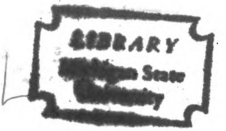
INNOVATION INTERNALIZATION IN A FORMAL ORGANIZATION

Thesis for the Degree of Ph. D.

MICHIGAN STATE UNIVERSITY

Nan Lin

1966



This is to certify that the

thesis entitled

INNOVATION INTERNALIZATION
IN A FORMAL ORGANIZATION

presented by

Nan Lin

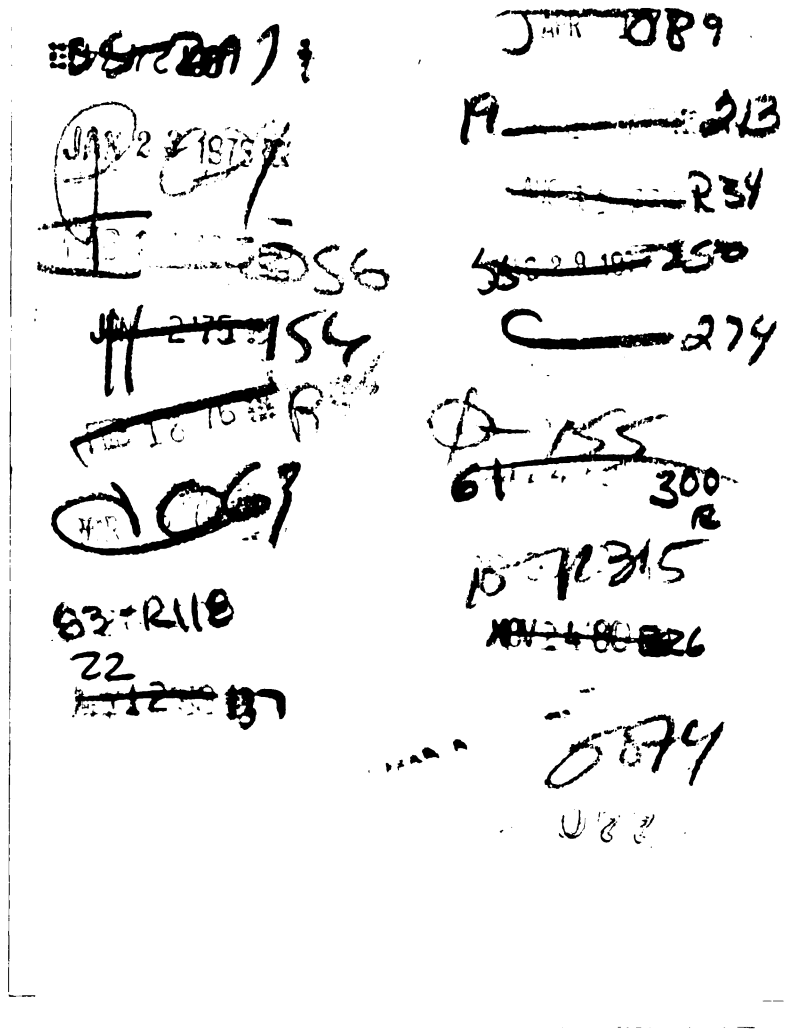
has been accepted towards fulfillment
of the requirements for

Ph. D. degree in Communication

Major professor

Date August 24, 1966

O-169



ABSTRACT

INNOVATION INTERNALIZATION IN A FORMAL ORGANIZATION

by Nan Lin

The purpose of the investigation was to study the process of innovation diffusion in formal organizations. In particular, it was suggested that along with innovation awareness and innovation adoptive behavior, innovation internalization should be investigated since there were occasions where compliance behavior was in effect, thus making the adoptive behavior a very weak, if not meaningless index. A significant set of such occasions was the formal organizations.

To remedy the inadequacy of the existing paradigm of diffusion research, a general model of innovation dissemination and diffusion was presented. It consisted of five components: (1) the source of information, (2) the dissemination or diffusion process, (3) the receiver of information, (4) the impact of dissemination and adoption, and (5) the control system. In the receiver component, three elements were specified and internalization was singled out as the major focus in the study.

A field study was conducted in three Michigan high schools. All teachers in the three schools were asked to fill out a questionnaire in a group situation (N=119). The innovation investigated was schedule modification.

The questionnaire included items of various scales on innovation internalization (the dependent variable), psychological distance, relevant new information about the innovation, feedback, group norm, feeling of security, participation (the independent variables), dogmatism, information level, source credibility, change orientation of the principal, horizontal communication, vertical communication, group cohesiveness, perceived legitimacy of participation, a need for autonomy, equalitarian relationship, and role satisfaction (the control variables). The variables were selected to cover three general areas: formal leadership, interaction of formal and informal opinion leadership, and work group interaction. Scales were constructed in a pretest and validated in the main study.

Eleven interaction hypotheses were postulated. None were found to be significant. Nine of the hypotheses were in the expected direction while two were in the direction opposite from that predicted.

Among the independent variables, information level, group norm, relevant new information about the innovation and participation were found to be significantly related to innovation internalization. Perceived legitimacy of participation was also significantly correlated with innovation internalization.

INNOVATION INTERNALIZATION IN A FORMAL ORGANIZATION

By

Nan Lin

A THESIS

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

DOCTOR OF PHILOSOPHY

Department of Communication

1966

PREFACE

The study was an attempt to integrate several intellectual research areas in the study of a complicated phenomenon. More specifically, it combines theoretical discussions of concepts and models with their empirical applications in a formal organization; namely, an educational system.

The central concept, innovation internalization, was first discussed in the theoretical framework of innovation and information dissemination and diffusion in formal organizations, and then studied in the sampled system. It was hoped that the evidence provided by the data of this exploratory study would strengthen the belief that the concept, innovation internalization, is meaningful and would encourage future empirical efforts toward building a theory of information dissemination in organizations.

I wish to thank the research opportunity granted to me by the Project on Diffusion of Educational Innovations, under the leadership of Dr. Everett M. Rogers, Department of Communication, and Dr. Donald J. Leu, College of Education.

To Dr. Verling C. Troldahl, my thesis advisor, I extend my great appreciation. Dr. Troldahl has been instrumental in guiding this study from the beginning to the very end.

Significant theoretical suggestions have come from the other members of my Guidance Committee: Dr. John Gullahorn, Department of Sociology, Dr. Hideya Kumata and Dr. Erwin P. Bettinghaus, Department of Communication. Dr. Eugene Jacobson, Department of Psychology, also gave some crucial advice. To them all, I owe a great deal.

My colleague on the research team, Mrs. Natalie Sproull, was very helpful in the phases of questionnaire construction and data collection. The Institute for International Studies in Education, College of Education, was the headquarters of the Project. I am thankful to Dr. Cole S. Brembeck and his able personnel, especially Mrs. Marion Jennette, for their daily support.

Technical help was kindly provided by Mr. Albert Talbott and his assistants at the Research Services, Department of Communication.

Finally, I must emphasize that the study is a commencement of research experience made possible with the scientific training and theoretical orientation provided to me by the Department of Communication during the past three years. To Dr. David K. Berlo, the Chairman, and all faculty members in the Department, I am very grateful indeed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX SCALES

CHAPTER I

INTRODUCTION

Diffusion of innovations in a system is a current and urgent topic among both practitioners and scientists. It is hoped that through introduction of new ideas and practices a target system may effectively be changed or improved. Research efforts in diffusion processes are abundant in quantity and diversified in areas of emphasis. However, as bureaucracy is being increasingly associated with the development of society, the lack of empirical evidence and theoretical statements in the nature and reality of change in formal organizations calls for immediate research attention.

As a preliminary effort in responding to this need, this project was designed to fulfill two purposes:

1. To suggest a theoretical model of innovation dissemination and diffusion, with special attention paid to formal organizations. Definitions of organization, formalized organization, diffusion, communication and dissemination, a review of the traditions of diffusion research and the inadequacy of current paradigm or model will be discussed, followed by a brief description of what is needed in an ideal model. Also, a theoretical model to utilize in innovation diffusion and dissemination research is presented.

This theoretical consideration will be covered in the first chapter.

2. To provide empirical evidence on the nature of innovation internalization in a formal organization. The major portion of the paper, however, is a report of an empirical study which attempts to identify the problem of interaction between innovation dissemination and attitudinal variation of the members in a formal organization. Data will be gathered in an educational system where teachers constitute the basic unit of concern.

Definitions

As technical development progresses, specialization of functions and activities has become both a necessity and demanded. The results of this need is the formation of complex organizations, varying in form, structure, task, internal pattern, rules and norms.

An organization can be defined as a system with the following characteristics:

1. It consists of various offices, each of which has its specified and specialized function(s) which is spelled out in written form.

2. These offices are structured along in a hierarchical power line, taking the form of branches of a tree. Each office has a definite superior office to report to and its functions are regulated under the supervision of that office (Weber, 1947).

3. On the top of the hierarchical line, there are a very limited number of offices (either monocratic or multicratic) in charge of all the functions (means) and products (ends) of the system.

4. In each office there are specified positions which have specified roles in terms of the functions and products of the system. A position may be relevant to only one of the processes (function or product). The person who occupies a position is required to fulfill the role-responsibility of the position spelled out explicitly in some form. This position is a primary, if not sole occupation of a person (Weber, 1947).

5. Punishment and reward (such as being discharged from the position, or moving upward or downward along the power line or with decreased or increased material compensation) are regulated according to established rules which usually specify the required competency of the occupant of the position.

6. Communication and interaction, except in infrequent deliberately arranged occasions, take place along the hierarchical power line. Each position has a definite limited range of other positions to communicate and interact with. It seems the density of the amount of interaction and communication follows the law of an approximated normal curve along the power lines with that position as the origin.

Although, admittedly, these characteristics may not all be found in a particular system bearing the title of

organization, they constitute the fundamental features which make organization differentiatable from other types of systems.

For the purpose of internally comparing various organizations, the degree of formalization of bureaucratization can be used. A relatively highly formalized organization is defined with the following elements: (1) Centralization of control--low amount of branching off. (2) Differentiation of functions--more rigorously defined functions for each office and position and less overlapping of functions across positions and offices. (3) Qualification for office and position--more emphasis on competence. (4) Objectivity--more clearly defined role-responsibility for each position. (5) Precision and continuity--more uniform position behavior and consistent response over time (Friedrich, 1952).
The system becomes a dynamic one when it is investigated over a period of time. In fact, one way to evaluate the growth and efficiency of an organization is to study the dynamic process of change that takes place within an organization and its impact on the function or product of the organization. It is in the dynamic aspect of an organization that the terms diffusion, dissemination, communication become meaningful.

Now let us define the terms; diffusion, communication, and dissemination.

Diffusion is the process of message transmission from one state of a system through a second and later states

of a system. It is a subset of the concept, "communication," in that communication can take place between two states while there are at least three states involved in diffusion, with a second state acting both as receiver and sender. In more rigorous terms, diffusion is defined as the process of message transmission from one state, be it a person or an aggregate, through a non-absorbing state to a third state over time. (A state is absorbing if once the message reaches it, it is impossible to be transmitted from it. In other words, it is a terminal state as far as transmission of the message is concerned.)

Dissemination is a similar process of information transmission as that of diffusion. It differs in that: (1) the system within which the transmission takes place is well-defined, (2) the transmission is a deliberate effort on the part of the original state, (3) the description and control of the transmission process in the system is more or less complete and precise. Thus, it can be said that diffusion and dissemination are similar phenomena differing only in the degrees of delineation and description of the system, source intention, and transmission control. A diffusion becomes a dissemination when the additional three conditions are sufficiently evident whereas a dissemination becomes a diffusion when the three conditions are not adequately fulfilled.

