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A STUDY OF THE RELATIONSHIP BETWEEN THE VERBAL INTERACTION OF TEACHERS AND THEIR PHILOSOPHICAL AND EDUCATIONAL BELIEFS IN EXPERIMENTALISM

by
Patrick Barry Mullarney

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
1972

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CHAPTER I

INTRODUCTION

The purpose of this study was to determine whether a significant relationship exists between a teacher's verbal interaction with students in a secondary public school and that teacher's philosophical beliefs and educational philosophical beliefs in Experimentalism.

BACKGROUND

How children are grouped for instruction has been the subject of much debate and research. There are two generally accepted dimensions in the theory of organization - vertical and horizontal.

Vertical and Horizontal Organization

"Vertical organization provides a system for classifying students and moving them upward from entry to departure from the school unit. Horizontal structure

provides a system for dividing students into instructional groups and allocating them to teachers." (Goodlad, 1966)

The horizontal dimension is concerned with the various groupings for instruction within grade levels or classes, whether it be homegeneous, heterogeneous, small group instruction, large group instruction, or independent study. Whichever grouping pattern is used, some type of interaction between a teacher and students occurs. The nature of the interaction may determine generalized attitudes toward the teacher and the class that the students share in common, in spite of individual differences.

Classroom Climate

Attitudes developed by the social interactions which occur in the classroom sometimes are referred to as classroom climate. These interactions develop expectations by students about how the teacher will act and what kind of person he is; classroom behavior is reflective of these expectations and is usually stable, once established. Flanders states that "the word climate is merely a shorthand reference to those qualities

that consistently predominate in most teacher-pupil contacts and contacts between pupils in the presence or absence of the teacher." (Flanders, 1967a, pp. 103-104)

Domination and Integration - H. H. Anderson and his colleagues (1939, 1945, 1946) conducted major research projects to observe the types of contacts that the teachers have with children, resulting in a series of consistent and significant findings which describe two basic types of contacts, i. e., domination and integration.

A person whose behavior is characterized by domination is described as being inflexible, rigid, deterministic, and usually disregards the wishes and judgment of others. Domination is considered to be the technique of autocracy or dictatorship; it retards the growth processes in others. It is the antithesis of the scientific attitude and the open mind.

Integration designates behavior which leads to a sameness or commonness of purpose among differences. It is considered to be the behavior of a flexible person.

This type of behavior is noncoercive; it is consistent with the scientific approach and the open mind. Differences are encouraged and used to their best advantage. (Anderson, 1939)

Flanders summarizes the results of the studies by Anderson and others as follows:

> First, the dominative and integrative contacts of the teacher set a pattern of behavior that spreads throughout the classroom; the behavior of the teacher, more than that of any other individual, sets the climate of the class. The rule is that, when either type of contact predominates, domination incites further domination and integration stimulates further integration. The teacher's tendency spreads among the pupils and persists even when the teacher is no longer in the room. Furthermore, the pattern a teacher develops in one year is likely to persist in his classroom the following year with completely different pupils. Second, when a teacher has a high proportion of integrative contacts, pupils show more spontaneity and initiative, voluntary social contributions, and acts of problem solving. Third, when a teacher has a high proportion of dominative contacts, the pupils are more easily distracted from school work and show more compliance to, as well as rejection of, teacher domination. (Flanders, 1967, p. 223)

Lippitt and White analyzed the effects of adult leaders' influence on boys' groups. Generally, the behavior that Lippitt and White called "authoritarian leadership" consisted of dominative contacts; "democratic leadership" consisted of integrative contacts; and "laissez-faire leadership" consisted of occasional integrative contacts within a general climate of indifference. Flanders states that most of the conclusions of the study by Lippitt and White confirm or extend the general conclusions of Anderson and his associates with few semantic modifications, but very little change, if any, in behavioral meaning. (Flanders, 1967a)

Cogan's (1956) research assessed the student's perception of the teacher, how often the student did required homework, and how often he did extra, nonrequired schoolwork. The first of the three scales used in Cogan's instrument assessed the traits in the teacher which are descriptive of the dominative and integrative behavior patterns discussed previously. Cogan used Murray's list of major personality needs. Upon inspection however, it can be observed that the traits fall into groupings of dominative and integrative behavior patterns. Results of this study showed that students reported doing

more assigned and extra schoolwork when they perceived the teacher's behavior as falling into the integrative pattern rather than the dominative pattern.

Direct and Indirect Teacher Influences - Teacher-pupil relationships in a classroom can be considered to be essentially superior-subordinate in quality. The teacher usually has the responsibility for determining the nature of the activities in the classroom. If the students assume any responsibility for the activities and interaction in the classroom, it is with the permission, verbal or non-verbal, of the teacher. No student in a classroom situation is ever completely independent of a teacher's authority. However, there are various degrees of independence; the conditions of independence or dependence are created by the teacher's choice of influence. Flanders asserts the following:

> One can conceive of direct influence and indirect influence which, under appropriate circumstances, determine the degree of dependence. These two kinds of influence can be defined, in terms of verbal behavior, as follows.
>
> Direct influence consists of stating the teacher's own opinion or ideas, directing the pupil's action, criticizing his behavior, or justifying the teacher's authority or use of that authority.

> Indirect influence consists of soliciting the opinions or ideas of the pupils, applying or enlarging on those opinions or ideas, praising or encouraging the participation of pupils, or clarifying and accepting their feelings. (Flanders, 1967a, p. 109)

Many studies have been made to ascertain whether indirect or direct influence of the teacher results in higher student achievement or in more positive student attitudes. Flanders (1967) conducted a study during 1955-56 observing the classes of nine eighth grade social studies teachers, as well as another study in 1957, observing the classes of ten New Zealand elementary teachers. Both studies showed that classes of the indirect teachers had higher levels of attitude development.

In 1940, Flanders conducted another research project which involved sixteen eighth grade mathematics teachers and fifteen seventh grade English-social studies core teachers. The results of this study showed that both achievement and student attitude development were significantly higher and more positive for the classes taught by indirect teachers.

Campbell and Barnes (1969) cite thirteen research studies which support the assertion that students who have teachers who are more indirect in their verbal interaction with students have significantly higher achievement and more positive attitude development. As a result of these studies, it seems desirable to have this type of teacher behavior; consequently, it would be beneficial to be able to identify a teacher who is likely to behave in this manner when one has the opportunity to select a new teacher.

Philosophy and Behavior

One way to identify a teacher who is likely to behave in an indirect manner may be to determine whether there is a significant relationship between a teacher's personal and educational philosophy and the behavior that a teacher exhibits.

Phenix (1967) and many others contend that a relationship exists between a philosophy of education and educational practices. He asserts the following:

> Differences in educational practice - in courses of study, teaching methods, administrative procedures, and patterns

> of support and control - are generally reflections of differing beliefs about such matters as human nature, knowledge, values and the good society. These beliefs are the foundation of differing philosophies of education. A philosophy of education is any reasonably coherent set of values and fundamental assumptions used as a basis for evaluating and guiding educational practice. (Phenix, 1967, p. 4)

Many educational philosophers would deny this statement today. There is much dispute as to the connection between philosophy and educational practices.

Burns (1967) contends that educational philosophy can be implicated from formal philosophy; however, there is controversy among philosophers as to the nature and strength of the implication. Logical implication has been used loosely when attempting to derive educational directives from formal philosophical positions. He asserts that educational implication is psychological, not logical nor material, even though this type of implication is consistent and factual. This meaning of educational implication is that particular educational practices are presupposed by particular philosophic beliefs about the nature of education or man, else those educational practices would be meaningless and irrational.

It is important to note that these educational practices are not logically implied by philosophy or one's belief in a philosophy; rather, they are psychologically implied in a pragmatic means-ending sense.

> To say, then, that philosophy implies educational practices is to say that an educator follows some set of educational procedures because he believes certain things about the universe and man; if he believed other things then, to be psychologically consistent, he would follow other practices. Perhaps this type of connection is one defensible explanation of the nature and function of the "educational implication." (Burns, 1967, p. 42)

The review of selected literature in Chapter II addresses itself to the controversy of what implications philosophy holds for educational practices and what is the connection between philosophy and educational practices.

Brown (1968) also builds a case that gives support to this assumption. He contends that the perceptual psychologist takes as his fundamental assumption that people's ideals, emotions, opinions, and beliefs have an effect upon their behavior. People do not behave according to the facts as they see them. He further

contends that there is a striking similarity between the concept of perceptual field and the concept of "frame of mind" or "belief system." Brown defines beliefs as evaluations of perceptions and contends that the behavior of a person is the result of his beliefs. "What is more, the beliefs which are most powerful in their influence on behavior are the person's fundamental philosophic beliefs pertaining to the nature of man, reality, knowledge, values, ethics, and the like. In short, believing and behaving are closely related." (Brown, 1968, p. 26)

Researchers in education should be aware that a person's basic beliefs about philosophy may lie beneath the surface within a particular situation. Basic beliefs may be different than those beliefs which are consciously involved in a particular teaching or research setting, and they may be in conflict with the situational beliefs. According to Brown, "this may explain why they (the researchers) found a perplexing lack of significant relationship between the teacher's general classroom practice and what was called the teacher's philosophy ." (Brown, 1968, p. 243) In Brown's research, he avoided this dilemma by testing the teacher's personal philosophical beliefs and the educational philosophical beliefs held by that teacher. These results were then compared with observed classroom practices in which the teacher engaged.

It was found that "when beliefs about teacher practices [educational beliefs] were supported by similar or logically compatible philosophic beliefs, we could predict with a high degree of accuracy whether observed classroom practices [teacher's classroom behavior] would be experimental or nonexperimental." (Brown, 1968, pp. 169-170)

Sergiovanni (1971), when discussing the components of supervisory practice, points out the following:

> . . .each of us needs to be aware of and concerned about our assumptions, values and beliefs regarding the nature of work, the nature of man, and how these relate to the function of schools in our society. This last concern is of critical importance in that faulty supervisory assumptions, and subsequently faulty school climates, are able to penetrate classroom doors. Thus, they take their toll from our young school clients and from classroom learning environments. (Sergiovanni and Starrett, 1971, p. 84)

He suggests also that values, assumptions, and philosophies are internalized parts of a supervisor and are consistent with the life style of the supervisor. Thus, a supervisor's pattern would set the environmental climate. By the same reasoning, a teacher would have

values, assumptions, and philosophies which would be internalized, be consistent with the life style of the teacher, and set the classroom climate for the students.

Experimentalism and Teachers' Classroom Behavior

If there is a relationship between the behavior the teacher exhibits and the teacher's personal and education philosophy, and if it is desirable for a teacher to behave in an indirect manner with integrative contacts, one could predict that a teacher would tend to behave more indirectly if that teacher were in high agreement with John Dewey's Experimentalism. Using the same reasoning, one would predict that a teacher would tend to behave more directly with dominative contacts if that teacher were in low agreement with John Dewey's Experimentalism.

Agreement with Experimentalism and Indirect Teacher Influence - A teacher who has a high agreement with Experimentalism would have a scientific outlook and tend to see a heterogeneous world. The scientific outlook welcomes disagreement, dissensions, and controversy as natural and necessary in a world where there are individual differences. The experimental mind sees man as an active

participator in the affairs of his world. This person likes situations kept open and flexible, relative to the situation involved and the possible changes it might undertake. The Experimentalist acts upon as well as reacts to his environment. (Brown, 1968)

An indirect teacher is one who exhibits verbal behavior consisting of statements which accept and clarify an attitude or the feeling tone of a student in a non-threatening manner. Statements which praise and encourage the student to pursue his endeavors and statements which are a response and acceptance of a student's ideas are most evident in an indirect classroom climate. An indirect teacher would encourage divergent student ideas, opinions, and questions. The teacher would attend to student ideas and integrate them into the classroom discourse through is own active response statements. Many questions are asked in order to move the conversation to the next step, introduce a new problem element, or involve ideas which the teacher thinks will help to solve the problem the student is discussing. Most important is the fact that the student is an active participant in the process, rather than a passive reactor.

Learning, to the Experimentalist, is an act of intelligent inquiry, not merely the acquisition and possession of knowledge. Knowledge is artificial and ineffective to the degree in which it is presented merely as truth to be accepted, held, and treasured for its own sake. (Brown, 1968)

An indirect teacher would not monopolize the classroom climate with lecturing, asking precise questions, and expecting short, precise facts for answers. In addition, he would not give a great deal of directions nor would he often justify his authority.

Brown (1968) further describes this type of teacher as follows:

> In the study the issues involving the nature of problems around which teachers should organize classroom activities was represented by five statements of belief which are in agreement with Dewey's philosophy: (1) A good teacher puts pupils to work on what they see as their own problems, rather than something that is the teacher's or textbook's problem, (2) Frequently asks children to choose among several alternatives, (3) A good teacher encourages children to adventure in 'deep water,' to tackle problems that appear to be 'over their heads,'

> (4) A good teacher uses 'feedback' from pupils to diagnose the changing state of affairs in the class, and revises original plans to meet new circumstances, and (5) A good teacher makes unplanned changes when a particular lesson is not getting an enthusiastic response from children. (Brown, 1968, pp. 219-220)

Flanders (1967) asserts that an indirect teacher is more alert to, concerned with, and makes greater use of statements made by students. This teacher goes beyond mere clarification and acknowledgement of student ideas; he makes extensive use of them. An indirect teacher asks longer, more extensive questions and he does this about four times more frequently than does a direct teacher. An indirect teacher has less discipline problems, does not find it necessary to give lengthy directions, and criticizes the student less.

