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Abstract

An Organizational Development (OD) program, used to aid organizations in accomplishing their tasks, was designed to include several schools and the total administrative hierarchy of a school district. In the OD project described in this report, a control group of those not involved in the program and an experimental group of those participating in the OD program were selected at random from the teachers of academic core subjects (mathematics, science, English, and social studies) in separate junior high schools in the same school district. There were three women and 11 men in both groups. Two instruments were administered to the control and OD groups before and after the OD project. The study was designed to discover the effect of an OD program on the social-emotional climate of the classroom in a junior high school. The findings indicate that organizational development will change teacher behavior to more student-centered activities. A review of the literature, a bibliography, and appendices of the instruments of the study are included. (MF)

THE EFFECT OF ORGANIZATIONAL DEVELOPMENT ON CLASSROOM CLIMATE

Ronald Clyde Bigelow

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The teachers and administrators involved in this study have spent many long hours without complaint in supplying the data this study required. Without such aid, research becomes impossible.

This work is dedicated to my wife, Lynne, whose sacrifices and love have kept me going, and our children, Ronald Jr., Elizabeth, and Richard. I hope research efforts such as this will aid in improving their educational experiences.

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CHAPTER I

INTRODUCTION

Since the inception of the National Training Laboratories' tradition of laboratory training in 1947, its development has taken two separate but interrelated paths. These paths share much of the theory and research knowledge that falls under the general category of social psychology. One path, generally referred to as "sensitivity training," has the goal of the development of individual interpersonal communications skills and personality development. The second path, group development, has the goal of aiding groups to increase the effectiveness of their efforts and to make better use of the resources contained in the group, in a task oriented situation.

Group development focuses on the functioning and needs of the group. This is done to facilitate the satisfaction of the needs of the group by providing members with skills in interpersonal relations and a knowledge of group functions and conditions that affect those functions. It also provides experiences for testing and practicing skills in real situations. Organizational development, which is an elaboration of group development, is used to aid organizations in accomplishing their tasks. Organizational development (hereafter referred to as "OD") had its inception in 1958, when the ESSO Company began a series of laboratory training programs in their refineries around the world under the leadership of Blake and Shepard.

The specific goals of sensitivity training generally include self insight, understanding conditions which facilitate or hinder communication, skills in diagnosing individual behavior, and motivation to try to improve one's own behavior in the communication process. Laboratory training emphasizes the grcup aspects of these goals, and often includes in addition group skills such as problem solving (Bennis, 1962; Buchanan, 1962; Miles, 1960; Schmuck, 1967; Tannenbaum, Weschler, and Massarik, 1961). The general goal of OD centers on the concept of "organizational health."

Organizational Health

Argyris (1964), Bennis (1966), and Parsons (1955), have all discussed the attributes of organizational health at length, and have divided the attributes into three general categories: Task accomplishment, internal integration, and mutual adaptation of the organization and its environment. The task accomplishment area consists of: Reasonably clear, acceptable, achievable, appropriate goals; relatively undistorted communication flow horizontally, vertically, and to and from the environment; and optimal power equalization, with the style of influence being essentially collaborative, based on competence and problem-solving need, rather than on organizational position.

The second area of organizational health, that of internal integration, deals with the climate of the organization, and consists of three parts: Resource utilization, or how well personalities fit expected roles; cohesiveness, or "organizational identity," how well

the members identify with the organization; and, morale, the positive feelings one has toward the organization and his role in it.

Mutual adaptiveness, the third category of organizational health, deals with the organization's ability to adjust to its environment, and consists of: Innovativeness, the ability to modify over time, autonomy, the ability of the organization to take independent action; adaptation, the responses by the organization to environmental changes; and, problem-solving adequacy, the ability of the organization to detect, define and invent new solutions for problems, and to carry out needed action and evaluate its effectiveness.

For these goals to be realized, it is assumed that they must be shared by a majority of the members of the organization, and that some minimal level of communication skills that allow organizational health to exist must be exhibited by the members. Buchanan (1965), has given a delineation of the type of activities that must be present for an OD program to be effective:

> "Training approaches meriting the name of laboratory (or T-Group) utilize: (1) a face-to-face, largely unstructured group as a primary vehicle for learning, (2) planned activities involving interaction between individuals and/or between groups, (3) systematic and frequent feedback and analysis of information regarding what happened in the here-and-now and what effect it had, (4) dilemmas or problems for which "old ways" of behaving for most of the participants do not provide effective courses of action (and thus for which innovative or "search" behavior is required), and (5) generalization, or reformulation of concepts and values based upon the analysis of direct experiences."

Buchanan has also given an excellent summary of the results of OD, reporting on research from both education and business. His summation provides a starting point for this study.

> In view of this way of finding out what was learned (from studies of OD programs) it is surprising to note the high degree of agreement between the observed changes and the usual goals of laboratory training.... Despite the generally positive findings from the studies reviewed above, we cannot on the basis of these studies alone become very sanguine in support of laboratory training...these studies provide little evidence that the training contributed to organizationally useful and self-reinforcing changes in the effectiveness of the organization where the participants worked (Buchanan, 1965).

Schmuck and Runkel (1968) report some interesting and exciting results from an intensive and inclusive study of the OD program in a Beaverton, Oregon junior high school. The study also gave reason to believe that there are methods of testing the effectiveness of OD from the standpoint of classroom level activity. Several of the teachers in the Beaverton project reported apparent changes in their classrooms: "...a better atmosphere in my classroom," or "...more attention to the feelings of the students." These reports suggest a change in the climate of the teacher's classrooms.

If the norms, procedures, skills and attitudes of OD are shared by the teachers, one would expect that they would be reflected in the classroom behavior of the teacher. If the teachers' reports are accurate, it would provide evidence that OD has had the effect of establishing the desired norms within the staff to a point that they have modified their classroom processes to more closely conform to those norms.

Classroom Climate

> The words classroom climate refer to generalized attitudes toward the teacher and the class that the pupils share in common in spite of individual differences. The development

> of these attitudes is an outgrowth of classroom social interaction.... These expectations color all aspects of classroom behavior, creating a social atmosphere or climate that appears to be fairly stable, once established. Thus, the word "climate" is merely shorthand reference to those qualities that consistently predominate in most teacher-pupil contacts and contacts between pupils in the presence of or absence of the teacher (Flanders, 1962).
>
> Classroom interaction is more than a matter of the teacher telling and the pupils listening or of the teacher asking and the pupils answering. Learning does not occur merely because of the teacher's presentations; it occurs through the interplay of the teacher's behavior with many other forces.... In each classroom as well, complex patterns of social and psychological relations operate constantly, creating a classroom learning climate that can significantly affect a pupil's academic motivation (Fox, Luszki, and Schmuck, 1966).

Schmuck (1966) attempted an analysis of those factors that contribute most significantly to classroom climate, both from the teacher and student peer group standpoint. In reference to classroom peer groups, he found: "Pupils in peer groups with diffuse liking structures compared to those in centrally structured groups showed more positive attitudes toward classroom peers, school life, and themselves as pupils. They also shared a more supportive perception of the teacher and academic work."

In terms of the classroom teacher he also found significant differences:

> The teacher with more positive social climates, in contrast to the others, emphasized and were more sophisticated about classroom mental health conditions. They also perceived more linkages between mental health and academic learning concepts than the other teachers.... Teachers with positive climates appeared to converse often with a wide variety of students and to reward individual students while punishing the whole class. In contrast, teachers with more negative climates

conversed often with only a few students, seldom issued reward statements, and often punished individual students publicly.

For the purposes of this study, classroom climate was defined as the generalized attitudes toward the teacher and the class that the pupils share in common, despite individual differences.

Relationships Between Organizational Development and Classroom Climate

The goals of the OD program reported in this study, "Inservice Education for School Communication," were specified by the training staff as follows:

(1) Increased openness and ease of interpersonal relations

(2) A feeling that clearer and more effective staff communication has been achieved

(3) Increased willingness and skill in giving information about one's own behavior

(4) Increased awareness of interpersonal processes when they are taking place

(5) A widened and shared perception by members of the staff of some new varieties of organizational patterns

(6) Skill in using a systematic problem-solving procedure

(7) An increase of skill in sharing initiative, that is, skill in helping a colleague who has enunciated an idea to develop it into a practical plan for action

If these goals were achieved, the school staff should be enjoying good organizational health. Beyond the organizational level of activity, one can consider effects on classroom level activity, if the teacher transfers the learnings from OD to the classroom.

Increased openness and ease of interpersonal relations and increased willingness and skill in giving information about one's own behavior would certainly have a positive effect on classroom climate. Students and teachers sharing their perceptions of classroom events and behaviors in an open constructive manner should move both the teacher and the students toward behaviors that are desired by the students (Gage, Runkel, Chattergee, 1960). A widened and shared perception of some new varieties of classroom organization would be a logical outcome of this type of two-way communication between teacher and student. Students with shared perception should have a more diverse liking pattern.

Skills in problem solving would certainly aid the teacher and the student in defining classroom level problems and finding solutions using information from her expertise in classroom management and from student feedback. This could work in concert with helping students to develop ideas into practical plans for action. These ideas could be student initiated study, student council work, classroom organization, or any problem area the student chooses to confront.