To assess a change, rapid or slow, and whether the expected consequences of the change are achieved and sustained

in the organization, it is essential to study how the information about the change is introduced into the organization, how this information is processed through the hierarchical line, how it is received and reacted upon by the behaviorally or attitudinally affected members of the organization, how the actual change is received, and finally what the consequences of the change upon the function(s) and/or the product of the organization are. Such study, focusing on the dynamic aspect of a formal organization as a change (innovation) is introduced, is generally considered as a topic in the "diffusion of innovation" and "information dissemination" research traditions.

Traditions of Diffusion Research

The problems of diffusion and diseemination have been studied in various kinds of research traditions. Although they study common phenomenon and attempt to describe and explain it theoretically, the contents are inevitably different and variables considered also vary.

The rural sociological approach to studying diffusion of agricultural innovations is best represented by the Ryan and Gross study (1943) of hybrid seed corn, and Lionberger studies (1949) of informal communication patterns in communities, the Wilkening studies (1949) of social psychological variables, and Coleman's study (1946) of sociometric data on soil conservation. This tradition also provided the fundamental data for the significant summarizing document

on diffusion of innovation by Rogers (1962).

The major contribution to the studying of educational innovations has come from the Columbia University Teachers College since the late 1920's. The effort was originally guided by Mort and best summarized by Ross (1958). Adaptability of schools to new practices is the central theme in most of the studies. Recent efforts include R. Carlson's study of adoption of educational innovations (1965) and J. Coleman's study of school climates (1961).

The diffusion of medical drugs was first studied by Caplow (1954). A series of systematic investigations was made by the Columbia University Bureau of Applied Social Research under the leadership of Katz, Menzel and J. Coleman (1954).

The communication approach to the study of news diffusion and dissemination problems includes research by Deutschmann and Danielson on four major news events (1960), Deutschmann and Borda on adoption patterns in a village of a developing country (1962) and the study of diffusion of news of the Kennedy assassination (Greenberg and Parker, 1964).

Dissemination of scientific information is another approach to studying innovation diffusion. Centers to study the optimal process of dissemination of scientific information to practitioners and fellow scientists have been established at The University of the State of New York (Center on Innovation in Education), the Johns Hopkins

University (Center for Research in Scientific Communication), University of Michigan (Center for Research on the Utilization of Scientific Knowledge), and Stanford University (Institute for Communication Research), among other academic institutes. Extensive data were gathered by Garvey (1963, 1965), on the diffusion process of scientific knowledge among psychologists.

The spatial diffusion study is an approach first taken by Hagerstrand (1952, 1960) to study population immigration and spread of agricultural products in Sweden. This approach has become closely associated with machine simulation of innovation diffusion through the works of Karlson (1958), Pitts (1962), and Deutschmann (1962).

A unifying effort to summarizing and conceptualizing all the findings in the diversified areas of subject matters was made by Rogers (1962). It is, to date, the best documentation of empirical evidence of diffusion research.

Inadequacy of Existing Paradigm

It is suggested that the adoption process consists of five stages (NCRS 1955): (1) awareness, (2) interest, (3) trial, (4) evaluation, and (5) adoption. Rogers (1962) also discussed disadoption and continuation phenomena after the state of adoption or rejection. The paradigm, reflecting the focus and weaknesses of parts of diffusion research in general, suffers in at least two respects: (1) empirically, the transition from one stage to another varies in the length of time, and the delineation of one stage from another is

sometimes difficult. Questions have been realised, such as: (a) whether interest-evaluation-trial are an ordered set, and (b) how the first occurrence and the final termination of one stage can be objectively measured. (2) Theoretically, the attention so far paid to studying the phenomena modeled in this paradigm is rather narrow and not exhaustive. A crucial yet seldom touched topic, for instance, is the problem of evaluation of innovation adoption. The central focus of innovation diffusion studies is usually presupposed by the assumption that innovation adoption is by definition desirable. Rigid examinations of the validity of this assumption seem to have so far been neglected. The damage which could occur through interpretations of outcomes of the studies where this assumption is not true can be incalculable in terms of both their practical values and contributions to theory-building.

Another topic calls for studies on the discrepancy between attitudinal and behavioral changes. The usual diffusion studies investigate the adoption rate, innovativeness, and other concepts which are defined operationally in terms of the length of time period during which an innovation has been behaviorally adopted. Social psychologists (Festinger, LePiere, etc.) have empirically demonstrated that under certain conditions behavioral change does not imply attitudinal change. This discrepancy further implies the need to investigate the two variables separately in an innovation diffusion study.

This inadequacy of the paradigm becomes more obvious when it is applied to the study of diffusion of innovation in a formal organization. A formal organization differs from other kinds of social systems in that the power structure in it is clearly delineated, roles and positions are well defined, and compliance behavior in accordance with the position held and fulfillment of hierarchical demands are usually in effect. When an innovation or change has been adopted by high level decision-makers, adoption rate is likely to be relatively high since the low-ranking members comply in accordance with their role-expectations. However, the success of the innovation or change should be measured beyond the adoptive point exhibited by the members of the organization since different degrees of effort or commitment to an innovation will be found among members after they have adopted it due to different degrees of their internalization of the innovation. As Merton pointed out (1957):

> If the bureaucracy is to operate successfully, it must obtain a high degree of reliability of behavior, an unusual degree of conformity with prescribed patterns of action. . . . Discipline can be effective only if the ideal patterns are buttressed by strong sentiments which entail devotion to one's duties, a keen sense of the limitation of one's authority and competence, and methodical performance of routine activities. The efficacy of social structure depends ultimately upon infusing group participants with appropriate attitudes and sentiments. (p. 199.)

Barnard, in discussing authority, says (1938):

> A person can and will accept a communication as authoritative only when four conditions simultaneously obtain: a) he can and does understand

> the communication; b) at the time of his decision he believes that it is not inconsistent with the purpose of the organization; c) at the time of his decision, he believes it to be compatible with his personal interest as a whole; and d) he is able mentally and physically to comply with it. (pp. 163-171.)

It is clear that the first condition stated by Barnard is the cognitive awareness of the information while the next two conditions and part of the last condition are attitudinal.

Kelman (1961) in his discussion of social influence and opinion change proposed and partially validated three distinctive processes from which adoptive behavior may be induced. In the "compliance" situation, he stated, the adoptive behavior is observed only when surveillance of the influencing agent is in effect. In the "identification" situation, the adoptive behavior will persist as long as the individual's relationship with the influencing agent continues. In the "internalization" situation, the adoptive behavior will be retained as long as the issue at hand is perceived as relevant to the values of the individual.

Internalization is thus defined as the extent to which a member perceives the innovation or change as relevant and valuable to his role performance in the organization. In contrast to internalization, compliance is defined as the use of the innovation, whether the member sees the innovation as relevant or irrelevant to his role performance in the organization. Using Barnard's term, the adoption of innovations belongs to the group of orders for actions in the "zone of indifference" where these orders are unquestionably acceptable. "The person affected will accept

orders lying within this zone and is relatively indifferent as to what the order is so far as the question of authority is concerned. Such an order lies within the range that in a general way was anticipated at time of undertaking the connection with the organization" (Barnard, 1938).

Thus, it is essential to measure the degree of innovation internalization among the members in the organization in addition to studying their adoptive behavior so to determine the actual effect of the innovation in the formal organization.

Another element which is apparently lacking in the general diffusion paradigm, yet essential in studying the phenomenon, is the process of decision-making. Simon states this problem clearly: (1945)

> Although any practical activity involves both "deciding" and "doing," it has not commonly been recognized that a theory of administration should be concerned with the processes of decision as well as with the processes of action.

Decision-making is not only crucial at the high level offices in terms of selection of innovations, it is also an essential topic in the study of how the decisions of the low-ranking members in the organization may be influenced (Simon, 1944).

Impact study also deserves an important place in the research strategy of innovation diffusion in formal organizations, as well as in other systems. Rogers (1965) has emphasized the need of our focusing on this problem in studying changes in educational systems. The impact or consequences of an innovation, beyond any doubt, should

be one of the most appropriate criteria in determining the success and usefulness of the innovation to the organization.

If we take the viewpoint that the world as a whole behaves according to the second law of thermodynamics--that confusion increases and order decreases (see arguments by Wiener, 1954, Chapter 2)--we are led to consider the problem of control, which is a device intended to slow down the speed of decay in an organization through negative feedbacks. Changes may themselves be either creative (thus, order-building) or pathological (thus confusion-increasing) (Deutsch, 1952). Therefore, the control system in the organization set up to regulate the quantity and quality of information about the change, and the change itself, is of vital importance in the study of innovation diffusion. A control system study should cover at least three elements: (1) the feedback system which provides information upward vertically, (2) the memory storage which processes the feedback information, and (3) the reinforcement system which is the adjustment on the process of information dissemination and change implementation made by the high level office, having investigated the processed feedback information, upon the organization. (See Allport, 1964, for definition of "feedback" and "negative feedback.")

Presentation of a Model

All the above discussion seems to lead to a demand of a new diffusion model general enough to study the diffusion phenomena in various systems, including formal

organizations, which possess the following properties:

(1) It should incorporate the elements in the existing paradigm which are distinguishable, in the sense that they can be measured objectively; and significant, in the sense that its occurrence is frequently found across all fields of substance.

(2) It should incorporate the other important elements not previously attended to in the paradigm.

(3) Each element in the model should be worthy of study independently, which requires a differentiation power from one element to another.

(4) A study can be made to investigate all elements in the model, which demands an integration of all elements. Such a study should at least be theoretically possible and meaningful.

With these conditions in mind, and the problems discussed, the following model of information dissemination is suggested:

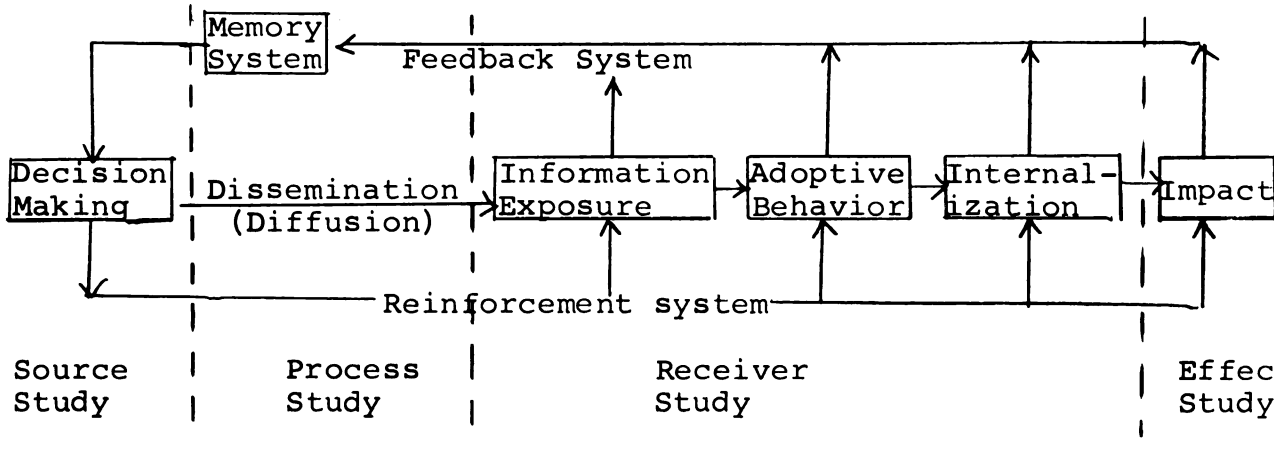


Figure 1. A model of innovation dissemination and diffusion.