A teacher who sees knowledge as inquiry is a thoroughgoing experimentalist who attempts to create classroom situations that are inclined to be open and free, emphasizing participation of the pupils as actors as well as reactors. (Brown, 1968)

Disagreement with Experimentalism and Direct Teacher Influence - A teacher who has a low agreement with Experimentalism would have a prescientific outlook and would like to see a world in which there were no discordant elements. The nonexperimentalist believes that things always are to be what they are supposed to be, with no variations; he tries to homogenize reality by blending and reducing reality to particles of uniform size. These particles would then be distributed evenly to achieve an unvarying uniformity. The nonexperimentalist believes that man is basically a passive spectator in events which he is powerless to influence. If one agrees with the previous statement, he thinks that a student gains knowledge by having things impressed on his mind; the mind is formed from without. Knowledge is handed down by books and learned men. The more passive the mind is, the easier it is to shape and impress knowledge upon it. (Brown, 1968)

The nonexperimentalist views learning as follows:

> Learning is the sum of impressions made on the mind as a result of the presentation of material to be known. Learning is the acquisition of knowledge by the minds of individuals. Truth exists ready-

> made somewhere; the task of the scholar is to find it. Inquiry into the accumulated body of knowledge must necessarily precede inquiry into practical, personal, or social problems. One must possess knowledge before he can put it to intelligent use. (Brown, 1968, p. 46)

Direct verbal behavior consists primarily of lecturing, giving directions, criticizing, or justifying authority. Direct behavior is also exhibited by short, precise questions which require, short, precise facts as answers. Flanders comments that "since power, maturity, authority, and initiative usually lie with the teacher, it is not surprising to discover that the teacher talks more than half the elapsed coding time in most visits." (Flanders, 1970, p. 100) Lecture is the form of verbal interaction that is used to give information, facts, opinions, or ideas to students. Usually information in the form of lecture is given in fairly extended time periods with only brief interruptions. (Amidon and Flanders, 1967a) Clearly, this is a teacher dominated activity.

It would appear that the direct teacher believes that knowledge is there to be acquired by the student. This acquisition takes place with the learned one, the teacher, impressing this knowledge on the passive mind, the student.

The prescientific outlook also expects rules to be venerated and demands a strict conformity to them. Brown's (1968) study found some interesting results:

> Teachers who saw knowledge as acquisition were decidedly non-experimental, providing somewhat restricted or tightly controlled classroom situations in which pupils participate primarily as respondents to plans and purposes impinging upon them from without. (Brown, 1968, p. 206)

> Teachers who imposed a general method on all alike were in disagreement with experimentalism on both philosophic and educational beliefs in all cases. They believed in ready-made knowledge, and in organizing learning around teacher's or textbook's problems. They also believed in keeping pupils under firm control, and in not letting their interest and attention stray from the assigned task. (Brown, 1968, p. 188)

> Teachers who tended to neglect direct experience [allowing the pupils to actively participate] believed that a good teacher should be very much in control of the classroom situation and directive of the pupils' learning. (Brown, 1968, p. 177)

The direct teacher behaves in such a manner that he is often giving directions to the class, justifying his position or reasons for conducting an activity in the classroom, or criticizing the student to change the student's behavior from unacceptable, in the teacher's

perception, to acceptable. The student is expected to be a passive reactor, not an active actor in the learning process. (Amidon and Flanders, 1967a)

The student would not be expected to initiate the verbal interaction. The teacher would initiate the process and would expect the student to limit himself to the question or guidelines set forth by the teacher.

Two notes of caution should be set forth at this time. First, when discussing the verbal behavior of an indirect teacher, no definite indication was given that an indirect teacher would engage in direct behavior. Similarly, no indication was given that a direct teacher would engage in indirect behavior. It should be noted that both types of verbal interaction occur in any classroom; it is a matter of relative degree. Flanders asserts the following:

> A general assumption underlying the discussion is that in the control of classroom learning, there are times when direct influence is most appropriate and other times when indirect influence is most appropriate. At first glance, this assumption may appear to conflict with the findings of research on classroom climate. However, a careful study of the data collected indicates that in all types

> of classroom situations, both direct and indirect influence occurred. (Flanders, 1967a, p. 115)

Second, the "pure" experimentalist teacher exists only in a theoretical-philosophical model. Once again, it is a matter of relatively high and low agreement with the philosophy of Experimentalism.

THE PROBLEM

If indirect teacher verbal behavior is desirable as indicated by the research to date, it would seem beneficial to be able to identify this type of teacher before he is placed in a classroom situation. If a significant relationship between a teacher's verbal behavior and the teacher's personal philosophical beliefs and educational philosophical beliefs is established, the results of this study would have an impact on the selection of personnel for a school system.

Statement of the Problem

One of the major concerns in any educational system is teacher effectiveness. Brown (1968) comments on the various systems, such as Anderson's (1946) system and

Flanders' (1970) system, which investigate patterns of teacher behavior as follows:

> While such operational or socio-psychological approaches may yield interesting descriptions of teaching behavior they do nothing whatsoever to help anyone solve the problem of deciding which teachers are good and which are not so good. Their deliberate effort to avoid contamination from philosophy leaves them high and dry. The user of these approaches has no way (except to leap in the dark clutching his own blind and unspoken faith) to get from the described characteristics of teachers to judgements regarding the relative merits of the differentiated types of teachers. (Brown, 1968, p. 245)

Brown goes on to say that the large problem one faces is the question of "Who's a good teacher?" He contends that "good" must be a value position, a position which should be derived from a recognizable philosophy in this case, Experimentalism.

> Utilizing both the method and the supporting system of thought proposed by Dewey, we have demonstrated that the value judgments (beliefs) can be measured and compared with logically congruent observable behavior (teachers' classroom practices). We have used Dewey's comprehensive framework of experimentalism as a means for looking at teaching practices

> in correspondence to value positions regarding what is "good." Philosophic systems such as this constitute the connecting threads, the avenues upon which we can get back and forth from practices to beliefs in some meaningful fashion. (Brown, 1968, p. 246)

If a significant relationship does exist between a teacher's verbal behavior and his personal philosophical beliefs and educational philosophical beliefs, and if one considers Experimentalism as the value position for measuring teacher effectiveness, a "good" teacher could be selected in advance by ascertaining the degree to which the prospective teacher holds personal philosophical beliefs and educational philosophical beliefs which are compatible with Experimentalism.

If this significant relationship does exist, and if it is desirable to change teacher behavior in order to bring about particular results in a classroom, possibly one should pay less attention to experimenting with different methods of instruction and patterns of organization; rather, one could concentrate on changing the philosophy of the teacher so as to facilitate the desired classroom behavioral change. The purpose of this study is to ascertain whether a significant relationship exists

between a teacher's verbal interaction with students in a secondary public school and that teacher's agreement or disagreement with John Dewey's Experimentalism philosophy.

Statement of the Hypothesis

Based upon the assumption that one's philosophy does affect his behavior, and the contention that a teacher who is in high agreement with Experimentalism is likely to behave indirectly in his verbal interaction with students, and a teacher who is in low agreement with Experimentalism is likely to behave directly in his verbal interaction, the following null hypothesis is set forth.

There is no significant relationship between a teacher's verbal interaction with students in a secondary public school classroom and that teacher's personal philosophical beliefs and educational philosophical beliefs in Experimentalism as measured by Brown's (1968) Personal Beliefs Inventory and Teacher Practices Inventory.

PROCEDURES

The Personal Beliefs Inventory (Brown, 1968) and Teacher Practices Inventory (Brown, 1968) were administered to forty secondary school teachers during a faculty meeting. From this group of teachers, twenty teachers were selected for observation in the classroom, using Flanders' (1970) Interaction Analysis. The eleven Interaction Analysis Ratios computed from the composite observation matrix were treated statistically.

Selection of the Instruments

To ascertain the philosophical beliefs held by the teachers in the sample, Brown's (1968) Personal Beliefs Inventory and Teacher Practices Inventory were selected. Flanders' (1970) System of Interaction Analysis was selected to observe the verbal interaction of the teachers in the classroom.

Personal Beliefs Inventory - This inventory is part of a larger instrument, the Experimentalism ("X") Scale, which was developed for the primary purpose of measuring individual differences in agreement or disagreement with John Dewey's philosophy.

This forty item inventory contains an equal number of the plus-items and minus-items. The plus-items are compatible with Experimentalism. The areas which are represented in the inventory include as follows: (1) items involving mind and body, (2) items involving permanence and change, (3) items involving science and morals, (4) items involving emotions and intellect, (5) items involving freedom and authority, and (6) items involving knowing and doing.

When the subject responds to this inventory, the scale with which he answers the statements ranges from "1," I agree very much, to "6," I disagree very much. However, when the researcher calculates the score for each subject, the plus-items' answers are reversed. For example, a "1" is counted "6," a "2" is counted as "5," a "3" is counted as "4," and "4" is counted as "3," a "5" is counted as "2," and a "6" is counted as "1." When this procedure is completed, all of the changed plus-items and the unchanged minus-items are added up to provide a total score. The higher the total score, the higher the subject is in agreement with Experimentalism. (Brown, 1968) (See Appendix A)

Teacher Practices Inventory - The second part of the Experimentalism ("X") Scale is the Teacher Practices Inventory. This instrument is concerned about the concept of what the teacher considers to be good teaching practices in a classroom.

It is a forty item inventory, containing an equal number of plus-items and minus-items. The plus-items are representative of the seven steps or features of the educative experience advocated by Dewey. All of the minus-items are representative of the "evils of education" which Dewey opposed. The areas represented are as follows: (1) items involving situations of experience, (2) items involving the development of challenging problems, (3) items involving the generation of ideas, (4) items involving the observation and collection of data, (5) items involving the development of reasoned hypotheses, (6) items involving experimental application and testing, (7) items involving the evaluation and judgment of results, (8) items involving neglect of direct experiences, (9) items involving reliance upon extrinsic motivation, (10) items involving the making of learning a direct and conscious end in itself, (11) items involving the mechanical following of an established method, and (12) items involving the imposition of a general method on all alike.

The scoring process for this inventory is the same as the process described for the Personal Beliefs Inventory. A high total score on this inventory indicates a high compatibility with Dewey's educational beliefs, and a low total score indicates a lack of agreement or conflict. (Brown, 1968) (See Appendix B)

The validity of the two inventories developed by Brown (1968) was established by administering the inventories to prominent American educators. Responses were received from nineteen of these, including William M. Alexander, Morey Appell, Melvin C. Baker, Arthur W. Combs, Robert L. Curran, Jack R. Frymier, Ira J. Gordon, Vynce A. Hines, Phillip Lambert, Joe Park, Thomas A. Ringness, Carl R. Rogers, John Rothney, B. F. Skinner, and B. Othanel Smith.

Results of the inventories showed a wide range of scores which were compatible with the beliefs which had been expressed by the people toward Experimentalism. Professors Baker and Park are known as being exceptionally well-informed about and highly sympathetic to the philosophy of John Dewey, and Professor Broudy refers to himself as a classical realist, a philosophic position opposed on many issues to Dewey's pragmatic views. Upon examining

the scores of these men, Baker and Park obtained the highest scores, both with identical scores of 130, the maximum being 132; Broudy recorded the next to the lowest score, more than 50 points lower than Baker and Park. It is assumed that these inventories were discriminating among the beliefs of these experts.

The Personal Beliefs Inventory seemed to meet with more approval than the Teacher Practices Inventory about which there were some objections because of stipulated context. Brown reports that "both instruments produced a reasonably wide spread of scores, from slight disagreement to low agreement to high agreement with Experimentalism. Those known to be pro-Dewey scored near the top of the scale while those known to be in critical disagreement with Dewey scored low (near the theoretical mean) on the scale." (Brown, 1968, p. 128)

The reliability of the inventories was established by refining it five times and following its administration to many groups, including populations in California, New York, and Illinois. When the fifth form, form A and form B, was administered to these populations, the results showed reliabilities ranging from .55 to .78 for Personal Beliefs Inventory and from .56 to .94 for Teacher Practices Inventory. Brown asserts that "in any event,

the reliabilities found for the inventories of the Experimentalism Scale should be considered quite satisfactory. They compare favorably with the reliability coefficients reported for other respected measures in this area." (Brown, 1968, p. 101) The fifth form, form A and B, is used in this study.

Interaction Analysis - To observe the type of verbal interaction engaged with students, Ned A. Flanders' (1970) System of Interaction Analysis was chosen. Interaction analysis is a system for observing and coding the verbal interchange between a teacher and the students. The events are coded by using the ten categories developed by Flanders. The unique feature of Flanders' system is that it preserves the sequence in which the verbal interaction occurred.

Campbell and Barnes (1969) comment that "the Flanders' interaction analysis observational system is the most thoroughly developed. This system has isolated ...10 verbal microelements of the psychological-social level." (Campbell and Barnes, 1969, p. 587)

Ten categories make up the Flanders' System which include seven for teacher behavior, two for student talk,

and one for noting silence, confusion, or noise. The seven teacher talk categories are subdivided into two sets. Four of these categories are indicative of indirect teacher verbal behavior; three of these categories are reflective of direct teacher verbal behavior. (See Appendix C)

During the observation, the observer writes down the number of the category which identifies the verbal interaction which is taking place in the classroom every three seconds. The observation may last for as little as twenty minutes or as long as forty-five minutes. Notes may be placed in the margin next to the columns of tallies to denote any special details which may be needed to assist the observer in his analysis after the observation.

After the observation is completed, a 10 X 10 observation matrix is constructed. (See Appendix D) The tallies which are in columnar form are entered into this matrix so the teacher-pupil interaction patterns may be interpreted. Each tally is part of two behaviors. As tallies are entered into the matrix as a pair, each tally is entered as a "first" number in a pair and as a "second" number in a pair. The first number in a pair

indicates the column into which the tally will be entered - the second number, the row.

For example, if the observer had written down the following sequence of interaction: 10, 6, 6, 5, 5, 4, 8,the first pair would be 10 - 6. This pair would be entered into the matrix as a tally in row 10 in column 6. The next pair would be 6 - 6. This pair would be entered into the matrix as a tally in row 6 in column 6. This process would continue until all tallies have been entered into the matrix. To insure that all tallies have been entered the correct number of times, the observer should place a 10 (silence) at the beginning and at the end of each observation.

