibility in pupil behavior is eliminated; whereas, the low-controlling teacher may positively reinforce flexible behavior by her pupils.

Crabtree[18] studied the effects of structuring on the productiveness of children's thinking by designing and utilizing two instructional programs with differing degrees of teacher imposed structure. Structuring was limited to two influences: communicating to children and prearranging the learning environment. Tests of divergent and convergent thinking were used as criterion measures in this small, but carefully controlled study.

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[18]Charlotte Crabtree, "Effects of Structuring on the Productiveness of Children's Thinking," Journal of Experimental Education, XXXVI (Fall, 1967), 1-13.

The author reported results confirming her hypothesis that higher structuring aided convergent thinking, and lower structuring aided divergent thinking. Teacher influence seemed to be more important than teaching materials in accounting for the differences found.

The particular studies cited above, provide support for the inquiry method. But collectively, the research findings tend to be somewhat contradictory. In a number of studies reviewed by the writer, but not reported here since they offered no empirically based support for inquiry, no significant gains in achievement occurred as a result of either the inquiry or the conventional method. In most instances, however, these researchers did indicate motivational advantages and improved interest and attitudes on the part of the subject students in inquiry settings. Controlling and structuring, forms of direct teacher influence, tended to discourage divergent thinking on the part of the pupils, which clearly is a necessary element in most inquiry-centered instruction.

The writer offers this final argument for inquiry, provided by Goldmark:

> It is doubtful that we can predict exactly what kinds of knowledge our children will need in the future. It is even possible that the storage-of-knowledge function will be taken over by computers. However, children will probably always need a method for making judgments about problems--for evaluating alternatives and making decisions.

> But perhaps even the equipping of children with methods for making judgement will not sufficiently prepare them for future problems. Perhaps a more basic requirement is that children be educated to want to cope with problems. If the children are apathetic, they will not even care to recognize problems; there would be no inquiry, no solutions. A sort of vacuum would be created into which the few could move to control the many. Thus education must have as its first objective a commitment to inquiry, and it must provide methods for inquiring into problems and for reconstructing the tools of inquiry. This is the education demanded in our society.[19]

The Role of the Teacher in Inquiry-Centered Instruction

Certain facets of the teacher's role in inquiry-centered instruction have been implicit in the section above. But since this study was based on the assumptions that inquiry places new demands on the teacher, and that the classroom verbal interaction developed by the teacher, is probably instrumental in achieving the necessary intellectual climate to foster inquiry, some related considerations are explained below.

Smith and Cox[20] wrote that a democratic concept of control is most conducive to this inquiry climate, and that this implies that the teacher and pupils will share much of the policy-making and planning. The teacher's primary task becomes one of helping the pupil become

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[19]Bernice Goldmark, Social Studies--A Method of Inquiry (Belmont, California: Wadsworth Publishing Company, Inc., 1968), p. 43.

[20]Smith and Cox, Strategies in Social Studies, p. 37.

self-directed, self-disciplined, self-motivated and willing to accept responsibility for his own decisions. The pupil is taught to express his own beliefs and views, knowing that these views, and the views of others will be open to analysis and evaluation, not ridicule and belittlement.

Participants of the Tri-University Project in Elementary Education at the University of Washington have depicted the teacher's role in conducting inquiry as follows:

> In providing motivation and direction, the teacher through questions and discussion guides the pupils to the identification of the problem. Throughout the motivational activity, the primary role of the teacher is directing pupil interest, while remaining flexible enough to deal with unanticipated questions and interests that might be pertinent to the study.[21]

These writers suggest that in planning, one of the most crucial areas is that of questioning techniques and strategies.[22] Inquiry begins with a question so it is imperative that the teacher ask appropriate questions and serve as a model of the inquiring mind for the students. The teacher should be well prepared in the content of the study--but should not, however, be limited to the prepared

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[21]Dorothy J. Skeel and Joseph G. Decaroli, "The Role of the Teacher in an Inquiry-Centered Classroom," Social Education, XXXIII, No. 5 (May, 1969), 547-50.

[22]Ibid., p. 549.

questions to the extent that he cannot adjust to the pupil responses and line of inquiry that they may logically be pursuing.

Tucker delineates the essential behaviors of the inquiry teacher:

1. He must be consistent and intellectually honest with the students.
2. He must give them ample opportunity to develop their powers of systematic analysis.
3. He must allow them to make mistakes and work their way out of these mistakes.
4. He must be willing to admit to not knowing all--he must be part of the inquiry, not apart from it.
5. Finally, and most importantly, he must be willing to demonstrate in appropriate instances that he is committed to a value system based upon a rational systematic analysis. Logically then, he must reject, in an inquiry classroom, the traditional role of the social studies teacher as a neutral observer of the social, economic, and political scene--but he must be careful that this involvement is predicated upon the open-minded characteristics of true inquiry. . . . It is a short step from involvement to indoctrination.[23]

Interaction Analysis

During the 1940's and 1950's, a growing number of researchers turned their attention to developing systematic ways of analyzing selected dimensions of the teaching act. "Classroom climate," and its importance to the teaching-learning process became a commonly recognized term referring to, "the generalized attitudes toward the teacher and the class that the pupils share in common despite

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[23]Jan Tucker, "A Classroom Challenge: Teaching A Method of Inquiry," California Social Science Review, IV, No. 3 (May, 1965), 28-30.

individual differences . . . these common attitudes color all aspects of classroom behavior, creating a social atmosphere, or climate, that appears to be fairly stable, once established."[24] For the most part, this work was based on the findings of H. H. Anderson[25] and his colleagues, whose studies focused on the observation of "dominative" and "integrative" contacts. Most of the observational techniques developed since then for the analysis of teaching behaviors, have been based on similar behavioral distinctions.

The findings of Anderson were based on the observational data obtained on five teachers and extending over several years. The most significant of these were:

1. The dominative and integrative contacts of the teacher set a pattern of behavior that spreads throughout the classroom.
2. The behavior of the teacher, more than any other person, sets the climate of the class.
3. A climate of domination incites further domination, and one of integration stimulates further integration.
4. The pattern a teacher develops one year is likely to persist in his classroom the following year even with different students.
5. When a teacher has a higher proportion of integrative contacts, pupils show more spontaneity and initiative, more voluntary social contributions, and more acts of problem-solving.

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[24]Flanders, Influence, Attitudes and Achievement, pp. 5-6.

[25]H. H. Anderson, "The Measurement of Domination and of Socially Integrative Behavior in Teacher's Contact with Children," Child Development, X, No. 2 (June, 1939), 73-89.

6. When a teacher has a higher proportion of dominative contacts, the pupils are more easily distracted from schoolwork, and show greater compliance to, as well as rejection of teacher dominations.[26]

Shortly after Anderson started his work, Lippitt and White,[27] working with Kurt Lewin, studied the effects of adult leaders' influence on boys' groups. Since this was done in a laboratory setting, the contrasting patterns of leader behavior were able to be more clearly defined, and the effect of the pattern of leader behavior was intensified. Lippitt and White's "authoritarian leadership" was largely dominative, and their "democratic leadership" largely integrative.

The findings reached by Lippitt and White confirmed and extended the findings of Anderson that the teacher's behavior was instrumental in the development of the classroom social climate, and that this was largely done through verbal acts. Withall[28] and

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[26] Ibid., p. 75.

[27] Ronald Lippitt and Robert White, "The 'Social Climate' of Children's Groups," in Child Behavior and Development, ed. by R. G. Baker, J. S. Kounin, and H. F. Wright (New York: McGraw-Hill Book Company, 1943), pp. 458-508.

[28] J. G. Withall, "The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms," Journal of Experimental Education, XVII (March, 1949), 347-61.

Hughs[29] conducted studies which were also mainly concerned with the verbal behavior of the teacher and pupils in classrooms.

Defining "teaching as interaction," Hughes and her associates looked at the classroom interactive situation as a superior-subordinate relationship. That is to say, they considered the teacher-student relationship in the classroom to be of a reciprocal character. In this light, the teacher and students in the classroom were actually partners or objects in a situation that acted upon each other.

This reasoning was based on two assumptions: (1) the teacher's influence in a classroom is directed toward some conscious end which is intended to instruct or to aid the student in his learning, and (2) that the child or group in direct interaction with the teacher has influence that is guided by a search for competence, a reach for his own identity and his defenses or protection of himself. The teacher's intent to instruct in such a manner as to change the behavior of the student and the student's response in terms of his own idiosyncratic system then, form the dynamics within which the

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[29]Marie Hughs, "Development of the Means for the Assessment of the Quality of Teaching in Elementary Schools," in Handbook of Research on Teaching, ed. by N. L. Gage (New York: Rand McNally, 1963), pp. 269-271.

interaction in the classroom takes place. These two concepts--Teacher Power and Teacher Responsiveness to student's actions--constitute the basis for Hughes' system of categorization of classroom interaction.

The data of the study were classroom records obtained by two observers who checked with one another and collated their records. Most of the records were 30-minute duration. Thus continuous sequential records of certain events occurring over a known period of time were secured. The "certain" or selected class of events was the teacher's verbal (and nonverbal to the extent that it could be reliably obtained) behavior and the response of the child or group to whom the behavior was addressed. Children's initiatory actions directed toward the teacher were also included. After securing extensive specimen records of teacher behavior in this manner, they developed a means for categorizing the acts performed by a teacher.

Hughs, et al., divided their material for analysis into units of teacher behavior according to the "function" it performed for the child or group. The function was inferred from the context in which it occurred and did not necessarily conform to any conventional language unit. They described teaching then in terms of functions the teacher behavior--verbal and nonverbal--performed for the individual or group to whom the teacher was directing

his influence. They then arranged the teaching acts into seven broad categories: Controlling, Imposition, Facilitating, Development of Content, Personal Response, Positive Affectivity, and Negative Affectivity.[30]

Medley and Mitzel,[31] added to the scientific study of teaching by designing and field testing a systematic approach to analyzing teaching. Although their system (OSCAR) has not proven as useful as Flander's I.A., their findings have proven useful to other investigators. These findings showed that the most influential aspect of teaching was the patterns of verbal interaction in the classroom.

B. O. Smith,[32] one of the first and most verbal advocates of analysis of classroom interaction, classified teaching acts according to certain logical characteristics, such as defining, classifying, comparing, contrasting, evaluating, directing, and admonishing. His findings

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[30]The description of Hugh's research and system of analysis was taken from: Judith Henderson and Ted Ward, Research on Instruction (East Lansing, Michigan: Learning Systems Institute, MSU, undated), pp. 5665A-5665B.

[31]Donald M. Medley and Harold E. Mitzel, "The Scientific Study of Teacher Behavior," in Theory & Research in Teaching, ed. by Arno Bellock (New York: Teachers College, Bureau of Publications, 1963), pp. 85-88.