This model comprises five basic parts:

1. The source of information: in an organization, the source is the high level office which has the decision-making and message construction functions in terms of initiating and regulating a change in the organization.

2. The dissemination or diffusion process: in an organization, this process consists of a) channels of offices through which information is transmitted, b) the input and output behavior of these channels, and c) the problems of linkage between channels.

3. The receiver of information: in an organization, the receiver is defined as the member whose function or role is directly affected by the change initiated. At least three elements, how and when he becomes aware of the information, how and when he adopts the innovation, and how attitudinally he is willing to commit to the change, deserve research attention.

4. The impact of dissemination and adoption: it includes the consequences of the information about the change and the change itself upon the members, the functions, the products of the organization, and upon the relevant environment and society.

5. The control system: it consists of three elements; the feedback system, the memory (storage) system, and the reinforcement system.

In describing the model, one may start from the left hand side of the diagram with the source. When a set of

potential changes is presented to the source from either external or internal planners, he has to, first of all, decide if a change should be initiated. Then, he has to select the change(s) which, through past experiences and scientific calculations, is expected to bring the optimal effect intended for such a change in the organization. Further, the source has the responsibility to construct messages to inform the members about the change about to take place. (The source may delegate this task to an office.) These messages are disseminated in the organization through various branches of offices along the hierarchical power line. (It should be noted that, for some changes, the dissemination process does not follow the hierarchical power line.) The receiving member is expected to be exposed to this information, followed by his adoptive behavior, when the change is introduced. A series of consequences of the change follows from the adoptive behavior of the members. His internalization of the change should be studied. How far off the observed consequences are from those expected is one of the control functions brought about by the feed-back system. It also investigates possible undesirable side-effects of the change which occur either in the members' roles and functions or in the end-product of the organization, or upon the relevant society. This information is fed into the memory system and processed for presentation to the source office. The source evaluates this information and makes another series of deliberations and decisions. It

then adjusts the dissemination process and enactment of change accordingly. This process may go on and on until the change has been completely assimilated into the organization and has become an integrated part of its routines. (Even when a change is assimilated into the organization, it can still be studied as described by the model. However, it is beyond the focus of this particular paper.)

There are many interesting problems arising from investigation of this model. For example, under what conditions does the adoptive behavior take place before internalization occurs, and under what other conditions does internalization occur before the adoptive behavior? One possible answer lies in the distinction between a general social system and a formal organization, where compliance is demanded; another concerns the degree of dogmatic or authoritarian traits of the system or the individual.

Another interesting topic is the possibility of "killing" or abandoning the change upon consideration of the feedback information. One might ask, "What are the points in the organization where, and what are the probabilities at which negative feedback and side-effects are cumulated to exceed the positive effects to such an amount that the decision to kill the change will occur at a particular time?"

How can this model be utilized? In other words, what are some of the possible ways for this model to contribute to our knowledge about diffusion? At this particular moment, the following are considered to be possible results

of using this model;

1. For each diffusion content area, a systematic summary of research findings and theoretical discussions to date can be made.

2. From the summary, ~~neglection of~~ a particular phase can be singled out and further studies can be focused on this phase.

3. For a particular formal organization, an overall view of the information dissemination process can be constructed and studied.

4. For a particular formal organization, the weak linkages can be discovered and remedied.

5. Simulation models can be constructed to study the particular behavior of information dissemination in a formal organization. The value of such models depends on the comparison between 1) the simulated components and the simulation results and 2) those of reality.

6. It can be used as a preliminary step toward constructing a theory of information dissemination and diffusion.

The Problem

Having presented the general model of information, dissemination and diffusion, a particular organization and a particular segment of the model to be focused on in the present study will be discussed. This is a diffusion study in the U.S. education system focusing on the internalization process and related phenomena.

Comparatively speaking, educational change is a much slower process than changes which take place in agriculture or medicine (M. Miles, 1964, and Rogers, 1965). For one thing, formal organizations are relatively less receptive to change (Griffith, p. 425, Miles); for another, re-training of the relevant members involved in a change may be rather costly. Also, stability of the organization itself is usually the most important consideration. However, the significance of change and rapid up-dating processes became apparent when another country's scientific achievement (the Sputnik adventures of the Soviet Union since 1958) forced the persons concerned with education to take another look at the educational system and investigate ways to shorten the length of time required to attain and retain the leadership of educational accomplishments. Since late 1950's the government and private foundations all have responded to the call for re-evaluation and redesign of the educational system by pouring in billions of dollars each year for research work and development which studies the ways and means of bringing innovations into the educational system effectively (Miles, 1964). Although it is dangerous to assume that any change is equivalent to progress, it is equally clear that progress requires change.

It is also under this kind of scrutinization that the paradigm of the diffusion process which also exists in fields such as medicine, mass communication, agriculture, geography is regarded as inadequate. Rogers (1965) pointed

out that there is no corps of change agents in education at all comparable to those in other fields, that the impact or consequences of educational change is less easily to be assessed and evaluated, and that it is often the case that decisions in regard to the adoption of certain changes are not made on the individual basis so "adoptive behavior" as such may not be a meaningful research variable.

It would seem that the model just presented should be useful in studying the change process in education. In addition to the fact that it brings into focus the essential elements in such a process, the model pays especial attention to the concept of internalization, a concept which may be more significant and meaningful than the observed behavioral adoption of the change in some contexts, notably the formal organizations. It is hoped that this new contribution may orient diffusion studies in the educational system toward a more meaningful and fruitful path of understanding the process and effect of innovations.

The particular question of the central interest of the investigation here is: What are the factors contributing to the explanation of the variability in the degree of internalization among members of a certain change in a formal organization, namely in an educational system? More specifically, assuming an innovation is introduced into a school building, what are the factors which can explain the variability in internalization of the new idea among teachers?

Lack of research attention in this area is surprisingly

evident. Industrial psychologists have studied job satisfaction and productivity rates. It is far from clear how these elements are related to the members' attitudes and behavior toward a particular change or innovation.

Review of Literature and Presentation of Hypotheses

In the remainder of this chapter, an attempt will be made to present variables which are considered important in predicting or explaining the dependent variable "internalization." For each set of hypotheses, some relevant studies are reviewed, hypotheses are derived, and their relevancies are discussed.

Formal Leadership

An important relationship in the power structure of a formal organization is that between the subordinate and his superior. Mann (1957) indicated that expectations of the superior are more important forces for creating change in an individual than the expectations of his subordinates. The Hawthorne studies demonstrated that psychological rather than physiological reaction contributed to the results of constant increase of the production rate (1941). Likert (1961), in stressing the need for both upward and downward communications, stated that employee-centered rather than job-centered superior style is more likely to induce high production rate. Levinson (1965) discussed the importance of organization affiliation and introduced the concept of

reciprocation which he defined as a continuous process of fulfilling mutual expectations, or carrying out a psychological contract, and, or enhancing the man-organization relationship. Comrey, High and Wilson (1955) found that production rate is correlated with social nearness as perceived by the member.

Thus, it seems that the relationship between a teacher and the principal should be personal rather than institutional; employee-centered rather than job-centered; and helpful rather than rigid-controlled as perceived by the teacher if he is to accept an innovation being diffused in the organizational hierarchy internally. I will call this perceived relationship "psychological distance." And we can see the shorter this psychological distance between the teacher and the principal, as perceived by the teacher, the more likely for the teacher to internally accept the innovation.

This phenomenon is especially likely under the assumption that the teacher is highly dogmatic and trusts whatever information is given to him by a perceived reliable source--in this case, the principal. Rokeach (1960) in his belief system theory stated that for a highly dogmatic person, the differentiation between information source and information itself is weak and that for a less dogmatic person, he is more likely to judge the information on its own merits, independent of the information source (his superior). This hypothesis was empirically confirmed

by Powell (1964). Also, Vidulich and Kaiman (1961) found that high status of the person providing information compared to low status was more influential with people who tended to be more dogmatic or authoritarian, whereas low status information source carried greater weight with more open-minded, less authoritarian people. This experiment seems to support the interaction between psychological distance and a person's belief system in eliciting productivity. The relationship should also be an important one in determining the degree of a member's internalization of an innovation introduced by the organization. Thus, we may hypothesize:

H1: The greater the psychological distance between a teacher and his principal, as perceived by the teacher, the less likely he is to internally accept an innovation adopted by the school system. This negative correlation will be stronger among high dogmatics than among low dogmatics.

H2: For a high dogmatic teacher, the perceived shorter psychological distance between him and his principal is more important than the level of information in determining the degree of his internalization of the innovation.

H3: For a low dogmatic teacher, high information level is more important than the perceived psychological distance between him and his principal in determining the degree of his internalization of the innovation.

Likert (1961) suggested that job satisfaction may be linked with the amount of new information transmitted from a superior to his subordinates. Mann (1957) also indicated that the more meaningful and relevant the material the greater the likelihood of acceptance of change induced

by the organization. It seems safe to postulate:

H4: The more frequently a teacher is posted on relevant new information about an innovation by his principal, the higher the degree of the teacher's internalization of a given innovation, and the more the teacher perceives the principal as a credible source the higher the relationship will be.

Mandell and Duckworth (1955) found that overall morale of 64 trades employess in civil service was high if they said that their "superior lets them know how they are doing." Costello and Zalkind (1963, pp. 218-219) emphasized the importance of "knowledge of results" in a person's performance in his organization. They suggested that 1) the knowledge of the results of one's learning effort almost universally increases the speed of learning and the level of proficiency achieved, 2) the more specific the knowledge of performance the more rapid is the improvement and the higher is the level of performance, 3) the longer the delay in giving knowledge of performance, the less effect the given information has, and 4) giving the learner knowledge of his results tends to increase his motivation to learn.

Comrey, High and Wilson (1955) found that production was correlated significantly with amount of communication downward. These statements point out the importance of downward feedback in an organization and we are led to hypothesize:

H5: The more frequently a teacher receives feedback from his principal on the adequacy of his work-related performance, the greater the degree of his internalization of an innovation, and

the more his principal is perceived as chang-oriented the higher the relationship will be.

Interaction of Formal and Informal Opinion Leadership

As Likert (1961) pointed out that good communication and high performance go together. Comrey, High and Wilson (1955) found empirically that production and vertical communication is highly correlated. The Hawthorne studies (1941) have shown that horizontal communication is the most important factor in affecting the production rate. Guion (1958) found that morale was associated with absence of conflict in the work group.

On the other hand, Guion (1958) also found that the process of successful change in a hierarchical organization will start and continue to the extent that the members perceive the behavior of superiors, peers, and subordinates to be in keeping with the norms of behavior in the larger organization. Mechanic (1963) discussed that although there is a formal patterning of power within organizations, an informal power structure may develop which is incongruent with formal organization. The influence that lower-ranking personnel achieve tends to be characterized by an ability to thwart or resist change. Roy (1954) found similar results in a machine shop.