One of the first steps in analyzing a matrix is to transform the number of tallies for each column into percentages. For example, if there were forty tallies in column 6, and if there were a total of 800 tallies for the entire matrix, by dividing 800 into 40, one would observe that 5 percent of the general talk in the classroom was spent by the teacher giving directions. In terms of analyzing teacher talk, if the total number of tallies in columns 1 through 7 were 600, one would divide 40 by 600 to discover that 6.67 percent of the teacher talk was spent in giving directions.

By using various combinations of total tallies in various columns, a matrix will, to the skillful interpreter, show the amount and quality of different kinds of interaction in a classroom. These combinations are the eleven Interaction Analysis Ratios as developed by Flanders (1970).

1. Teacher Talk (TT) - percentage of time the teacher spends talking during a lesson.

2. Student Talk (ST) - percentage of time the students spend talking during a lesson.

3. Silence/Confusion (SC) - percentage of time during which there is no discernible flow of communication.

4. Teacher Response Ratio (TRR) - index which corresponds to the teacher's tendency to react to the ideas and feelings of pupils.

This ratio is found by adding category frequencies in columns 1 + 2 + 3, multiplying by 100, and dividing by the sum of columns 1 + 2 + 3 + 6 + 7.

5. Teacher Question Ratio (TQR) - index representing a tendency of a teacher to use questions when guiding the more content-oriented part of the class discussion. This ratio is calculated by multiplying the sum of tallies in column 4 by 100 and dividing this number by the sum of columns 4 and 5.

6. Instantaneous Teacher Response Ratio (TRR89) - tendency of the teacher to praise and integrate pupil ideas and feeling into the class discussion at the moment the pupil stops talking. This ratio is calculated by adding cell frequencies in rows

8 and 9, columns 1, 2, and 3, multiplying by 100, and dividing the product by the total frequencies in the cells of rows 8 and 9, columns 1, 2, 3, 6, and 7.

7. Instantaneous Teacher Question Ratio (TQR89) - tendency of the teacher to respond to pupil talk with questions based on his own ideas, compared to the tendency to lecture. This ratio is calculated by adding the frequencies in cells (8-4) + (9-4), multiplying by 100, and dividing by the total tallies in the four cells (8-4) + (8-5) + (9-4) + (9-5).

8. Pupil Initiation Ratio (PIR) - indicates what proportion of pupil talk was judged by the observer to be an act of initiation. This ratio is calculated by multiplying the tallies in column 9 by 100 and dividing by the sum of all pupil talk.

9. Content Cross Ratio (CCR) - This ratio is calculated by determining the percent of all tallies that lie within the columns and rows of Categories 4 and 5. This ratio isolates those teacher statements which are least likely to be involved with certain process problems which every teacher must solve. A high CCR indicates the main focus of the class discussion was on the subject matter, the teacher took an active role in the discussion, and attention to motivation and discipline problems was at a minimum.

10. Steady State Ratio (SSR) - reflects the tendency of the teacher and pupil talk to remain in the same category for periods longer than three seconds. The higher this ratio, the less rapid is the interchange between the teacher and the pupils, on the average.

11. Pupil Steady State Ratio (PSSR) - more sensitive index to the rapidity of the teacher-pupil interchange when pupil talk is average. This ratio is calculated by adding frequencies in the (8-9) and (9-9) cells, multiplying by 100, and dividing by all pupil talk tallies. (Flanders, 1970)

Selection of the Sample

Forty teachers in the Kearsley Community High School, Flint, Michigan, were given the Personal Beliefs Inventory and the Teacher Practices Inventory in December, 1971.

A score was computed for each inventory for each teacher; the two scores for each teacher were combined to form a composite score for each teacher. The teachers were placed in rank order according to the composite scores. As Table 1 indicates, the scores for the teachers tested ranged from a high score of 188 to a low score of 87 for the Personal Beliefs Inventory, out of a possible range of 240 to 40. The scores for the teachers tested ranged from a high score of 221 to a low score of 91 for

TABLE 1

PERSONAL BELIEFS INVENTORY SCORES, TEACHER PRACTICES INVENTORY SCORES, AND COMPOSITE SCORE FOR FORTY TEACHERS FROM WHICH SAMPLE SELECTED

TEACGER CODE	PERSONAL BELIEFS INVENTORY SCORE	TEACHER PRACTICES INVENTORY SCORE	COMPOSITE SCORE
A	177	218	395
B	188	195	383
C	160	221	381
D	162	213	375
E	172	193	365
F	161	199	360
G	164	193	357
H	163	189	352
I	166	182	348
J	159	188	347
K	143	198	341
L	154	181	335
M	151	184	335
N	143	186	329
O	161	156	317
P	144	173	317
Q	142	173	315
R	130	184	314
S	147	162	309
T	144	164	308
U	142	165	307
V	133	173	306
W	143	162	305
X	146	158	304
Y	150	154	304
Z	108	196	304

TABLE 1 (Continued)

TEACHER CODE	PERSONAL BELIEFS INVENTORY SCORE	TEACHER PRACTICES INVENTORY SCORE	COMPOSITE SCORE
AA	150	151	301
BB	143	156	299
CC	146	152	298
DD	146	148	294
EE	132	158	290
FF	138	144	282
GG	113	169	282
HH	129	150	279
II	134	141	275
JJ	134	141	275
KK	129	143	272
LL	136	130	266
MM	166	91	257
NN	87	146	233

the Teacher Practices Inventory, compared to a possible range of 240 to 40. The composite scores, the scores by which the teachers were ranked, ranged from a high score of 395 to a low score of 233, compared to a possible range of 480 to 80.

Upon inspection of Table 1, it can be observed that the Personal Beliefs Inventory score and the Teacher Practices Inventory score for each teacher are not identical. Theoretically, these scores should be the same. However, when these inventories are used in practice, there may be a discrepancy between the two scores. To determine whether the differences between the two scores were significant, correlation coefficients were computed for the inventories and the inventories and the composite score. (See Table 2)

The correlation coefficient for the Personal Beliefs Inventory and the Teacher Practices Inventory was .3569 which is significant beyond the .05 level of significance. The correlation coefficient for the Personal Beliefs Inventory and the composite score was .7553 which is significant beyond the .01 level of significance; the correlation coefficient for the Teacher Practices Inventory and the composite score was .8818 which is significant beyond the .01 level of significance.

TABLE 2

CORRELATIONS AMONG PERSONAL BELIEFS INVENTORY, TEACHER PRACTICES INVENTORY AND COMPOSITE SCORES OF BOTH INVENTORIES FOR ALL TEACHERS SURVEYED

PERSONAL BELIEFS INVENTORY	1.0000		
TEACHER PRACTICES INVENTORY	.3569	1.0000	
COMPOSITE SCORE	.7553	.8818	1.0000
	PERSONAL BELIEFS INVENTORY	TEACHER PRACTICES INVENTORY	COMPOSITE SCORE

N = 40 DF = 38 R at .0500 level = .3120

R at .0100 level = .4026

It is concluded that there are no statistically significant differences between the inventories' scores and between the inventories and composite scores.

From the forty teachers who originally completed the two inventories, ten teachers were selected from the thirteen teachers whose composite scores were low, indicating a low agreement with Experimentalism, as measured by Brown's (1968) instruments. Teachers MM and NN were eliminated from the sample as they were not regular classroom teachers; they were involved in special services.

Teacher FF, after completing the inventories, declined to participate further in the study. Therefore, the group low in agreement with John Dewey's Experimentalism, as measured by Brown's (1968) instruments, had composite scores ranging from 266 to 299.

Ten teachers from the twelve teachers whose composite scores were high, indicating a high agreement with Experimentalism, as measured by Brown's (1968) instruments, were selected as the high agreement group. Teacher G and teacher I were eliminated from the study as they were not regular classroom teachers; they were involved in special services. Therefore, the group high in agreement with John Dewey's Experimentalism, as measured by Brown's (1968) instruments, had composite scores which ranged from 395 to 335. (See Table 3)

These twenty teachers were observed. Flanders' (1970) Interaction Analysis was the system used in recording the nature of interaction in their classrooms.

The Personal Beliefs Inventory scores, Teacher Practices Inventory scores, and the composite scores for the ten teachers who were in high agreement with Experimentalism and for the ten teachers low in agreement

TABLE 3

PERSONAL BELIEFS INVENTORY SCORES AND TEACHER PRACTICES INVENTORY SCORES OF TEACHERS OBSERVED

TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM	PERSONAL BELIEFS INVENTORY SCORE	TEACHER PRACTICES INVENTORY SCORE	COMPOSITE SCORE
A	177	218	395
B	188	195	383
C	160	221	381
D	162	213	375
E	172	193	365
F	161	199	360
H	163	189	352
J	159	188	347
K	143	198	341
L	154	181	335

TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM	PERSONAL BELIEFS INVENTORY SCORE	TEACHER PRACTICES INVENTORY SCORE	COMPOSITE SCORE
BB	143	156	299
CC	146	152	298
DD	146	148	294
EE	132	158	290
GG	113	169	282
HH	129	150	279
II	134	141	275
JJ	134	141	275
KK	129	143	272
LL	136	130	266

with Experimentalism were treated statistically to determine whether the two groups were significantly different statistically. (See Table 4)

The results of the analysis of the Personal Beliefs Inventory are that the high agreement group and the low agreement group are significantly different beyond the .0001 level of significance. The variance within the groups is not significant.

An analysis of the Teacher Practices Inventory shows that the high agreement group and the low agreement group are significantly different beyond the .0001 level of significance. The variance within the groups is not significantly different.

When the composite scores for the high agreement group and the low agreement group were treated statistically, the results show that the groups are significantly different beyond the .0001 level of significance. The variance within the groups is not significant.

It may be concluded that the high agreement group and the low agreement group are statistically significantly different, and the variance within the groups is not significant.

TABLE 4

ANALYSIS OF PERSONAL BELIEF INVENTORY AND TEACHER PRACTICES INVENTORY BETWEEN THE TWO GROUPS OF TEACHERS

VARIABLE		HIGH AGREEMENT WITH EXPERIMENTALISM TEACHERS	LOW AGREEMENT WITH EXPERIMENTALISM TEACHERS	TEST STATISTIC	DEGREES OF FREEDOM	SIGNIFICANCE LEVEL
PERSONAL BELIEFS INVENTORY	Mean	163.90	134.20	T=5.9105	18	.0000
	Var.	156.10	96.40	F=1.6193	9, 9	.0618
	Size	10	10			
TEACHER PRACTICES INVENTORY	Mean	199.50	148.80	T=9.2529	18	.0000
	Var.	181.83	118.40	F=1.5358	9, 9	.2420
	Size	10	10			
COMPOSITE SCORE OF BOTH INVENTORIES	Mean	363.40	283.00	T=11.062	18	.0000
	Var.	394.27	134.00	F= 2.9423	9, 9	.0618
	Size	10	10			

Observation of Sample Using Interaction Analysis

The ten teachers high in agreement with Experimentalism and the ten teachers low in agreement with Experimentalism were observed individually in their classrooms three times for an average of twenty-five minutes per observation using Flanders' (1970) System of Interaction Analysis. After each observation, a 10 X 10 observation matrix was constructed for each teacher. After three separate matrices were constructed, they were collapsed into a composite matrix for each teacher. From this composite matrix, the eleven Interaction Analysis Ratios (Flanders, 1970) were computed.

Analysis of the Data

The eleven Interaction Analysis Ratios and their norms have been established by Flanders (1970) through his work with Interaction Analysis. A descriptive analysis of the ratios was completed by computing the percentages of time each teacher spent in the specific ratios and by comparing them to the norms. (See Tables 5 and 6 in Chapter III) Following a descriptive analysis, the ratios were treated statistically. (See Table 7 in Chapter III)

Consultation for coding the raw data, key punching cards, and computer analysis was obtained from the Statistical Laboratory in the Rackham School of Graduate Studies.

The MIDAS version of the CONSTANT program, computed on The University of Michigan Terminal System, was used to treat the results of the Personal Beliefs Inventory, Teacher Practices Inventory, composite scores, and the Interaction Analysis Ratios.

The Personal Beliefs Inventory scores, the Teacher Practices Inventory scores, and the composite scores were submitted to the computer with the command CORR which results in the correlation coefficients among the three sets of scores. A coefficient of correlation is a single number that tells to what extent two things are related, i. e., to what extent do variations in the one go with variations in the other. In different situations, it can vary from a value of +1.00, which means perfect positive correlation, through zero, which means complete independence or no correlations whatever, on down to -1.00, which means perfect negative correlation. (Guilford, 1956)

The Personal Beliefs Inventory scores, the Teacher Practices Inventory scores, the composite scores, and the eleven Interaction Analysis Ratios were submitted to the computer with the command STUD which yields the mean, variance, t-test, F-test, size of groups, degrees of freedom, probability of the first mean being greater than, or less than, the second mean, and the level of significance. Two of the test statistics are important to the analysis of the data; these are the t-ratio and F-ratio. Also computed is a Bayesian posterior probability that the population groups are ordered in the same way as the sample means. It is derived from an approximation to the Behrens-Fisher distribution. A high probability gives strong evidence that the group means differ. It is derived assuming normal but not equal variances.

Variances for the group in high agreement with Experimentalism and the group low in agreement with Experimentalism were computed for each score and ratio. The application of the F-test tested whether or not two variances could probably have arisen by random sampling from the same population of observations or from two populations with the same variance. When the F-ratio is not significant, as determined by the F-table, the hypothesis that the two population variances are equal is not rejected. When the F-ratio is significant, however, it

can be assumed that the difference in group variances is caused by a difference in the population variances.

Means for the group in high agreement and the group in low agreement were computed for each score and ratio. With the application of Student's t-test, a t-ratio resulted. By this approach, it can be tested whether or not the difference between the means for the two groups is due to random sampling or some other intervening variable as described in the hypothesis. When the t-ratio is significant, as determined by the t-table, it can be assumed that the difference between the two groups is probably due to a difference in population means. One cannot prove the truth of the null hypothesis; only its improbability can be demonstrated. (Guilford, 1956)

CHAPTER II

REVIEW OF RELATED RESEARCH AND SELECTED LITERATURE

This chapter presents the chronological review of research studies which have been conducted, quantifying and qualifying the verbal interaction in a classroom between a teacher and the students and the relationship of the interaction to student attitude and achievement. The latter part of the selected review of the literature addresses the following questions: (1) what implications does philosophy hold for educational practices? and (2) what is the connection between philosophy and these educational practices which seem to be consistent with the basic philosophy professed?