[32]B. O. Smith, "A Concept of Teaching," Teachers College Record, VI, No. 5 (February, 1963), 229-234.

were consistent with the findings of Medley and Mitzel, Flanders, Hughs, and Anderson, and others, in that as the teacher was engaging the class in one or more of these logical operations, he was mainly directive (dominative), or supportive (integrative) and that once again the verbal transactions of the classroom were the most cogent factors in setting the stage for learning.

Interaction Analysis, (IA), the analytic system used in the present study, was developed by Flanders,[33] using the studies of Anderson, and Lippitt and White as a base. Flanders set out to explore two questions left unanswered by this earlier research: (1) Since both integrative and dominative types of statements are used by all teachers, what are the consequences of these different types of statements used under different conditions? and (2) What is a typical balance of integrative and dominative acts found in the classroom?

Flanders' project was based on several theoretical ideas about the relationship between teacher influence patterns and the achievement and attitudes of students. The relationship was tested under two conditions of student goal perception: goal clarity and goal ambiguity; in two subject areas; geometry and social studies. The hypotheses of the study were concerned with the effect

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[33]Flanders, Influence, Attitudes and Achievement, p. 126.

of direct and indirect teacher influence and various conditions of goal perception on student achievement.

Testing of these hypotheses involved the use of two general kinds of concepts. Teacher behavior was described as direct or indirect teacher influence, and student goal perception as either ambiguous or clear.

During the first year of the study, the concepts of teacher influence and goal perception were tested in a laboratory situation and these four treatments were created: (1) direct influence with goal clarity, (2) direct influence with goal ambiguity, (3) indirect influence with goal clarity, and (4) indirect influence with goal ambiguity. In each subject area a teacher role-played both direct and indirect teacher influence. The second year of the research project involved a field study that tested the same relationships as those tested in the first-year laboratory experiment.

Analysis of the data indicated that the results of the first and second year studies were essentially the same. The results indicated that all types of students learn more working with the more indirect teachers. They also found that indirect teachers act most indirectly when goals are being clarified and when new content material is being introduced, and act most directly after goals have been clarified and work is in progress. In addition, they found that teacher flexibility was more

predictive of teaching success than was the concept of direct-indirect influence. It was found that the teachers of classes in which achievement was above average differed from the teachers of below average classes in their ability to shift their behavior as it was necessary. This ability, which was rarely found among teachers categorized as direct, meant that the teacher had the capability to make his own behavior (direct or indirect) appropriate to the requirements of the class situation at the moment.

In the Flanders' system of interaction analysis, observations of all teacher statements are classified first as either indirect or direct. This classification gives central attention to the amount of freedom the teacher grants to the student. In a given situation, therefore, a teacher has a choice. He can be direct, that is, minimizing the freedom of the student to respond, or he can be indirect, maximizing the freedom of the student to respond. His choice, conscious or unconscious, depends upon many factors, among which are his perceptions of the situation and the goals of the particular learning situation.

To make total behavior or total interaction in the classroom meaningful, the Flanders' system also provides for the categorizing of student talk. A third major section, that of silence or confusion, is included in order to account for the time spent in behavior other

than that which can be classified as either teacher or student talk. All statements that occur in the classroom, then, are categorized in one of three major sections: (1) teacher talk, (2) student talk, and a separate category, (3) silence or confusion, used to handle anything else that is not teacher or student talk.

The larger sections of teacher and student verbal behavior are subdivided in order to make the total pattern of teacher-pupil interaction more meaningful. The two subdivisions for teacher verbal behavior, indirect and direct teacher talk, are further divided into smaller categories. Indirect influence consists of four observation categories: (1) accepting feeling, (2) praising or encouraging, (3) accepting ideas, and (4) asking questions. Direct influence is divided into three categories: (5) lecturing, (6) giving directions, and (7) criticizing or justifying authority. Student talk is divided into only two categories: (8) responding to teacher, and (9) initiating talk. All categories are mutually exclusive, yet totally inclusive of all verbal interaction occurring in the classroom.

After the recording data have been obtained, the sequence of events in a classroom is entered into a ten-row by ten-column table, called a matrix, for analysis. After the observer has tabulated the matrix, he is then able to develop a description of the classroom interaction. The total percentages of teacher and student

talk can be found. The observer can focus on the relative number of indirect and direct teacher statements and the kind of emphasis given to motivation and control in the classroom can be determined. These and other observations concerning the teacher-pupil interaction are conveniently summarized in the matrix.[34]

This writer believes that the foregoing has demonstrated the importance of the establishment of a supportive classroom climate, especially if inquiry on the part of students is to be fostered. Furthermore, that the verbal interactions of the classroom were shown to be the single most reliable dimension for study when engaged in an investigation which requires definitive knowledge of teaching styles of the subjects in the study.

Dogmatism and Its Relationship to Teaching

Rokeach, basing his research on the concept of the authoritarian personality, developed the general theory of dogmatism, and an instrument, the Dogmatism Scale, which was designed for measuring the degree to which a person's belief system is open or closed. Being open or closed is defined as "the extent to which the person can receive, evaluate, and act on relevant information

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[34]The categories of verbal interaction and accompanying descriptions are found as APPENDIX B. The description of Flander's research and system of analysis taken from Henderson and Ward, Research, pp. 5465-A-5465C.

received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside."[35]

Other writers, in keeping with the main thrust of Rokeach's argument, have suggested that certain behavior characteristics are evidenced by people who are perceived to be closed-minded. Ausubel and Tenzer[36] write that the attributes of dogmatism include unwillingness to examine new evidence after an opinion is formed; a tendency to view controversial issues in terms of blacks and whites, and a need for early, typically premature, closure in reaching conclusions about complex issues.

The rationale for the hypothesis pertaining to the relationship between closed-mindedness and direct teaching styles, in the present study, comes from this body of research. A teacher attempting to operate his classroom in a manner consistent with the goals of inquiry, instead of the goals of the traditional classroom, would find it necessary to overcome the anxiety generated in such a situation. As a teacher allows for

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[35]Rokeach, Investigations into Belief and Personality Systems, p. 57.

[36]David P. Ausubel and Amy G. Tenzer, "Components of and Neutralizing Factors in the Effects of Closed-Mindedness on the Learnings of Controversial Issues," American Educational Research Journal, VII (March, 1970), 267-73.

greater student choice and is less able to predict and control successive events in the teaching-learning situation, flexibility (or adaptability) is imperative. According to the conclusions reached by Kingsley,[37] students who were high in dogmatism found it more difficult to adjust to new situations.

It is possible that the dogmatism of a teacher might cause him to reject the use of inquiry-centered instruction if inquiry is viewed as somewhat innovative. Bridges and Reynolds[38] using a sample of 262 elementary teachers tested for teacher receptivity to change. The hypothesis that elementary teachers with open belief systems would be more receptive to the trial of innovation than elementary teachers with closed belief systems was confirmed by their findings. The number of years of teaching experience was not found to be a significant factor.

A number of studies have been reported which dealt specifically with relationships between dogmatism of

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[37]Ruth W. Kingsley, "Commitment to Teaching and Open-Mindedness of Teachers in Training" (unpublished Ph.D. dissertation, University of Arizona, 1966).

[38]Edwin M. Bridges and Larry B. Reynolds, "Teacher Receptivity to Change," Administrators Handbook, February, 1968.

teachers and inquiry type teaching. McCollum[39] obtained dogmatism scores, Education Set Scale scores and scores from areas of the Edwards Personal Preference Schedule for prospective social studies teachers. His conclusions as to predictions of success using the reflective teaching method were: (1) that the two groups of students with a factual set would find it difficult to test hypotheses, conceptualize, and generalize. He also concluded that the high means achieved by all three groups of students on the Dogmatism Scale indicated that they would encounter many problems in the use of the reflective method in teaching.

Kardatzke[40] concluded that cultural-institutional and teacher characteristics had relatively little effect on most teacher practices. He did find that teachers who scored below the mean on Rokeach's Dogmatism Scale showed a tendency to take a more moderate position on controversial issues than teachers who scored above the mean on the Dogmatism Scale.

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[39]Robert E. McCollum, "A Study of the Relationship Between Selected Personality Characteristics and the Reflective Method," Dissertation Abstracts, XXIX (September, 1968), 762-A.

[40]H. H. Kardatzke, "Cultural-Institutional and Teacher Influences upon Social Studies Curriculum and Instruction: An Exploratory Study," Dissertation Abstracts, XXIX (December, 1968), 1824.

Piele compared the results of his investigation into the relationships between classroom teaching behavior of teachers and dogmatism, with the results of a study which researched simulated teaching and dogmatism. He concluded that:

1. Closed minded teachers, as compared with open minded teachers, appear to use more of a variety of verbal behaviors and to monopolize talk in the classroom more under actual teaching conditions than they do under simulated teaching conditions.
2. Open minded teachers, as compared with closed minded teachers, tend to use indirect influence more under simulated teaching conditions than they do under actual teaching conditions.
3. Under both simulated and actual teaching conditions, students of open minded teachers appear to talk more in the classroom than do the students of closed minded teachers.[41]

The foregoing studies indicate that dogmatism may be related to a teacher's ability to function in the more indirect style that is necessitated by inquiry-centered instruction. In most of these studies teaching was measured with rating-type scales, not with analytic systems. Piele's did actually analyze teaching performance and compare it with a measure of simulated teaching.

Organizational Climate

One of the first researchers to recognize the importance of the organizational setting in which an

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[41]Philip K. Piele, "The Relationship of Teacher Open and Closed Mindedness to Classroom Verbal Behavior" (unpublished Ph.D. dissertation, University of Oregon, 1968).

individual is teaching was Cornell,[42] who used the term "organizational climate" in his study of socially perceptive administration. He defined the term as "a delicate blending of interpretations by persons in the organization of their jobs or roles in relation to others and their interpretations of the roles of others in the organization."

One of the major findings of Cornell's four-year study of four school systems was that the environment of administration, or organizational climate of the organization, may be more important than specific administrative activity.[43] In other words, the generalized tone of a building was considered as having a lasting effect on individuals working in that building, and that this tone, or atmosphere, of a building may be more significant for the participants than single actions of the administrator.

A study emphasizing the relationship between the principal's behavior and the type of climate found in his school, was conducted by Halpin and Croft.[44] This major contribution to the study of organizational climate was

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[42]Francis G. Cornell, "Socially Perceptive Administration," Phi Delta Kappan, XXXVI (March, 1955), 219-23.

[43]Ibid., p. 222.