Thus, we can see that there are at least three elements at work in terms of the interaction of formal and informal leaderships; namely, 1) the vertical communication

between the subordinate and his superior, 2) the horizontal communication between the subordinate and his peers in the work group, and 3) the perceived norm of the work group. It should be pointed out that all these relationships are psychological in nature, for what the member believes to be the relationships is much more important than what the relationships actually are. With these three factors, we may hypothesize:

H6: When his work group opinion highly favors an innovation, the more frequently the teacher engages in horizontal communication the greater his degree of internalization of the innovation; conversely when the work group opinion is not very favorable toward the innovation, the less the teacher's frequency of horizontal communication the greater his degree of internalization.

Work Group Interaction

In a study done by Seashore (1954), it was found that, when a member's feeling of security in the organization was high, group cohesiveness and productivity were positively correlated. When his feeling of security in the organization was low, group cohesiveness and productivity were negatively correlated. This interaction between group cohesiveness and feeling of security may hold true when the dependent variable becomes internalization of an innovation by a teacher.

H7: When a teacher's feeling of security in the school system is high, his perceived degree of group cohesiveness will be positively correlated with his internalization of an innovation; when his feeling of security in the school system is low, however, his perceived group cohesiveness will be negatively correlated with his internalization of an innovation.

Group participation is another important variable affecting success of change in an organization. Coch and French (1948) found that participation and group discussion were effective ways to overcome resistance to change. Mann (1957) also stressed that participation in analysis and interpretation helps by-pass those resistances which arise from proceeding too rapidly or too slowly. Mann and Neff (1961) found that participation in problem-solving is important in bringing about motivation for change. Levine, Jacob, and Butler (1953) found that group decision is superior to lecture in bringing behavior change.

However, the effect of participation in bringing about internalization has to be qualified by some conditions. French, Israel, and As (1960) partially confirmed that participation will increase motivation and job satisfaction and will improve relations with the other party only to the extent to which the given form of participation is considered legitimate.

Mann and Neff (1961) also found that participation is effective in motivating change only when the relationship between the superior and the subordinate is equalitarian rather than authoritarian in nature, when the subordinate feels a need for independence, and when his attitude toward his job is favorable. Thus, we may postulate the following hypotheses:

H8: Participation increases internalization of an innovation by a teacher, and it is more so when the given form of participation is seen as legitimate by the teacher than when it is not.

H9: Participation increases internalization of an innovation by a teacher, and it is more so when his relationship with his principal is equalitarian than when it is authoritarian.

H10: Participation increases internalization of an innovation by a teacher, and it is more so when the teacher feels a need for independence than when he does not.

H11: Participation increases internalization of an innovation by a teacher, and it is more so when his attitude toward his job is favorable than when it is not.

CHAPTER II

RESEARCH DESIGN AND DATA COLLECTION

Sampling and Data Collection Plan

The empirical testing of the hypotheses was conducted as a field study in several schools. The unit of analysis was the teacher in the secondary school.

1. Pretest: One high school with 30 or so teachers was selected (denoted as School P) in order to construct and validate the measurement scales of several concepts. Internal consistency tests were performed with the pretest data and the questionnaire items for the main study were subsequently constructed.

2. Main study: Three high schools were selected in Michigan and self-administered group interviews with all the teachers in the selected schools were conducted. Sampling considerations in selecting schools included the following:

a. Size of schools: The school size should be large enough (30) for tests of homogeneous variance across schools.

b. Innovative schools: The schools must have officially adopted the innovation of interest. The innovation was selected on the basis of its controversial nature among teachers preceding the adoptive behavior of the school.

c. Size of sampled teachers: The total number of teachers interviewed, for statistical stability purposes, should be around 100.

d. Other control variables: The selected schools should be comparable in terms of their geographic locations (metropolitan, urban, or rural), sizes of student body, educational levels of the teachers, teaching experiences of the teachers, educational levels and school-administering experiences of the principals, and the financial status of the schools.

Operationalizations of Concepts and Scale Construction

The study is a descriptive and correlational one; hence, no manipulation of variables was done. The conceptual and operational definitions along with some samples of the items used are:

1. Internalization. The extent to which a member perceives the innovation or change as relevant to his role performance in the organization. Operationally, it is the sum of scores a teacher obtains from his responses to questions dealing with the value and significance of a change to his teaching duty and the educational system as a whole.

e.g., "I think schedule modification represents an improvement in educational practices at my school."

1. agree very much
2. agree on the whole
3. agree a little

4. don't know

5. disagree a little

6. disagree on the whole

7. disagree very much

2. Psychological distance: The extent of closeness a person perceives the social relationship (identification) of himself and another person or institutionalized person as being. Operationally, it is the discrepancy between the perceived social distance score between "teachers" and "your principal" and the perceived social distance score between "yourself" and "your principal."

e.g., a. "The principal makes teachers feel at ease when talking with him."
b. "He makes me feel at ease when talking with him."

3. Open- and Closed-Mindedness: The extent to which a person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside. Operationally, it is the sum of scores a teacher obtains in his responses to the Troldahl-Powell short form of Rokeach's Dogmatism scale (Troldahl and Powell, 1965, 20 items).

4. Information level (within the state educational system): The extent to which a person possesses the knowledge about a certain defined set of events or phenomena. Operationally, it is the sum of scores a teacher obtains in his responses to questions dealing with the activities and personalities within Michigan educational system.

e.g., a. "Do you happen to know what the main issue about the Amish School in Hillsdale County controversy is?" (open-ended question)
b. "Do you happen to know who the superintendent of your district is?"

5. Relevant new information about an innovation: The amount to which a person possesses the knowledge about a certain defined innovation which is related to his role in the specified system or organization. Operationally, it is the sum of scores a teacher obtains in his responses to questions about the location, quantity, quality, and other attributes about the innovation under investigation.

6. Source credibility (on educational innovations): The perceived degree of reliability placed upon the source of a message, independent of the nature of the message. Operationally, it is the sum of scores a teacher obtains in his responses to the Berlo-Lemert-Mertz source credibility scale on the dimensions of safety, dynamism, and competence (Berlo, Lemert and Mertz, 1966).

7. Feedback: The evaluative information received by a person in regard to his role performance and his attitude toward his role in the specified system or organization. Operationally, it is the sum of scores a teacher obtains in his responses to questions on how often his principal talks to him about his teaching performance in the school, gives him encouragement, and renders him help.

e.g., "The principal never lets me know if he has heard any praises or criticisms about my teaching performance." (A negative statement.)

8. Change of orientation of the principal (general attitude toward change): The degree of general predisposed favorable attitude toward changes and innovations. Operationally, it is the sum of scores a principal obtains in teachers' responses to questions dealing with the necessity, importance of, and personal adjustment to changes in general in the school system.

e.g., "Personally, I feel I can adjust to changes easily."

9. Group opinion leader: The person whose opinions generally are highly regarded, frequently sought, and positively evaluated by others in a defined system or organization. Operationally, it is the person who obtains high scores from sampled teachers on their responses to items eliciting names of (1) respected teachers, (2) teachers whose opinions are most frequently sought, in teaching problems, and (3) teachers whose opinions on crucial educational issues are valuable (sociometric choice).

e.g., "Name three teachers whose opinions you most frequently seek when you have problems related to your teaching performance."

10. Vertical communication: The extent of communication which takes place between persons of different hierarchical positions formally defined in a specified system or organization. Operationally, it is the sum of scores a teacher obtains in his responses to the questions on the frequency of his talking with the principal on school activities and teaching problems.

e.g., "Compare with an average teacher, the principal talks to me about discipline problems:

_____ much more frequently
_____ more frequently
_____ about the same amount
_____ less frequently
_____ much less frequently

11. Horizontal communication: The extent of communication which takes place between persons of similar or equivalent hierarchical positions formally defined in a specified system or organization. Operationally, it is the sum of scores a teacher obtains in his responses to the questions on the frequencies of his talking with other teachers in the same school on school activities and teaching problems.

e.g., "Compared with an average teacher, I talk to other teachers about non-academic school activities:

_____ much more frequently
_____ more frequently
_____ about the same amount
_____ less frequently
_____ much less frequently

12. Feeling of security: The extent to which the values held by a person, perceived by him as essential to his existence, are not threatened by stimuli received in the specified system or organization. Operationally, it is the sum of scores a teacher obtains in his responses to questions dealing with how compatible he thinks his role as a teacher and his personality are, how safe he thinks he is in the school, and how much he believes others in the school like him.

e.g., "I really feel at home in this school as nothing makes me nervous or uneasy.

13. Group cohesiveness: The extent to which a person perceives the membership of a defined group as valuable and attractive. Operationally, it is the sum of scores a teacher obtains in his responses to the questions on how much he wants to stay in the school and how well teachers get along in the school as perceived by him.

e.g., "If I had a chance to do the same kind of work for the same pay, in another school, I would consider moving." (A negative statement.)

14. Decision-Making participation: The extent to which a person perceives himself as taking part in discussions or information exchanges leading to decisions which affect the group to which that person belongs. Operationally, it is the sum of scores a teacher obtains in his responses to questions on how often he attends decision-making discussions and how influential he thinks he is with his principal in making decisions.

e.g., "I don't think I can influence the decisions of the principal regarding things about which I am concerned." (A negative statement.)

15. Perceived legitimacy of participation: The extent to which a person perceives his taking part in decision-making discussions as compatible with his role and the group norms. Operationally, it is the sum of scores a teacher obtains in his responses to questions on whether it is a general practice for teachers or him to take part in decision-making discussions.

e.g., "It isn't really the job of the teachers to take part in any decision-making discussions regarding school matters." (A negative statement.)

16. Need for autonomy: The extent to which a person is predisposed to strive for self-reliance, to act alone without help. Operationally, it is the sum of scores a teacher obtains in his responses to questions on the frequency with which he regularly engages in independent behavior and the satisfaction he gets from such behavior.

e.g., "Everybody is responsible for his own life and no one else can live the life for him, so I make my own decisions and judgments."

17. Role satisfaction (attitude toward job): The degree of a person's predisposed favorability toward the position he holds in a defined system or organization to which he belongs. Operationally, it is the sum of scores a teacher obtains in his responses to the questions dealing with his satisfaction as a teacher in the school.

e.g., "I have some very good reasons to refute the general feeling that any one can be a teacher."

Demographic and background variables such as age, sex, educational level, relevance of training to his teaching subject, salary, traveling out-of-state and abroad, and others were also included in the questionnaire.

Pretest

The pretest consisted of three separate stages. After reviewing relevant literature, a number of items was adopted from existing scales. (See the Appendix for the finally adopted items.) Additional items were constructed. The assembled list of items became the first booklet. Two education graduate students at M.S.U. who had had previous

high school teaching experience were invited to go through the booklet and critically examine the items. This stage was primarily intended to adjust the clarity of the items. After modifications and reorganization, the screened items were typed and a preliminary form of questionnaire was mimeographed. A discussion group was formed to go through the questionnaire item by item. Definitions, examples, and format were also checked. This group included two faculty members and two research associates. The result of this second stage scrutinization was a questionnaire to be used in a pretest high school.

The decision was made in early October, 1965, that a high school in Michigan with 30 or so teachers should be selected for the purpose of the pretest. In order to select a school which had not adopted the innovation ("Flexible scheduling") which could be investigated in the main study, and yet had adopted an innovation which in general affected most of the teaching staff and students, a short survey form was sent out to more than 60 secondary school principals in Michigan inquiring about the innovations which had been adopted and the size of teaching staff in each school.