TEACHER INFLUENCE IN THE CLASSROOM

One of the major concerns in educational systems is teacher effectiveness. A basic assumption which underlies this study of whether a significant relationship exists between a teacher's verbal interaction

in the classroom and the teacher's personal philosophical beliefs and educational beliefs in Experimentalism is that the verbal interaction in a classroom can be quantified and qualified.

Domination and Integration

Anderson (1939) is one of the early researchers who, in terms of dominative and integrative behavior, developed measures for recording the contacts which teachers have with children. He used three kindergarten groups taught by three teachers in two schools. Reliability coefficients were established by data from seventy-three pairs of consecutive and simultaneous records of five minutes each by two independent observers. The observers showed high agreement in defining a contact, in recording the total number of contacts, and in recording contacts in each five minute period. However, they were more reliable in observing dominative contacts than integrative contacts.

The number of contacts per hour was computed for contacts with individual children and contacts with the group. In individual contacts, teachers A and C each had twice as many dominative as integrative contacts, and teacher B had five times as many dominative as integrative

contacts. In group contacts, the ratios were higher, all being over five to one for domination.

Further research by Anderson and his colleagues (1945, 1946) cites that the dominative and integrative contacts of the teacher set a pattern of behavior that spreads throughout the classroom. The summary of this research indicates there are mainly two types of teacher contacts, domination and integration; a teacher who has a high proportion of integrative contacts has pupils who show more spontaneity and initiative, voluntary social contributions, and acts of problem solving. When a teacher has a high proportion of dominative contacts, the pupils are more easily distracted from school work and show more compliance to, as well as rejection of, teacher domination.

Leaders have an effect on the group with which they work. The study of Lewin, Lippitt, and White (1939) investigated the relationship of three different roles of leader behavior on children's groups. They established the leadership roles as autocratic, democratic, and laissez-faire.

In their first experiment, a significant amount of aggression and hostility which was directed toward certain scapegoats was observed when the leaders were absent from the group in the autocratic leadership experiment. In a second experiment, the boys in four out of five autocracies showed an extremely nonaggressive and apathetic pattern of behavior. The group was most productive under democratic leadership, least productive in the anarchistic situation which was characterized by disorganization and inefficiency. Other results accrued from these experiments, but the relationship of dominative behavior on the part of the autocratic leaders has definite implications for the behavior of teachers.

Cogan's (1956) study assessed student perception of the teacher, how often the student did required homework, and how often he did extra, nonrequired homework. The first of the three scales used in Cogan's instrument assessed the traits in the teacher which are descriptive of the dominative and integrative behavior patterns. Cogan used Murray's list of major personality needs. The traits are grouped in preclusive, inclusive, and conjunctive behavior patterns. Upon inspection, however, these terms correspond to the terms used by Anderson, Flanders, and Lewin, Lippitt, and White.

The results of Cogan's study show that a student could differentiate with Cogan's instrument between the behavior of different teachers. Students also reported doing more assigned and extra schoolwork when they perceived the teacher's behavior as falling in the integrative pattern rather than the dominative pattern.

Interaction Analysis

Flanders' research asserts that a teacher's verbal behavior can be assessed and pupil attitudes and achievement are significantly higher when a teacher uses indirect influence.

Interaction Analysis and Student Attitude - In 1955-1956, Flanders conducted a research project in Minnesota where he observed nine seventh grade English-social studies core classes. In addition to using interaction analysis to determine the kind of verbal interaction in the classroom, he tested the students' attitudes toward their teachers and schoolwork.

In 1957, Flanders (1965) observed ten classes in elementary schools in New Zealand to ascertain whether there were significant differences in the nature of the

verbal interaction of a teacher in the classroom and the attitudes of the students toward their teachers and schoolwork.

The results of these two research projects are succinctly stated by Flanders as follows:

> The same results were found in Minnesota and New Zealand, some 8,000 miles apart, in spite of differences in teaching style and pupil expectations. The teachers of classes that scored high on liking the teacher, motivation, fair rewards and punishments, lack of anxiety, and independence used more indirect influence. In New Zealand, but not in Minnesota, teachers in classrooms that scored low used more direct influence, yet, in both countries teachers in classrooms that scored high used more indirect influence. The greater use of indirect influence meant asking more questions, clarifying and using pupil ideas, and giving praise.
>
> The interaction data showed that more than one-half of the statements were concerned with subject matter. It is clear that the main business in the classrooms studies was learning subject matter. Yet, eight percent more indirect influence and twelve percent more direct influence (in New Zealand) distinguished the teachers of the high-and-low scoring classes. An analysis of interaction matrices

> showed that these relatively small differences in the influence patterns occurred at strategic moments in classroom communication. (Flanders, 1970, p. 392)

Flanders further asserts that indirect influence, however small the amount, is significantly related to the positive attitudes of students.

Interaction Analysis and Student Achievement - In 1959-1960, Flanders conducted another research project in Minnesota which involved sixteen eighth grade mathematics teachers and fifteen seventh grade English-social studies core teachers. The students were given a pre-test of achievement, as well as an attitude survey. It was at this point that Flanders began using Interaction Analysis to research the relationship between a teacher's verbal interaction in the classroom and student achievement.

Flanders describes this study as follows:

> In both mathematics and social studies classes, the adjusted achievement of the top group (those whose teachers were more responsive), was significantly higher than the other group. The same significant differences also occurred when average class

> scores on positive pupil attitude were compared. Put most simply, in those classrooms in which the teacher responded to pupil ideas more often, the pupils appeared to be learning more and liking the learning activities better. (Flanders, 1970, p. 328)

Nelson (1966) observed six and seven year old students in the University Elementary School at the University of California at Los Angeles during the 1960-1961 school year to determine whether or not a teacher modifies her pattern of influence with the ongoing pupil interaction, irrespective of model teaching style. If so, what effect does variability in teaching style have on the learning outcomes with respect to language performance? The second question in her study was whether a teaching style which is predominately indirect produces higher pupil achievement than a teaching style which is largely direct.

The results of the study were that indirect influence patterns were related to superior written expression. On the Q-sort, self-selective products were judged superior more frequently and inferior less frequently than those products secured from a direct

teaching model. Gross differences in vocabulary and verbal output were significant at the .05 and .005 level of significance respectively, favoring the self-selective approach.

Furst and Amidon (1967) conducted a research project in grades one through six, including twenty-five classrooms at each grade level. There were a minimum of five observations in each of the subject areas of arithmetic, social studies, and reading at each grade level. The two questions to be answered by this study were whether differences in interaction patterns, if any, exist among the six grade levels and whether differences in interaction patterns, if any, exist among subject areas of reading, social studies, and arithmetic in the elementary grades.

The results of the study showed that interaction analysis does differentiate teachers' verbal interaction. Primary teachers seem to advocate question-answer techniques while intermediate teachers conceive lecture as most conducive to learning. Primary teachers behave as though student participation was important; they reinforce student talk more than do teachers at other levels. Primary teachers use more praise, encouragement, and

acceptance; upper grade teachers have the students involved with independent study for a large portion of the class. Both early primary and intermediate teachers show by their teaching methods that they consider extended indirect influence to be important. Teachers were more indirect in social studies than in reading and arithmetic. This study also pointed out that teachers in third grade tend to increase the amount of time spent talking and giving directions. Extended direct influence is the highest; extended indirect influence is the lowest. The teachers respond to students other than by praise and questioning.

Morrison (1966) was interested in the student trait called "internality-externality" and analyzed the data to see if students scoring high or low on this trait respond differently to indirect and direct patterns of instruction. The sample included 101 classes of which thirty sixth grade classes were observed. The classrooms were self-contained and located in Michigan. Her study indicated that students whose ideas were used more often by the teacher made greater achievement gains on the post-tests; less criticism was accompanied by greater achievement gain on the tests measuring punctuation and capitalization, language and social study skills, and problem solving.

There were no significant differences on the usage, computation, and parts of speech tests. It was also found that high praise was accompanied by greater achievement gain scores when parts of speech, punctuation and capitalization, social study skills, and problem solving (math) were measured; however, there were no significant differences on the usage, computation, and language study skills tests (all of these were sub-tests of adjusted pupil achievement).

Samph completed an unpublished analysis of the same sixth grade data which interested Morrison. He selected sixteen classes from the thirty which were observed in the project such that the I/D ratios were approximately equally spaced across the full range of indirectness. Within these classes, he identified 155 low achievers by selecting students who were two or more years below their national grade level norm on the achievement pretest. He attempted to see if indirectness was positively related to adjusted pupil achievement for the total language skill section of the test. He also investigated the relationship with positive pupil attitude.

Samph found that pupils in the more indirect classes made significantly higher gains in achievement and

had significantly higher scores on positive pupil attitudes. In a series of subtests, he presented evidence to show that such relationships were not due to the average ability level of the entire class, but to the unique contributions of particular teachers. (Flanders, 1970)

LaShier (1966) made an independent study of achievement and attitude scores among ten eighth grade classes taught by student teachers who were given help in preparing to teach an unusual unit of study. The effects of initial pupil ability were carefully controlled; a special test of achievement was developed for this unit of study. The results of this work provided statistically significant higher achievement and more positive student attitudes in those classes taught by the more indirect teachers. LaShier's cumulative matrices showed remarkable similarities to the corresponding cumulative matrices reported in a project conducted by Flanders.

Soar (1967) conducted a study of the development of vocabulary and reading skills in elementary students in relation to the climate and control existing in the classroom. The Iowa Tests of Basic Skills were administered in the Fall and Spring in fifty-six classrooms in grades three through six. The results of this study showed that indirect

teaching was related to greater growth than direct; classrooms in which there were greater expressions of hostility produced less learning than those with warmer emotional climate. The combination of indirect teaching and low hostility resulted in the greatest gain of all. Differences in emotional climate did not produce differences in reading growth nor were there differences from grade to grade; however, indirect teaching was related to greater growth than direct teaching.

Amidon and Flanders (1967) conducted a research project in Minnesota using four different groupings of eighth grade geometry students. Two groups had indirect teachers, one of which had clear goals; the other had unclear goals. Two groups had direct teachers, one of which had clear goals; the other had unclear goals.

The results of this study did not show statistically significant differences between the clear and ambiguous conditions. Differences for all students in geometry achievement were higher, however, for the indirect pattern at the .05 level of significance. When the same achievement scores were computed for students who had scored above average on a test which tested "dependent-proneness," the students who had indirect teachers had

significantly different higher achievement scores at the .01 level of significance.

Flanders (1970) reports that Powell in 1968 and Weber in 1968 published separate studies which were based on the same interaction analysis data. They observed 180 students in the third and fourth grades of a suburban school district.

The third grade students were completing their third year with the same teacher, having been assigned to this teacher for the first, second, and third grades. All of the students had a different teacher in the fourth grade. Those teachers of the third grade who were above average on a composite score of indirectness were considered to be indirect; those below average were considered to be direct. There were nine teachers involved in the third grade observations and seventeen involved in the fourth grade.

At the end of three years, Powell found a superiority for student growth in the indirect classes, most significant for the arithmetic scores, significant for composite scores, and not significant for the reading

scores. For the same period, Weber found that all three measures of verbal creativity were significantly different, indicating a superior growth for students in the indirect classes. None of the measures of figural creativity showed statistically significant differences between the indirect and the direct classrooms.

At the end of the fourth year, both researchers used an adjusted fourth year gain score which attempted to eliminate the effects of the first three years. Under these circumstances, there were no significant results to report in Powell's achievement scores. Flanders (1970) tends to discount this fourth year's design as contaminated. Weber found that verbal creativity associated with indirect influence was significant at the .01 level. Figural creativity was not significant except in one case which was significantly correlated with direct influence.

Based upon these research studies, it is assumed that interaction analysis can differentiate and quantify the verbal interaction of a teacher in a classroom. The research also has made it clear that indirect influence by teachers, as described by Flanders, results in higher student achievement and a more positive attitude in students.

PHILOSOPHY AND EDUCATION

Another basic assumption which underlies this study is that philosophy and behavior are related. This assumption may be accepted a priori. Indirectly, this study addresses itself to the following questions: (1) what implications does philosophy hold for educational practices? and (2) what is the connection between philosophy and these educational practices which seem to be consistent with the basic philosophy professed? There appears to be great controversy as to the answers to these questions.

Philosophy and Educational Practices

Reid (1962) states that philosophy should not be reserved for a selected few; it is needed as a guide for the ordinary man in his everyday life. Due to the increase in technology and the accompanying scientific knowledge, life may be void of meaning and purpose and ought to have direction and integration. He asserts that the philosopher is the one person who can fill this

void. He defines "philosophy of education in the most general sense (as) the application of philosophy and the methods of philosophy to problems of education." (Reid, 1962, p. 17)

Kilpatrick (1942) sees a philosophy of education stemming from a foundation of general philosophy and existing to help education accomplish its goals and operate itself better than it would otherwise. Philosophy of education would assume the roles of critic of the assumptions, clarifier of educational aims, and evaluator of educational methods.