[44]Andrew W. Halpin and Don B. Croft, The Organizational Climate of Schools (Chicago: Midwest Administration Center, University of Chicago, 1963). Citation for the original study.

prompted by the phenomena of how greatly schools differed. Halpin, who continued the study wrote:

> Anyone who visits more than a few schools notes quickly how schools differ from each other in their 'feel.' In one school the teachers and the principal are zestful and exude confidence in what they are doing. . . . In a second school the brooding discontent of the teachers is palpable; the principal tries to hide his incompetence and his lack of a sense of direction behind a cloak of authority. . . . A third school is marked by neither joy nor despair, but by hallow ritual. Here one gets the feeling of watching an elaborate charade in which teachers, principal, and students alike are acting out parts. . . . And so, too, as one moves to other schools one finds that each appears to have a 'personality' of its own. It is this 'personality' that we described here as the 'Organizational Climate' of the school. Analogously, personality is to the individual what Organizational Climate is to the organization.[45]

It is this "feel" of the school in which the intern teacher is teaching that is of interest to this study. Will a teacher be markedly influenced by the setting in which he is teaching?

Peterson[46] writing about group behavior in general, discussed the effect that climate has on the group members. Since pupils can be viewed as members of a group, Peterson's views are included here. His view was that effort and effectiveness of group was either enhanced or stifled, depending on the type of organizational climate

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[45]Andrew W. Halpin, Theory and Research in Administration (New York: The Macmillan Company, 1966), p. 131.

[46]O. F. Peterson, "Leadership and Group Behavior," Leadership in Action No. 2 (Washington, D.C.: National Training Laboratories, 1961), p. 29.

present. Lonsdale[47] wrote that organizational climate was an interaction between needs-satisfaction, and task-achievement within an organization.

Some of the findings of Corman and Olmsted's[48] six-year study of the Student Teaching Experimental Program (STEP) of Michigan State University, bear particular importance to the present investigation. A portion of the STEP study was an investigation of the influencing factors during the training period of the students as student teachers and later as intern teachers. On the basis of interviews and the results obtained from a fifty-six-item instrument designed to allow for the "typing" of people on the basis of certain attitudinal and perceived behavioral characteristics, the subject students were categorized at entrance into the program, at exit from the program, and at one-half-year intervals in between. Four entry types and seven exit types were identified. These are represented in the following tables.

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[47]Richard Lonsdale, "Maintaining the Organization in Dynamic Equilibrium," Behavioral Science and Educational Administration, Sixty-third Yearbook, NSSE, ed. by Daniel E. Griffiths (Chicago: University of Chicago Press, 1964), p. 166.

[48]Corman and Olmsted, Internship of Teachers.

TABLE 2.1.--Entrance types for persons entering the elementary intern program.[a]

Types	Percentage of Group
Security Seekers	37%
Authority Seekers	15%
Achievement Seekers	17%
Self-Actualizing Seekers	31%
Total	100%

[a]Ann Olmsted, Lecture, Michigan State University, April, 1970.

TABLE 2.2.--Exit types for persons exiting from the elementary intern program.[a]

Types	Percentage of Group
Time Servers Contented Conformists	31%
Task Focusers Pragmatists Child Focusers	50%
Ambivalents Alienated	19%
Total	100%

[a]Ann Olmsted, Lecture, Michigan State University, April, 1970.

The fact that certain entrance types had a higher incidence of occurrence in certain exit types is really not of significance here. Of major importance to the present study are the findings concerning the influences in this change process. Corman and Olmsted concluded that in the context of the student teaching experience, the style of the supervising teacher seemed to be a stronger influence than the type of school building. Once in the intern position, the type of school and the influence of other teachers was a stronger influence than the intern consultants.[49] In order to type schools a School Characteristic Questionnaire and the Tightness of School Scale (TOS Scale) which was developed by the researchers, were used to obtain data. The "tightness" of the schools as measured by this instrument was similar to organizational climate of specific interest to this study.

Halpin and Croft's studies were the source of many of the doctoral dissertations reviewed. Most of these were attempts at replication of the earlier work, or determining relationships between teacher perceptions and leadership types. No studies were reviewed that attempted to find relationships between actual measured teaching performance and the contextual organizational climate, as is done in the present study.

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[49] Ibid.

Replicative studies by Morris,[50] Brown,[51] and Berends,[52] have tended to support the findings of Halpin and Croft. The specific dimensions which Halpin and Croft identified for measuring organizational climate were found to be valid dimensions on which to measure organizational climate.

Elaboration of Selected Studies

The studies of Halpin, and Corman and Olmsted were used specifically in the development of a criterion instrument used in the present study. Because of this, some elaboration of their work is included here.

The instrument which was developed by Halpin and Croft to measure organizational climate, was a sixty-four-item questionnaire called the Organizational Climate Description Questionnaire (OCDQ).[53] The behaviors upon which each of the subtests are based are listed below:

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[50]Derek V. Morris, "Organizational Climate of Canadian Schools," The CSABulletin, III (June, 1964), 3-7.

[51]Robert J. Brown, "Identifying and Classifying Organizational Climates in Twin City Area Elementary Schools" (unpublished Ph.D. dissertation, University of Minnesota, 1964).

[52]Eugene Berends, "Perceptions of the Principal's Personality; A Study of the Relationships to Organizational Climate" (unpublished Ph.D. dissertation, Michigan State University, 1969).

[53]Halpin, Theory in Administration, p. 149.

OCDQ SUBTESTS

Teacher's Behavior

1. Disengagement indicates that the teachers do not work well together. They pull in different directions with respect to the task; they gripe and bicker among themselves.
2. Hindrance refers to the teachers' feeling that the principal burdens them with routine duties, committee demands, and other requirements which the teachers construe as unnecessary busywork.
3. Esprit refers to "morale." The teachers feel that their social needs are being satisfied, and that they are, at the same time, enjoying a sense of accomplishment in their job.
4. Intimacy refers to the teachers' enjoyment of friendly social relations with each other.[54]

Principal's Behavior

5. Aloofness refers to behavior by the principal which is characterized as formal and impersonal. He "goes by the book" and prefers to be guided by rules and policies rather than to deal with the teachers in an informal face-to-face situation.
6. Production Emphasis refers to behavior by the principal which is characterized by close supervision of the staff. He is highly directive and task-oriented.
7. Thrust refers to behavior marked not by close supervision of the teachers, but by the principal's attempt to motivate the teachers through the example which he personally sets. He does not ask the teachers to give of themselves any more than he willingly gives of himself; his behavior, though starkly task-oriented, is nonetheless viewed favorably by the teachers.
8. Consideration refers to behavior by the principal which is characterized by an inclination to treat the teachers "humanly," to try to do a little something extra for them in human terms.[55]

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[54] Ibid., pp. 150-51.

[55] The paraphrasing of these behaviors, and the descriptions of school climate types taken from Berends, "Perceptions of Personality: Organizational Climate," pp. 12-15.

Six types of organizational climates were then identified by the construction of profiles and factor analysis based on data from the OCDQ. It was found that these types could be ranked in respect to Esprit. The six climates are described below:

1. The Open Climate describes an energetic lively organization which is moving toward its goals, and which provides satisfaction for the group members' social needs. Leadership acts emerge easily and appropriately from both the group and the leader. The members are pre-occupied disproportionately with neither task achievement nor social-needs satisfaction; satisfaction on both counts seems to be obtained easily and almost effortlessly. The main characteristic of this climate is the "authenticity" of the behavior that occurs among all the members.
2. The Autonomous Climate is described best as one in which leadership acts emerge primarily from the group. The leader exerts little control over the group members; high Esprit results primarily from social-needs satisfaction. Satisfaction from task achievement is also present, but to a lesser degree.
3. The Controlled Climate is characterized best as impersonal and highly task-oriented. The group's behavior is directed primarily toward task accomplishment, while relatively little attention is given to behavior oriented to social-needs satisfaction. Esprit is fairly high, but it reflects achievement at some expense to social-needs satisfaction. This climate lacks openness, or "authenticity" of behavior, because the group is disproportionately preoccupied with task achievement.
4. The Familiar Climate is highly personal, but undercontrolled. The members of this organization satisfy their social needs, but pay relatively little attention to social control in respect to task accomplishments. Accordingly, Esprit is not extremely high simply because the group members secure little satisfaction from task achievement. Hence, much of the behavior within this climate can be construed as "inauthentic."
5. The Paternal Climate is characterized best as one in which the principal constrains the emergence of leadership acts from the group and attempts to

initiate most of these acts himself. The leadership skills within the group are not used to supplement the principal's own ability to initiate leadership acts. Accordingly, some leadership acts are not ever attempted. In short, little satisfaction is obtained in respect to either achievement or social needs; hence, Esprit among the members is low.

6. The Closed Climate is characterized by a high degree of apathy on the part of all members of the organization. The organization is not "moving": Esprit is low because the group members secure neither social-needs satisfaction nor the satisfaction that comes from task achievement. On the whole, the members' behavior can be construed as "inauthentic"; indeed, the organization seems to be stagnant.[56]

In the second closely related study, Corman and Olmsted[57] investigated the influence of the particular types of schools in which the student teachers and the intern teachers were working. They developed a fifteen-item instrument called the TOS Scale which sought to differentiate between "Tight" and "Loose" school types. These types closely paralleled the two extreme rankings of Halpin's six climate types, the "Closed" and "Open."

Using certain items and procedures from the Corman and Olmsted instrument, and the climate dimensions developed by Halpin and Croft, this writer then developed an instrument for measuring school climates for use in

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[56]Halpin, Theory in Administration, pp. 174-81.

[57]Corman and Olmsted, Internship of Teachers, p. 57, and personal interview with Dr. Ann Olmsted, Spring, 1970.

the present study. A detailed account of procedures and description of the instrument is included in Chapter III.

Other Variables of Interest

The review of the literature produced no studies concerned with the grade level of teaching assignment and its relationship to classroom verbal performance. Apparently, the possible variation in verbal performance from grade to grade has not been viewed with interest.

This review does not report the literature pertaining to the possible relationship between teacher verbal performance and the grade-point average of the teacher, since the research that has been done has produced contradictory findings, and none of this research has been investigating the relationship between GPA and verbal performance of teachers, specifically. GPA has not been found to correlate significantly with levels of teaching performance, measured by evaluation type checklists.[58] Actual teaching is measured on the verbal dimension in the present study.

The writer's decision to include the variables of GPA and grade level of teaching assignment, was prompted by four years of experience as a consultant working in

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[58]Gene L. Lavender, "The Prediction of Social Studies Teachers' Success through the Use of Credentials," Dissertation Abstracts, XXIX (December, 1968), 1717-A. In this study GPA was found to be negatively correlated to evaluations of success in teaching.

classrooms at grades one through seven. The subsequent observations of the writer have produced this "intuitive, logical, leap," concerning the need to study these variables.

Summary

The review of literature focused on four major topics germane to this study. These were: inquiry-centered instruction, verbal interaction in the classroom, dogmatism and its relationship to teaching, and organizational climate.

The first section reviewed the contributions of a number of writers, to establish the conceptual framework on which this study was based.

The second section sought to establish the importance of verbal interaction to teaching in general, and its importance, specifically, to inquiry in the classroom. The research and subsequent analytic systems of a number of researchers were reported. Despite several limitations, Flander's Interaction Analysis, the system used in this investigation, was shown to be one of the more reliable systems available.