All of these learnings would tend to increase student participation in decision making. This increased participation, involvement and sharing of perceptions and feelings fit nicely into the characteristics of improved classroom climate.

Classroom climate has been shown to have an effect on the academic achievement of students (Flanders, 1959; Schmuck and Van Egmond, 1965). In the Schmuck-Van Egmond study it was shown that the teacher exerts a major influence on the classroom climate. "The results indi-

cated that the teacher, especially as a social-emotional leader, had an effect on the academic performances of both boys and girls which was independent to a significant degree from the affects of parents or peers." One can then say that classroom climate affects students' academic performance, and that the teacher can and does control the classroom climate. Because of the above studies relating classroom climate and academic achievement, it will be assumed for the purposes of this research, that a measure of change in classroom climate probably indicates a change in student academic achievement. Therefore, if it can be shown that an OD program in the public schools does produce a more open, indirect style of teaching, and its concurrent open inclusive classroom climate, this would be a measure of a change in the classroom level activity and of the increased effectiveness of the project school.

During the Fall of 1967, the directors of the Beaverton, Oregon project were contacted by the board of directors of another school district in the Pacific Northwest concerning the feasibility of attempting an OD program for a total school district staff. The board of directors chose to call the project "Inservice Education for School Communication." They stated the following as the criteria for the inservice project:

> Those persons in leadership roles in the .. School District through their interpersonal relationships between themselves and others have a definite effect on the kind of teaching performed in the classroom. Although this relation is subtle, a tone or atmosphere is established either facilitating or hindering effective communication which in turn affects the teachers and permeates the classroom.

It appears from this statement that the Board of Directors are aware

of the important role classroom climate plays, and the role teachers play in its establishment.

Questions to be Considered

The primary purpose of this study was to determine the effect of an organizational development program on social-emotional climate of the classrooms in the junior high school involved. Organizational development is rapidly becoming a part of business and educational administration. Classroom climate, analagous in many ways to organizational climate, has been shown to be an important factor in students' attitudes toward school, and their academic achievement. If it can be shown that training in organizational development does improve classroom climate, it would provide evidence for the value of such programs, and demonstrate their importance to school systems.

The central question of this research is: Does organizational development affect the classroom climate of the schools involved? If a significant difference in classroom climate is found the design of the experiment also provides an opportunity to obtain answers to some further questions:

> Is there a relationship between certain teacher demographic characteristics (age, experience, level of academic preparation) and the amount of change in classroom climate observed in teachers' classes?
>
> Is there a relationship between the amount of change in teachers' skills and attitudes as perceived by the laboratory trainers, and the amount of change in classroom climate observed in teachers' classes?
>
> If a change is observed, it is important to have some concept of

which teachers are most affected and least affected. This will provide some criteria from which to determine what groups of teachers will need special work or special activities designed into an OD project. Trainer perceptions of change in participants' behavior during laboratory trainer projects have been shown to be related to a significant degree (Miles, 1964). If this relationship holds for this project, it will aid in substantiating previous findings.

Summary

Evidence obtained during prior OD projects in schools gives some reason to believe that such projects positively effect classroom climate. Because of the relationship between classroom climate and student academic achievement, this evidence has particular interest. As any new in-service project is introduced into schools, it is important to know what effect it will have, not only on those directly involved, but on those indirectly involved.

Organizational development projects are designed to change teacher behavior, with certain end goals (organizational health) in mind. If teacher behavior is changed, those changes should be reflected in the teacher's classroom behavior. Therefore, this is an evaluation of changes in teachers' on-the-job behavior, as reflected by changes in classroom level activity.

CHAPTER II

REVIEW OF RELATED RESEARCH

Introduction

Due to the short history of organizational development projects and the great variability of such programs, it is necessary to set some narrow restrictions on the type of empirical studies that may shed some light on the probable outcomes of any particular OD project. An OD project is designed with the characteristics of the target organization in mind and within the realities of the situation under consideration. The design is also greatly effected by the predelictions of the designers. For these reasons, it is a rare occurence for any two projects to look the same. The studies and summaries of empirical literature reported in this chapter were selected for their similarity to the project reported, as judged by the criteria of intervention goals, project design, and research style and focus.

Types of Organizational Development Laboratories

OD laboratories can generally be differentiated on the basis of the assumptions used in designing the interventions. Some designers base the design of their interventions solely on the assumption that if human relations skills and the goals of sensitivity training are met, organizational functioning will be improved. For this reason

their development programs are little more than sensitivity training with work groups within an organization. The reviews of the empirical literature sited below do not confirm the hypothesis that this type of training is effective in improving the organization's productivity, even though it may improve the interpersonal competence of the individuals involved.

A second type of laboratory reported in the empirical literature is the "managerial grid lab" (Blake and Mouton, 1967). This type of laboratory is designed to increase the managerial and supervisory skills of middle and upper level executives. T-group experiences are used to maximize learnings. The assumptions of these laboratories are that a change in the basic philosophic orientations of the managers to a more humanistic viewpoint will increase their effectiveness as managers, which will in turn improve the efficiency of those they are supervising. These changes, theoretically, will improve the productivity of the organization. Again, it is difficult to find external evidence of increased organizational productivity as a direct outcome of these laboratories.

The intervention goals of this project have been stated in Chapter I: Moving the organization closer to good organizational health. The development of individual interpersonal competence is considered only incidental to the project. The focus is the increase in the organization's ability to deal systematically with problems as they arise, and to adopt new organizational structures that increase problem-solving ability. Norms of openness and trust were introduced

to aid in the development of increased communication and idea sharing.

The project design centers on the use of intact work groups. Some use is made of didactic teaching exercises and games that demonstrate various concepts critical to the development of staff norms and skills. The important points here are that on-going work groups within the staff were the center of training attention; real problems within the staff were the topics of discussion. Teaching exercises and games were introduced only to elicit feelings or concepts as needed to improve groups' effectiveness.

The research reported here depends on the use of external criteria measures (Martin, 1957). External criteria are measures of changes in on-the-job behavior, rather than measures of psychological or intrapersonal changes participants may experience.

Reviews of Empirical Literature

Stock (1964), Buchanan (1965, 1968), House (1967), and Campbell and Dunnette (1968) have published reviews of empirical studies covering T-Group literature. The review by Stock has as its focus the behavior of individuals in groups, rather than on the changes in participants' behavior upon return to his organization. The reviews by House (1967) and Buchanan (1965, 1968) discuss a fairly wide sample of studies focused on evaluating laboratory training as a developmental technique. House concludes that:

> We have seen that T-Group training can result in better listening, more supportive behavior, more considerate manager, more sensitive people and less need for depen-

dence. Research indicates that these values are associated with effective managerial performance for certain kinds of organizations and certain kinds of subordinates. There is evidence that these values, however, do not always lead to more effective organizational performance.

Buchanan's reviews of the literature draw more optimistic conclusions:

> Thus we can conclude from evidence available:
> (a) that laboratory training is effective as a means of facilitating specifiable changes in individuals in the industrial setting;
> (b) that it has been used effectively in some programs of organization development, but not in others... (1965).
>
> One can summarize this review of the literature regarding the value of laboratory training as follows:
> (1) It facilitates personal growth and development, and this can be of value to the individual who participates.
> (2) It accomplished changes in individuals which according to several theories are important in effecting change and in effecting managing organizations. This has been demonstrated in several cases of successful organizational development.
> (3) Studies comparing the value of laboratory with other types of training as a means of introducing concepts and skills in the first phase of organizational development are not available.
> (4) The findings from this literature search are compatible with the conclusions reached in a similar review made four years ago (1968).

Both House and Buchanan see laboratory training in a positive light. Both conclude that laboratory training does effect changes on the part of individuals involved. However, it should be noted that there is a difference of opinion as to the results of those changes, in terms of the organization to which the participant returns. Buchanan's conclusion as to the benefit to the organization is based on theories of organization performance, not on research evidence as to

actual increased effectiveness or efficiency.

The most recent and the most exhaustive review done to date is that of Campbell and Dunnette (1968). Their conclusion, at best, can be considered neutral:

> To sum up, the assumption that T-group training has positive utility for organizations must necessarily rest on shaky ground. It has been neither confirmed nor disconfirmed. The authors wish to emphasize again that utility for the organization is not necessarily the same as utility for the individual.

The conclusions drawn by House (1967) and Buchanan (1965) are based on the same three studies: Boyd and Elliss (1962), Bunker (1965), and Miles (1964). The reviews of Buchanan (1968) and Campbell and Dunnette (1968) are based on these same three studies and add the studies by Valiquet (1964) and Morton and Bass (1964) in finalizing their conclusions. These five studies consider the effects of differing types of laboratories, however, they do depend on the use of external criterion measures.

Boyd and Elliss (1962), Bunker (1965), Miles (1964), and Valiquet (1964) all carried out similar studies. All four studies used a "perceived change" measure as the basic external criterion. This measure was in the form of an open-ended question, asked of the participant's fellow employees. The question asked the respondent to describe any changes he may have noticed in the trainee's on-the-job behavior. In all studies the reporters were specifically asked not to be perjorative in their comments. Several estimates of change were obtained for each participant. Data were collected by mailing questionnaires to respondents, except in the Boyd and Elliss (1962) study, where observers

were interviewed by the researchers. Data were collected several months after the completion of the training programs. All studies used at least one control group. Control group members were selected by asking each trainee to nominate an individual within his organization who held a similar position, but who had not been involved in T-group experiences.