The Philosophy of Education Society (1962) in their statement, "The Distinctive Nature of the Discipline of the Philosophy of Education," asserts the following:

> The criteria guiding educational choices and policies may be consistent with the theories and concepts of one philosophical position (e.g., idealism, realism, or experimentalism), or with some combination from the alternative positions. Therefore, in order that educational choices and

> policies be philosophically critical they must be made in view of the delineation and examination of alternative philosophical criteria: and anyone, thus oriented, is working within an area that is included in the subject matter of the discipline of the philosophy of education. (Philosophy of Education Society, 1962, p. 20)

Broudy (1955) in his article, "How Philosophical Can Philosophy of Education Be?" contends that a philosophy of education usually consists of a few general statements of the good life and what, in the light of the educators' or philosophers' preferences and experiences, the schools should be doing. He further asserts the following:

> Philosophical points of view may imply much or little for education. Unless a view is fairly explicit about its value theory and incorporates it into some sort of philosophical anthropology, it is rather difficult to derive educational principles and practices from it. Dewey's Instrumentalism comes off best in this type of derivation because Dewey's activistic theory of knowing is at the same time a theory of learning, reflective thinking, ethical thought and democratic process. (Broudy, 1955, pp. 617-618)

Kandel (1956) points out in reference to Broudy's article that a significant contribution can be made by general philosophy to philosophy of education by "determining the nature of ends, content, and methods; in defining the meaning of and place of knowledge and learning; in exploring the nature of values and the values to be aimed at." (Kandel, 1956, p. 135)

Philosophy and Implications for Education

Sidney Hook (1956) contends that it is a "great deal of nonsense" when one claims that metaphysical or epistemological position has logical implications for education theory and practice. Any two philosophers who share the same philosophical position may have great disagreement as to the specific educational techniques and objectives to be employed. He continues that it is apparent that the philosophy of education is concerned with questions of value, with issues of ethics and social philosophy. The philosophy of education is inquiry into the attitudes and dispositions

which formal schooling should aim to develop in students. This inquiry does not depend on metaphysics or epistemology. "No ethical statement can be deduced from a metaphysical one except where we are dealing with disguised value judgments in the form of metaphysical expressions." (Hook, 1956, pp. 145-146)

Phenix (1958) has some different ideas; according to him, general philosophy has a definite role in the area of education. He sees the role as one that involves the organization, interpretation, clarification and criticism of what is already within the realm of the known and the experienced. He states as follows:

> Briefly, philosophy of education is the application of philosophic method and outlook to the area of experience called education. It includes such things as the search for concepts which will coordinate various aspects of education in a comprehensive scheme, the clarification of meanings in educational terminology, the exhibiting of basic premises or assumptions upon which statements about education rest, and the development of categories which relate education to other areas of human concern. (Phenix, 1958, p. 14)

Joe R. Burnett (1967) presents a view that one can utilize formal philosophy in order to derive logical implications for educational theory and practice if this is done by conceiving "logical implications" in a manner which he terms "situational." Central to his "situational" view is the problem of connection. He lists six conditions for making connections with a general philosophic theory in order that effectiveness in applying the theory is increased. However, he hastens to add the following:

> Finally, no claim has been made herein as to the usefulness of implications derived from metaphysics (say) for educational theory or practice. The claim is merely that the situational approach does allow logical implications to be made in a manner which is perfectly defensible. (Burnett, 1967, p. 34)

This problem of connection between philosophy and educational practices is cited by Edel (1956) in his article, "What Should be the Aims and Content of a Philosophy of Education?" He states as follows:

> One reason why there can be no definitive description of the

> philosophy of education is that there cannot be a definitive description of philosophy. Philosophers disagree about the nature and tasks of philosophy because philosophizing is a highly refined act of consciousness because the nature of consciousness and its relation to reality is part of what is philosophy is therefore in part a function of the philosophical results which themselves vary. (Edel, 1956, p. 126)

The problem of logical implication and the connection between general philosophy and the direct implications it has for educational practices are treated in depth in 1962 by Hobert W. Burns' article, "The Logic of the 'Educational Implication'." He discusses the logical or strict implication between formal philosophy and educational practice, the lay implication to which Burnett referred, as impossible to deduce specific directions for educational practices from metaphysical, epistemological, or axiological premises.

Burns asserts "that the connection between formal philosophy and educational practice is not adequately

explained or formalized by the synthetic or empirical connective designated by the 'term material implication'." (Burns, 1967, p. 35) He contends that if there is a connection between formal philosophy and educational practice, it may be explained by a psychological connection, pragmatic implication.

> The necessity of this type of "implication" is psychological, not logical (although it is consistent), not material (although it is factual); the consistency is measured not in terms of formal, sentential rules of inference, by pragmatically--in terms of human behavior, in terms of means-ending. (Burns, 1967, p. 42)

He states that in this usage, the meaning of "educational implication" is that particular practices are presupposed by particular philosophic beliefs about the nature of education or man; if not, the practices would be meaningless and irrational.

> To say, then, that philosophy implies educational practices is to say that an educator follows some set of educational procedures because he believes certain things about the universe and man; if he believed other things then, to be psychologically consistent, he would follow

> other practices. Perhaps this type of connection is one defensible explanation of the nature and function of the "educational implication." (Burns, 1967, p. 42)

Hirst (1966) says that there is no direct connection between formal philosophy and educational practices because the questions and answers are too complex. When seeking answers to educational questions, social and psychological developments must be considered as well as philosophy. Educational principles cannot be formally deduced from philosophical beliefs.

> To this domain, which I shall refer to as educational theory, philosophical beliefs make their own distinctive contribution along side social theory, psychological theory and so on. The traditional view that there is a direct connection between philosophy and educational practice either totally ignores, or heavily underestimates, the significance of educational theory in this sense. It fails to recognize the important truth that unless philosophical beliefs are to influence educational practice in a distorting manner, they must influence it indirectly through the medium of educational theory where they are considered conjointly with many other elements before any particular principles for educational practice are explicitly formulated. (Hirst, 1966, p. 80)

He further states that educational theory must be built so as to be consistent with some set of philosophical and other beliefs. However, there is no logically necessary relationship between the beliefs and theory-practices. He contends the following:

> There is indeed a pressing need for the development of philosophically informed educational principles but these can only be achieved if those engaged in the work and teaching of philosophy of education direct their attention to philosophical questions that arise from specific educational issues. (Hirst, 1966, p. 95)

Philosophy as a General Theory of Education

Dewey (1962) says that "philosophy may be defined as the general theory of education; the theory of which education is the corresponding art or practice." (Dewey, 1962, p. 22) He points out that men's interests manifest their dispositions; these dispositions are formed by education. There must be a general idea of the value and relations of these interests if there is to be any orderly process to forming these dispositions that are realization of the interests.

In Democracy and Education, Dewey (1916) asserts the following:

> Unless a philosophy is to remain symbolic--or verbal--or a sentimental indulgence for a few, or else mere arbitrary dogma, its auditing of past experience and its program of values must take effect in conduct. Public agitation, propaganda, legislative and administrative action are effective in producing the change of disposition which a philosophy indicates as desirable, but only in the degree in which they are educative--that is to say, in the degree in which they modify mental and moral attitudes. (Dewey, 1916, p. 328)

Broudy (1955) comments that ". . .they (Dewey and others) took their departure from educational problems and tried to solve them by constructing an educational theory--more or less adequately grounded in philosophy." He further states that "Dewey's Instrumentalism comes off best in this type of derivation (educational principles from a philosophical position) because Dewey's activistic theory of knowing is at the same time a theory of learning, reflective thinking, ethical thought, and democratic process." (Broudy, 1955, pp. 617-618)

Brown (1968) comments on this situation when he talks about the unnatural split between theory and practice, the discrepancy between what teachers say they know and believe in theory, and how they teach, or fail to teach, in practice.

Virtue (1962) asserts the following:

> The total life work of John Dewey thus illustrates the thesis that general philosophy is basic to the philosophy of education. Concepts originating in analysis of the learning situation are adequately defined, illuminated, and criticized only in the more general disciplines of epistemology, ethics, and metaphysics. The philosophy of education may be the actual starting point for a general philosophy, and may contribute distinctive ideas to that general philosophy, but these ideas are validated by their ability to be coordinated with more general aesthetic, ethical, epistemological, and metaphysical principles. (Virtue, 1962, p. 38)

It is reasonable to contend that there is some connection between philosophy and education; however, another question arises. Which comes first, the philosophy followed by certain behaviors or certain behaviors which form a philosophy? Virtue (1962) points out that

professional philosophers disagree as to what actually came first chronologically in Dewey's thought--his educational ideas or his general Experimentalist principles.

Hook (1956) criticizes those who assert that progressive education is specifically related to the experimental philosophy of Dewey. He states as follows:

> This misapprehension is very widespread and accounts for the fanatical and hasty criticism of modern or progressive education, not on the grounds of empirical evidence, drawn from concrete educational experience, but on the grounds of antecedent opposition to Dewey's naturalism and his theory of meaning, truth, and experience. (Hook, 1956, p. 147)

He also contends that there is considerable evidence that Dewey gained his educational insights before he professed his characteristic philosophical views. It is not the purpose of this study, however, to become involved with the proverbial argument of which comes first, the chicken or the egg. It is assumed in this study that a teacher enters the classroom with philosophical and educational beliefs which have a relationship to the verbal interaction of that teacher with his

students.

Brown (1968) asserts that a teacher's beliefs may give direction to his classroom practices, or his beliefs may be drawn from his experience. These beliefs may be developed to justify what the teacher is doing in the classroom. "Believing may lead behavior, or follow it." (Brown, 1968, p. 26)

Butler (1968) points out that "in all of the connections between philosophy and education the certainty of transfer is by no means assured." (Butler, 1968, p. 12) This study is concerned with whether or not there is any consistency in that transfer.

Brown (1968) contends that teachers, like everyone else, can behave only in terms of what seems to them to be so. Their classroom practices are related to their beliefs. What teachers believe and do about educational problems in the classroom depends about people, reality, and knowledge. "Such beliefs are called a person's philosophic point of view or frame of mind. What each teacher believes about such questions in theory makes a difference in how he teaches in practice." (Brown, 1968, p. 2)

A significant relationship among a teacher's personal philosophical beliefs, educational philosophical beliefs, and the behavior of the teacher in the classroom was found in a study conducted by Brown. (1968) He developed the Personal Beliefs Inventory and the Teacher Practices Inventory which were discussed in Chapter I. In addition to these inventories, the third part of the Experimentalism ("X") Scale was the Teacher Practices Observation Record. This study is replacing Brown's classroom observation instrument, the Teacher Practices Observation Record, with Flanders' classroom observation instrument, Interaction Analysis.

In the previous discourse, efforts were made to demonstrate that there is a consistency between philosophy and educational practices; however, what the connection is stimulates debate. This study is not concerned with what type of connection exists between philosophy and educational practices; there appears to be an agreement that some type of connection should exist. This study is investigating whether a consistency among a teacher's personal philosophical beliefs, educational beliefs, and classroom verbal interaction does exist as measured by Brown's and Flanders' instruments.

SUMMARY

The verbal interaction of a teacher in a classroom can be quantified and qualified. The basic research clearly shows that indirect influence as defined by Flanders (1970) is significantly correlated with higher student achievement and positive student attitude.

The connection between philosophy and its implications for educational practices is in dispute. It is agreed, however, that there is some connection, or consistency between them. It is further agreed that philosophy does not logically imply educational practices, but with psychological and social developments, philosophy does have a role in guiding educational practices. Hirst (1966), Burns (1967), and Brown (1968) particularly support this idea. This study investigates whether this rational consistency, which should exist between beliefs and practices, does or does not, in fact, exist as measured by Brown's and Flanders' instruments.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

The data and analysis of the data collected according to the procedures set forth in Chapter I are presented to test the null hypothesis.

Based upon the assumption that one's philosophy does affect his behavior, and the contention that a teacher who is in high agreement with Experimentalism is likely to behave indirectly in his verbal interaction with students, and a teacher who is in low agreement with Experimentalism is likely to behave directly in his verbal interaction, the following null hypothesis is set forth.

There is no significant relationship between a teacher's verbal interaction with students in a secondary public school classroom and that teacher's personal philosophical beliefs and educational philosophical beliefs in Experimentalism.

ANALYSIS OF INTERACTION
ANALYSIS RATIOS

Flanders' (1970) eleven Interaction Analysis Ratios were computed for each teacher in this study. The eleven ratios were treated descriptively (See Table 5 and Table 6) comparing the percentages with the norms which have been established by Flanders. These ratios were treated statistically as outlined in the procedures in Chapter I. The following data are presented to test the null hypothesis. (See Table 7)

1. Teacher Talk (TT) - This is the percentage of time the teacher spends talking during a lesson. The percentages computed in this ratio indicate that all teachers, except teacher B and teacher J, in the high agreement group are well below the norm which is 68.0 percent. Teachers B and J are below the norm; however, they approached it with 61.1 and 57.6 percentages, respectively. The percentages in the low agreement group approached or are above the norm. The lowest percentage was 52.2 with teacher EE; teachers CC, II, and LL exceed the norm with percentages 76.1, 69.0, and 73.4, respectively.

TABLE 5

SUMMARY OF INTERACTION ANALYSIS RESULTS IN PERCENTAGES FOR TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM COMPARED TO FLANDERS' NORMS

RATIOS	TT	ST	SC	TRR	TQR	TRR89	TQR89	PIR	CCR	SSR	PSSR
FLANDERS' NORMS*	68.0	20.0	12.0	42.0	26.0	60.0	44.0	34.0	55.0	50.0	35-40
GROUP MEAN	41.5	49.3	9.3	65.3	22.2	96.2	35.6	85.5	48.0	62.0	71.0
INDIVIDUAL TEACHERS											
A	44.5	51.3	4.3	89.7	19.9	98.9	35.8	91.9	52.6	60.1	70.1
B	61.6	34.6	3.8	89.6	13.3	98.6	26.1	78.3	69.2	64.2	78.8
C	35.5	53.9	10.6	44.3	23.0	92.9	45.8	88.2	38.3	68.7	75.5
D	33.9	59.5	6.6	48.6	15.4	95.6	24.3	94.1	39.3	66.9	78.6
E	42.1	48.8	9.1	78.2	25.4	97.4	37.1	87.1	49.0	59.1	69.8
F	30.7	62.1	7.3	63.2	32.4	98.3	48.4	89.2	36.5	70.5	80.2
H	38.1	57.9	4.0	85.3	22.5	98.3	38.2	93.5	41.5	63.1	74.3
J	57.6	27.3	15.1	23.5	13.4	98.3	16.1	55.2	72.1	51.9	40.8
K	31.8	55.0	13.2	82.5	39.2	98.7	55.8	87.8	40.9	56.7	69.0
L	38.7	42.7	18.6	48.4	17.6	89.7	27.0	89.2	40.9	57.9	72.4

*Norms from Flanders, 1970, pp. 101-106.