School P was selected as the pretest school for the following reasons:

1. It has a faculty body of 33 teachers which was a sufficient number for pretesting.

2. It is an innovative school which has adopted innovations such as "independent study," "language laboratory," "programmed learning," "new mathematics," and "biological science curriculum services."

3. It has not adopted "flexible scheduling" which was the innovation to be studied in the main study. Thus, it does not conflict with our future selection of schools.

4. "Independent study" was utilized as the innovation in the pretest, which resembled "flexible scheduling" in its structural impact on the system.

With the permission of the principal and cooperation of the teachers, the research team consisting of three members visited the school one Monday in December, 1965. The school comprises grades 9 through 12 and has a student body of 400. There are 33 teachers; however, the actual number of teachers who took the pretest questionnaire was 29, including three who filled out the forms and sent them back to us through the mail later. The school started using independent study in the fall of 1964.

We used the group interview technique; the teachers were gathered in a conference room and they were asked to fill in the questionnaire themselves while the research team was there to explain and discuss problems the teachers might have. An oral introduction about the research project was given in general terms before the questionnaires were passed out. All but four of the 26 teachers completed the questionnaire in 60 minutes.

In all cases, inter-item correlations were used to investigate the internal consistency among items for each variable. Elimination of items was made under these criteria: 1) whether the correlation was in the expected direction, and 2) how well each item correlated with all other items supposedly tapping the same underlying variable. The results of the analysis of the pretest data are as follows:

1. Internalization: There were four items (two positive and two negative to control for acquiescence response set) in the pretest. All six of the inter-item correlations were in the right direction and ranged from .14 to .55.

2. Innovation information level: Since the innovation investigated in the pretest differed from that in the main study, the two items used in the main study were not pre-tested.

3. Open- and Closed-mindedness: The existing scale of the 20-item short form was used in the pretest and in the main study.

4. Need for autonomy: Seven items were used in the pretest, five of them revised items used by Vroom in his "Need for Independence" scale. Four items were eliminated. The three inter-item correlations of the final three-item index ranged from .22 to .33 (all positive items).

5. Psychological distance: Two sets of nine items were used in the pretest, six of them being revised items of Fleishman's scale. All intercorrelations were in the

right direction (two items were negative). But three items were eliminated from the scale because they did not inter-correlate very highly with the other items. The correlations of the six items ranged from .11 to .83 (two negative items).

6. Downward feedback: Five items were used in the pretest. One item was eliminated and the six correlations ranged from .10 to .54 (all items were positive).

7. Change orientation of the principal: Nine items were used in the pretest. Five items were eliminated and the six inter-item correlations among the other four items ranged from .23 to .57 (three items were negative statements).

8. Vertical communication: Three items were used in the pretest. One item was taken off from the scale and the correlation between the two items (both positive) was .29.

9. Participation: Vroom's revised four-item scale for psychological participation was used in the pretest. Two items were eliminated and the correlation between the other two items (one being negative) was .35.

10. Perceived legitimacy of participation: Five items were used in the pretest. Two items were eliminated from the scale and the three correlations among the other three items (all negative) ranged from .26 to .42.

11. Equalitarian teacher-principal relationship: Four items were used in the pretest. One item was taken from the scale and the other three items formed the final scale with the three inter-item correlations ranging from .29 to .46. (One item was negative.)

12. Horizontal communication: Three items were used in the pretest. One item was eliminated and the correlation between the other two was .34 (all positive).

13. Feeling of security: Four items were used in the pretest. One item was eliminated. The correlations among the three scaled items ranged from .51 to .75. (One item was negative.)

14. Group cohesiveness: Revised Seashore's five-item scale was utilized in the pretest. One item was eliminated and the six correlations among the four items (one was negative) ranged from .20 to .79.

15. Role satisfaction: Four items were constructed for the pretest. One item was eliminated and the correlations among the other three (one item was negative) ranged from .12 to .58.

16. Information level scale: Six items were used in the pretest. One item was eliminated and the ten correlations among the other five items (all positive) ranged from .04 to .48.

The Questionnaire

The final questionnaire used in the main study consisted of 57 pages of 200 items.* In the introduction, the general purposes of the study were described, and the confidential nature of the individual questionnaire was emphasized. The respondents were asked not to place their

*The length of the questionnaire was due to the overall project.

names anywhere in the questionnaire and it was indicated that the questionnaires would be read and studied only by the research team.

Because of the necessity to keep the questionnaire to such length, a response test item was inserted. It reads, "On the average, a senior student in high school is about 17 or 18 years old"; and concentration of responses in the first two categories, "agree very much" and "agree on the whole" would be an indication that the length of the questionnaire did not prevent the respondents from eliciting true responses.

For the purpose of identifying the opinion leaders for the study of cliques and opinion norms (as in Hypothesis 6), demographic items such as sex, age and subject matter taught were compared with a list of the teachers identified by their ages, sex, and teaching departments obtained from each sampled school. It was hoped that the respondents perceived as opinion leaders could be identified and that their responses could be used as the group norms for those who chose them.

As a whole, the questionnaire started off with behavioral items such as mass media exposure and prior adoption of innovations. Items concerning the particular innovation studied were then followed. Starting with Item 37 through Item 103 most of the variables for this study were measured. Source credibility was tested from Item 184 through Item 193. It should be noted that the response test

item occurred as Item 88 -- near the end of the measurement; thus, it should be a fair indication of the respondents' mental alertness throughout the measurement.

Data Collection

All the teachers in three sampled schools (denoted from now on as Schools 1, 2, and 3) were interviewed. The general procedure was as follows:

The research team, consisting of one professor of Education, a research associate, and the investigator, arrived at the school about one hour earlier than the scheduled interview time on the designated date. School 1 was visited on a Tuesday, School 2 on a Thursday and School 3 on a Friday. All tests were administered in the afternoon and lasted about an hour.

The research team usually toured the school building to familiarize themselves with the school environment. Questions were asked of the principal about the student body, size of staff, name of the county school superintendent, and the actual operation details of the innovation studied in the school.

At the scheduled hour, the teachers were gathered in a conference room, a library, or their study office. The principal introduced the faculty member on the research team to the teachers. After introducing the other members of the team to the teachers, the faculty member explained in general terms the purposes of the study and thanked them

for their time and cooperation. This brief speech was always blended with light jokes to loosening up the rather tight attentiveness of the teachers toward strangers. It also served to indicate that the research team members who came to ask their help were at the same intellectual level as they were.

The questionnaires then were passed out and pencils supplied. Teachers were reminded not to discuss their responses among themselves. The research team members stood aside ready to help them if they had any problems.

A group interview in a captive situation was used for several reasons. First, it achieved maximum amount of control in a field situation. Secondly, it saved time for both the researchers and the teachers, as compared to individual interviews. Thirdly, it was economical. And finally, it disrupted the school schedule minimally.

The test was usually completed within an hour. The minimum time of completion was 23 minutes for one teacher. The maximum time of 85 minutes was recorded for another teacher.

Some specific incidents should be mentioned.

In School 1, the first completed questionnaire took 30 minutes and the last took 80 minutes. The teachers conversed quite a bit and the situation was not helped when refreshments were served during the test. There were 57 teachers in the school, and 45 took the test.

In School 2, the first completed questionnaire took 23 minutes and the last one took 55 minutes. There were 53

teachers in the school, but only 37 completed the test. Thirty-one completed it in the scheduled time; six returned the questionnaires through the mail in the next day. At the beginning of the meeting, there were about 8 more teachers present and they left the room when the questionnaires were being passed out. The exact reasons were not known, but the possibilities were: 1) the principal told them it would take 45 minutes, whereas the researchers announced that it would take about 60 minutes. Some of them might feel they would not be able to finish anyway. 2) The general resentment teachers might have toward surveys and studies.

In School 3, the first completion took 30 minutes and the last 65 minutes. There were 37 teachers in the school and all took part in the test. All finished and completed their questionnaires at the scheduled meeting. This perfect rate probably was the result of the fact that, because funds became available, the teachers were compensated for their time ($5.00 for the hour).

Schools 1 and 2 were visited in December, 1965 and School 3 was interviewed in March, 1966. The time gap was due to some unavoidable complications of the research project and availability of personnel.

In Schools 1 and 3, there was some confusion as to the term, "the principal," used in the questionnaire. In both cases, the principals who bore the title were chiefly responsible for external affairs whereas the assistant

principals had the internal functions of the principal in the school buildings. This was pointed out to us in several teachers' comments.

The Innovation Investigated

Schedule modification was utilized as the innovation. It was defined in the questionnaire as follows:

> For purposes of this study, schedule modification (flexible scheduling) is defined as a secondary school situation where class size, length of class meetings, number and spacing of classes are varied according to an assessment of the nature of the subject, type of instruction, and ability and interest of students.

School 1 adopted the module system with units of 32, 48, 64, and 89 minutes in February of 1965. School 2 started using 50-minute and 70-minute blocks in September, 1965. School 3 adopted the module system with units of 45, 60, 75, 90 and 105 minutes in September, 1964.

CHAPTER III

FINDINGS

Characteristics of the Respondents

As can be seen in Table 1, there was no difference more than sampling error expectations for sex (x^2 = 2.308 with Yate's correction, d.f. = 2), education level (x^2 = 5.93 with Yate's correction, d.f. = 6), or income level (x^2 = 11.59 with Yate's correction, d.f. = 6) among the three schools. The schools do differ on the ages of the teachers; School 1 tended to have older teachers than the other two schools (x^2 = 14.6 with Yate's correction, d.f. = 6, p = .05).

Respondent Set Test Item Result

In order to determine whether response set or fatigue occurred among the respondents while the questionnaire was being completed, a test item was inserted near the end of the questionnaire. The item, "On the average age, a senior student in high school is about 17 or 18 years old," with similar seven-point response category, was intended to draw positive responses. The result indicates that 100 percent of School 1 respondents, 97.3 percent of School 2 respondents and 94.6 percent of School 3 respondents selected

Table 1. Characteristics of respondents.

		School 1	School 2	School 3
Sex				
	Male	42.2%	56.8%	54.1%
	Female	55.6	40.5	35.1
	N.R.	2.2	2.7	10.8
		100.0%	100.0%	100.0%
		N=45	N=45	N=45
Age	20-29	31.1	67.5	66.7
	30-39	26.6	13.5	32.4
	40-49	17.8	13.5	8.1
	50-	20.0	2.7	2.7
	N.R.	4.4	2.7	0
		100.0%	100.0%	100.0%
Education	1-3 College or Bachelor's	37.8	37.8	27.0
	Bachelor's	33.3	35.1	27.0
	Master's	17.8	18.9	27.0
	Master's +	11.1	2.7	18.9
	Others	0	8.1	0
		100.0%	100.0%	100.0%
Income	5000-6000	22.2	51.3	23.5
	6001-7000	11.1	13.5	27.0
	7001-8000	28.9	16.2	16.2
	8001-	20.0	5.4	8.1
	N.R.	17.8	13.5	24.3
		100.0%	100.0%	100.0%

the response categories in the positive direction. Thus, it seems safe to assume that the responses obtained, generally speaking, were valid.

Scale Validation

The crucial scales which were utilized to test the hypotheses were re-validated by investigating the inter-item correlations for each scale. With a total sample size of 119 respondents, the following results were observed:

1. Internalization: The four-item correlations all in the expected direction, ranged from .39 to .63 and the median correlation was .46.

2. Psychological distance:

Set 1: For between the Principal and the teachers in general: The six item correlations, all in the expected direction, ranged from .35 to .76. The median correlation was .53.