The third section reported selected studies of dogmatism and its relationship to teaching. Studies were selected that were concerned specifically with the relationships between dogmatism and inquiry-centered instruction. The results of six studies were reported

that indicated that the dogmatism of a teacher may be related to his ability to function using an inquiry approach.

Organizational climate was the final major section of this chapter. Literature relating to the influence of organizational climate on teachers was cited. The research of Halpin, and Corman and Olmsted was reported in detail because of the significant relationship of their studies to the present investigation, and because instrumentation developed for use in this study was based on their earlier work.

CHAPTER III

PROCEDURES UTILIZED IN THE STUDY

The purpose of this chapter was to report the design, data-collection process, instrumentation, and statistical procedures of the study.

The Population of Interest

The subjects of this study were intern teachers enrolled in the Elementary Intern Program (EIP) of Michigan State University. Interns were selected because they were serving in roles similar to regular beginning teachers, and it was desired, for the purposes of the study, to gather data on this type of population. The data were gathered in May, near the end of their first year of teaching, exclusive of student teaching.

Other considerations which prompted the use of intern teachers as the research population of interest were:

1. The EIP has, as a part of its design, a supervisory-type role--the intern consultant, and because of the nature of this role the occupants could be utilized as data-gatherers

for the study without the usual interjection of a "strange" observer in the classroom. This allowed for the assumption that the actual observations (taped) were representative of the teaching style of the intern teacher.

2. Intern consultants, because of their generally high level of elementary teaching expertise, interest in the improvement of education, and high level of cooperation demonstrated in past research efforts, were expected to be conscientious participants in this research.
3. In many studies of classroom teaching performance reported in the literature, systematic differences have initially been present, in that the subjects have received quite differing types of college preparation for teaching from different institutions. In using intern teachers this difference was held to a minimum. Some differences existed in the programs among various EIP Centers, but these differences were assumed to be small when compared to the similarities across centers.

The population of interest was the total number of intern teachers who had been teaching in regular

classrooms, grades one through six, in the eleven EIP centers since the beginning of the school year, 1969-1970 (Population N=208). This excluded all interns who were teaching at grades other than one through six, or who were teaching in special assignments such as special education, art, physical education, or music. (Forty-five interns were excluded on the basis of being in one of these categories.)

The Study Sample

The study sample consisted of thirty-five intern teachers, randomly drawn from the population of interest. Thirty-nine intern teachers were originally drawn for the sample, with two interns refusing to participate and the recorded data of two interns being unusable due to faulty recording techniques. This number (N=35) was considered sufficient for the purposes of the study, and yet manageable in terms of expense and time. Maintaining an N greater than thirty allows for the use of the z-test statistic instead of the less powerful t-test.

Randomization allowed for the results of the study to be generalized to the population of interns in the eleven EIP Centers of Michigan State University teaching in grades one through six. Presumably, the findings could be applicable to the universe of intern programs similar to EIP.

Intern Teachers

Data were gathered for description of the sample subjects. Table 3.1 includes a description of the intern sample by major and minor areas of academic preparation, exclusive of elementary education which was the designated major curriculum of all subject interns. The majority of interns majored in social science with minors in English and Science.

Table 3.2 describes the interns' Michigan State University grade-point average (GPA) accumulated to March, 1970. The average GPA was 2.92 on a scale with 4.0 representing an "A."

TABLE 3.1.--Distribution of academic majors and minors of intern sample, 1970.

	Majors			
Subjects	Social Science	English	Math Science	Fine Arts
Number	18	7	5	3
Percentage*	51	26	14	9
	Minors			
Subjects	English and Science	English and Social Science	Social Science and Science	Math-Science and Social Science
Number	17	9	8	1
Percentage	48	25	23	3

*Approximate percentages are given, rounded-off to two places.

TABLE 3.2.--Distribution of grade-point averages of intern sample, 1970.

Subjects	Grade Point Average - 4.0 Scale				
	1.50-1.99	2.00-2.49	2.50-2.99	3.00-3.49	3.50 4.00
Number	0	1	20	12	2
Percentage	0	3	57	34	6

Nineteen, or more than 54 per cent of the sample interns indicated that they were married. Sixteen, or approximately 46 per cent were single. Of the nineteen married interns, twelve had no children. The remaining seven interns had an average of three children each.

Table 3.3 contains a description of the intern sample by age distribution. Approximately 65 per cent were in the age group of 21-25. This appeared to be consistent with the approximate average ages of past intern groups.

The intern sample was comprised of thirty-three females and two males. Randomization procedures did not accurately sample the factor of sex, since this per cent of males--approximately 6 per cent, is not truly reflective of the number of males typically enrolled in EIP. Since the beginning of the program, the average percentage of males in the program has been approximately 19 per cent.

TABLE 3.3.--Age distribution of intern sample, 1970.

Subjects	21-25	26-30	31-35	36-40	40- +
Number	23	6	3	2	1
Percentage	65	17	9	6	3

Instrumentation

The specific questions to be answered by this study demanded that instruments be selected that could objectively measure: (1) classroom verbal behavior of the teacher and students, (2) the personality trait-dogmatism, and (3) the organizational climate of schools. A search of the literature produced positive results, insofar as the first two variables were concerned. No instrument was found, however, that would adequately measure the third variable--organizational climate, and yet be usable in this study. Therefore, an instrument called the School Climate Scale[1] was developed by the investigator.

The first part of this section explains the rationale for the selection of the two existing instruments. The second part provides the rationale for development of the investigator's instrument, and details the procedures employed.

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[1]This instrument appears as APPENDIX C, under the title: School Situation Questionnaire.

Interaction Analysis[2]

This system which is sometimes referred to as the "Minnesota System," developed by Flanders,[3] was selected because it appears to be one of the most reliable and adequate systems available for the measurement of classroom verbal behaviors, or interaction. Medley and Mitzel, developers of OScAR, a similar analytic system, made a comparative study of a number of these systems. They state:

> Flanders (1960) has developed the most sophisticated technique for observing climate (or classroom verbal interaction). Thus far, one which is unique in that it preserves a certain amount of information regarding the sequence of behavior.[4]

Selection of Flander's IA was based on this type of recommendation, consultation with a number of persons who had first-hand knowledge of various systems and the investigator's personal knowledge of the system. Its reported reliability is .84.[5]

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[2]The complete description of this instrument appears as APPENDIX B, under the title: School Situation Questionnaire.

[3]Flanders, Influence, Attitudes and Achievement.

[4]Donald M. Medley and Harold E. Mitzel, "Measuring Classroom Behavior by Systematic Observation," in Handbook of Research on Teaching, ed. by N. L. Gage (New York: Rand McNally, 1963), pp. 248-314.

[5]Flanders, Influence, Attitudes and Achievement, p. 111.

The need for determining the investigator's competence in using IA posed a problem, in that it was difficult to find a person with demonstrated knowledge of the system who could attest to the proficiency of the investigator. There is always the chance when a comparison is made between the "untried" and the "proven," that the untried is really measuring more accurately than the proven. At any rate, two university faculty members at professional ranks (Dr. John Masla at Michigan State University and Dr. Robert Oana at Central Michigan University) did verbally attest to the investigator's ability to use the system. Also, an inter-rater reliability check was made between the investigator and an intern consultant who had knowledge of the system. This reliability coefficient was .91. This was obtained using an ANOVA technique suggested by Ebel.[6]

Dogmatism Scale

This scale developed by Milton Rokeach[7] appeared to be the only reliable instrument for the measurement of open- and closed-mindedness, one of the more important variables of interest in the present investigation. None

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[6]William A. Mehrens and Robert L. Ebel, eds., Principles of Educational and Psychological Measurement (Chicago: Rand McNally and Co., 1967), pp. 120-21.

[7]Rokeach, Investigations into Belief and Personality Systems.

of the other instruments reviewed had reported reliability ratings that were sufficiently high. Furthermore, the ease of administration (especially of the Short Form E,[8] which was employed here), provided further justification for its use when compared with other instruments which were purported to measure similar constructs. The reported reliability of the Short Form E is .79.

School Climate Scale[9]

This instrument was developed by the investigator after a search of the literature failed to produce an adequate instrument for use in the present study. An instrument developed by Halpin and Croft[10] was only usable when the total staffs of the sample schools reacted to their scale. This was not manageable since the subject interns were located in thirty-five different schools representing twenty-one different school districts.

Another instrument the TOS Scale developed by Corman and Olmsted[11] forced the results into a dichotomy

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[8]Rokeach, Investigations into Belief and Personality Systems, p. 50.

[9]This instrument appears as APPENDIX C, under the title: School Situation Questionnaire.

[10]The complete description of this instrument was contained in Chapter II.

[11]Corman and Olmsted, Internship of Teachers.

which was deemed unadvisable from a statistical standpoint for the purposes of this study. After consultation with Dr. Ann Olmsted, one of the developers of the TOS Scale, and member of this writer's doctoral guidance committee, the writer developed an instrument for the measurement of organizational climate.

The research of Halpin and Croft resulted in the identification of the behaviors on which to measure organizational climate. (These are listed on pp. 26-27, Chapter II.) Using these dimensions the writer then constructed a series of items, which obtained information relative to these behavioral dimensions. The items were submitted to a panel of judges (four intern consultants)[12] to be rated as to the relationship between specific items and behaviors. This procedure was followed a number of times with items being added and deleted until all items were deemed appropriate by the panel.

This fourteen-item instrument was then used to rank eight different schools with two raters independently ranking each school. These results were subjected to an analysis of variance technique[13] used to determine the

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[12]This panel consisted of Robert Babcock, Joyce Putnam, Pam Schuler, and Eileen Suber, Port Huron EIP consultants.

[13]Mehrens and Ebel, Principles of Measurement, pp. 120-21.

reliability of ratings with an inter-rater reliability coefficient obtained of .87. This was deemed adequate considering the global nature of the variable-organizational climate. These results appear as Table 3.4.

In order to increase the objectivity of the instrument, numerical weights were assigned to each response category, ranging from 1 for "Rarely Occurs" to 4 for "Frequently Occurs." The responses to the items were then summed with items 7, 10, and 11 being scored negatively. This resulted in a scale with a lower limit of -1, and upper limit of 44. The "pure" type; Closed is represented by -1, and the "pure" type Open by +44.