TABLE 6

SUMMARY OF INTERACTION ANALYSIS RESULTS IN PERCENTAGES FOR TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM COMPARED TO FLANDERS' NORMS

RATIOS	TT	ST	SC	TRR	TQR	TRR89	TQR89	PIR	CCR	SSR	PSSR
FLANDERS' NORMS*	68.0	20.0	12.0	42.0	26.0	60.0	44.0	34.0	55.0	50.0	35-40
GROUP MEAN	63.9	21.2	14.9	22.7	13.9	83.1	22.4	48.8	73.7	56.2	37.8
INDIVIDUAL TEACHERS											
BB	60.0	29.9	10.1	50.0	19.4	90.9	39.4	53.9	68.0	55.4	53.1
CC	76.1	11.5	12.4	37.0	12.4	84.0	22.6	28.9	85.5	64.4	29.6
DD	64.2	24.2	11.6	40.9	26.6	89.9	37.8	28.2	80.7	42.2	28.5
EE	52.2	30.3	17.6	6.9	15.7	74.6	22.2	57.8	57.8	51.4	46.4
GG	52.9	28.1	19.1	26.2	16.0	89.2	25.0	53.5	64.3	53.2	45.9
HH	66.0	14.4	19.6	25.4	20.0	80.3	28.0	18.2	77.2	52.3	22.7
II	69.0	16.4	14.6	10.0	5.0	84.4	10.2	60.9	79.7	64.9	39.5
JJ	63.8	18.0	18.2	10.3	4.3	89.4	2.8	68.2	76.5	61.9	33.2
KK	61.0	23.4	15.6	15.3	11.9	72.5	23.6	62.5	67.1	50.5	37.8
LL	73.4	16.0	10.6	5.3	7.2	75.6	12.1	56.2	80.2	66.2	41.6

*Norms from Flanders, 1970, pp. 101-106.

TABLE 7

COMPARISON OF MEAN INTERACTION ANALYSIS RATIOS FOR THE GROUPS HIGH AND LOW IN AGREEMENT WITH EXPERIMENTALISM

VARIABLE		TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM	TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM	TEST STATISTIC	DEGREES OF FREEDOM	LEVEL OF SIGNIFICANCE
TEACHER TALK	Mean	41.45	63.86	T=5.40	18	.0001
	Var.	110.72	61.23	F=1.81	9, 9	.1954
	Size	10	10			
STUDENT TALK	Mean	49.31	21.21	T=6.74	18	.0001
	Var.	127.04	46.58	F=2.73	9, 9	.0756
	Size	10	10			
SILENCE AND CONFUSION	Mean	9.26	14.94	T=-2.89	18	.0099
	Var.	25.74	13.06	F= 1.98	9, 9	.0162
	Size	10	10			
TEACHER RESPONSE RATIO	Mean	65.33	22.73	T=4.82	18	.0001
	Var.	533.92	246.97	F=2.16	9, 9	.1331
	Size	10	10			
TEACHER QUESTION RATIO	Mean	22.21	13.85	T=2.40	18	.0274
	Var.	70.37	50.99	F=1.38	9, 9	.3195
	Size	10	10			
INSTANTANEOUS TEACHER RESPONSE RATIO	Mean	96.17	83.08	T=5.41	18	.0001
	Var.	10.16	48.35	F=4.76	9, 9	.0147
	Size	10	10	Prob (1st mean > 2nd in sample)		.9999

TABLE 7 (Continued)

VARIABLE		TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM	TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM	TEST STATISTIC	DEGREES OF FREEDOM	LEVEL OF SIGNIFI-CANCE
INSTANTANEOUS TEACHER QUESTION RATIO	Mean	35.56	22.37	T= 2.46	18	.0243
	Var.	153.74	133.88	F= 1.15	9, 9	.4200
	Size	10	10			
PUPIL INITIATION RATIO	Mean	85.45	48.83	T= 5.60	18	.001
	Var.	132.37	294.56	F= 2.23	9, 9	.1246
	Size	10	10			
CONTENT CROSS RATIO	Mean	48.03	73.70	T= 5.19	18	.0001
	Var.	166.39	78.20	F= 2.13	9, 9	.1380
	Size	10	10			
STEADY STATE RATIO	Mean	61.91	56.24	T= 1.84	18	.8280
	Var.	34.01	61.31	F= 1.80	9, 9	.1965
	Size	10	10			
PUPIL STEADY STATE RATIO	Mean	70.95	37.83	T= 7.12	18	.0001
	Var.	128.29	88.21	F= 1.45	9, 9	.2929
	Size	10	10			

The t-test, computed for the TT Ratio, shows a significant difference between the two groups at the .0001 level of significance. The variance within the groups is not significant, as indicated by the F-test. The test statistics for this ratio indicate that the null hypothesis is rejected. Those teachers who were in high agreement with Experimentalism were more indirect in their verbal interaction in the classroom. The teachers who were in low agreement with Experimentalism are significantly different from the high agreement group and were more direct in their verbal interaction in the classroom. There is a consistency between a teacher's agreement with John Dewey's Experimentalism and the quality of the verbal interaction between that teacher and his students.

2. Student Talk (ST)--This is the percentage of time the students spend talking during a lesson. In this ratio, the percentages computed indicate that the student talk in classes whose teachers were in the high agreement group is well above norm, except teacher J. Teacher J had a percentage of student talk of 27.3; this percentage is above the norm, which is 20.0 per cent, but not to the degree of the other teachers in this group.

Five of the teachers in the low agreement group had percentages of student talk which are below the norm. Teachers BB, DD, EE, GG, and KK do have classes that exceed the norm, but by no more than 10.3 per cent. One may conclude by inspection that there was a greater percentage of student talk in the classes whose teachers were in the high agreement group.

The t-test, computed for the ST Ratio, confirms this conclusion. There is a significant difference between the two groups at the .0001 level of significance. The F-test indicated that the variance within the groups is not significant. The test statistics for this ratio indicate that the null hypothesis is rejected. Those teachers who were in high agreement with Experimentalism were more indirect in their verbal interaction and had significantly more student talk in their classes. There is a consistency between a teacher's verbal interaction in the classroom and the degree of agreement with Experimentalism. Those teachers who were in high agreement with Experimentalism, as measured by Brown's inventories, were more indirect and are significantly different from the group in low agreement with Experimentalism. The variation among the scores within each group may be due to normal random sampling as indicated by the F-test.

3. Silence/Confusion (SC)--This is the percentage of time during which there is no discernible flow of communication. The percentages in this ratio showed that high agreement teachers J, K, and L are above the norm with percentages of 15.1, 13.2, and 18.6, respectively. Teacher C approached the norm of 12.0 per cent with the percentage of 10.6. The other teachers in the high agreement group are below the norm. All of the teachers in the low agreement group are above the norm or approached it. Teachers BB, DD, and LL are slightly below the norm with percentages 10.1, 11.6, and 10.6, respectively.

The t-test, computed for the SC Ratio, shows that there is a significant difference between the groups at the .0099 level of significance. The F-test indicated that the variance within the groups is not significant. The test statistics for the SC Ratio indicate that the null hypothesis is rejected. Although there are variations among the scores within each group, these variances may be due to random sampling. The two groups are consistent with their professed beliefs and the quality of the verbal interaction in their classrooms. The group in high agreement with Dewey's Experimentalism is significantly different from the group in low agreement

with Experimentalism and had less silence and confusion in their classrooms. The group in low agreement with Dewey was more direct in their verbal interaction.

4. Teacher Response Ratio (TRR)--This is the index which corresponds to the teacher's tendency to react to the ideas and feelings of students. In this ratio, the percentages for the high agreement teachers are all above the norm, except teacher J who had the percentage of 23.5 for this ratio. Teachers A and B are exceptionally above the norm of 42.0 per cent on this ratio; they had percentages of 89.7 and 89.6, respectively. The teachers who were in low agreement are below norm on this ratio with the exception of teacher BB whose percentage was 50.0. Teachers EE and LL are particularly low on this ratio; their percentages were 6.9 and 5.3, respectively.

The t - test, computed for this ratio, shows a significant difference between the high agreement group and the low agreement group at the .0001 level of significance. The F-test indicated that the variance within the groups is not significant. Upon the basis of the test statistics for this ratio, the null hypothesis is rejected. The teachers who were in high agreement

with Experimentalism reacted significantly to the ideas and feelings of their students. The teachers who were in low agreement were more direct in their verbal interaction in the classroom than the high agreement group. The spread of the scores within each group was not significant and may be due to sampling error. There is a consistency between the relationship of a teacher's agreement with Dewey and the quality of verbal interaction in that teacher's classroom.

5. Teacher Question Ratio (TQR)--This index represents the tendency of a teacher to use questions when guiding the more content oriented part of the class discussion. The high agreement teachers are slightly below the norm of 26.0 per cent with the exceptions of teachers F and K who had percentages of 32.4 and 39.2, respectively. The low agreement group is also below norm with the exception of teacher DD who is slightly above norm with a percentage of 26.6.

Even though both groups are generally below the norm, a t-test, computed on this ratio, indicates a significant difference between the groups at the .0274 level of significance. An F-test showed that the

variance within the groups is not significant. The null hypothesis is rejected based upon the test statistics for this ratio. Although both groups of teachers are generally below the norm, the group in high agreement with Experimentalism is significantly more indirect in their verbal interaction than the group in low agreement. The teachers in low agreement did not tend to use questions when guiding the more content oriented part of the class discussion. The large variation among the scores within each group is not significant and may be attributed to random sampling. There is a consistency that teachers in the high agreement group are more indirect in their verbal interaction than the teachers in the low agreement group who were more direct in their verbal interaction in the classroom.

6. Instantaneous Teacher Response Ratio (TRR89)-- This index represents the tendency of the teacher to praise or integrate student ideas and feelings into the class discussion at the moment the student stops talking. The high agreement group is high above the norm which is 60.0 per cent. Teacher A had the highest percentage which was 98.9; teacher L was the lowest in that group with a percentage which was 89.7. The low

group is also well above the norm. Teacher BB had the highest percentage in that group, and teacher KK had the lowest percentage in the group. Their percentages were 90.9 and 72.5, respectively.

A t-test was computed, and a significant difference exists between the two groups at the .0001 level of significance. However, the F-test revealed that the variance within the groups is also significant at the .0147 level of significance. This result indicates that the variation among the scores within each group may be due to something more than random sampling. This F-ratio tends to take away some of the strength of the t-test. The t-test is a basis for rejecting the null hypothesis; the Bayesian posterior probability of .9999 provides the t-test with the additional strength necessary for this rejection.

7. Instantaneous Teacher Question Ratio (TQR89)-- This index represents the tendency of the teacher to respond to student talk with questions based on his own ideas, compared to his tendency to lecture. The percentages in this ratio show that teachers C, F, and K in the high agreement group are above the norm of 44.0 per cent with percentages of 45.8, 49.4, and 55.8,

respectively. The remainder of the high agreement group is below the norm with teacher J's percentage of 16.1 being the lowest. The low agreement group is all below the norm with teacher BB's percentage of 39.4 as the highest in that group and teacher JJ's percentage of 2.8 being the lowest in the group.

A t-test was performed on these percentages; the results show that the groups are significantly different at the .0243 level of significance. The F-test indicated that the variance within the groups is not significant. The test statistics for this ratio indicate that the null hypothesis is rejected. Those teachers in the group in high agreement with Experimentalism were more indirect in their verbal interaction in their classrooms than the teachers in the low agreement group. The teachers in high agreement tended to respond to student talk with questions based on their own ideas, compared to their tendency to lecture. There is a consistency between a teacher's agreement with John Dewey's Experimentalism and the quality of the verbal interaction between that teacher and his students.

8. Pupil Initiation Ratio (PIR)--This index indicates what proportion of student talk was judged by the observer to be an act of initiation. The high

agreement group is well above the norm which is 34.0 per cent. All of these teachers are at least twice as high as the norm, except teacher K who had a percentage of 55.2. The low agreement group has seven teachers who are above norm. Teachers CC and DD approached the norm with percentages of 28.9 and 28.2, respectively. Teacher HH had the lowest percentage which was 18.2.

The t-test, computed on these percentages, shows that the groups are significantly different at the .0001 level of significance. The F-test indicated that the variance within the groups is not significant. Based upon the test statistics, the null hypothesis is rejected. Although both groups are generally above the norm, the group in high agreement with Experimentalism had more student initiated talk than did those teachers in the group in low agreement. There is a consistency demonstrated by these results; teachers who were in high agreement with Dewey's Experimentalism were indirect in their verbal interaction in the classroom. Teachers who were in low agreement with Dewey's Experimentalism were direct in their verbal interaction in the classroom.

9. Content Cross Ratio (CCR)--This index isolates those teacher statements which are least likely to be involved with certain process problems which every teacher must solve. A high CCR indicates the main focus of class discussion was on subject matter, that the teacher took an active role in discussion, and attention to motivation and discipline problems was at a minimum. The CCR is a crude estimate of the content orientation of the class. Teachers B and J are above the norm of 55.0 per cent set by Flanders (1970). Their percentages were 69.2 and 72.1, respectively. The remainder of the high agreement group is below or approached the norm. This indicates that most of the teachers in the high agreement group took less of an active role in the content area of the class discussions. The low agreement group is well above the norm for the CCR with the exception of teacher EE who is slightly above the norm with a percentage of 57.8. These high percentages indicate that the teacher was active in the class discussions with a heavy emphasis on asking questions and lecturing.

The t-test which was computed on these percentages shows that the groups are significantly different at the .0001 level of significance. The F-test does not

reveal any significant difference of variance within the groups. The test statistics for this ratio indicate that the null hypothesis is rejected. The fact that the group in high agreement with Experimentalism is generally below the norm indicates that the teachers were not taking active roles in the discussion, and attention to motivation and discipline problems was at a minimum. The group in low agreement was generally high in this ratio which indicates that the teachers were direct in their verbal interaction. The variations among the percentages within the groups may be due to random sampling.