Set 2: For between the Principal and the respondent: The six-item correlations, all in the expected direction, ranged from .62 to .78. The median correlation was .53.

3. Dogmatism: The twenty-item correlations ranged from .50 to -.23. Nineteen (10%) of the correlations were in the wrong direction. The item-against-total correlations, all in the expected direction, ranged from .24 to .62. The median correlation was .49.

4. Information level: The five-item correlations ranged from -.06 to .26. Since these information items did not

necessarily tap a single dimension, internal consistency was not needed. The final scale was constructed by summing across the five items.

5. Relevant new information about the innovation: The two-item correlation was .50, in the expected direction.

6. Source credibility: Since it was theoretically assumed that there were three independent dimensions of source credibility; namely, competence, safety, and dynamism; the three groups of correlations were investigated separately.

The four-item correlations for the Competence dimension ranged from -.10 to .52 and the median correlation was .20. One correlation (-.10) was in the wrong direction. For the Safety dimension, the four-item correlations ranged from .20 to .69, all in the expected direction. The two-item correlation for the Dynamism dimension was .20, in the expected direction.

7. Feedback from the Principal: The four-item correlations, all in the expected direction, ranged from .27 to .57. The median correlation was .51.

8. Perceived change orientation of the principal: The four-item correlations, all in the expected direction, ranged from .13 to .39.

9. Horizontal communication: The two-item correlation, although in the expected direction was .075. It was a weak scale and this problem will be further discussed in the hypothesis-testing section.

10. Vertical communication: The two-item correlation was .47, in the expected direction.

11. Feeling of security: The three-item correlations were .33, .38, and .51, all in the expected directions.

12. Group cohesiveness: The four-item correlations, all in the expected direction, ranged from .11 to .58. The median correlation was .21.

13. Participation: The two-item correlation was .54, in the expected direction.

14. Perceived legitimacy of participation: The three-item correlations were -.06, .17, and .27; the first one being in the wrong direction. Thus, the scale was not as strong as intended.

15. Equalitarian relationship: The three-item correlations were .20, .34 and .46, all in the expected direction.

16. Need for autonomy: The three-item correlations, all in the expected direction, were .02, .27 and .51.

17. Role satisfaction: The four-item correlations, all in the expected direction, ranged from .17 to .60. The median correlation was .36.

Hypothesis-Testing

Formal Leadership (Psychological Distance, Dogmatism, Information Level and Innovation Internalization):

H1: The greater the psychological distance between a teacher and his principal, as perceived by the teacher, the less likely he is to internally accept an innovation adopted by the school system. This negative correlation will be stronger among high dogmatics than among low dogmatics.

The Psychological Distance score was obtained by subtracting the score of the Psychological Distance scale between the Principal and the teachers in general from that of the Psychological Distance scale between the Principal and the respondent. For instance, if a respondent obtained a score of 36 on perceived Psychological Distance between the principal and the teachers in general and a score of 42 between the Principal and himself, then the net score obtained by the respondent on this scale was +6.

The next step was to control on Dogmatism. The distribution of the Dogmatism scales were found to range from 13 to 89 (20 items on seven-point scales. The higher the score a respondent obtained the more closed-minded he was assumed to be). Respondents were divided into two groups at the median of the dogmatism distribution. The analysis shows:*

	Correlation between Internalization and Psychological Distance	N
High dogmatic group	.24	58
Low dogmatic group	.04	61

It indicates that, although there was a difference between the two correlations, this difference was not greater than what one might expect simply from sampling error.

---

*A Z test of the difference between the correlations transformed to Fisher's Zs was not significant, using a two-tail test. Z = 1.08, p = 0.28.

H2: For a high dogmatic teacher, the perceived shorter psychological distance between him and the principal is more important than the level of information in determining the degree of his internalization of the innovation.

Using the upper 50 percent (n=58) of Dogmatism scorers, a t-test for the absolute values of the correlations between Internalization and the Psychological Distance, and between Internalization and the Information Level was computed.*

The analysis shows:

Between Internalization and Psy. Distance	Between Internalization and Information Level	Between Psy. Distance and Information Level
.31	-.24	-.05

(t = .402 d.f. = 55, n.s. at .05 level.)

Thus, the hypothesis was not supported.

H3: For a low dogmatic teacher, high information level is more important than the perceived psychological distance between him and his principal in determining the degree of his internalization of the innovation.

Using the lower 50 percent (n=61) of Dogmatism scorers, the approximate t-test for the correlations between Internalization and the Psychological Distance, and between Internalization and the Information Level was computed.

The analysis shows:

---

*The formula of the test can be found in McNemar (1952, p. 140). It follows the t distribution with N-3 degrees of freedom and can be interpreted as a test to indicate if one independent variable contributes significantly more than another in explaining the variability of the dependent variable.

Correlation between Internalization and Psychological Distance	Correlation between Internalization and Information Level
.04	.09

(t = .297, d.f. = 58 n.s. at .05 level.)

The hypothesis was not confirmed.

H4: The more frequently a teacher is posted on relevant new information about the innovation by his principal, the higher the degree of the teacher's internal acceptance of a given innovation, especially when the teacher perceives the principal as a highly credible source.

To control on Source Credibility, the respondents were assigned to the high source credibility group if their scores were above the mean or to the low source credibility group if their scores were below the mean. Correlations between Internalization and Relevant New Information about the Innovation were computed. However, the three assumed independent dimensions--namely, Competence, Safety, and Dynamism--might affect the dependent variable independently. Thus, when tests were made, each dimension of Source credibility was used separately as a control variable, and the results are shown in Table 2.

In all three dimensions, the relationship was stronger when Source Credibility was higher. However, in no case were the differences significant at the .05 level. Thus, the hypothesis was not confirmed.

H5: The more frequently a teacher receives feedback from his principal on the adequacy of his work-related performance, the greater the degree of his internal acceptance of an innovation, and the more the principal is perceived as change-oriented the stronger the relationship will be.

Table 2. Dimensions of source credibility, relevant new information about the innovation, and internalization.

	Correlation Between Internalization and Relevant New Information About the Innovation	N
For the Dimension of Competence:*		
High competent source	.25	59
Low competent source	.13	60
For the Dimension of Safety:**		
High safe source	.30	55
Low safe source	.12	64
For the Dimension of Dynamism:***		
High dynamic source	.22	64
Low dynamic source	.14	55

*z = .72, p = .47, n.s.
**z = 1.00, p = .32, n.s.
***z = .43, p = .67, n.s.

First, the product moment correlation between Feedback and Internalization was computed. The correlation obtained was .15, which was not significant at the .05 level.

To control on the perceived Change-Orientation of the Principal the respondents scoring above the mean of the distribution scale were assigned to the high perceived Principal's change-orientation group and the others were assigned to the low perceived Principal's change-orientation group. Then, correlation was computed between Internalization

and Feedback for each group.

	Correlation between Internalization and Feedback	N
High source change orientation	.266	62
Low source change orientation	.023	57

(Z = 1.37, p = .17)

Thus, although the r for the high scource change orientation was higher than that for the low source change orientation group, the difference was not significant at .05 level and the hypothesis was not supported.

H6: When his work-group opinion leader highly favors an innovation, the more frequently the teacher engages in horizontal communication the greater his degree of internal acceptance of the innovation; conversely, when the work group opinion leader is the innovator, the less teacher's frequency of horizontal communication the greater his degree of internal acceptance.

First, the product moment correlation between Internalization and the Horizontal Communication was computed. The correlation, .15, was not significant at the .05 level.

It should be noted that there were three items, each asking the respondent to indicate three of his opinion leaders in terms of respectability, teaching performance advice, and educational issues. The questionnaires of the leaders were identified and their attitudes (their internalization scores) toward the innovation were used as the group norm for the respondent. The intercorrelations among the three sets of group norms were .32, .45 and .48. Thus, the scores of the three categories were summed into the

final score of group norm for each respondent with the following procedure:

1. Mentioned opinion leaders of each respondent were identified and their internalization scores were obtained. The group norm was then obtained by averaging these scores for the respondent.

2. If the respondent did not mention any opinion leaders, the group norm of the particular school, obtained by averaging all opinion leaders' attitudes in that school, was assigned as his score.*

Finally, a respondent was assigned to the high favorable group if his group norm was above the mean score or to the low favorable group if it was below the mean. The correlation between internalization and the horizontal communication was computed for each group. It shows that the hypothesis was not confirmed. The tendency was in the direction opposite of that predicted.

Since the two-item scale of the Horizontal Communication was rather weak, as discussed in the Scale Validation section, the two groups were again tested by analyzing each Horizontal Communication item separately. The results indicate: (1) the hypothesis in regard to non-academic communication of the horizontal communication is not confirmed; (2) the hypothesis in regard to the discipline problem discussions of the horizontal communication is not confirmed; in fact, the difference was in the opposite direction and significant at the .05 level.

*Out of 119 respondents there were 14 cases; about 12% of the total sample.

Table 3. Group norm (leader opinions), horizontal communication and internalization.

	Correlation between Internalization and Horizontal Communication	N
Overall:*		
High favorable opinion leaders	-.001	60
Low favorable opinion leaders	.331	59
On Non-Academic Communications:**		
High favorable opinion leaders	-.01	60
Low favorable opinion leaders	.27	59
On Discipline Problems:***		
High favorable opinion leaders	-.03	60
Low favorable opinion leaders	.34	59

*z = 1.85, p = .06
**z = 1.53, p = .26
***z = 2.02, p = .04 in the opposite direction

Work Group Interaction (Feeling of Security, Group Cohesiveness, Participation, Perceived Legitimacy of Participation, Equalitarian Relationship, Need for Autonomy, Role Satisfaction, and Innovation Internalization):

H7: When a teacher's feeling of security in the school system is high, his perceived degree of group cohesiveness will be positively correlated with his internalization of an innovation; when his feeling of security in the school system is low, however, his perceived group cohesiveness will be negatively correlated with his internalization of the innovation.

To test this hypothesis, a respondent was assigned to the High Feeling of Security group if his score was above the mean or assigned to the Low Feeling of Security group

if it was below the mean. The correlations between Internalization and Group Cohesiveness were computed for each group.

	Correlation between Internalization and Group Cohesiveness	N
High Feeling of Security	.23*	64
Low Feeling of Security	.25**	55

(*p = .06, **p = .06)

Both of the correlations approached significance. But the hypothesis was not confirmed. Also, for the Low Feeling of Security group, the tendency was in the opposite direction.

H8: Participation increases internalization of an innovation by a teacher, and it is more so when the given form of participation is seen as legitimate by the teacher than when it is not.

To control on the Perceived Legitimacy of Participation, respondents were divided into the High Perceived Legitimacy and Low Perceived Legitimacy groups at the median of the scale distribution. The analysis shows:

	Correlation between Internalization and Participation	N
High Perceived legitimate group	.320	62
Low Perceived legitimate group	-.01	57

(z = 1.8, p = .07. It did not reach the significant level of .05.)

It was found that although the direction of the difference was correct, the difference had failed to reach the significant level of .05. Thus, the hypothesis was not confirmed.

H9: Participation increases internalization of an innovation by a teacher, and it is more so when his relationship with the principal is more equalitarian than when it is less.

To control on the Perceived Equalitarian Relationship, respondents were assigned to the High and Low Equalitarian groups at the median of the scale distribution. The analysis shows:

	Correlation between Internalization and Participation	N
High equalitarian group	.27	60
Low equalitarian group	.10	59

($z = 1.00$, $p = .32$.)