Each study used trainees from different organizational settings, and used criterion measures in addition to those reported here. Valiquet (1964) used 60 participants from an on-going organizational development laboratory conducted in a large corporation. Unfortunately his study suffers from a lack of adequate control groups, and a very low rate of questionnaire response.

Morton and Bass (1964) report research from an organizational development program for the managerial staff of a large aerospace corporation. Managers involved in the program were asked to report "critical job incidents" which they considered an outcome of the development project. Almost all of the incidents reported by the trainees were judged by the researchers to indicate a positive effect on managerial job behavior. The use of self-reporting by laboratory participants as a means of data collection, and the lack of a control group makes conclusions as to the effectiveness of the project difficult.

Several summary statements can be made from the results of the five above studies:

1. Thrity to forty per cent more changes were attributed to the experimental groups than to the control groups;

2. The types of changes perceived to be consistently difference between the experimental and control groups were in the areas of increased sensitivity, more open communication, and increased flexibility in their professional positions.

Unfortunately in all of these studies there is no way of determining whether these changes in on-the-job behavior in any way changed the productivity of the organization.

Other Studies of Interest

Three other studies deserve special attention in this review because of their closeness to the project under consideration and the results obtained in the studies. Bartlett (1967) reported on the results of an in-house laboratory conducted in an industrial firm. The training design included skill training in communication skills and simulated giving and receiving feedback in role playing situations. The goal of the project was to move the management force from a theory "X" orientation to a theory "Y" orientation (McGregor, 1967). Bartlett concluded that the laboratory did produce a change in the productivity of the organization on the basis of (1) increased efficiency and quality (monthly shipping dollars went up by 128%), (2) decreased employee absenteeism and turnover (by 72% and 50%, respectively), and (3) reduced production costs (by 10%). This is indeed impressive evidence, however, no direct linkage is provided between the laboratory intervention and the changes observed in the productivity of the organization.

The second study of interest is that of Beckhard (1966). The

goals of the program Beckhard reports were: a change in the managerial style in the organization; improved operating efficiency; increased problem-solving skills of the total management; and the establishment of a systematic program of growth and development for management executives. The laboratory involved members of a motel chain, employing 7,000 persons. Top management officials were the first to be involved in actual training. Training then moved to lower managerial levels in the organization. Laboratory training was combined with classes presented by specialists in management, food preparation, budget controls, auditing procedures, etc. Beckhard provides some compelling evidence based on external criteria as to improved organizational health after the training; however, it is impossible to differentiate between the effect of the laboratory training and the effect of the classes in professional areas received by the employees.

The study of greatest consequence for this research is that of Schmuck, Runkel and Langmeyer (in press). The overall goal of the project was to improve the flexible problem-solving ability of a junior high school faculty. Subgoals included: (1) the increase of the effectiveness of subgroups within the school; (2) improving communication within the staff: (3) improved participation at faculty meetings; (4) increased discussion among the faculty about interpersonal or inter-role problems; (5) increased initiative on the part of teachers in solving problems they have with upper echelons; (6) initiators of ideas would test his ideas more frequently with a lower-echelon subgroup before carrying ideas to the administration; (7) the

invention by the staff of some new organizational forms within their school, or at least the borrowing of some from the training program, that would help them to confront new problems; and (8) the teachers would find classroom application for the forms and methods used in the training.

The design of the intervention is unusual in that it involved actual working groups from the school; training was carried out with the total school staff and during the training, size and composition of subgroups were rotated so that every pair of staff members interacted with each other in more than one type of group. Laboratory training was used as a developmental technique for the organization, not as a technique to improve personal development. Any occurence of attempts to improve the interpersonal development of individuals was incidental to the design of the intervention.

The laboratory was held during the Fall of the year just prior to the teachers' return to the classroom. The laboratory lasted five and one-half days, with additional follow-up meetings held until February of the following year. A follow-up laboratory for the socialization of new staff members was held the following summer. This laboratory was initiated by the staff of the school and was carried out by a different set of trainers.

Data as to the effectiveness of the intervention were collected in several ways. Teachers were interviewed three months after the first week of training. A sample of teachers were also asked to write essays on the effects they attributed to the training. Comparisons with other schools were made by the use of an instrument developed by

the researchers. Comparison data were obtained from junior high schools in Washington and New York. The instrument was designed to elicit teachers' perceptions, feelings, and group norms vis'a vis' the principal, staff meetings, interpersonal communication, sharing ideas, and helping others.

The data collected in all areas is truly compelling. Positive changes occurred in all areas of concern. The changes observed that are of most interest in this study are those that occurred in the classroom. Nineteen of the teachers writing essays reported the use of small group techniques in their classroom. Many of the teachers reported the use of verbal techniques learned during the intervention.

New activities used in the classroom were reported to be:

> ...using small groups for projects, using nonverbal exercises to depict feelings about the subject matter being studied, using theatre-in-the-round or fishbowl formations for having students observe one ancther, using a paraphrasing exercise to point out how poor classroom communications are, using the problem-solving sequence and techniques in social studies classes to learn more about social problems, and using small groups for giving and receiving feedback about how the class is going. As far as we know none of these practices was used by these teachers before the organizational development laboratory (Schmuck, Runkel, and Langmeyer, in press).

Unfortunately, no control data are available against which to compare the teachers' perceptions. For that reason, the apparent improvement in the classroom techniques, or any effects the use of those small group techniques may have had on classroom climate, is not known from the facts presented. However, the evidence reported cannot be discounted.

Summary

The studies cited in this section provide some evidence that on-the-job behavior does change as a result of OD programs. This change in behavior may or may not improve the efficiency of the organization involved. The study by Schmuck, Runkel and Langmeyer (op. cit. p. 18) does show that organizational development can be used as a technique to improve certain parameters of organizational health. Some evidence was provided by the statements of teachers that they did change their classroom techniques to conform with the norms learned and methods experienced during the intervention, but no data were presented taken directly from the classroom, by the research staff.

CHAPTER III

RESEARCH DESIGN

The nature of the OD project and the instruments used to measure the effects of the project were judged to be critical to the outcomes of the study. In this chapter the OD project is described, the instruments used are discussed, and the statistical techniques used to analyze the data are explained. The questions to be considered in the study are stated in more precise, statistical terms. This is done in preparation for the actual treatment of the data. The description of the organizational development project is given in detail, so that the reader may achieve some understanding of the project's design and implementation as compared to those projects described in Chapter II.

Experimental Design of the Study

This study was designed to include both experimental and control groups. Both instruments were administered to the control and OD groups before and after the OD project. Control and OD groups representing the population were selected at random from the teachers of academic core subjects (mathematics, science, English, social studies) in separate junior high schools in the same school district. The two junior high schools are similar in size. However, the OD school's physical facilities are much newer than those of the control school, but this was not seen as important.

Population of the Study

The population for this study is considered to be the junior high school level teachers (grades 7, 8, and 9), in the district under consideration. Teachers making up the two groups were asked to report several demographic characteristics: age, years of teaching experience, level of college preparation, sex, graduate and undergraduate college major and minor.

Teaching experience in both control group and the OD group ranged from 1 to 28 years. The average years experience in the control school was 9.20; in the OD school, 8.96. This is not a significant difference. Level of education ranged in both groups from a bachelor's degree to over 30 hours of graduate preparation beyond the master's degree, with the mode for both groups at over 45 hours of graduate credit beyond the bachelor's degree. Both the control group and the OD group had two teachers above the mode in educational experience. The OD group had three individuals below the mode in educational experience. The control group had five people below the mode, indicating slightly greater variability in educational experience for the control group. Both groups had three women and eleven men. Undergraduate majors for both the control and OD groups are highly variable, and generally are made up of areas other than education, sociology, psychology, social psychology or counseling. This is not true of graduate major and minor areas. Six teachers in the OD group and five control group teachers reported education or educational administration as graduate majors. Graduate minor areas, when reported, were all in fields other than the social sciences,

with the exception of one teacher in the OD group who reported a political science minor. No teachers reported sociology, social psychology, psychology, or counseling as academic areas of preparation. Three of the teachers in each group reported previous work in "Human Relations" training. The control group and the OD group are not significantly different by any of the demographic characteristics considered above. For that reason it is felt that the control group and the OD group are comparable for the purposes of this study.

Description of the Organizational Development Project

The OD project this study describes is one facet of a program designed to include several schools and the total administrative hierarchy of a school district. The program was carried out by the staff of the Center for the Advanced Study of Educational Administration. The first intervention was designed to prepare the administrative staff of the school district for the coming events in individual departments and schools. Volunteer principals and teachers attended a two-week human relations workshop during the summer of 1968. During September of 1968, the school district departments concerned with student personnel services, social work, counseling, and curriculum attended a three-day organizational development laboratory. The superintendent of schools and his cabinet (directors and assistant superintendents) attended several organizational development laboratories of varying lengths. On several occasions the participants requested that trainers attend their meetings to observe the group process and help them over the rough spots.