Since this study sought to determine the strength of relationships of selected variables, it was not necessary to equate a particular score obtained with the School Climate Scale with one of the six organizational climate types. An arbitrary determination was made by the writer, and it is offered here for the reader's benefit. No claim is made that these intervals are precise. As a part of the reliability determination process the results from the School Climate Scale obtained on the eight selected schools were examined by the same panel of judges referred to earlier. They unanimously agreed that six schools were appropriately categorized by the scale, and that two schools were within one climate of the true situation. It appeared that this scale did,

TABLE 3.4.--Inter-rater reliability ratings of The School Climate Scale

	Rater 1	Rater 2	Sum	Sum^2
School 1	39	39	78	6084
School 2	38	38	76	5776
School 3	30	31	61	3721
School 4	33	34	67	4489
School 5	32	32	64	4096
School 6	39	40	79	6241
School 7	24	30	54	2916
School 8	41	44	85	7225
Sum	276	288	564	40548

Sum of Squares "Rating" = 20298
Product of Sum and Means $564 \times \frac{564}{16}$ = 19881

Sums of Squares

For Raters $\frac{564}{8} - 19881$ = 0

For Schools $\frac{40548}{2} - 19881$ = 393

For Total $20298 - 19881$ = 417

For Error $417 - 393$ = 24

Mean Square

For Schools $\frac{393}{7}$ = 56.14

For Error $\frac{24}{7}$ = 3.43

Reliability of Ratings

$$\frac{56.14 - 3.43}{56.14 = 1\ (3.43)} = .866$$

in fact, provide for fairly meaningful and accurate typing of schools. These score intervals and corresponding types are described in Table 3.5

TABLE 3.5.--Organizational climate types and corresponding scores obtained from the school climate scale.

Climate Types	Score Interval
Open	32 and higher
Antonomous	28 - 31
Controlled	25 - 27
Familiar	22 - 24
Paternal	20 - 23
Closed	19 and lower

For the reader's benefit the climate types[14] are briefly described below:

1. The Open Climate describes the energetic organization which is moving towards its goals. Leadership acts emerge easily from the group. Task achievement and social-needs satisfaction are balanced. The group members behave authentically.
2. The Antonomous Climate is described as one in which the main leadership comes from the group. High Esprit results primarily from social-needs satisfaction.

[14]See Chapter II pp. 53-54 for a more complete description of these climate types.

3. The Controlled Climate is characterized best as impersonal and highly task-oriented. This climate lacks openness because of the pre-occupation with task achievement.
4. The Familier Climate is highly personal, but under-controlled. Esprit is not very high because group members secure little satisfaction from task achievement.
5. The Paternal Climate is one in which the principal constrains leadership actions from the group. Little satisfaction is obtained from task achievement and socializing; hence, Esprit among the members is low.
6. The Closed Climate is characterized by a high degree of apathy. The organization is not "moving." Esprit is low because the group members secure no satisfaction.

Design Elements

The population of the study consisted of intern teachers teaching in regular classroom assignments, grades one through six. From this population a random sample of thirty-nine interns was drawn. The loss of four subjects left a sample size of thirty-five.

The experimental unit was the intern teacher with the criteria of independence between units ensured because

of the respective teaching assignments. All interns were assigned to different buildings.

The Indirect to Direct teaching ratio (IDTR) obtained from Interaction Analysis was designated as the dependent variable. The Dogmatism Scale score (DS), School Climate Scale score (SCSS), Grade Point Average (GPA), and Grade Level of Teaching (GLTA) were designated as independent variables. There was a complete set of data obtained for each subject intern in the study.

The basic statistic was one of multiple correlation. The arrangement of the variables in this way allowed for the estimation of relationships between the dependent variable and the set of independent variables.

Data were obtained to determine if there was variation in the teaching styles between interns, and to determine to what extent each of the independent variables included in the study attributed to this variance. This provides estimates of the strengths of relationships between these variables.

The Statistical Hypotheses of the Study

The nature of a correlational study does not demand that statistical hypotheses be formulated, but in order to address the question of predictability, a hypothesis, in the null form, is posed. The basic question to be answered is, "What proportion of the observed variance in the dependent variable (IDTR) is accounted

for by each of the independent variables (DS, SCSC, GPA, and GLTA"? On the basis of the study, those variables found to relate significantly would remain in the prediction rule, and those that do not would be deleted.

Hypothesis in null form (To be used with each independent variable).*

> Xi does not account for any of the variation in the IDTR above that accounted for by the remainder of the independent variables and the mean of the dependent variable.
>
> Where: Xi represents each of the independent variables, 1 through 4.
>
> Symbolically: $Ho_i = b_i = 0$
>
> Where: b_i = any of the beta weights, or regression coefficients of the independent variables.

*This is the same as testing that R = 0, which appear as individual hypotheses in the next chapter.

Data Collection

In February, 1970, the writer presented a research proposal at a monthly meeting of EIP Center Directors, and received tentative approval to use intern teachers as the subjects of the study. Final approval for this research was granted in April, 1970.

A cover letter was sent to the nine centers represented in the random drawing of interns, scheduling meetings between intern consultants involved in the study and the researcher. Materials and recording equipment were delivered, and brief instructional sessions were

held for the purpose of establishing uniformity of data-gathering across centers.

The consultants then arranged for their respective interns to complete the Dogmatism Scale, the School Climate Scale, and demographic questionnaire. The consultants reacted to the School Climate Scale, independently of the interns.

Specific "blinds" were built into the study to ensure that the data would be as free from contamination as possible. The Dogmatism Scale, and the School Climate Scale were administered under pseudo-type titles, and three items (items 1, 3, + 5) were added to the Dogmatism Scale in an effort to further disguise it. Neither the interns nor consultant knew the exact nature of the study nor that Interaction Analysis would be employed to analyze the taped samples of teaching.

The audio-taping of three twenty-minute sessions of classroom instruction of each intern, was accomplished by the consultants. Restrictions were imposed to the effect that the particular sessions to be taped be non-systematically selected by the consultant. Also, the taping was to be done in one or more of the instructional areas of social studies, science, language arts, and reading (at the primary grades).

The questionnaires and scaled instruments were hand-scored by the researcher with results verified by

an assistant hired by the researcher. These data were placed on IBM cards by a skilled key-punch operator.

The tapes were analyzed by the researcher and the resultant tallies placed on IBM cards. These data were then plotted and matrices constructed by means of an IBM-1130 computer program and IDTR's obtained; with these data being transferred to IBM cards.

The data were obtained from five of the centers during the first two weeks in May, 1970. Data from the remaining four centers were gathered during the later part of May, and extending into the first week of June in two instances. This was necessitated by availability of recording equipment, and the distances between the center locations. It was assumed by the investigator that the verbal patterns of the interns would not markedly change from one week to the next. The data from the first five centers were compared with the data from the last four, and no systematic differences were observed.

Statistical Procedures

Multiple-regression techniques were employed in the statistical treatment of the data. This routine, sometimes referred to as the Least Squares (LS) routine, allowed for the estimation of the relationships between the dependent variable and a set of independent variables.

Linearity between variables do not have to be assumed in order to employ this technique; however,

assumptions concerning linearity between the coefficients are necessary. Because of the nature of the distributions of the variables, the assumption of linearity was considered to be met.

The LS routine as operated on by the IBM - 3600 computer allows for the reporting of significance at intermediate levels, in addition to the .01 or .05 levels. These results were reported so that the exact levels of the relationships, as well as the strengths of the relationships are provided the reader.

The intercorrelations between the independent variables, and the correlations between each independent variable and the dependent variable (IDTR) are reported.

The Fisher r to z transformation is applied to the data due to the fact that the distributions of r that are produced are skewed distributions.

Statistical Limitations

The simple correlations, or r's, can be considered as meeting the necessary assumptions. This is not the case with the intercorrelations. As Hays has pointed out,

> One often finds an experimenter testing the significance of each one of the intercorrelations, as if they were each based on a different sample. The resulting significance levels are largely meaningless, for the reasons much like those making t-tests for all differences among a set of means a dubious

> procedure . . . in particular one should ordinarily expect some of these tests to show significance by chance alone.[15]

Another limitation of the design of this study is the size of the N in the research sample. It remains unknown whether this N of 35 is large enough so that the beta weights for each of the independent variables, and the resultant F-tests were meaningful and inclined to hold constant in replicative studies. It is likely that studies with larger N's might find differing beta weights for the prediction rule, and stronger relationships.

Summary

Chapter III presented the procedures utilized in the study. The population of interest and study sample of intern teachers were defined, with selected demographic information reported.

The rationale was stated for the choice of the instrumentation employed and for the development of one instrument, the School Climate Scale. The reported inter-rater reliability of the Flander's Interaction Analysis was .84. The Short Form E of the Rokeach Dogmatism Scale was reported as .79 reliable. On the basis of information gathered in this study, it was concluded that the School Climate Scale had reliability ranging from .74 to .86.

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[15]William Hays, Statistics (New York: Holt, Rinehart and Winston, 1963), pp. 576-77.

These reliability ratings were sufficient for the purposes of this study.

The final sections of Chapter III focused on the data gathering and statistical procedures employed in the study. Certain restrictions that incorporated in the basic research design were discussed. The justification for the use of multiple-regression statistical techniques, and limitations imposed by their use, were enumerated.

CHAPTER IV

ANALYSIS OF RESULTS

This chapter is divided into three major sections. Successive sections report and discuss (1) raw data obtained as measures for each variable, (2) findings relative to the simple correlations between variables and decisions regarding the four hypotheses, and (3) findings relative to the multiple-correlations and the regression equation for the prediction of classroom verbal behavior.

Raw Data Obtained

The traditional style of presenting the raw data in appendices has not been followed here. Instead, the data appear in a series of tables with accompanying discussions. The reason for including the data in this chapter was that the range in a sample can directly affect the size of the obtained r's in a study of relationships. It is highly unlikely that meaningful relationships will be found between variables that are restricted in range. When there is a restricted group

small changes on one variable may be accompanied by large changes on the other variable resulting in lower r's.

The scores obtained from the three instruments used in the study are presented in tables 4.1, 4.2, and 4.3. Table 4.4 contains the description of the sample parameters measured on each of the variables including those measures obtained from inspection of the demographic data. Following the tables is a discussion of the obtained ranges in each of the variables.

TABLE 4.1.--Dogmatism scale scores.

Mean - 58.029		SD - 12.62	
Intern No.	Score	Intern No.	Score
01	71	23	63
02	55	24	54
03	46	25	56
04	69	26	70
05	44	27	69
07	44	28	59
08	37	29	50
10	26	30	43
11	48	31	57
13	75	32	57
14	58	33	55
16	65	34	80
17	65	35	56
18	82	36	58
19	68	37	60
20	73	38	75
21	51	39	45
22	47		

N = 35 (No.'s 6, 9, 12, 15 dropped from sample. Intern No. 6 refused to participate, and interns no. 9, 12, and 15 were unusable due to faulty tape recordings.

TABLE 4.2.--School climate scale scores.