Although the difference was in the right direction, it could not be attributed to more than sampling error. Thus, the hypothesis was not confirmed.

H10: Participation increases internalization of an innovation by a teacher, and it is more so when the teacher's need for autonomy is high than when it is low.

To control on the Need for Autonomy, respondents were divided into the high and low Need for Autonomy groups at the median split. The analysis shows:

	Correlation between Internalization and Participation	N
High need for autonomy group	.23	59
Low need for autonomy group	.15	60

($z = .0$, $p = .60$)

The correlations showed expected relationship, however, the difference was not large enough to be greater than sampling error expectations. Thus, the hypothesis was not supported.

H11: Participation increases internalization of an innovation by a teacher, and it is more so when his role satisfaction is high than when it is low.

To control on Role Satisfaction, respondents were assigned to the High and Low Role Satisfaction groups at the median split. The analysis shows:

	Correlation between Internalization and Participation	N
High role satisfaction group	.28	55
Low role satisfaction group	.09	64

($z = .53$, $p. = .60$)

Again, the difference of the correlations was in the right direction; but it could be due to random errors. Thus, the hypothesis was not supported.

Other Findings

Since no significant differences between relations between the independent variables and the dependent variables under different conditions were found as hypothesized, it can be said that under the test situation, conditional variables were not relevant. Thus, it became legitimate and important to investigate if the main effects hypothesized were indeed significant.

Main Independent Variable	Correlation with Internalization
Psychological Distance	.14
Information Level	.21*
Relevant New Information about the Innovation	.19*
Feedback	.15
Group Norms**	.20*
Feeling of Security	.07
Participation	.18*

(**as measured by opinion leaders' attitudes toward the innovation; *$p \leq .05$, two-tail test.)

It shows that four out of seven main independent variables were indeed significantly correlated with Internalization. To further studying the explanation of Internalization in terms of the independent variables used in the study, all the 17 independent variables were correlated with Internalization. Five of the correlations were found significant and a multiple regression with Internalization as the dependent variable, and the five variables as predictors, yielded the results shown in Table 4.

It shows that in terms of the amount of contribution in explaining the degree of Internalization, the order of the independent variables is: 1) Perceived Legitimacy of Participation, 2) Participation, 3) Information Level, 4) Relevant New Information about the Innovation, and 5) Group Norm.

Table 4. Simple and partial correlations between internalization and five independent variables.

	Independent Variable	Simple r	Partial r
1.	Perceived Legitimacy of Participation	.27	.19
2.	Participation	.18	.13
3.	Information Level	.21	.11
4.	Relevant New Information about the Innovation	.19	.07
5.	Group Norm	.20	.06

Multiple correlation coefficient = .39.

CHAPTER IV

CONCLUSIONS

Summary

The exploratory study reported here examined the extent of innovation internalization in members of an educational system. Three high schools in Michigan were selected and all the teachers in the schools were interviewed. Hypotheses were grouped in three general headings and the findings are as follows:

1. In the category of Formal Leadership, the first hypothesis was that the farther the psychological distance between a teacher and his principal, as perceived by the teacher, the less likely he is to internalize the innovation adopted by the school system. Furthermore, this negative correlation will be stronger among high dogmatics than among low dogmatics. The analysis showed, although the direction was correct, that the hypothesis was not supported.

The second hypothesis stated that, for a high dogmatic teacher, the perceived closer psychological distance between him and his principal is more important than the level of information in determining the degree of his innovation internalization. The data did not support the hypothesis.

Also suggested was the hypothesis that for a low dogmatic teacher, high information level is more important

than the perceived psychological distance between him and his principal in determining the degree of his internalization of the innovation. Again, it was not confirmed by the data.

It was postulated that the more frequently a teacher is posted on relevant new information about an innovation by his principal, the higher the degree of the teacher's internalization of a given innovation, and the more the teacher perceives the principal as a credible source the higher the relationship will be. For all three dimensions of source credibility; namely, safety, competence, and dynamism, the hypothesis was not confirmed.

The fifth hypothesis stated that the more frequently a teacher receives feedback from his principal on the adequacy of his work-related performance, the greater the degree of his internalization of an innovation. And, the more his principal is perceived as change-oriented the higher the relationship will be. The hypothesis was not supported.

2. In the category of Interaction of Formal and Informal Opinion Leadership, one hypothesis was made.

It was postulated that when his work group opinion leader highly favors an innovation, the more frequently the teacher engages in horizontal communication the greater his degree ofinternalization of the innovation; conversely, when the work group opinion leader is less favorable toward the innovation, the less teacher's frequency of horizontal

communication the greater his degree of internalization. The data showed the hypothesis was not supported and, further, the relationship was opposite to the predicted. This reversed relationship was found to be significant when the horizontal communication dealt with discipline problems.

3. In the category of Work Group Interaction, five hypotheses were tested.

It was hypothesized that when a teacher's feeling of security in the school system is high, his perceived degree of group cohesiveness will be positively correlated with his internalization of an innovation; when his feeling of security in the school system is low, however, his perceived group cohesiveness will be negatively correlated with his internalization of an innovation. It was not supported by the data.

It was predicted that participation increases internalization of an innovation by a teacher, and it is more so when the given form of participation is seen as legitimate by the teacher than when it is not. The data did not confirm the hypothesis, although the relationship was approaching the required statistical level.

It was next hypothesized that participation increases internalization of an innovation by a teacher, and it is more so when his relationship with his principal is equalitarian than when it is authoritarian. It was not supported.

The next hypothesis stated that participation increases internalization of an innovation by a teacher, and

it is more so when the teacher feels a need for independence than when he does not. It was not confirmed.

Finally, it was postulated that participation increases internalization of an innovation by a teacher, and it is more so when his attitude toward his job is favorable than when it is not. The hypothesis was not supported by the data.

In summary, we may conclude that we did not find any significant interactions among the independent variables and control variables upon internalization as hypothesized. Thus, it became logical to investigate the main effects of the independent variables on the dependent variables.

Main Effects of the Independent Variables

The main independent variables are: (1) In the formal leadership area: psychological distance, relevant new information about the innovation, information level and downward feedback; (2) in the interaction of formal and informal opinion leadership area: opinion leaders' attitude toward the innovation (group norm); and (3) in the work group interaction category: participation. It was found that informational level, relevant new information about the innovation, group norm, and participation are significantly related to innovation internalization.

Furthermore, among the control variables, perceived legitimacy of participation was also found to be significantly related to innovation internalization.

Discussion

Of the 11 hypotheses tested, nine were in the right direction (H1, 2, 3, 4, 5, 8, 9, 10, 11) and two were in the opposite direction of that predicted (H6 and 7). One of the reversed findings was significant at the .04 level and H7 and H8 were approaching significance at .06 and .07 respectively. Why might such a consistent lack of significant differences occur?

Methodological Evaluations

1. Sample size: There is a possibility that the sample size was not large enough since evidence on none of the hypotheses was in the right direction. At least four hypotheses (H1, 5, 8 and 9) showed a fair probability of approaching significance given a larger size of sample.

2. Better instrumentation: Several scale construction problems appeared. For one, some scales did not have enough items to provide sufficient variability. For example, six scales have three or less items each. The horizontal communication scale has the variability of 1, 2 categories as its standard deviation and vertical communication scale has the standard deviation of 1.6 categories. (There are seven response categories for each scale.) Also, some scales have validation problems. Horizontal communication scale was very weak; the intercorrelation between the two scale items was .08. Perceived legitimacy of participation, source credibility, and dogmatism had some

reversed correlations. Thus, the final analysis might have been confounded.

3. School differences: Checking the variability of each scale for each school, it was found that School 2 has significantly less variability in its scales than School 1 (using the standard deviations of the scales, School 1 has 13 scales with higher variability while School 2 has only 2 scales with higher variability. This difference was found to be significant beyond the .05 level, using the x^2 test with Yate's correction, d.f. = 1). School 2 also has less variability than School 3, but the difference was not significant (School 3 has 12 scales with higher variability and School 2 has only 6).

School 2 also differed from the other two schools in opinion leader mentions. The no response rate was highest for School 2. The x^2 test (with Yate's correction, d.f. = 2) for the no response rate for the three schools is significant beyond the .001 level. The higher rate of no responses of School 2 persisted throughout the questionnaire.

The lack of enthusiasm of School 2 respondents as indicated by the data was supplemented by the fact that a number of teachers left the conference room immediately prior to the administering of the questionnaire. It is rather difficult to speculate on the reasons for the lack of enthusiasm among the teachers. It might be due to one or more factors:

a. The innovation, Flexible Scheduling, was not adopted

to its full extent in School 2. Although the principal claimed that the school had adopted the innovation, the data show that only 18.92 percent of the respondents indicated that they have adopted the innovation.

b. The true "resentment" toward the innovation might be a factor. The internalization mean scores for Schools 1, 2 and 3 are 7.55, 9.08, and 8.78, respectively and the mean difference between School 2 and 3 is significant.*

These school differences might indicate the need to analyze the schools separately. Since they were analyzed as a whole group, the differences in schools might have caused the "averaging" effects in the findings.

4. Perceptive confusion in the term "principal": Respondents in both School 1 and School 3 reported the confusion of their perception in the term, the "principal," since the assistant principal in each case was the school administrator while the principal himself was more responsible for inter-school activities such as getting funds for the school and keeping in touch with the regional board of education. Thus, some respondents reported that they responded to the items related to the principal in terms of the assistant principal instead. This confusion, thus, might also have confounded the data.

---

*$\bar{X}_2 = 9.08$, $S_2^2 = 13.18$, $\bar{X}_3 = 6.78$, $S_3^2 = 6.71$, $t = 3.16$, d.f. $= 72$ $p < .01$ (Walker and Lev, p. 156.).

Theoretical Evaluations

The basic theoretical consideration here is the newness of the dependent variable--internalization--in the particular diffusion research context. Lack of empirical evidence utilizing this variable in similar circumstances forced the hypotheses to be drawn in such a manner that the relationships predicted had only indirect support from existing literature.

In the formal leadership categories, psychological distance or similar concepts were found to be related to production rate (The Hawthorne studies, 1941; Likert, 1961; Comrey, High and Wilson, 1955), and organization affiliation (Levingson, 1963). Thus, the main effect of psychological distance on internalization of a specific innovation was not known. Again, a personality variable--dogmatism, here--was found to be related to information and information source in a certain interacting way (Powell, 1964; Vidulich and Kaiman, 1961). The interaction effect of dogmatism and psychological distance on innovation internalization had not been explicitly studied.

On the other hand, the amount of new information was found to be related to job satisfaction (Likert, 1961) and the likelihood of acceptance of change (Mann, 1957). Since job satisfaction and likelihood to accept change are also attitudinal in nature and rather close to innovation internalization, it is then not too surprising that it is found that the amount of relevant new information about

the innovation is indeed related to innovation internalization. Thus, controlling on its three dimensions; namely, safety, competence and dynamism, did not improve or distort the relationship between the amount of relevant new information about the innovation and internalization.

For the independent variable, downward feedback, existing literature indicated its relationship with overall morale (Mandell and Duckworth, 1955), performance (Costello and Zalkind, 1963), and production (Comrey, High and Wilson, 1955). At the same time, change orientation of the superior was never studied in this context.