The total organizational program began by involving the upper echelons of the organization on the assumption that the skills and enthusiasm of the leadership of the organization were critical to the success of such a project. This same assumption was used in development of the designs for the individual schools to be involved. The first appearance of the training staff in the school consisted of one day of interviews with the principal, vice-principal, counselors and teachers in the school to determine the problems the professional staff of the building perceived to be most seriously affecting their performance. Interviews were carried out in small groups. Teachers were interviewed during their daily planning time. After the problems perceived by the staff were categorized and rank ordered by the training team, one member of the training team returned to the building for a one-hour meeting with the total faculty. This meeting was to determine if the staff would agree with the final statement of the problems and their order of importance.

During January and the first part of February of 1969, two meetings were held involving the principal, vice-principal, counselors, and the department heads of the school. This group was not a formal part of the school structure, but was applied by the training staff and was referred to as "the cabinet." It should be noted that the position of department head in this school was not the role generally associated with that term. This role consists mainly of clerk for the department, with no teacher supervision or evaluation functions. Some individuals in these roles had adopted a vigorous leadership role, but

the administration had specified that this was not to be a classical "department head" role.

These cabinet meetings were scheduled for two and one-half hours. Both meetings lasted at least three and one-half hours. During both meetings, basic verbal communication skills were introduced and emphasized. Discussion during the meetings revolved around problems cabinet members were having in defining and filling their roles in the organization. Some discussion also considered relations between cabinet members and between cabinet members and the principal. During the second meeting, each cabinet member brought a department member to begin involving more staff in the interaction.

Verbal communication skills and a group problem-solving sequence were introduced to the total staff during meetings held from mid-February to mid-March. These meetings were held during the school day, with a one-hour meeting following the end of the school day. The first day's meeting groupings consisted of those teachers sharing common planning times, during their planning periods. These meetings were fifty-minutes long, and were used to introduce and provide practice in verbal communication skills. The meeting following the dismissal of school lasted one hour. The staff was given an exercise in one-way and two-way communication to perform. This exercise was followed by a discussion of the differences between the two modes of communication.

The following four meeting times involved departmental groups, working through a five-stage problem-solving sequence. The first

three meetings were held during the school day. Teachers' classroom assignments were modified to free departmental members of classroom responsibilities during common periods. These periods were also fifty minutes in duration. Each day the staff came together for on hour after dismissal of school. During these one-hour sessions, departmental groups were provided with opportunities to share their plans and to aid other groups in developing their plans.

The problem-solving sequence introduced to the staff consists of the following five steps:

1. Defining the problem;
2. Delineation of restraining and helping forces;
3. Selection of restraining forces to be confronted;
4. "Brain storming" potential ideas for the reduction of selected restraining forces, and the selection of those ideas that seem most viable;
5. Preparation of an action sequence and the planning of a try-out.

These stages were introduced as the departmental groups progressed in the accomplishment of their tasks. Members of the training team working in pairs aided the groups in maintaining task focus and sustaining clear communication. Communication skills were reinforced whenever trainers saw fit to do so. At no time did trainers mention the application of these skills to the classroom; however, most groups did discuss the potential of their classroom use.

The last meeting of the program was held in mid-March and was designed to be a culminating experience. This meeting was held on a

Saturday and the total professional staff (42 members) were paid for their presence. The meeting lasted from 8:30 a.m. until 4:30 p.m., with lunch being served at the meeting site. The morning hours were used in action tryouts by the various departments. Departments were paired to provide aid and feedback for the group presenting. Most groups became very involved in their participation, and the feedback received by those presenting was seen to be very helpful.

The afternoon was used to begin the staff working as a total group. Two departments presented topics for discussion to the total staff. Both problems were seen as school-wide in scope, and elicited much discussion. In each case decisions for staff action were achieved. The final thirty minutes of the afternoon were spent discussing the outcomes of the project, and the teachers' feelings as to its productivity. Several departments requested that members of the training staff return at a later date to aid them in a follow-up of the progress being made. The training staff agreed. Most school staff members expressed that the meetings had been productive, but expressed concern about whether or not the plans developed would be implemented. Several indicated that they felt the continuation of the plans were their responsibility, and that they "shouldn't need any crutches".

Data Collection

Fourteen classroom teachers were selected at random from the project school population. Control data were obtained from a random sample of fourteen teachers from a second junior high school in the

project district. Pretest data were collected during the first three weeks of January. Six twenty-minute tape recordings of classroom interactions were made by each teacher in the sample. The "Classroom Life" questionnaires were administered on January 17 and 18. Posttest tape recordings (six) were collected during the first three weeks of April. The Classroom Life instrument was administered on April 9 and 10. Recordings were made of classroom interactions in the academic core subjects: science, mathematics, social studies, and English. Administrators and counselors in both schools had the same prior experiences in the OD project prior to the collection of the pretest data. Teachers in both schools made recordings and administered the Classroom Life questionnaire simultaneously. The cooperation of the control group was obtained by the promise of anonymity and feedback as to the results of the study at its completion.

Students responded to the Classroom Life questionnaire on both before and after measures. Questionnaires from students responding on only the before or the after measure were discarded, as were any incomplete questionnaires. 96.8% of those students returning questionnaires provided usable before and after measures. The fourteen classes responding to the questionnaires in each school provided 304 before-after measures from the OD school, and 260 before-after measures from the control school.

Of the 28 teachers selected to tape record classroom interactions for analysis by use of Flanders' Interaction Analysis, 13 in each school returned completely usable tapes. After considering the demo-

graphic characteristics and classroom assignments of the teachers not returning usable classroom recordings, it was decided that the loss of these teachers from the sample would not bias the data collected. Those teachers not returning usable tapes indicated recording equipment failure as the major reason.

Hypotheses to be Tested

1. There will be a statistically significant difference between classroom climate before and after the "In-service Education for School Communication" OD project, in the project school.

2. There will be no statistically significant relationship between the effect of the OD project on teachers' classroom climate and teacher age.

3. There will be no statistically significant relationship between the effect of the OD project on teachers' classroom climate and teachers' years of teaching experience.

4. There will be no statistically significant relationships between the effect of the OD project on teachers' classroom climate and teachers' level of academic preparation.

5. There will be a statistically significant relationship between observers' perceptions of teachers' learnings during the OD project and change in teachers' classroom climate.

INSTRUMENTS

Interaction Analysis

Interaction analysis is a system of classification of teacher and student verbal behaviors. It deals only with verbal behavior, as it is assumed that the teacher's verbal behavior is consistent with

his non-verbal gestures. This seems a reasonable assumption in light of both experience and research (Birdwhistell, 1966; Ruesch, 1955). Interaction analysis also permits a systematic record of spontaneous events and allows one to carefully scrutinize the process in instruction occuring.

There are ten categories in the system; seven deal with teacher comments, two deal with student comments, and one is assigned to silence or confusion:

1. ACCEPTS FEELING: Accepts and clarifies the feeling tone of the students in a nonthreatening manner.

2. PRAISES OR ENCOURAGES: Praises or encourages students' action or behavior.

3. ACCEPTS OR USES IDEAS OF STUDENTS: Clarifying, building, or developing ideas suggested by a student.

4. ASKS QUESTIONS: Asking a question about content or procedure with the intent that a student answer.

5. LECTURING: Giving facts or opinions about content or procedure.

6. GIVING DIRECTIONS: Directions, commands or orders to which a student is expected to comply.

7. CRITICIZING STUDENT BEHAVIOR OR JUSTIFYING TEACHER'S AUTHORITY: Statements by the teacher intended to change student behavior from nonacceptable to acceptable.

8. STUDENT TALK - RESPONSE: Talk by students in response to teacher.

9. STUDENT TALK - INITIATION: Talk by students which they initiate.

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

Of the seven categories assigned to teacher talk (#1-7), categories one through four represent indirect influence. Categories five, six, and seven represent direct influence. Category four includes all teacher questions. It is true that some questions allow more freedom to answer than others, however, any question allows more freedom than passively sitting and listening to the teacher. A question also invites participation, even though that participation may be on a closely prescribed basis.

Categories eight and nine are assigned to student talk. Category eight is concerned with statements that are prescribed by the teacher's comments. Category nine deals with comments that indicate the expression of the students' own ideas, or comments from one student to another.

The function of category ten is to indicate silence or confusion. Pauses normally occur during classroom interactions; however, this category is not used during extended periods of silence that would indicate reading assignments, or silence and confusion not directly connected to the interaction process.

Justification for the Use of Interaction Analysis

In this OD project three basic interpersonal communication skills were stressed: Perception checking, paraphrasing, and behavior de-

scription. Paraphrasing is a verbal testing to insure that the message you got was the one sent. It provides the speaker with a measure of how well you understand the verbal message he is sending. A perception check shows persons' desires to relate to and understand the recipient as a person by checking out one's perception of his inner state. It can also demonstrate an acceptance of his feelings. Behavior description is the non-perjorative description of what you have observed of the acticns of another person. This provides feedback from which a person can gain knowledge of himself and his actions. These three skills tend to increase the autonomy of the individual and his sense of equality, when used honestly and with some level of expertise.

One of the basic concepts underlying these skills is that you must understand what another is attempting to convey to you before you can properly respond to the idea or question he is presenting. The use of these skills by the teacher in the classroom would be indicated by an increase in categories two, three, and four. All these categories indicate the use of indirect influence as defined by Flanders.