10. Steady State Ratio (SSR)--This ratio reflects the tendency of the teacher and student talk to remain in the same category for periods longer than three seconds. The lower the score, the more rapid is the interchange between the teacher and students. Both high agreement and low agreement groups have percentages near or above the norm. The norm is established at 50.0. Teacher F in the high agreement group had a percentage of 70.5, the highest percentage for both groups. Teacher DD in the low agreement group had a percentage of 42.2, the lowest percentage for both groups.

Not too surprisingly, the t-test, which was computed for this ratio, does not show a significant difference between the two groups. The F-test indicated that the variance within the groups is not significant. Based upon these test statistics, the null hypothesis is not rejected. The rate of interchange between the teacher and students was about the same for both groups.

11. Pupil Steady State Ratio (PSSR)--This is a more sensitive index of the rapidity of the teacher-student interchange when pupil talk is average. In this ratio, all of the teachers in the high agreement group are well above the norm of 35-40 per cent, except teacher J who is slightly above the norm with a percentage of 40.8. Four teachers in the low agreement group are above the norm with the highest percentage in this group, 53.1. Teachers CC, DD, and HH are below the norm with percentages 29.6, 28.5, and 22.7, respectively. The other three teachers in the low agreement group are at norm.

The t-test, computed on this ratio, indicates that the low agreement group and the high agreement group are significantly different at the .0001 level

of significance. This more sensitive measure of the rapidity of the teacher-student interchange indicates a significant difference. The F-test does not reveal a significant variance within the groups. The test statistics for this ratio indicate that the null hypothesis is rejected. The teachers who were in high agreement with Experimentalism were more indirect in their verbal interaction than those teachers who were in low agreement with Experimentalism. The rate of interchange between teacher and students was significantly higher for the group in high agreement. These results indicate that those teachers who were in high agreement were consistently indirect in their verbal interaction; teachers who were in low agreement were consistently direct in their verbal interaction.

SUMMARY OF THE RESULTS

Based upon the test statistics for ten of the eleven Interaction Analysis Ratios, the null hypothesis is rejected. The ten Interaction Analysis Ratios include Teacher Talk (TT), Student Talk (ST), Silence and Confusion (SC), Teacher Response Ratio (TRR), Teacher Question Ratio (TQR), Instantaneous Teacher Question Ratio (TQR89), Pupil Initiation Ratio (PIR),

Content Cross Ratio (CCR), and the Pupil Steady State Ratio (PSSR). The variance within the groups is significant for the Instantaneous Teacher Response Ratio (TRR89); however, the Bayesian posterior probability strengthens the significant t-ratio for the TRR89 Ratio. The Steady State Ratio (SSR) does not show a significant difference between the group in high agreement with Experimentalism and the group in low agreement with Experimentalism. Ten of the eleven Interaction Analysis Ratios demonstrate a relationship between a teacher's agreement with John Dewey's Experimentalism and the nature of the verbal interaction between that teacher and his students.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains a restatement of the problem, summarization of the procedures and findings, conclusions, and recommendations for further research.

SUMMARY

The purpose of this study was to determine whether a significant relationship exists between a teacher's verbal interaction with students in a secondary public school classroom and that teacher's philosophical beliefs and educational philosophical beliefs in John Dewey's Experimentalism.

Restatement of the Problem

If this study shows that there is a consistency between the teacher's agreement with Experimentalism, as measured by Brown's (1968) instruments, and the nature

of verbal interaction carried out in the classroom, as measured by Flanders (1970), one may ascertain the degree to which a teacher is likely to be indirect in his verbal interaction. The research on interaction analysis demonstrates that indirect verbal interaction and influence is significantly related to higher student achievement and more positive student attitudes.

Based upon the assumption that one's philosophy does affect his behavior, and the contention that a teacher in high agreement with Experimentalism is likely to behave indirectly in his verbal interaction with students, and a teacher in low agreement with Experimentalism is likely to behave directly in his verbal interaction, the following null hypothesis was tested.

There is no significant relationship between a teacher's verbal interaction with students in a secondary public school classroom and that teacher's personal philosophical beliefs and educational philosophical beliefs in Experimentalism as measured by Brown's (1968) Personal Beliefs Inventory and Teacher Practices Inventory.

Procedures

Forty Teachers in the Kearsley Community High School in Flint, Michigan answered the Personal Beliefs Inventory and the Teacher Practices Inventory (Brown, 1968). These teachers were placed in rank order according to their composite scores of both inventories. As a difference between the two inventories' scores for each teacher existed, a coefficient of correlation was computed to test to what extent the two inventories were related. It was found that the two inventories were correlated beyond the .05 level of significance. Ten teachers from the twelve highest composite scores were selected as the group in high agreement with John Dewey's Experimentalism. Ten teachers from the thirteen lowest composite scores were selected as the group in low agreement with John Dewey's Experimentalism. The Personal Beliefs Inventory scores, Teacher Practices Inventory scores, and the composite scores for the ten teachers high in agreement with Experimentalism and for the ten teachers low in agreement with Experimentalism were treated statistically to determine whether the range of scores of the two groups were significantly different statistically. It was found that the scores of the two groups were significantly different beyond the .0001 level of significance.

The twenty teachers were observed in their classrooms, utilizing Flanders' (1970) System of Interaction Analysis to record the nature of the verbal interaction in the classrooms. Each teacher was observed three times, approximately twenty-five minutes for each observation. The three observation matrices were collapsed into a composite matrix for each teacher. From this composite matrix, the eleven Interaction Analysis Ratios were computed.

These ratios were treated descriptively with the norms established by Flanders (1970). (See Tables 5 and 6 in Chapter III) The eleven Interaction Analysis Ratios also were submitted to a t-test, an F-test, and a Bayesian posterior probability test to determine whether or not there was a significant difference between the two groups. (See Table 7 in Chapter III)

The results showed that the differences in the Interaction Analysis Ratios between the two groups were significant in ten of the eleven ratios. (See Table 8)

The significant ratios were Teacher Talk (TT), Student Talk (ST), Silence and Confusion (SC), Teacher

TABLE 8

SUMMARY OF INTERACTION ANALYSIS RATIOS

INTERACTION ANALYSIS RATIO	MEAN FOR TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM	MEAN FOR TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM	t-RATIO	LEVEL OF SIGNIFICANCE
TEACHER TALK	41.45	63.86	5.40	.0001
STUDENT TALK	49.31	21.21	6.74	.0001
SILENCE AND CONFUSION	9.26	14.94	2.89	.01
TEACHER RESPONSE RATIO	65.33	22.73	4.82	.0001
TEACHER QUESTION RATIO	22.21	13.85	2.40	.03
INSTANTANEOUS TEACHER RESPONSE RATIO	96.17	83.08	5.41	.0001
INSTANTANEOUS TEACHER QUESTION RATIO	35.56	22.37	2.46	.02

TABLE 8 (Continued)

INTERACTION ANALYSIS RATIO	MEAN FOR TEACHERS IN HIGH AGREEMENT WITH EXPERIMENTALISM	MEAN FOR TEACHERS IN LOW AGREEMENT WITH EXPERIMENTALISM	t-RATIO	LEVEL OF SIGNIFI-CANCE
PUPIL INITIATION RATIO	85.45	48.83	5.60	.0001
CONTENT CROSS RATIO	48.03	73.70	-5.19	.0001
STEADY STATE RATIO	61.91	56.24	1.84	N.S.
PUPIL STEADY STATE RATIO	70.95	37.83	7.12	.0001

Response Ratio (TRR), Teacher Question Ratio (TQR), Instantaneous Teacher Response Ratio (TRR89), Instantaneous Teacher Question Ratio (TQR89), Pupil Initiation Ratio (PIR), Content Cross Ratio (CCR), and the Pupil Steady State Ratio (PSSR). The Steady State Ratio (SSR) did not show a significant difference between the group high in agreement with Experimentalism and the group low in agreement with Experimentalism. Ten of the eleven Interaction Analysis Ratios demonstrated a relationship between a teacher's agreement with John Dewey's Experimentalism and the quality of the verbal interaction between a teacher and his students.

CONCLUSIONS

Based upon the analysis of the data (See Table 8), the null hypothesis that there is no significant relationship between a teacher's verbal interaction with students in a secondary public school classroom and that teacher's personal philosophical beliefs and educational philosophical beliefs, as measured by Brown's (1968) inventories, is rejected.

Ten of the eleven Interaction Analysis Ratios were significant which demonstrate that the group high in agreement with Experimentalism and the group low in agreement with Experimentalism were significantly different in their verbal interaction. There is a consistency between a teacher's agreement with John Dewey's Experimentalism and the nature of the verbal interaction between that teacher and his students. Those teachers in high agreement, as measured by Brown's inventories, were more indirect in their verbal influence in the classroom than the group low in agreement.

One of the questions which underlies this study is whether Brown's (1968) inventories do in fact measure agreement-disagreement with Dewey's Experimentalism. The validity and reliability of the Personal Beliefs Inventory and the Teacher Practices Inventory established by Brown were assumed. Neither does this study attempt to solve the problem of "connection" or "implication" between philosophy and educational practices. It is recognized that the problem is in dispute as to the exact nature of the connection. There appears to be agreement, however, that some type of connection exists. This study assumed that some type of connection does exist and investigated

whether this rational consistency, which should exist between beliefs and practices, did or did not, in fact, exist as measured by Brown's and Flanders' instruments.

It was found that the inventories did differentiate among the faculty members; the participants in the study did have a range of agreement with Experimentalism. The correlation between the two inventories demonstrated that the teachers were significantly consistent in their responses. These results are in accord with the findings in Brown's (1968) study.

Agreement with Experimentalism and Indirect Teacher Influence

The Experimental mind sees man as an active participator in the affairs of his world. (Brown, 1968) The amount of student talk and the Pupil Steady State Ratio indicate that the teachers in high agreement with Experimentalism were consistent with this tenet. The Student Talk Ratio for this group was well above the norm and the group in low agreement. The teachers in high agreement talked less during the class, were more attentive to student ideas and feelings as indicated by the Teacher Response Ratio, and tended to continue the

discussion by asking questions as opposed to lecturing. A tendency to integrate more frequently these pupil ideas and feelings into the discussion when the students stopped talking also was evident.

Learning, to the Experimentalist, is an act of intelligent inquiry, not merely the acquisition and possession of knowledge. (Brown, 1968) The group in high agreement with Experimentalism encouraged students to take a more active part in the discussion than did the teachers low in agreement with Experimentalism. Upon inspection of the Pupil Initiation Ratio and the Pupil Steady State Ratio, one will notice that the high agreement group had percentages about two times above the norm. This situation is consistent, indicating that teachers in this group responded to student talk and did so as a contributor to the discussion, not as a lecturer disseminating information.

One ratio which was not significant was the Steady State Ratio; both groups were slightly above the norm. With the high Content Cross Ratio for the group low in agreement and the high Pupil Steady State Ratio for the group high in agreement, it is

concluded that the classes progressed at about the same pace. However, classes that had teachers high in agreement with Experimentalism had more sustained student talk during the class, and the classes who had teachers low in agreement had more lecturing during the class.

This evidence suggests that the group high in agreement with Experimentalism was consistent with their beliefs and was more indirect in their verbal interactions in the classrooms. The teachers in the high group did not monopolize the classroom climate with lecturing, asking precise questions, and expecting short precise answers. The tendency to react to the students' ideas and feeling and to incorporate these into the class discussion was evident. The group in high agreement with Dewey apparently saw knowledge as inquiry and attempted to create classroom situations that were inclined to be open and free, emphasizing participation of the students as actors as well as reactors to a greater extent than the low group.

Disagreement with Experimentalism and Direct Teacher Influence

The nonexperimentalist believes that things are to be what they are supposed to be with no variations; he tries to homogenize reality by blending and reducing reality to particles of uniform size. The nonexperimentalist believes that man is basically a passive spectator in events which he is powerless to influence. A student gains knowledge by having things impressed on his mind. (Brown, 1968) The Teacher Talk Ratio, the Content Cross Ratio, and the Student Talk Ratio indicate that the teachers low in agreement with Experimentalism were more consistent with these views than were the teachers in the high group. The teachers talk more during the classes, were less attentive to student ideas and feelings as indicated by the Teacher Response Ratio, and tended to continue the discussion by lecturing as opposed to asking questions.

The Pupil Initiation Ratio for the group in low agreement with Dewey is slightly above the norm; however, considering the Instantaneous Teacher Question Ratio, it is concluded that the teachers reacted to the questions and comments initiated by the students with further lecture. The teachers were disseminating information rather than acting as a contributor and promoting

inquiry through questions. As the Pupil Steady State Ratio is also low, it is concluded that the students' questions or comments were short and precise.

This evidence suggests that the group low in agreement with Experimentalism was consistent with their beliefs and was more direct in their verbal interaction in the classrooms than were the teachers in the high group. The teachers did monopolize the classroom climate with lecturing, asking precise questions, and expecting short precise answers. The tendency to react to the students' ideas and feelings and to incorporate these into the class discussion was not evident. One may infer that the group low in agreement with Dewey saw knowledge as something to be acquired by the student and attempted to create a classroom climate where all students were gaining this knowledge in a passive manner; the participation of the students was encouraged less than by teachers in the high group.

Summary of the Conclusions

It is concluded that the teachers in high agreement with Experimentalism, as measured by Brown's (1968)

inventories, and teachers in low agreement with Experimentalism demonstrated a consistency between their beliefs and their verbal interaction in the classroom. There is a significant relationship between a teacher's agreement with Experimentalism and the nature of that teacher's verbal interaction. A teacher in high agreement tended to utilize more indirect teacher influence than did teachers in low agreement; a teacher in low agreement tended to utilize more direct teacher influence than did teachers in high agreement.