Mean - 26.34			SD - 8.09		
Intern No.	Intern's Rating	Consultant's Rating	Intern No.	Intern's Rating	Consultant's Rating
01	23	25	23	34	33
02	26	37	24	19	18
03	13	12	25	24	24
04	21	25	26	37	37
05	16	17	27	33	37
07	16	27	28	22	22
08	35	35	29	25	27
10	24	23	30	21	25
11	31	40	31	37	25
13	06	13	32	27	25
14	13	19	33	16	15
16	30	26	34	36	25
17	29	28	35	35	37
18	39	40	36	18	21
19	32	42	37	19	15
20	24	30	38	36	21
21	20	19	39	30	29
22	36	28			

N = 35

Pearson Product-Moment Correlation Coefficient (r) = .74 for Intern and Consultant Ratings.

This r of .74 computed to further demonstrate the reliability of the School Climate Scale. Only the ratings of consultants were used for computing the between - variables correlation.

TABLE 4.3.--Interaction analysis data.

Intern No.	No. Sessions	Mean I.D. Ratio	Mean Length
01	6	.3421	200
02	6	.7788	171
03	5	.4393	139
04	5	1.0865	136
05	2	.8638	158
07	6	.9072	181
08	5	1.2008	138
10	6	1.0707	148
11	6	1.1569	162
13	4	.6942	139
14	6	.7055	206
16	5	.7237	188
17	5	.6113	180
18	6	1.4437	189
19	5	1.6171	202
20	6	1.1681	174
21	5	1.3905	178
22	3	.4025	177
23	6	.4247	216
24	6	.4781	194
25	6	.5624	187
26	6	.6464	181
27	6	.7795	199
28	6	.3118	168
29	5	.6211	192
30	6	.2783	190
31	5	.7822	187
32	5	.2469	179
33	4	.4659	150
34	5	.5903	206
35	5	1.0348	193
36	4	.6975	179
37	6	1.5325	167
38	6	.7677	186
39	4	1.4504	198

N = 35
Mean ID Ratio - .8080 SD - .38

Mean No. Sessions - 5.2 Mean Session Length - 178*

Due to the capacity limits of the 1130 computer, the three taped sessions were at logical points, split into five or six sessions. An attempt was made to hold these to a fairly uniform length of about 8 to 10 minutes.

*Number of observations, or tallies, recorded at three-second intervals.

TABLE 4.4.--Statistics on transformed variables.

Variable	Minimum Value	Maximum Value	Mean	Standard Deviation
Dogmatism*	26.00	82.00	58.03	12.62
School Climate	12.00	42.00	26.34	8.09
Grade Point Aver	2.30	3.52	2.92	.34
Gr Level Tch Assign	1.00	6.00	3.14	1.68
Indirect-Direct Tch Ratio	.25	1.62	.81	.38

*The Dogmatism Scale scores are interpreted with low scores representing open-mindedness thus resulting in negative values for positive r's.

Discussion of Range in Variables

Dogmatism.--The range of this variable, as indicated by the minimum and maximum scores of 26.00 and 82.00 respectively, and SD of 12.62, shown in Table 4.1 appeared to be adequate for a correlation study. With approximately 33 per cent of the scores falling above or below the scores of 46 and 70, enough deviation was found so that meaningful relationships could be detected.

School Climate.--With a range of thirty points (from 12.00 to 42.00), and SD of 8.09 the deviation in this variable was deemed adequate for correlational purposes. Table 4.2 describes these data.

Grade Point Average.--The deviation in this variable with SD of .34, probably was restrictive in nature. The effect of this was to make it more difficult

to obtain meaningful estimates of the relationships between this and other variables, even if they really existed.

Grade Level of Teaching Assignment.--The variability in the sample as measured on this variable (range-1.0 to 6.0; SD - 3.14) was considered adequate for the purposes of this study. Due to the sampling techniques an almost equal number of subjects were observed at each grade level, and the mean was close to the true mid-point of the scale. This variable was not normally distributed.

Indirect-Direct Teaching Ratio.--The obtained scores ranged from very direct (.25) to very indirect (1.62). However, the SD of .38 suggested that the variance of the subjects' teaching styles, as measured by Flander's IA was not sufficient for the study of correlations. This restriction probably reduced the correlation coefficients obtained, thereby serving as a rather serious limitation of the study. Table 4.3 contains the description of these data.

Findings Related to Simple Correlations

Relative to the hypotheses to be tested, the correlation coefficients were obtained for inter-correlations between independent variables, and correlations between the independent variables and the dependent variable, Indirect to Direct Teaching Ratio (IDTR).

Table 4.5 contains these r's which were used in the hypotheses testing.

The reader is reminded that the inter-correlations which are also found in Table 4.5 are somewhat meaningless since, as Hays[1] suggests, that one should expect to find some spurious, significant relationships due to chance alone, roughly one out of ten times. These inter-correlations between independent variables have been presented for the benefit of the reader. No conclusions will be reached in this study on the basis of these particular data.

TABLE 4.5.--Simple correlation coefficients.

Variables 1-5					
DS (IV)*	1.0000				
SCS (IV)	.1547	1.0000			
GPA (IV)	-.2243	.1069	1.0000		
GLTA (IV)	-.1857	.1064	.3010	1.0000	
IDTR (DV)	-.0012	.3328**	.0059	-.2307	1.0000
	DS	SCS	GPA	GLTA	IDTR

*The notations (IV) and (DV) indicate the independent and dependent variables.

**Significance at the .05 level of confidence.

[1]Hays, Statistics, pp. 576-77.

The following section reports the tests of the hypotheses.

Hypothesis One

There is no relationship between the dogmatism scores of intern teachers of Michigan State University's Elementary Intern Program as measured by Rokeach's Dogmatism Scale, and the verbal behavior of intern teachers as measured by Flanders' Interaction Analysis.

Symbolically: $Ho_1 : R_{DS,\ IDTR} = 0$

Tested by: z-test $z = \frac{r}{s_r}$ (Tabled Values)

Where: $r = -.0012$

Discussion of Results

On the basis of the obtained r of -.0012 Hypothesis One was not rejected. There was close to a zero-order correlation found between the dogmatism scores of intern teachers and their IDTR's. This suggests that the dogmatism, or degree of open-mindedness, of an intern teacher is not related to the degree of directness of his verbal behavior.

Hypothesis Two

There is no relationship between the social-psychological, school climate as measured by the School Climate Scale, and the verbal behavior of intern teachers as measured by Flanders' Interaction Analysis.

Symbolically: $Ho_2 : R_{SCS,\ IDTR} = 0$

Tested by: $z = \frac{r}{s_r}$

Where: $r_{SCS,\ IDTR} = .3328^*$

*Significant at the .05 level of confidence.

Discussion of Results

On the basis of the z-test Hypothesis Two was rejected. A positive relationship between school climate as measured by the School Climate Scale, and verbal behavior of intern teachers as measured by Flanders' IA was found. This correlation was significant at the .05 level. This suggests that the school climate in which the intern is teaching is related to his verbal behavior in the classroom.

Hypothesis Three

There is no relationship between the Grade Point Average earned at Michigan State University of the intern teachers, and the verbal behavior of intern teachers as measured by Flanders' IA.

Symbolically: $Ho_3 : R_{GPA,\ IDTR} = 0$

Tested by: $z = \frac{r}{s_r}$

Where: $r_{GPA,\ IDTR} = .0059$

Discussion of Results

On the basis of the obtained r of .0059, Hypothesis Three was not rejected. This near zero-order

correlation suggests that there is no relation between the grade-point average of interns earned at Michigan State University and their verbal behavior as measured by Flanders' IA.

Hypothesis Four

There is no relationship between the Grade Level of Teaching Assignment of intern teachers, and the verbal behavior of intern teachers as measured by Flanders' IA.

Symbolically: $Ho_4 : R_{GLTA,\ IDTR} = 0$

Tested by: $z = \frac{r}{s_r}$

Where: $r_{GLTA,\ IDTR} = -.2243$

Discussion of Results

On the basis of the obtained r of -.2243, Hypothesis Four was not rejected. In fact, this correlation which is approaching significance at the .05 level, is in a negative direction, whereas it was hypothesized that if a relationship existed, it would be in a positive direction. This indicates that the grade level at which an intern is teaching may be related to his verbal behavior as measured by Flanders' IA, but only slightly so and in an inverse way.

Findings Related to Multiple Correlation Coefficients

In an effort to arrive at a "prediction rule," the Least Squares (LS) technique was employed. Data

obtained were: (1) overall regression statistics, (2) multiple correlation coefficients, and (3) estimations of the amount of variance in the dependent variable, IDTR, that could be attributed to each of the independent variables.

In table 4.6 the analysis of variance for overall regression is shown. The obtained F value is significant at the .15 level of confidence.

TABLE 4.6.--Analysis of variance for overall regression.

	Sum of Squares	Deg of Freedom	Mean Square	F	Sig.
Regression (about mean)	.9657	4	.2414	1.823	.15
Error	3.9724	30	.1324		
Total (about mean)	4.9381	34			

Also, this section describes the statistics related to the multiple-correlation for the independent variables under study. The multiple-correlation, R, for this set of independent variables was .4422.

Table 4.7 contains data regarding multiple-correlation, as well as data concerning the value of each of the independent variables in the prediction rule.

Discussion of Results

The resultant R of .4422 suggests that the set of variables used to predict IDTR is a better, or more

TABLE 4.7.--Multiple-correlation coefficients.

N=35	R^2=.1956	R=.4422		S=.3639		
Variables	Beta Weights	Std Errors of Betas	F_B	Sig. of F_B	Partial Corr Coefs	R^2 Deletes
IDTR			.8886	.353		
DS	-.1086*	.1728	.3949	.535	-.1140	.1850
SCS	.3783	.1685	5.0403	.032	.3793	.0604
GPA	.0312	.1757	.0317	.860	.0325	.1947
GLTA	-.3006	.1741	2.9815	.095	.3001	.1156

*The LS routine operates with absolute values, therefore whether a number is positive or negative in sign makes no difference in the determination of the statistics.

accurate predictor than any one of the individual variables.[2] Two of the selected variables served as fairly potent predictors in the rule--SCS, and GLTA. Further inspection of the data reveals that the variables GPA, and DS were not of predictive value in the rule. The exact contribution of each of these variables to the variance in the constant IDTR, is shown by the respective beta weights (Table 4.7) produced by the LS program.

In replicative studies these beta weights should remain fairly constant; therefore, the variables GPA and DS, should probably be deleted from the rule and other more potent predictors added. The addition

[2]Agricultural Experimental Station, Stat Routine No. 7 - Least Squares, Michigan State University, 1966.

of one or two such variables could serve to reduce the amount of measurement error. This error term is shown in the table as S or Standard Error of Estimate. The S for this prediction rule was .3639, which is too high for meaningful use, according to Borg.[3]

The R^2 Deletes data has been included in the above table for possible use in future studies. This statistic is an estimation of the proportional gain in the prediction equation if a particular variable is deleted. For example, the data suggest that if dogmatism (DS) was dropped from the equation, there would be approximately an 18 per cent improvement in the accuracy of the prediction. If school climate (SCS) was deleted, a much smaller increase (6 per cent) in the accuracy of the prediction might result.