A second concept underlying interpersonal communication skills is that feelings are always present, and that good or bad, they should be recognized and dealt with. An increase in the teacher's recognition of students' feelings, and his acceptance of the fact that the student has a right to his feelings, would be reflected by an increase in category one. Again, category one indicates indirect teacher influence.

Both the skills of paraphrasing and perception checking invite the student to respond to the teacher. This would be reflected in an increase in categories eight and nine, again indicating indirect influence, and an increased participation on the part of the students.

Categories five, six, and seven indicate direct teacher influence. If the teacher is using the skills taught in OD, then lecturing, giving directions, and criticizing or justifying authority should decrease. When a teacher disagrees with the behavior of a student and applies OD skills, the student would not be criticized, but his behavior would be described and its effects on the feelings of the teacher and the class would be conveyed. This would again convey indirect influence; as the teacher is not demanding a change in the student, only conveying information to the student as to the effect of his behavior.

Interaction analysis categories fit well with the skills and concepts promoted by OD programs. It is for this reason that it was selected for use in this study. No other existing system examined provides the direct relationships between categories and skills. Another added advantage interaction analysis demonstrates is the availability of statistical techniques for comparisons of data. This must, of course, be a consideration in the selection of an analysis system.

The correspondence of interaction analysis categories allows the following sub-hypotheses to be generated:

(1a) There will be a significant increase in the level of usage of category one by teachers involved in the OD project between before and after measures.

(1b) There will be a significant increase in the level of usage of category two by teachers involved in the OD project between before and after measures.

(1c) There will be a significant increase in the level of usage of category three by teachers involved in the OD project between before and after measures.

(1d) There will be a significant increase in the level of usage of category four by teachers involved in the OD project between before and after measures.

(1e) There will be a significant decrease in the level of usage of category five by teachers involved in the OD project between before and after measures.

(1f) There will be a significant decrease in the level of usage of category six by teachers involved in the OD project between before and after measures.

(1g) There will be a significant decrease in the level of usage of category seven by teachers involved in the OD project between before and after measures.

(1h) There will be a significant increase in the level of usage of category eight by the students in classes of teachers involved in the OD project between before and after measures.

(1i) There will be a significant increase in the level of usage of category nine by the student in classes of teachers involved in the OD project between before and after measures.

The reader will note that subhypothesis #1a, 1b, 1c, 1d, 1h, and 1i predict an increase. Subhypothesis #1e, 1f, and 1g predict a decrease.

Lesson Analysis by Flanders' Interaction Analysis

Lesson analysis was done by an outside agency in accordance to prescribed procedures to insure that observer bias did not distort the

data. Inter-rater reliability was established during the coding by the use of Scott's reliability coefficient (Scott, 1955). Inter-rater reliabilities were found to be .92 and .94.

Classroom Life

A second instrument used in the analysis of classroom climate was "Classroom Life" (Edelmann and Schmuck, 1966). This instrument can be found in Appendix I. The instrument is made up of nine items; four that indicate the students' perception of the teacher, three about the students' relations with other students in the class; and two questions about the students' perception of the class in general. All items have been used in previous instruments. Unfortunately, Edelmann and Schmuck report no internal consistency data for this statement. A pilot study involving 312 students was run to determine the instrument's reliability. Reliability was determined by use of the Kuder-Richardson formula No. 21 as reported in Horst (1966). Reliability was found to be .79.

Justification for the Use of the "Classroom Life" Questionnaire

It is the thesis of this paper that OD skills, if applied to the classroom situation, should produce an improved classroom climate. For this study classroom climate is defined in terms of students' generalized attitudes toward the teacher and the class; therefore, unless students' attitudes do change, there is no reason to believe that classroom climate has changed, even if the teacher's verbal behavior does indicate a use of OD skills. For that reason it is important

to have measures of both the verbal interaction between the teacher and the students, and a measure of the student's generalized attitudes toward the teacher and the class. The "Classroom Life" questionnaire provides a measure of student attitudes toward the teacher, his general feelings toward the class, and his fellow students in the class.

Flanders' interaction analysis provides a measure of only one factor that contributes to classroom climate. "Classroom Life" will provide a measure of the student's view of the classroom in terms of (1) his general feelings toward the class, (2) his perception of other students in the class, and (3) his perception of the teacher. This information provides a second measure of classroom climate, from the students' viewpoint.

Statistical Analysis of "Classroom Life" Instrument

The responses to the items in the "Classroom Life" instrument are a Likert-type. One item has six response possibilities. Two items have four response possibilities. The other six items have five response possibilities. All item responses are ordered so that the lower the response number the more positively the respondent views the class in reference to this particular item. A central response would be "average" and a high numbered response would indicate a negative view of that characteristic of the class.

Comparisons were made between test results from the pre-pilot and post-pilot groups and between post-pilot and post-control groups.

Each item was compared for: (1) significance of amount of change, and (2) direction of change. Significance of the amount of change observed was measured by use of the Chi-square technique (acceptable level of significance will be considered to be .05). Direction of change was determined by inspection.

Statistical Analysis of Flanders' Interaction Analysis Data

Statistical comparisons of Flanders' interaction analysis data were made by use of Darwin's Likelihood Ratio Criterion (Darwin, 1955). It has been shown, and is somewhat obvious upon consideration that events in a verbal interaction are not independent of each other. What one says in an interaction is dependent to a certain degree upon what one has previously said, and what the others in the interaction have said. For this reason, a simple Chi-square comparison of matrices cannot be used. Darwin's technique is based on the assumption that communication events are to a degree dependent and makes the necessary corrections needed to meet that situation. Actual computations were carried out by the University of Oregon's IBM 360 computer. (For a complete description of this statistical procedure, see Appendix II.)

Four Flanders' Interaction Analysis matrices were prepared; one for the total of all entries for lessons analyzed from the control group, prior to training; one for the total tallies of the OD group prior to training; one for the control group's total tallies after training; and one for the OD group's total tallies after training.

Hypothesis One was tested by use of Darwin's Likelihood criterion ratio to compare OD matrices before and after the training rejection of the null hypothesis was considered .05 (5 chances out of 100 that results this strong would have occured in random data).

Sub-hypothesis 1a through 1i were tested by the use of Chi-square analysis of column totals of OD pre- and pilot post matrices, disregarding the steady states cells.* The Chi-square test can be used in this case as a comparatively large sample and is used in terms of number of classroom situations and teachers. Again, the .05 level of significance was used to determine hypothesis acceptance.

Testing of Hypotheses Two, Three, Four, and Five

A comparison of those Flanders' categories indicating indirect teacher influence and direct teacher influence can be carried out by using a ratio of the amount of indirect to direct teacher influence. This ratio is generally called the I/D ratio. Indirect influence is indicated by tallies in categories in 1, 2, 3, and 4. Direct influence is indicated by tallies in categories 5, 6, and 7. This ratio was calculated for each teacher, on both before and after Flanders' data. The difference between these two values provides a measure of

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*Steady state cells are those cells which indicate the continued use of one particular verbal behavior. An example of this would be an extended sequence of lecturing. The coders' tallies would be 5, 5, 5, 5 . . . as long as the lecturing continued. Steady state cells are eliminated to cut down the level of dependence between coders' tallies.

the amount of change in the teacher's use of direct and indirect influence in the classroom. This difference was used as one variable from which to run rank order correlations against the variables of: teacher age, years of teaching experience, level of academic preparation, and observer perception of teacher's learnings. Significance of correlation was considered at the .05 level.

Summary

The nature of the organizational development project in the pilot school and the instruments used to collect data were described. Techniques for statistical analysis of the data and testing of the hypotheses were described. The use of Flanders' interaction analysis does present some restriction on how one can deal statistically with the data. However, it provides a researcher with some very valuable information and established statistical techniques. Now, to move on to the analysis of the data and the testing of the hypotheses.

CHAPTER IV

RESULTS

Introduction

In this chapter the analysis of the data gathered will be presented. The results of these analyses will be considered in terms of the hypotheses and subhypotheses developed in Chapter III. Two instruments were used in this study, and data were collected from control and experimental groups. For these reasons, a summary of the results from all instruments from both groups is first discussed. After the consideration of the results of the statistical analysis of the data, hypotheses and subhypotheses are tested.

Analysis of Classroom Life Questionnaire Responses

The classroom Life questionnaire is constituted of three clusters of items. One cluster measured students' perceptions of the teacher, a second measured the students' general view of the classroom, while the third measured students' perceptions of one another. The first analysis of the data was carried out on the teacher items. The items are presented in Table I (page 42) along with changes in the responses of the control and OD groups. Table I indicates that the only significant difference between responses on pretest and posttest measures between control and OD groups occurred on the item "The teacher of this class cares how hard I work." This indicates a positive change on the part of the control group, with no change observed in OD group

TABLE I

PERCEPTION OF THE TEACHER

Change in Classroom Life Questionnaire Responses
From Pretest to Postest

Chi-Square Analysis

		Very well	Pretty well	Some-what	Not Very well	Not well at all	Direction of movement
The Teacher of this class knows most of the students.	Control	4.46*	0.09	3.24	6.36*	0.36	-
	OD	1.61	0.98	0.00	3.27	11.20**	-
		Likes it alot	Likes it some	Likes it a little	Doesn't like it		
If we help each other the teacher of this class likes it.	Control	4.92*	0.70	1.95	0.79		+
	OD	6.42*	0.00	0.36	0.49		+
		Always	Most of the time	Some-times	Hardly ever	Never	
Pupils in this class do what the teacher wants them to.	Control	7.09**	0.09	0.06	34.97**	0.00	-
	OD	2.54	0.52	0.10	9.30**	6.80**	-
The teacher of this class cares how hard I work.	Control	7.46**	0.43	0.61	8.72**	4.59*	+
	OD	0.00	0.00	3.82	7.22**	2.34	0

* significant at the .05 level; ** significant at the .01 level
- movement in a negative direction; + movement in a positive direction; 0 no movement.

responses. Such a change was not predicted by my theory. The overall results reported in Table I indicate no significant differences between the two groups in changes observed in student responses to items referring to the classroom teacher. I therefore concluded that students' perceptions of the teacher were not influenced by the results of the OD training.