If a school system has the opportunity to select new teachers and considers the research that indirect influence is significantly related to higher student achievement and more positive student attitudes, the personnel administrator should consider the degree to which the prospective teacher's philosophical and educational beliefs are compatible with John Dewey's Experimentalism. This study concluded that teachers in high agreement with Experimentalism, as measured by Brown's (1968) inventories, were more likely to be indirect in their verbal interaction than those teachers in low agreement.

If it is advisable to change the classroom climate, consideration should be given to the values, assumptions, and philosophy of the teacher, as well as experimenting with different methods of instruction and patterns of organization; emphasis should be placed on changing the philosophy of the teacher so as to facilitate the desired classroom behavioral change. This study is consistent with this recommendation, as it was ascertained that a teacher's agreement or disagreement with Experimentalism was consistent with the nature of the verbal interaction in the classroom. The teachers high in agreement were more indirect in their verbal interaction; indirect verbal interaction is significantly related to higher student achievement and more positive student attitudes.

Colleges and universities in preparing teachers should note this study. If indirect verbal influence is desirable, the students' personal and educational philosophy should be compatible with Experimentalism.

RECOMMENDATIONS FOR FURTHER RESEARCH

The research using Flanders' (1970) Interaction Analysis has focused on the relationship of student achievement and attitudes with the nature of the teacher's verbal interaction. This study demonstrated that there is a relationship between the nature of a teacher's verbal interaction and the teacher's agreement-disagreement with Experimentalism, as measured by Brown's (1968) inventories. The teachers high in agreement with Experimentalism were more indirect in their verbal influence than the teachers low in agreement. The teachers low in agreement were more direct in their verbal influence than the teachers in high agreement with Experimentalism.

Brown (1968) asserts that the value of his inventories is that they permit comparable measurements of beliefs and classroom practices in terms of a common referrent. The degree of agreement-disagreement with Experimentalism should not be the only philosophic position tested as to its relationship with the nature of a teacher's verbal interaction. Other philosophic positions, such as Realism, Existentialism, or Idealism, should have research instruments developed which measure the degree of agreement-disagreement with each position. With these instruments, research might

be conducted to ascertain the relationship each of these positions has with the nature of the verbal interaction of a teacher in a classroom, as measured by Flanders' (1970) Interaction Analysis.

Hirst (1966), Burns (1967), and Brown (1968), agree that philosophy does not logically imply educational practices, but philosophy does have a role in guiding educational practices. They contend further that psychological and social developments are important components in the total system.

It is recommended that psychological and sociological variables which affect teachers be identified and researched as to their relationship with indirect and direct verbal influence a teacher exhibits in a classroom. With the results of this research, one could identify teachers likely to use indirect verbal influence in the classroom during the teacher selection process.

APPENDIX A
PERSONAL BELIEFS INVENTORY

PERSONAL BELIEFS INVENTORY
Form A-B
(Brown, 1968)

This is a study of what people believe about a number of basic philosophical questions. The best answer to each statement below is your personal belief. Many different and opposing points of view are presented here. You will find yourself believing some of the statements, not believing some, and uncertain about others. Whether you believe or do not believe any statement, you can be sure that many people feel the same as you do.

DIRECTIONS

Mark each statement in the left margin by writing 1, 2, 3, or 4, 5, 6, depending on how you feel in each case.

1. I AGREE VERY MUCH
2. I AGREE ON THE WHOLE
3. I AGREE A LITTLE
4. I DISAGREE A LITTLE
5. I DISAGREE ON THE WHOLE
6. I DISAGREE VERY MUCH

_+_ 1. Change is a basic characteristic of nature, and man has some measure of control over this change by using his intelligence.

_-_ 2. Knowledge is truth to be accepted, held, and treasured for its own sake.

_+_ 3. A statement of fact may be both true and untrue depending on the standpoints and conditions of the observations.

_-_ 4. To know something is to know the inner nature of things, i. e., as they really are prior to investigation.

_+_ 5. Man doesn't have a "spirit" which is separable from his body and the material world.

_+_ 6. Questions of value and moral judgment ought to be open to experimentation and scientific inquiry.

_+_ 7. All "truths" are relative.

_-_ 8. Man gains knowledge by having things impressed upon his mind.

_-_ 9. Truth exists ready-made somewhere - the task of the scholar is to find it.

_-_10. Practice is subordinate to knowledge, merely a means to it.

_-_11. Learning is an application of mental powers to things to be known.

_-_12. Man's destiny is in the hands of a supernatural power.

_-_13. The mind is a group of "contents" which come from having certain material presented to it.

_-_14. "Mind" is purely intellectual and cognitive; bodily activity is an irrelevant and intruding physical factor.

__-__15. The ends and laws which should regulate human conduct have been determined by the superior intelligence of an ultimate being.

__-__16. Knowledge is the sum total of what is known, as that is handed down by books and learned men.

__+__17. What something may be when totally independent of any observer or frame of reference is a scientifically meaningless question.

__-__18. The mind is formed from without, as one molds and shapes a piece of clay.

__+__19. Man's primitive impulses are neither good nor evil, but become one or the other according to the objects for which they are employed.

__+__20. There is no spiritual realm which lies beyond man's experience in the natural world.

__+__21. What is morally right and wrong ought to be decided on warranted evidence--the findings of empirical science.

__-__22. Knowledge is the result of theoretical insight on the part of scholars.

__+__23. There can be no final, absolute ends to which all men aspire.

__-__24. The mind turns outward to truth; the emotions turn inward to considerations of personal advantage and loss.

__+__25. The use of the scientific method can be extended to solve the problems of men in the area of values and moral judgments.

__+__26. Man is capable of managing his own destiny in an understandable and predictable natural world.

__-_27. The mind possesses faculties for remembering, imagining, reasoning, willing, and so forth, which are developed by exercise and discipline.

__+_28. What is right and good at one time and place may not be right and good for all times and places.

__+_29. You can never prove that any fact is unconditionally ture.

__-_30. The senses and muscles are merely external inlets and outlets of the mind.

__-_31. Man's destiny is determined by circumstances of nature which are beyond his control.

__+_32. Knowledge is artificial and ineffective in the degree in which it is merely presented as truth to be acquired and possessed for its own sake.

__+_33. Man's choices are good only if they prove successful in helping him live with some degree of security and equilibrium in the world of nature.

__-_34. Preaching a condition in which there were no more problems would be the ideal life.

__-_35. In the absence of a moral code supported by absolute authority, bodily appetite and passion overpowers intelligence.

__+_36. Questions of value and moral judgment ought to be open to experimentation.

__-_37. Learning is the sum of impressions made on the mind as a result of presentation of the material to be known.

__+_38. Nothing is or can be unchanging, absolutely certain.

__+_39. The nature of a thing is determined by what it does, or can be used for; it is what it becomes with intelligent use.

__+_40. Questions of values and morals should be taken out of their traditional supernatural setting and put in a naturalistic setting.

APPENDIX B

TEACHER PRACTICES INVENTORY

TEACHER PRACTICES INVENTORY
(Brown, 1968)

This is a study of what people believe is good teaching. Each statement below describes teacher behavior - something a teacher might do in a classroom. Many different and opposing kinds of teacher practices are presented here. As you read these statements, you will find yourself agreeing with some, disagreeing with some, and uncertain about others. The best answer to each statement is your personal belief or opinion.

DIRECTIONS

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 4, 5, 6, depending on how you feel in each case.

1. I AGREE VERY MUCH
2. I AGREE ON THE WHOLE
3. I AGREE A LITTLE
4. I DISAGREE A LITTLE
5. I DISAGREE ON THE WHOLE
6. I DISAGREE VERY MUCH

+ 1. Teacher focuses attention on what the students do or say rather than on what the teacher does or says.

+ 2. Teacher allows students to move freely about the room while engaged in purposeful activity.

+ 3. Teacher gives students a number of starting places and a number of different ways of getting at what is to be done.

+ 4. Teacher engages students in dramatizations, music, art, and other creative activities.

- 5. Teacher motivates students to greater intellectual efforts by rewarding them with grades, marks, prizes, or privileges.

- 6. Teacher organizes learning around questions posed by the teacher or textbook.

+ 7. Teacher makes "doing something" with a thing, rather than the thing itself, the center of students' attention.

- 8. Teacher sticks to questions which can be answered by looking in the textbook or other references readily available in the school.

+ 9. Teacher lets students face up to the realities of unpleasant predicaments and plights they get themselves into by insisting they face up to them.

+ 10. Teacher lets students become involved in ugly or distressing aspects of subjects.

- 11. Teacher accepts material in the approved textbook as a reliable measure for the appropriateness of information brought in by students from other sources.

- 12. Teacher asks the kind of questions that students should be able to answer if they have studied the lesson.

+ 13. Teacher asks students to work on their own problems, rather than something made a problem only for the purpose of conveying instruction in some school subjects.

__- 14. Teacher makes the acquisition of knowledge and skills the center of students' attention and effort.

__+ 15. Teacher encourages students to adventure into "deep water," to tackle problems that appear to be "over their heads."

__- 16. Teacher makes a direct presentation of the subject matter to be covered.

__- 17. Teacher makes students emphatically aware that they are here to study and learn.

__- 18. When one student fails to answer a question, asks another student to supply the correct answer.

__+ 19. Teacher encourages students to suggest what might be done to make "hypothetical leaps" into the unknown or untested.

__+ 20. Teacher gives students a wide choice in how they answer questions.

__+ 21. Teacher gives students a wide choice or free rein in devising and inventing proposals for what might be done to clear up troublesome situations.

__+ 22. Teacher urges students to put everyday things to uses which have not occurred to others.

__- 23. Teacher quickly tells students whether their answers are "right" or "wrong."

__+ 24. Teacher gives students opportunity to select facts and information which they consider appropriate to the question.

__- 25. Teacher faithfully follows a planned schedule in order to get in the number of minutes each week allotted to each subject in the curriculum.

__+ 26. Teacher has students compare the value of alternative courses of action and pass judgment on their relative desirability.

__- 27. Teacher shows students the most economical and efficient way to get a job done, and expects them to do it pretty much that way.

__+ 28. Teacher frequently asks students to choose among several alternatives.

__+ 29. Teacher permits students to go ahead with plans based on foresight, observation, and consideration of several alternatives - even when sure their judgment is mistaken.

__- 30. Teacher tells students where to start and what to do to accomplish the task at hand.

__- 31. Teacher uses a set standard to judge the work of all students in the class.

__- 32. Teacher provides a model to show students exactly what their work should be like when it is finished.

__+ 33. Teacher gives students a chance to discover by experiencing actual effects whether their choice of this rather than that idea was a judicious one.

__+ 34. Teacher encourages students to put their suggestions to a test with such remarks as "You'll never know unless you try it."

__- 35. Teacher usually has all students working on the same page of the same book at the same time.

__+ 36. Teacher asks the students to help decide when questions have been satisfactorily answered.

__- 37. Teacher provides approximately the same materials for each student in the class.

__- 38. Once work has begun, teacher insists that students remain in their places and concentrate on the task at hand.

__- 39. Teacher calls for the undivided attention of the group and scolds those who do not respond.

__- 40. Teacher limits physical activity to the gym or playground.

APPENDIX C

TEN CATEGORIES FOR FLANDERS' SYSTEM OF INTERACTION ANALYSIS

TEN CATEGORIES FOR FLANDERS' SYSTEM OF INTERACTION ANALYSIS

TEACHER TALK - INDIRECT INFLUENCE

1.* ACCEPTS FEELINGS: accepts and clarifies the feelings of pupils in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.

2.* PRAISES OR ENCOURAGES: praises or encourages pupil action or behavior. Jokes that release tension, but not at the expense of another individual, as well as nodding head or saying "um-um" or "go on" are included.

3.* ACCEPTS OR USES IDEAS OF PUPILS: clarifies or develops ideas suggested by a pupil. As the teacher brings more of his own ideas into play, shift to Category 5.

4.* ASKS QUESTIONS: asks a question about content or procedure with the intent that a pupil answer.

TEACHER TALK - DIRECT INFLUENCE

5.* LECTURING: gives facts or opinions about content or procedure; expresses his own ideas; asks rhetorical questions.

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*There is NO scale implied by these numbers. Each number classifies a particular kind of communication event and is not a position on a scale.

**Adapted from Ned A. Flanders, Teacher Influence, Pupil Activities and Achievement, p. 20.

6.* GIVING DIRECTIONS: directs, commands, or orders with intent that pupils comply.

7.* CRITICIZING OR JUSTIFYING AUTHORITY: makes statements intended to change pupil behavior from nonacceptable to acceptable pattern: criticizes or rebukes; states why he is doing what he is doing; refers extensively to himself.

STUDENT TALK

8.* RESPONSE: pupils make a predictable response to teacher. Teacher initiates the contact or solicits pupil's statement and sets limits to what the pupil says. Shift from 8 to 9 as pupil introduces own ideas.

9.* INITIATION: a pupil initiates communication with the teacher including unpredictable statements in response to teacher.

10.* SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

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*There is NO scale implied by these numbers. Each number classifies a particular kind of communication event and is not a position on a scale.

APPENDIX D

AN OBSERVATION MATRIX

AN OBSERVATION MATRIX

Category	1	2	3	4	5	6	7	8	9	10	Total
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
Total											
%GT											
%TT								TT = ST =			

A SAMPLE MATRIX

Category	1	2	3	4	5	6	7	8	9	10	Total
1	5					2				1	8
2	1	2	2	13	1	4		2	2		27
3		3	3	3					1		10
4				39	3	2	1	94	11	7	157
5				10	36	2		1	5	1	55
6		1		9	2	51		8	14	2	87
7							7	1	3		11
8		15	3	36	3	11	1	21	42		132
9	1	6	2	40	10	15	1		177	6	258
10	1			7			1	5	2	19	35
Total	8	27	10	157	55	87	11	132	258	35	780
%GT	1.0	3.5	1.3	20.1	7.1	11.1	1.4	16.9	33.1	4.5	(100)
%TT	2.0	7.6	2.8	44.2	15.5	24.5	3.1	TT = 355 (45.5%) ST = 390 (50.0%)			

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