Summary of Results

Four hypotheses were tested using the z-test in this study, and an equation for the possible prediction of future verbal teaching performance of intern teachers was formulated. The results were as follows:

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[3]Walter R. Borg, Educational Research (New York: David McKay Company, Inc., 1963), pp. 282-83.

Hypothesis	Results
1. There is no relationship between the dogmatism scores of intern teachers of the Elementary Intern Program of Michigan State University as measured by the Rokeach Dogmatism Scale, and the verbal behavior of intern teachers as measured by Flanders' Interaction Analysis.	Fail to reject.
2. There is no relationship between the social-psychological, school climate as measured by the School Climate Scale, and the verbal behavior of intern teachers as measured by Flanders' Interaction Analysis.	Rejected.
3. There is no relationship between the Grade Point Average earned at Michigan State University of the intern teachers, and the verbal behavior of intern teachers as measured by Flanders' IA.	Fail to reject.
4. There is no relationship between the Grade Level of Teaching Assignment of intern teachers, and the verbal behavior of intern teachers as measured by Flanders' IA.	Fail to reject.

The variables, Dogmatism of intern teachers, Grade Point Average of intern teachers, and Grade level of teaching assignment of intern teachers were not found to relate significantly to their classroom verbal behavior, tested at the .05 confidence level. Of these only Grade Level of Teaching Assignment approached significance.

A fourth variable, School Climate (of the schools in which the interns were teaching) was found

to be related to their classroom teaching behavior, significant at the .05 per cent confidence level.

Findings Relative to Over-all Regression

The obtained R of .44 indicated that the set of four independent variables was more highly correlated with the classroom verbal behavior of intern teachers, than any one of the independent variables. Dogmatism, Grade Point Average, and Grade Level of Teaching Assignment were of low predictive value, whereas School Climate was of average predictive value in the prediction rule.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V is divided into three parts. The first section summarizes the study. The second section reports conclusions drawn from the findings, and the third section presents recommendations for further research.

Summary of the Study

The purpose of the study was to investigate (1) the relationship between the measured dogmatism of intern teachers and their measured classroom verbal behavior, (2) the relationship between the measured organizational climate in which interns were teaching and their measured classroom verbal behavior, (3) the relationship between the grade level of interns' teaching assignments and their measured classroom verbal behavior, and (4) the relationship between the grade-point average of interns and their measured classroom verbal behavior.

The research sample was comprised of thirty-five intern teachers randomly drawn from the entire population of interns enrolled in Michigan State University's

Elementary Intern Program (EIP), who were teaching in regular classrooms during 1969-1970, grades one through six.

The general research model was one of correlation, with Verbal Interaction designated as the dependent variable, and the independent variables of Dogmatism, School Climate, Grade Point Average, and Grade Level of Teaching Assignment.

Data were obtained for verbal interaction by use of Flanders' Interaction Analysis, for the analysis of five ten-minute taped segments of actual classroom teaching of interns. The investigator analyzed the tapes according to a detailed outline of procedures. Measures of dogmatism of interns were obtained by the use of the Rokeach Dogmatism Scale (Short Form-E). Measures of organizational climate were obtained from the School Climate Scale, and instrument developed by the investigator for use in this investigation. This was administered to intern teachers and intern consultants for reliability. Only the consultants' ratings were used in the computation of the correlation coefficients for testing the hypotheses.

Multiple-regression techniques were employed in statistical analysis of the data. The .05 level of confidence for rejection or acceptance of the hypotheses was selected.

Of the four relationships investigated, only school climate was found to be correlated with the classroom verbal behavior of interns, significant at the .05 level of confidence.

The set of four independent variables was found to be more highly correlated with classroom verbal behavior of interns, than any single independent variable. The obtained R of .44 for the set of variables was not sufficiently high to serve as a meaningful rule for predicting classroom verbal behavior.

Conclusions

Within the limitations of this study, the following conclusions were drawn:

1. The measured dogmatism of intern teachers was not related to their measured classroom verbal behavior.
2. The grade-point average of intern teachers earned at Michigan State University was not related to their measured classroom verbal behavior.
3. There was a tendency for the grade level of the teaching assignment of intern teachers to be related to their measured classroom verbal behavior, but not significantly so. This relationship was in a negative direction.

4. The school climate in which interns were teaching was found to be positively related to their classroom verbal behavior. The more open the measured school climate, the more indirect the measured classroom verbal behavior of the interns.
5. The set of four independent variables included in the study was of higher predictive value than any single variable.
6. The correlation coefficient (R=.44) of the overall regression, or prediction rule, was not sufficiently high to ensure meaningful predictive information in regard to the classroom verbal behavior of intern teachers.
7. The correlation coefficient (r-.74) computed for the ratings of school climate by intern teachers and intern consultants, indicated that their individual perceptions of the situation in which the intern was teaching were quite similar, considering the fact that the backgrounds and professional experiences of these two groups were considerably different.
8. The measurement of the dependent variable, labeled Indirect-Direct Teaching Ratio (IDTR), produced a distribution of scores with a range

of .25 to 1.62, a mean of .81 and a SD of .38. Perhaps accurate estimates of the correlations between IDTR and the other variables were not obtained due to the restrictive nature of the distribution of the IDTR's.

Recommendations for Future Research

The following recommendations for future research are based, specifically, on the conclusions drawn from this investigation:

1. Other studies should be undertaken using information, such as the "R^2 Deletes"[1] obtained in this study to develop a prediction rule with a sufficiently high correlation coefficient. This should be in the range of .60 or higher for useful prediction.
2. The system to be used for analyzing teacher verbal performance should be modified so that any variation in teaching style will be detected. It may be useful to magnify differences by forcing the variable into a dichotomy, or by other design modifications. No recommendations for these modifications are offered here, due to the lack of precise information.

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[1] R^2 Deletes are estimates of the proportional gain in the prediction rule if a particular variable is deleted.

3. School climate should be the focus of future studies, especially as it concerns intern or beginning teachers. Is it primarily the actions of the principal that determine the working climate, or is it the actions of the teachers, or a combination of both? Could the School Climate Scale, developed for use in the present study, be modified to increase its internal reliability? It may well be that some important dimensions of school climate were not included in this instrument.
4. If the assumption is valid that the verbal behavior of teachers is instrumental to inquiry-centered instruction, then the type of school climate may be related to successful inquiry in classrooms. More information is required about this relationship.

Below are potential lines of inquiry that may be pursued by future researchers.

1. More study of school climate seems warranted so that consultants of the Elementary Intern Program might work more effectively with interns with added knowledge of the school climate in which the interns are teaching. Perhaps consultants could adjust their method of working with interns due to differing school

climates. The study of other closely related influences, such as parents and community, might produce useful information.

2. A considerable amount of information was generated by the computer program used in the analysis of the taped data. Much of this was not used, due to the design characteristics and scope of the present study. Other studies could be designed to take advantage of this data. Specifically, studies might focus on single categories of verbal interaction so that, for example, the motivational aspects of a teacher's verbal behavior could be isolated and studied.
3. It may be that a specific program of instruction in the use of some type of analytic observational system, should be included in the professional course preparation of elementary teachers. Or it might be that this training should come during the individual's first year of teaching.
4. Due to the extensive reliance of questioning in inquiry-centered instruction, some instruction pertaining to questioning strategies possibly should be included in the pre-service education of teachers. In

particular there is need for understanding the function of higher order questions in the classroom.

5. The Elementary Intern Program should make extensive use of the available observational systems,[2] so that hard data relative to the usefulness of these could be gathered. The EIP is suggested as a vehicle for this because of its unique organization, in that it has as a feature, a sizable group of competent practitioners, the intern consultants.
6. Possibly, the questioning strategies, and the experience with an analytic, observational system, as mentioned above, may help to develop teachers that are willing and able to use an inquiry-centered approach. On the other hand, it may be that the particular elements of inquiry should be subjected to in-depth studies. These should be of the type that are transacted in typical classrooms so that the results will be widely applicable.
7. The concept of "clustering" interns in a fewer number of schools might provide for more meaningful comparative studies of factors

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[2]Representative systems would be those of Hughs, and Flanders which were described in Chapter II. Others have been developed by Medley, Mitzel, and B. O. Smith.

such as school climate, because comparisons could then be made between, and within schools.

8. Since the research population was comprised of intern teachers enrolled in the Elementary Intern Program of Michigan State University, replicative studies could be undertaken to confirm and extend the findings of the present study pertaining to the relationship between school climate and verbal behavior of teachers, using other populations.

Reconceptualization

Four years of experience as an intern consultant in the Elementary Intern Program working with beginning teachers prompted this research. A basic unanswered question was what are the factors that account for the differences in the teaching styles of teachers. Some teachers are significantly more direct or indirect in their teaching approach than others.

So that future studies might be more fruitful by focusing on specific areas of teacher development, variables were chosen in the present design that were related to the following aspects of this development: (1) selection, (2) training, and (3) placement. In regard to the selection of teachers, a personality variable, dogmatism, was chosen. The grade-point average of a

teacher during his pre-teaching period was chosen as an intellectual variable to study, and the variables, school climate and grade level of teaching assignment were selected as sociological variables, related to the placement aspect of teacher development.

The researcher hoped that a rule for predicting teachers' patterns of classroom verbal interaction might be constructed. This prediction rule was comprised of the four independent variables included in the research design.

Given the findings of this study dogmatism as a personality variable and grade-point average as an intellectual variable do not tell us very much about how teachers act in the classroom. These variables were of little value in the prediction rule, whereas School Climate and grade level of teaching assignment were of value. (Partial correlation coefficients were .38* and .30 respectively.) It appeared that the situation or context, in which a teacher was working was related to his verbal behavior.

If indeed the results of this study are representative of the way things really are, then it is the situational factors that shape teaching behaviors. This would suggest that the selection aspect might not be as decisive in the development of teachers as the placement aspect.

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*Significant at the .05 confidence level.

Unanswered here is the question of the interactive process between these variables, although the predictive rule, or overall regression rule, had a correlation coefficient of .44 with verbal classroom behavior. This was higher than that of any single variable. It may be that some combination of two or three of these variables would produce even higher correlation coefficients. Future research should move to looking at the interactive process of various sociological variables as they impinge upon the behaviors of teachers.

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APPENDICES

APPENDIX A

PERSONAL OPINION QUESTIONNAIRE

NAME _____

DATE _____

PERSONAL OPINION QUESTIONNAIRE

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 in this inventory is your personal opinion. An attempt has been made 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 some of the others, and perhaps uncertain about others. Whether you disagree with any statement or not, 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 automobile manufacturers have made an effort in the 1970 models to control for air pollution.

_____ 2. In this complicated world of ours, the only way we can know what is going on is to rely on leaders or experts who can be trusted.

_____ 3. Publishers of school text books are reluctant to include racial minorities for fear of white boycott of their materials.