Changes in control and OD groups' responses to items referring to the students' general view of the classroom are presented in Table II (page 44). Significant positive changes were observed for both control and OD groups on the item "Life in this class...". The item "How hard are you working in this class?" shows no significant changes for either group. These findings indicate that students' attitudes toward the classroom in general did not change in either group.

Changes in control and OD groups' responses to items referring to other students in the class are quite significant. The change in item responses in the two groups can be seen in Table III (page 45). The control group changed in a negative direction on the item "Pupils in this class help each other," while the OD group shows no significant change. The OD group recorded a significant positive change on the item "Pupils in this class act friendly toward each other," while the control group moved significantly in a negative direction. On the item "Pupils in this class hang around together after school," the control group shows no change, while the OD group changes significantly in a positive direction. The results from items pertaining to the students' relations with his classmates show an overall improvement in the OD school, as compared to the control group.

TABLE II

PERCEPTION OF THE CLASS IN GENERAL

Change in Classroom Life Questionnaire Responses
From Pretest to Posttest

Chi-Square Analysis

		All good	Mostly good	More good	About as good as bad	More bad	Mostly bad	Direction of movement
Life in this class is ...	Control	1.65	4.31*	0.42	6.27*	9.79**	1.74	+
	OD	2.18	0.75	0.93	0.80	3.35	4.70	+

		Very hard	Quite hard	Not very hard	Not hard at all	
How hard are you working in this class	Control	0.67	0.48	0.15	0.00	0
	OD	1.04	0.00	0.00	0.00	0

* significant at the .05 level; ** significant at the .01 level
- movement in a negative direction; + movement in a positive direction; 0 no movement

TABLE III

STUDENT'S PERCEPTIONS OF OTHER STUDENTS

IN THE CLASSROOM

Change in Classroom Life Questionnaire Responses
From Pretest to Posttest

Chi-Squared Analysis

		Always	Most of the time	Sometimes	Hardly ever	Never	Direction of movement
Pupils in this class help each other.	Control	0.00	8.84**	0.24	5.07*	0.00	-
	OD	3.38	0.00	0.00	0.00	2.54	0
Pupils in this class act friendly toward each other	Control	5.33*	0.03	9.88**	0.00	0.00	-
	OD	9 36**	3.82	0.00	1.61	1.69	+
Pupils in this class hang around together outside of school	Control	3.45	1.16	1.92	0.61	3.09	0
	OD	0.00	2.85	2.62	4.42*	0.54	+

* significant movement at the .05 level; ** significant movement at the .01 level
\- movement in a negative direction; + movement in a positive direction; 0 no movement

While there is no clear evidence that an overall positive attitudinal change occurred in the OD school, the data from the Classroom Life questionnaire did indicate more positive attitudes toward classmates in the OD school as compared to the control school.

Results From Flanders' Interaction Analysis Data

Interaction Analysis, according to Flanders, was used to test changes in teachers' verbal behavior. Four matrices consisting of all data for the teachers were prepared in the following groups: (1) Control group, before the project; (2) control group, after the project; (3) OD group, before the project; and (4) OD group, after the project (these matrices are found in Appendix III). Four statistical comparisons were made, using Darwin's Liklihood Criterion Ratio (see Appendix II). The comparisons were: (A) control group before vs OD group before; (B) control group before vs control group after; (C) OD group before vs OD group after; and (D) control group after vs OD group after.

No significant differences were found in total teacher verbal behavior between "Control group before" and control group after" matrices and "control group before" and "OD group before matrices". Significant changes were found (p. .05) between "control group after" and "OD group after" matrices, and between "OD group before" and "OD group after" matrices. These results indicated that significant changes in teacher verbal behavior did occur in the OD school, while the control group did not significantly change.

Table IV shows changes observed in individual teacher's verbal

behavior in terms of Flanders' Indirect/Direct ratio. Flanders' I/D ratio is the ratio of the total number of tallies entered in the categories described as indirect teacher statements (1, 2, 3, and 4), and the total number of tallies entered in the categories described as direct teacher statements (5, 6, and 7).

TABLE IV

SUMMARY OF THE TEACHERS' INDIRECT/DIRECT VERBAL INTERACTION RATIOS IN THE OD AND CONTROL GROUPS

	OD			CONTROL		
Teacher*	Before	After	Change	Before	After	Change
1	.428	.539	.111	.468	.482	.014
2	.467	.571	.104	.442	.443	.001
3	.423	.532	.109	.455	.459	.004
4	.441	.550	.109	.453	.466	.013
5	.455	.573	.118	.422	.427	.005
6	.452	.563	.111	.427	.425	-.002
7	.489	.575	.086	.438	.430	-.008
8	.417	.531	.114	.472	.477	.005
9	.439	.554	.115	.421	.424	.003
10	.472	.549	.077	.498	.477	-.021
11	.418	.533	.115	.451	.468	.017
12	.502	.598	.096	.429	.422	-.007
13	.421	.547	.126	.507	.505	-.002
Averages:	.448	.555	.107	.452	.454	.002

*This listing does not mean to imply that these teachers are matched in any way.

The results in Table IV demonstrate an overall movement of OD group teachers toward higher I/D ratios. All OD group teachers had an increase in I/D ratio ranging from .077 to .126, with the average being .107. Control group teachers' I/D ratios changed an average of .002,

with changes ranging from -.021 to .017. These data clearly showed that there was a change in OD teachers' verbal behavior, in the predicted direction.

Tables V and VI (see page 49) provide a summary of changes that occurred in teachers' verbal behavior in terms of specific Flanders' Interaction Analysis categories. Control group teachers showed significant increases in their use of categories 4 (asking questions), 6 (giving directions), 7 (criticizing students or justifying teacher authority), 8 (student response to teacher questions), and category 10 (silence or confusion).

TABLE V

SUMMARY OF CHANGES IN CONTROL GROUP

VERBAL BEHAVIOR
CHI-SQUARE ANALYSIS

Flanders' category	Before*	After*	Change	X^2 (df = 1)	Significance
1	11	6	-5	2.27	NS
2	265	287	22	1.83	NS
3	1153	1149	-4	----	NS
4	2957	3127	170	10.12	.01
5	2403	2387	-16	0.10	NS
6	1642	1723	81	3.99	.05
7	761	824	63	5.22	.05
8	3046	3265	219	15.75	.001
9	1475	1545	70	3.32	NS
10	2001	2147	146	10.65	.01

*Adjusted totals (total tallies minus any steady state tallies).

OD group teachers showed significant increases in categories 2 (praise and encouragement), 3 (use of student ideas), 4 (asking questions, 8 (student response to teacher questions), 9 (student

self-initiated talk). Significant decreases were found in categories 6 (giving directions), and 7 (criticizing students or justifying teachers' authority).

TABLE VI

SUMMARY OF CHANGES IN OD GROUP

VERBAL BEHAVIOR
CHI-SQUARE ANALYSIS

Flanders' category	Before*	After*	Change	X^2 (df = 1)	Significance
1	7	11	4	2.29	NS
2	275	413	138	69.25	.001
3	1139	1419	280	68.83	.001
4	3017	3257	240	19.09	.001
5	2475	2472	-3	----	NS
6	1693	1279	-414	101.24	.001
7	797	602	-195	47.71	.001
8	3168	3347	179	10.11	.01
9	1566	1754	188	22.57	.001
10	2173	2098	-75	2.59	NS

*Adjusted totals (total tallies minus any steady state tallies).

The changes in the control group teachers' use of categories 6 and 7 indicate an increase in their controlling behaviors. The increase in categories 4 and 8 indicates an increased use of short answer questions and the students' responses to those questions. The increase in category 10 is difficult to interpret, but may be caused by pauses between teachers' questions and students' responses. This was confirmed by the coders.

These results show that OD group teachers moved to a more open, indirect style of verbal behavior. They were using more praise and

encouragement, more student ideas, more questions and less criticism and directions. It should also be noted that both student response types (categories 8 and 9) increased significantly in the OD group, showing that students were more involved in the interaction process.

Tests of Hypothesis I

Hypothesis I was stated as:

> There will be a statistically significant difference between classroom climate before and after the "Inservice Education for School Communication" OD project in the project school (see page 30).

Results from the Classroom Life questionnaire indicated that students' generalized attitudes toward the teacher and the class in general did not change. However, more positive attitudes toward fellow classmates were found (see Table III). Flanders' Interaction Analysis data indicated a marked change in teachers' verbal behavior toward a more indirect, student-centered style by OD teachers. Control group teachers became less indirect and more controlling. It is apparent that while teachers' verbal behavior did change in the predicted direction, students' attitudes toward the teacher and the class in general did not change. At the same time, changes did occur in the students' attitude toward one another in the OD school.

Tests of Hypotheses II, III, IV, and V

Hypotheses II to IV (see page 30) were tested by rank order correlations of teachers' ages, years of teaching experience, and level of academic preparation, against change in teacher Indirect/Direct ratio (see Table IV). Correlations were .07, -.11 and -.08

respectively. None of these correlations were statistically significant. Thus bearing out the hypothesis.

Hypothesis V (see page 30) was tested by running rank order correlations between change in teachers' I/D ratios, and trainer rankings of the learnings of individual participants involved in this study. Three trainers provided rankings of participants. Again, no significant correlations were found, despite high agreement between the trainers in their ranking of participants' learnings.

In light of the above results, I concluded that age, years of teaching experience, level of academic training and trainer rating of participant's learnings were not significantly related to change in teachers' Indirect/Direct ratios.

Summary

The results of the statistical analysis of the data collected from this organizational development project indicated overall students' attitudes toward the teacher and the class in general did not change. However, students' attitudes toward classmates did improve in the OD school. Analysis of the Flanders' Interaction Analysis data showed that OD teachers did move to a more open, indirect, student-centered style of verbal behavior, while control group teachers moved in the opposite direction. No significant correlations were found between changes in teachers' I/D ratios and teachers' age, years of teaching experience, level of academic preparation, and trainers' ratings of participants' learnings.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

This study began by asking three questions concerning the possible effects of an organizational development project on classroom level activity. The first question considered the effects the project had on classroom climate. The second question asked if there are any relationships between certain teacher demographic variables and the amount of change observed in teacher verbal behavior. The last question asked if trainers, from their observations of participants during the activities that make up an organizational development project, could predict which teachers would be most affected. The answers to these questions, as found in this study, will be explored. The outcomes of this study will also be considered in the light of implications for schools undergoing organizational development, and the effects of organizational development on teacher on-the-job behavior.

Summary of Results from the Classroom Life Questionnaire

The changes found in data from the Classroom Life questionnaire indicate that changes in students' attitudes toward each other have improved in the OD school classrooms. Students' attitudes in the OD school toward the teacher and the class in general did not change in comparison to changes in attitudes reported by the control group students. These results may be due in part to the short time lapse (two

weeks) allowed between the termination of the OD project, and the final collection of data. It is very possible that insufficient time was allowed for students' attitudes to reflect the changes observed in teacher verbal behavior. Bailey (1967) explored the hypothesis that human relations training would cause changes in teaching performance, and that this performance change would be perceived by the students. His study involved two high schools, one in California and one in Michigan. Students completed the Western Michigan University Student Opinion Questionnaire on a before-after schedule. The experimental school's faculty participated in a three day and evening human relations laboratory. Bailey's results indicate that there were changes in the perceptions of the students' in both schools, but no significant results were obtained between the two schools. These results would indicate that if teacher behavior does change, student attitude may not immediately reflect that change.

Students' attitudes have been shown to regress as the school year progresses (Flanders, Morrison and Brode, 1968). For this reason these results take on a doubly significant meaning. Not only were student attitudes toward classmates improved over those of the control group students, they did not regress.

The change in students' attitudes toward their classmates may be the vanguard of changes to come in attitudes toward the teacher and the class in general. This would follow from studies done by Flanders (op. cit. p. 7) indicating that there is a high relationship between high teacher Indirect/Direct ratios and improved classroom climate.

The study by Flanders, Morrison and Brode indicates that the observed regression of student attitudes during the school year is related to the "externality" or "internality" of the pupils and to the teachers' verbal classroom behavior. Greater losses in students' attitudes occurred among pupils whose teacher exhibited a lower incidence of praise and encouragement than among those where teachers exhibited a higher incidence of such behaviors. The increase observed in the use of praise and encouragement may be responsible for the improvement in student-classmate attitudes observed in the OD school.

Summary of Results from Flanders' Interaction Analysis Data

The data taken from tape-recordings of classroom sessions are very compelling. From the evidence, it is safe to conclude that the teachers involved in the organizational development project changed their verbal behavior. While the control group teachers increased their use of directions and criticism, the OD group teachers decreased their use of directions and criticism. The OD group teachers increased their use of praise and encouragement, student ideas, and questions.

Changes in the number of students' responses indicated a greater student involvement in the interaction process in the OD classrooms. Students in the control school were responding to an increased number of teacher questions, as were the students in the OD group. However, students in the OD group were also self-initiating more comments, indicating greater freedom to participate in a less prescribed manner.

Teachers in both control and OD groups were maintaining their level of lecturing (category 5), indicating continued concern for cognitive input. OD group teachers were maintaining this level of input without resorting to greater use of directions and criticism to maintain control of the students in their classes.

OD group teachers did not increase their use of Flanders' category 1; accepting and clarifying the feelings of students. OD group teachers did practice dealing with feelings in their group meetings during the OD project. However, it is apparent that this did not become a practice in the classroom. Considering the importance of feelings in group processes, this may be an important omission.

Teachers in the study of Schmuck, Runkel and Langmeyer (op. cit., p. 4) reported "...more attention to the feelings of my students." This was not confirmed by this study. However, this study may not be comparable to the Schmuck et. al. study because of the time teachers spent in organizational development activities in the different schools involved. Teachers in this study spent a total of 18 hours in OD activities. Teachers in the Schmuck study spent about 50 hours in training. This difference in time may be the cause of the lack of change in teachers' use of feelings in the classroom.

Summary and Conclusions from Hypotheses II, III, IV, and V

No significant relationships were found between teachers' age, level of academic preparation, and years of teaching experience when compared to changes in teachers' verbal behavior. It is apparent that these variables did not contribute in attempting to account for

the variance in change in verbal behavior among the teachers. This indicates that other variables should be considered if further research is initiated.

Eisenstadt (1967) was able to account for a considerable amount of the variance observed in changes in participants' behavior by a determination of the participants' "readiness." Readiness was established by an analysis of the participants' applications for training, interviews of participants, and the results of the Krout Personal Preference Inventory. This may be a fruitful path to follow in the future. Eisenstadt also found high relationships to (1) power at home, (2) perception of relevance of the laboratory training, and (3) cognitive sophistication. Unfortunately, none of these variables was considered in this study.

Eisenstadt reports that participants' behavior during the training gave little indication of the participants' learnings. This is in agreement with the results of this study. However, Miles (1964) found a correlation of .55 when comparing trainer ratings and changes in participants' on-the-job behavior. These differences may be present because of the situations participants found themselves in when returning to their work.

Situational variables, such as the work to which a participant returns may be more important than his activity in training. This may be particularly important in the case of change in teachers' behavior, because of the isolated conditions in which they work. A supervisor in industry is constantly confronted with pressures from peers and superiors that tend to maintain prior behavior. A teacher,

working alone in a classroom, may not be faced with the same constraints. This would tend to allow more freedom to experiment with newly learned or discovered behaviors. If power at home is an important variable, as the study by Eisenstadt indicates, this could relate to the changes observed in teacher behavior, as teachers do hold considerable power in the classroom.

During the OD project, teachers invariably mentioned the applicability of verbal communication skills to the classroom. This topic was not introduced by the trainers. Teachers' perceptions of the relevance of verbal communication skills and the concepts of OD to the classroom may account for much of the transfer observed. Unfortunately, data that would shed light on this point were not obtained in this study.

Effects of Organizational Development on Organizational Productivity

Several researchers have tried, with varying degrees of success, to demonstrate that organizational development improves organizational productivity. Their studies were reported at length in Chapter II. The summary of empirical research by Campbell and Dunnette (op. cit. p. 13) states that this hypothesis "...has neither been confirmed nor disconfirmed."

Classroom climate has been shown to be an important factor in student academic achievement. Walberg and Anderson (1968) have found very high relationships between classroom climate and student achievement in the cognitive, affective and behavioral areas. Studies done by Flanders (op. cit. p. 7) and Schmuck and Van Egmond (op. cit. p. 7)

tend to confirm this hypothesis. For those reasons, it was assumed for purposes of this study, that changes in classroom climate would be related to improvements in students' academic achievement.

All teachers participating in this study from the OD group have demonstrated increases in Indirect/Direct ratios. If higher Indirect/Direct ratios are concomitant with improved student classroom climate, then the productivity of the school, in terms of students' academic achievement, has been increased by the organizational development project. If the changes observed in students' attitudes toward classmates are the vanguard of overall attitudinal changes toward the class in general and the teacher, it would add considerable weight to the hypothesis that OD can increase the productivity of schools. Unfortunately it is not known if changes in student-classmate attitudes are preliminary to changes in attitudes toward the teacher and the class in general.

Implications for Schools Undergoing Organizational Development

Results from the study done by Schmuck, Runkel and Langmeyer (op. cit. p. 4) indicate that teachers adopted several small group techniques from the organizational development project for use in the classroom. The results of this dissertation show that teachers changed their verbal behavior to a more indirect, student-centered style. These two findings, when combined, give some indication that organizational development, beyond the affects it may have on improving the problem solving ability of the staff of a school, will change teacher behavior to more student-centered activities both in terms of teachers' verbal behavior, and small group activities.