_____ 4. My blood boils whenever a person stubbornly refuses to admit he's wrong.

_____ 5. The current financial difficulty in which schools find themselves is due to a taxpayers' revolt.

_____ 6. There are two kinds of people in this world: those who are for the truth and those who are against the truth.

_____ 7. Most people just don't know what's good for them.

_____ 8. Of all the different philosophies which exist in this world, there is probably only one which is correct.

_____ 9. The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.

_____ 10. The main thing in life is for a person to want to do something important.

_____ 11. I'd like it if I could find someone who would tell me how to solve my personal problems.

_____ 12. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

_____ 13. Man on his own is a helpless and miserable creature.

_____ 14. It is only when a person devotes himself to an ideal or cause that life becomes meaningful.

_____ 15. Most people just don't give a "damn" for others.

_____ 16. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

_____ 17. 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.

_____ 18. The present is all too often full of unhappiness. It is only the future that counts.

_____ 19. The United States and Russia have just about nothing in common.

_____ 20. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

_____ 21. 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.

_____ 22. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

_____ 23. It is better to be a dead hero than to be a live coward.

APPENDIX B

DESCRIPTION OF FLANDERS' INTERACTION ANALYSIS SYSTEM

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DESCRIPTION OF FLANDERS' INTERACTION ANALYSIS SYSTEM

Verbal Interaction Categorising System (VICS)

(Taken from: The Role of the Teacher in the Classroom and VICS Training Kit Manual as developed by Dr. Edmund Amidon based on the work of Dr. Ned Flanders)

Procedure:

For a detailed discussion of interaction analysis, tallying procedures, category definition, and matrix interpretation, the observer should study The Role of the Teacher in the Classroom. The following brief description of tabulation procedure is being presented for the convenience of the observer.

All teacher-pupil interaction is divided into ten categories, seven of teacher talk, two of student talk, and one of silence or confusion. Reference to the chart listing the ten categories will assist the reader in obtaining the over-all picture of the categories described in this section.

Teacher talk is recorded under one of two major headings: (1) indirect influence and (2) direct influence. Indirect influence contains

four categories and direct influence three. Included under the classification of indirect teacher influence are those types of teacher statements that increase student freedom to respond. Direct teacher influence refers to statements that restrict response by students.

A closer look at the categories of indirect influence reveals the exact types of teacher statements included here. Category 1, acceptance of feeling, contains teacher statements communicating acceptance by the teacher of both positive and negative student feelings. Statements that judge the "goodness" or appropriateness of pupil behavior comprise Category 2. These may be either praise or encouragement. Category 3, acceptance of ideas, is made up of teacher statements that reflect, summarize, or clarify student ideas. Teacher questions that require children's response are assigned to Category 4.

Categories of direct teacher influence reveal a contrasting type of teacher behavior. Lecture, giving information, and expressing opinion are recorded in Category 5 and Category 6 is used for the teacher's directions to pupils. In Category 7 are placed both statements of criticism and those in which the teacher justified his authority. Such statements are usually designed to change pupil behavior.

Student talk is divided into only two categories — Category 8, which is student talk in response to the teacher, and Category 9, which is student talk initiated by the student.

In the remaining category are recorded periods of silence or confusion. Pauses, short periods of silence, and periods during which the observer cannot determine who is talking are included in this category. Such a category is necessary because it allows the person who is doing the recording to account for every minute of the time spent in systematic observation.

A summary of the ten categories of interaction analysis with brief definitions can be found on the following pages.

Procedures for Observing Teacher-Pupil Interaction

Use of the interaction analysis system involves an observer's spending several hours in a classroom observing various kinds of classroom interaction. The most typical procedure for observing classroom interaction is presented in this section.

The observer enters the classroom and seats himself in a place where his presence will cause the least amount of distraction to the teacher and the class. He then spends from five to ten minutes observing without recording. During this time he is getting oriented to the classroom, acquiring a "feeling" for the total situation. This accomplished, he begins to record. Approximately every three seconds, or whenever a change in category occurs (See Rule 4), he writes the category number of the teacher or student verbal behavior he is observing at that moment. These numbers are recorded in sequence in a column. Since the observer writes approximately twenty numbers per minute, at the end of an observational period of fifteen or twenty minutes he will have recorded several long columns of numbers. Accuracy of observation and recording is of prime importance, of course, but evenness of tempo is also vital. While the observer is recording the appropriate category numbers, he often records marginal notes explaining unusual happenings in the classroom. These are helpful later in interpreting the material gathered.

The observer always notes the type of class activity being observed, since obviously interaction will vary from one activity to another. Whenever the classroom activity changes so that observing in inappropriate, as,

for example, when there are various groups working around the classroom, when the class members are working at their seats on individual work, or when silent reading is taking place, the observer stops recording. He then draws a line under the recorded numbers, makes a note of the new activity, and begins categorizing again when the total class interaction resumes.

TABLE ONE

CATEGORIES FOR INTERACTION ANALYSIS

TEACHER TALK	INDIRECT INFLUENCE	1.* ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included. 2.* PRAISES OR ENCOURAGES: 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.* ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5. 4.* ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5.* LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions. 6.* GIVING DIRECTIONS: directions, commands, or orders with which a student is expected to comply. 7.* CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK		8.* STUDENT TALK--RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9.* STUDENT TALK--INITIATION: 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.* SILENCE OR CONFUSION: 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.

Ground Rules

Clearly the classification of every statement into one of the categories is not always accurate. Many questions arise concerning whether a statement belongs in one category or another. Ground rules about classifying statements, although not completely eliminating disagreement among observers, have been found helpful and necessary in many cases. Certain of these rules, which appear to apply to a great number of teaching situations, are discussed here.

Rule 1 - When not certain to which of two or more categories a statement belongs, choose the category that is numerically farthest from Category 5. This is advisable except when one of the two categories in doubt is Category 10, which is never chosen if there is an alternate category under consideration.

Rule 2 - If the primary tone of the teacher's behavior has been consistently direct or consistently indirect, do not shift into the opposite classification unless a clear indication of shift is given by the teacher. The trained observer who is observing a particular action is in the best position to judge whether or not the teacher is restricting or expanding the freedom of action of class members.

Rule 3 - The observer must not be concerned with his own biases or with the teacher's intent. Rather, he must ask himself the question, "What does this behavior mean to the pupils so far as restriction or expansion of their freedom is concerned?"

Rule 4 - If more than one category occurs during the three-second interval, then all categories used in that interval are recorded; thus, record each change in category. If no change occurs within three seconds, repeat the previous category number.

Rule 5 - Directions are statements that result (or are expected to result) in observable behavior of children. Examples of direction are: "Go to the board, read Question 3, go to your seat, etc." Some teacher statements sound like directions, but will not be followed by observed student compliance. These statements often precede the actual direction. For example, "Let's get ready now to go to recess (orientation a 5), now, Row 5, get your coats."

Rule 6 - When the teacher calls on a child by name, the observer ordinarily records a 4.

Rule 7 - If there is a discernible period of silence (at least 3 seconds), record one 10 for every three seconds of silence, laughter, board work, etc.

Rule 8 - When the teacher repeats a student answer, and the answer is a correct answer, this is recorded a 2. This tells the student he has the right answer and therefore functions as praise.

Rule 9 - When the teacher repeats a student idea and communicates only that the idea will be considered or accepted as something to be discussed, a 3 is used.

Rule 10 -- If a student begins talking after another student (without the teacher's talking), a 10 is inserted between the 9's or 8's to indicate the change of student.

Rule 11 - Statements such as "uh, uh, yes, yea, all right, okay." which occur between two 9's, are recorded as 2 (encouragement). These statements function as encouragement (the student continues talking after the 2) and are therefore classified as 2.

Rule 12 - A teacher joke, which is not made at the expense of the children, is a 2. If the joke makes fun of a child, then it is coded as a 7.

Rule 13 - Rhetorical questions are not really questions; they are merely part of lecturing techniques and should be categorized as 5's.

Rule 14 - A norrow question is a signal to expect an 8. If the student gives a specific predictable answer, this is an 8. If the child expands documents, or justifies his answer, the observer should begin tallying 9's.

TALLYING WORKSHEET

1._____	26._____	51._____	76._____	101._____
2._____	27._____	52._____	77._____	102._____
3._____	28._____	53._____	78._____	103._____
4._____	29._____	54._____	79._____	104._____
5._____	30._____	55._____	80._____	105._____
6._____	31._____	56._____	81._____	106._____
7._____	32._____	57._____	82._____	107._____
8._____	33._____	58._____	83._____	108._____
9._____	34._____	59._____	84._____	109._____
10._____	35._____	60._____	85._____	110._____
11._____	36._____	61._____	86._____	111._____
12._____	37._____	62._____	87._____	112._____
13._____	38._____	63._____	88._____	113._____
14._____	39._____	64._____	89._____	114._____
15._____	40._____	65._____	90._____	115._____
16._____	41._____	66._____	91._____	116._____
17._____	42._____	67._____	92._____	117._____
18._____	43._____	68._____	93._____	118._____
19._____	44._____	69._____	94._____	119._____
20._____	45._____	70._____	95._____	120._____
21._____	46._____	71._____	96._____	121._____
22._____	47._____	72._____	97._____	122._____
23._____	48._____	73._____	98._____	123._____
24._____	49._____	74._____	99._____	124._____
25._____	50._____	75._____	100._____	125._____

WORK MATRIX

	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											Matrix Total
TOTAL											
%											

I/D Ratio = _____

Revised i/d Ratio = _____

i/d Row 8 = _____

i/d Rows 8 & 9 = _____

Extended Indirect = _____

Extended Direct = _____

Extended i/d = _____

3-3 Cell = _____

9-9 Cell = _____

Vicious Circle = _____

APPENDIX C

SCHOOL SITUATION QUESTIONNAIRE

APPENDIX C

SCHOOL SITUATION QUESTIONNAIRE Name _____ No. ___

Would you please indicate the extent to which each of the following statements characterizes the school in which you are teaching? Please check the particular category that you feel most closely corresponds to your particular teaching situation.

	Rarely Occurs	Some-times Occurs	Often Occurs	Frequently Occurs
1. The teachers enjoy a sense of accomplishment in their jobs.				
2. The teachers, as a group, seem to be working together.				
3. The principal is regarded as assisting the teachers.				
4. The teachers enjoy friendly social relations with each other in school.				
5. The teachers socialize together outside of school as well as in school.				
6. The teachers are mainly concerned with doing a good job.				
7. The principal engages teachers in busy work.				
8. The principal offers strong leadership in improving the education of the students.				
9. The principal demonstrates sincere consideration for the feelings of the staff.				
10. The teachers reflect an attitude of just getting the job done.				
11. The principal closely supervizes the teachers.				
12. The principal has demonstrated his willingness to do the things he expects of his staff.				
13. Leadership acts emerge from the group in the solution of building problems and concerns.				
14. The principal encourages leadership by others.				