Critique of the Study and Suggestions for Further Research

As is the case with most doctoral dissertations, a longitudinal study was not possible. This is indeed unfortunate in this case. Several very important questions cannot be answered because of the limited time between the end of the organizational development project and the final collection of data. Longitudinal studies are needed to determine what lasting effects OD may have on teacher verbal behavior and student attitudes.

It is apparent from the results of this study that demographic variables probably did not have any significant relationship with changes observed in individual teachers. For that reason, other variables should be considered. "Readiness," as defined in the Eisenstadt study, would seem a productive path to follow. The variables of power in the on-the-job situation, job security, and percent of time participants work with superiors and peers could also be considered. Organizational variables may be extremely important. Eisenstadt's research also indicates that perception of relevance of training and cognitive sophistication may also be important individual variables.

The control group in this study was limited to teachers in one other junior high school. It would be well to develop control groups from a wider base. Similar types of research should also be carried out in elementary schools and senior high schools.

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APPENDIX I

63/64

NAME _____

TEACHER _____

CLASS _____

In this booklet you will find several questions that have to do with yourself and with other students. Because you will be asked to fill out another booklet like this, or one very similar to it, at a later date this school year, for comparative purposes it is necessary that you write your name and class at the top of this page.

All of the information you include in this booklet will remain strictly confidential. Only the few of us who are collecting this information will know which booklet belongs to which person. No specific details about what is written in these booklets will be given to your teachers, your principal, your parents, or your fellow students.

This is not a test. There are no correct or incorrect answers. There is no grade, and your answers in no way will affect your school's evaluation of your work in this class.

Thank you for your cooperation.

Pupil's Name _____

CLASSROOM LIFE

Here is a list of some things that describe life in the classroom. Circle the number of the statement that best tells how this class is for you.

A. Life in this class with your regular teacher

1. Has all good things
2. Has mostly good things
3. More good things than bad
4. Has about as many good things as bad
5. More bad things than good
6. Has mostly bad things

B. How hard are you working these days on learning what you are being taught at school?

1. Very hard
2. Quite hard
3. Not very hard
4. Not hard at all

C. The teacher in this class knows most of the pupils

1. Very well
2. Pretty well
3. Somewhat
4. Not very well
5. Not well at all

D. The teacher in this class cares about how hard I work (in school)

1. Always
2. Most of the time
3. Sometimes
4. Hardly ever
5. Never

Pupil's Name _____

E. The pupils in this class help one another with their schoolwork

1. Always
2. Most of the time
3. Sometimes
4. Hardly ever
5. Never

F. The pupils in this class act friendly toward each other

1. Always
2. Most of the time
3. Sometimes
4. Hardly ever
5. Never

G. The pupils in this class do what the teacher wants them to do

1. Always
2. Most of the time
3. Sometimes
4. Hardly ever
5. Never

H. If we help each other with our work in this class, the teacher

1. Likes it a lot
2. Likes it some
3. Likes it a little
4. Doesn't like it at all

I. The pupils in this class hang around together outside school

1. Always
2. Most of the time
3. Sometimes
4. Hardly ever
5. Never

APPENDIX II

COMPARING INTERACTION MATRICES

DARWIN'S LIKLIHOOD CRITERION RATIO

Comparing Interaction Matrices

Given two or more matrices, the null hypothesis concerning the matrix distributions can be tested by a likelihood ratio criterion suggested by Darwin (1955).

$$2 (n_{jkl} \log_e n_{jkl} \; n_{jkl} - \underset{K}{} \; n_{j.l} \log_e n_{j.l} - \underset{L}{} \; n_{jk.} \log_e n_{jk} + \underset{M}{} \; n_{j..} \log_e n_{j..} \underset{N}{})$$

A dot in place of a suffix means that summation has been carried out over the replaced variable.

After the matrices needed are completed, the statistical test is as follows:

(1) Prepare a 10 x 10 matrix "A" and the second matrix "B". Check to see that the sum of the corresponding rows and columns within each matrix are equal.

(2) Prepare a third matrix "C" which is a combination of A + B. The addition is performed cell by cell. Matrix C should also balance and the sums of the corresponding rows and columns should equal the combined sums of the rows and columns in matrix A and B.

(3) The first term "K", is found by multiplying each cell frequency by its own natural logarithm ($n \log_e n$), adding these 100 products from A to the 100 products from B, and the sum will equal the first term K.

(4) The second term "L" is found by multiplying each row total by its own natural logarithm, adding the ten products from A to the ten products from B, and the sum will then equal term L.

(5) The third "M" is found by multiplying each cell frequency in the C matrix by its own natrual logarithm, adding the 100 products, and the total will then equal term M.

(6) The fourth term "N" is found by multiplying each row total of matrix C by its own natural logarithm, adding the ten products, and the total will then equal term N.

(7) The four terms (K, L, M, and N) are combined as indicated, that is 2 (K-L-M+N). If logarithms to the base ten are used, the formula becomes 4.605 (K-L-M+N).

(8) For two 10 x 10 matrices, this criterion has a sampling distribution of Chi-squared at 90 degrees of freedom. Since the Chi-squared approaches a normal distribution for higher degrees of freedom, the above criteria can be converted into a standard "z" as follows:

$$z = 2x^2 - 2n - 1$$

where $n = s(s-1)$ and s is the number of categories. For two 10 x 10 matrices, this formula becomes:

$$z = (2x^2)^{1/2} - 13.379.$$

The application of this test to more than two matrices is straight-forward. Term K will include the cell by cell addition of all matrices. Term L includes the row by row addition of all matrices. Term M is calculated from a single, combined matrix in which the cell totals are determined by the addition of frequencies in corresponding cells of the individual matrices. Term N follows the same procedure with the row totals of the combined matrix. The degrees of freedom are s(s-1)(r-1); s is the number of categories and r is the number of matrices.

APPENDIX III

SUMMARY MATRIX

CONTROL GROUP BEFORE TRAINING

	1	2	3	4	5	6	7	8	9	10	Total
1				5	3				3		11
2		18	31	84	66	19	6	12	16	31	283
3		30	213	346	324	47	22	81	162	141	1366
4	6	9	21	462	140	131	44	2281	287	38	3419
5	3	15	25	898	4643	415	93	154	309	491	7046
6	2	3	8	18	214	1065	295	342	158	602	2707
7		2	5	131	111	61	725	21	53	377	1486
8		148	574	812	817	256	112	5446	152	175	8492
9		45	468	245	354	156	55	6	1439	146	2914
10		13	21	418	374	557	134	149	335	1475	3476
										Total Tallies =	31,200

Indirect Total (1+2+3+4) = 5079

Direct Total (5+6+7) = 11239

I/D ratio = .452

SUMMARY MATRIX

CONTROL GROUP AFTER TRAINING

	1	2	3	4	5	6	7	8	9	10	Total
1			1	2				1	2		6
2	2	17	24	80	74	22	11	19	21	34	304
3	2	24	188	325	353	69	22	98	166	90	1337
4	1	13	11	422	159	131	49	2405	327	31	3549
5		8	26	840	4813	421	90	172	307	523	7200
6			11	10	234	986	317	351	170	630	2709
7		8	8	117	133	56	722	32	30	440	1546
8	1	174	523	863	841	270	133	5411	183	277	8676
9		41	453	268	376	182	74	29	1117	122	2662
10		19	92	622	217	572	128	158	339	1064	3211
										Total Tallies =	31,200

Indirect Total (1+2+3+4) = 5,196

Direct Total (5+6+7) =11,455

I/D ratio = .454

SUMMARY MATRIX

OD GROUP BEFORE TRAINING

	1	2	3	4	5	6	7	8	9	10	Total
1			2	2				1	2		7
2		20	29	88	69	21	6	17	14	31	295
3	1	28	197	331	340	60	24	94	175	86	1336
4	2	7	15	451	151	138	40	2331	293	40	3468
5	4	9	24	895	4720	418	95	160	315	555	7195
6		2	11	14	221	1108	303	358	161	623	2801
7		5	7	123	128	53	703	34	41	406	1500
8		171	552	799	822	263	138	5355	178	245	8523
9		47	472	241	363	172	60	24	1220	187	2786
10		6	27	524	381	568	131	149	387	1116	3289
										Total Tallies =	31200

Indirect Total (1+2+3+4) = 5,106

Direct Total (5+6+7) =11,396

I/D ratic = .448

SUMMARY MATRIX

OD GROUP AFTER TRAINING

	1	2	3	4	5	6	7	8	9	10	Total
1			3	4				2	2		11
2		28	51	103	71	104	8	28	23	25	441
3	4	43	367	392	362	37	12	88	224	157	1686
4	4	23	39	522	159	101	11	2429	390	101	3779
5	3	31	49	973	4637	306	41	193	320	551	7105
6		9	22	32	213	801	261	347	170	425	2280
7		9	16	143	137	31	683	59	56	151	1285
8		231	620	846	809	216	120	5141	162	343	8488
9		63	504	262	342	153	47	38	1137	345	2891
10		4	15	502	374	531	102	163	407	1136	3234
										Total Tallies =	31200

Indirect Total (1+2+3+4) = 5,917

Direct Total (5+6+7) =10,670

I/D ratio = .555