With horizontal communication and vertical communication as independent variables, it was previously found that one or both were related to performance (Likert, 1961), production (The Hawthorne studies, 1941); while group norm or informal leaders support were related to successful change (Guion, 1958; Mechanic, 1963; Roy, 1954). The communication patterns were thus related to internalization of an innovation while the frequency of communications, without direct previous literature support, did not show any significant relationship with innovation internalization (H6).

Feeling of security and group cohesiveness was reportedly to have an interaction effect on productivity. Yet this study does not support its interaction effect on internalization.

Participation was found to be related to overcoming resistance to change (Coch and French, 1948; Mann, 1957)

and motivation for change (Mann and Neff, 1961). Interaction effects between participation and perceived legitimacy of participation (French, Israel, and As, 1960), between participation and equalitarian relationship, between participation and need for independence, and between participation and job satisfaction were found to be related to motivation for change (Mann and Neff, 1961). Participation was indeed found to be related to innovation internalization while the interaction effects, although in the predicted directions, did not reach the significance level required.

In summary, thus, it can be noticed that the variables; the amount of relevant information, source credibility, group norm, and participation, which had been found to be related to job satisfaction, successful change, motivation to change, were indeed confirmed to be relevant to the extent of innovation internalization, which may be defined as internal acceptance of a specific change. On the other hand, the variables, such as psychological distance, horizontal and vertical communications, feeling of security, which were found to be related to performance, production, or overall morale, did not show any significant contribution in explaining innovation internalization. This discussion certainly lends credit to the importance of interlocking empirical evidence.

Furthermore, we may speculate that for those variables which had previously proved to be relevant to change or similar

conceptions, the non-significant results may have been caused largely by weak scales. We may also indirectly explain that the reversed significant relationship in Hypothesis 6 was caused at least partially by a previously unchecked conceptual relationship between these variables and innovation internalization or similar concepts. Also, in the hypotheses where the main effects were not significant, the chances for the expected improvement brought about by control variables were certainly diminished to some extent. However, the actual amount of this kind of effect cannot be determined.

Contributions of the Study

Since the interaction hypotheses are not confirmed by the data, the next logical question to ask is whether the dependent variable--innovation internalization--is really a meaningful variable in the study of innovation diffusion in formal organizations.

The question should be answered empirically as well as theoretically. The first empirical indication that internalization is meaningful to the teachers in the school system is the large number of other variables investigated which were found to be correlated with innovation internalization. An overall inter-correlation matrix was obtained between innovation awareness (in terms of how long ago a teacher became aware of the innovation), innovation adoption (in terms of how long ago the teacher started using the innovation) and innovation internalization and a large number

(71 in all) of variables covering institutions, personality, innovation characteristics, demography, sociometry, and information variables. It was found that, awareness is significantly correlated with 14 other variables including adoption, adoption is significantly correlated with 14 other variables including awareness, while internalization is significantly correlated with 22 other variables which do not include innovation awareness or adoption behavior. Thus, we may claim that internalization "makes sense" to the teachers. This comparison may, it can be argued, be enhanced by the fact that the particular innovation investigated, flexible scheduling, inevitably affects the complete staff of the school building so that adoptive index should have no variability. It is precisely this unique institutional factor which makes the variable, innovation internalization, significant and meaningful.

Theoretically, Homans has discussed the mutual dependence of sentiment, interaction and activity in the human group (Homans, 1950). It can be claimed that innovation internalization is the scale to assess the sentiment given to a particular innovation or change by the group members. In Homans' investigations, he proposed to study the paired relationships among the three concepts in the human groups. In the study of diffusion of innovations in formal organizations, thus, the parallels can be drawn between sentiment and internalization, between interaction and communication behavior, and between activity and

teaching performance or ability. Therefore, the conceptualization of internalization process seems to be on sound theoretical grounds.

Another social system theoretician, Talcott Parsons (1951), in discussing various social systems, pointed out three main concepts which he thinks are salient across systems; namely, ideas, desires and values. The term idea seems to be a cognitive concept which in diffusion terminology could be innovation awareness or knowledge, whereas desires and values are affective in nature. In diffusion terms, they resemble interest and internalization. Although the degree of mutual exclusiveness or inclusiveness of the two concepts is still empirically unclear, it nonetheless can be seen that the term internalization is very closely related to a phenomenon that the sociologists have long been theorizing, as well as the attention given to the term by social psychologists (e.g., Kelman).

Sentiment, value or attitude, and internalization are significant theoretical terms in studying the diffusion process in a formal organization. In this study, no significant interaction effects among certain psychological, personality, communication behavioral, and informational variables upon innovation internalization were found. There were certain factors, however, which were directly related to innovation internalization. For one thing, both information of a general kind and about the innovation tended to increase the likelihood for organization members to internally

accept an innovation. The amount of group interactions and the group norms about the innovation also affect the degree of internal acceptance of that innovation. And finally it is found that participation and the perceived legitimacy of participation may decide the extent to which a member internally accepts the innovation.

What do all these mean to the practitioners, the administrators and those who want to bring changes into schools effectively? The data of this study suggest the following considerations:

1. Information activities: It is desirable to keep the teachers posted on the current events in state and local educational systems. They should be provided with the materials to get themselves acquainted with significant activities and innovations in education.

2. Participation of teachers in school decision-making: The teachers should be allowed to participate actively in making decisions which affect the whole school or the teachers. When a problem comes up that involves a teacher's work, the principal should always consult him and ask for his opinion. Furthermore, teacher participation should not only be carried in form; it should be made clear that their participation may genuinely help reach the decisions which will benefit the school. It should also be made explicit to them, that their participation is more than mere routines.

3. Teacher interaction in general and their attitude toward an innovation: It is desirable to create a friendly and cordial atmosphere among the teacher which may in turn help create a positive norm toward an innovation. They should be encouraged to exchange views on crucial educational issues and discuss their teaching problems. It is helpful to have a work room set up where all the teachers spend most of their out-class hours working and discussing together.

4. Information about the innovation: Before and after the innovation is introduced into the school, information about the innovation should be continuously supplied so that the teachers understand to the fullest extent of the details of the innovation and thus are prepared to achieve the intended effect of the innovation. This activity may also clarify potential misgivings and misunderstandings on the part of the teachers about the innovation.

Suggestions for Future Research

In light of the findings of the exploratory study, attention now can be given to the consideration of future attempts along this direction.

Theory Building

This study investigated a new dependent variable in innovation diffusion in formal organization; namely, internalization. It appears that it is a meaningful concept in the research context. This component is further related

to the decision-making process, as suggested in the model and the data. There is no significant relationship found between internalization and innovation awareness or innovation adoption, which demonstrates the need of isolating the concept along with the other two "classical" variables in future diffusion research in formal organizations.

Thus, with adequate sample, better control and instrumentation, and careful selection of innovations, future attempts in studying the process of internalization should yield further findings and clarification to bring better understanding to the concept.

Another fruitful approach may be computer simulation of the diffusion process in formal organizations. We do have evidence relating to each of the components of the model. However, it would take some time and effort to investigate the diffusion process in a formal organization of its entirety in a single study. Also, it would be quite sometime before we have enough studies of that kind to make generalizations. A short cut is to utilize the large storage space and fast speed of the computers. Organizational role conflict was simulated by the Gullahorns (1965), career and environmental games in high school were simulated by Coleman and associates (in progress), and a large number of cognitive structure and decision-making process simulation models have been developed (Feigenbaum and Feldman, 1963). These indicate the feasibility of simulation models. At the same time, large educational information centers

have been established around the country and a large volume of empirical data has become available for utilization. It is only logical, in terms of time and effort, that computer simulations be utilized to study a complicated and multi-component phenomenon such as the diffusion process in a formal organization.

Research Strategy

From the experience of this study, it is apparent that we do not know enough about the process of internalization; for one thing, there was not enough empirical evidence to help in selecting the variables to be included. For another, most of the scales had to be constructed from scratch. Also, because of the lack of evidence, some of the hypotheses were drawn with very weak support. In order to understand this phenomenon and truly make the process manipulatable, the following research strategy is suggested for future studies:

Step 1: Some further exploratory investigations be carried out. The main purpose of these studies will be to cover as much ground as possible about the activities in the organization. The result of these studies is a conceptual map of organization structure and activities; the dimensionality of the formal organization. Factor analysis should be a very useful tool in getting the result.

Step 2: With the general information provided from Step 1 investigations, the relationship between the dimensions of organization and the process of internalization can be

studied. Here, how each and every dimension affects the process of internalization can be checked so that a rank-order of the dimensions can be made in terms of their contributions to explaining the variability of internalization.

Step 3: After the interrelationship between the dimensions of organization and internalization is understood, the probabilities of manipulations in the organization to improve its adaptability to innovations can be investigated. Under rigid control conditions, a single dimension or certain aspect of a dimension can be manipulated to study the probable effect. The outcome of this controlled approach is a knowledge of how to adjust the organization so that the process of internalization may take a quick, stable, and enduring pace.

It should be pointed out that the first two steps are intended to achieve complete understanding of the phenomenon while the final step is to test the manipulability of the situation. This same strategy can also be utilized to study the model in its entirety. As a matter of fact, it is suggested that the entire model be taken into consideration when such a strategy is drawn.

BIBLIOGRAPHY

Administrative Science Quarterly, Vol. 10, No. 1, June, 1965.

Allport, Floyd H. Theories of Perception and the Concept of Structure. New York: John Wiley & Sons, 1964.

Barnard, Chester I. The Functions of the Executive. Cambridge, Mass.: Harvard University Press, 1938.

Bass, Bernard M. Organizational Psychology. Boston: Allyn and Bacon, 1965.

Berlo, David K., Lemert, James B., Mertz, Robert J. "Dimensions for Evaluating the Acceptability of Message Sources," unpublished paper, Department of Communication, Michigan State University, 1966.

Blumer, Herbert. "Attitudes and the Social Act," Social Problems, Vol. 3, 1955, pp. 59-65.

Campbell, Donald T. "Social Attitudes and Other Acquired Behavioral Dispositions," in Psychology: A Study of a Science (Sigmund Kock, ed.), Vol. 6, 1963, pp. 95-163.

Caplow, Theodore, Raymond, John J. "Factors Influencing the Selection of Pharmaceutical Products," Journal of Marketing, Vol. 19, 1954, pp. 18-23.

Carlson, Richard O. Adoption of Educational Innovations. Eugene, Oregon: Center for the Advanced Study of Educational Administration, University of Oregon, 1965.

Carlson, Richard O., et al. Change Processes in the Public Schools. Eugene, Oregon: The Center for the Advanced Study of Educational Administration, University of Oregon, 1965.

Coch, Lester, French, John R. P. Jr. "Overcoming Resistance to Change," Human Relations, Vol. 1, 1948, pp. 512-532.

Coleman, A. Lee. "Some Aspects of Human Relations in Soil Conservation," Washington, D.C.: U.S.D.A., B.A.E. unpublished report, 1946.

Coleman, A. Lee, March, C. Paul. "Differential Communication Among Farmers in a Kentucky County," Rural Sociology, Vol. 20, 1955, pp. 93-101.

Coleman, James S., et al. "The Diffusion of an Innovation," Sociometry, Vol. 20, 1957, pp. 253-270.

Coleman, James S. The Adolescent Society. New York: Free Press of Glencoe, 1961.

Committee on Work in Industry, National Research Council. Fatigue of Workers: Its Relation to Industrial Production. New York: Reinhold, 1941.

Comrey, Andrew L., High, Wallace, Wilson, Robert C. "Factors Influencing Organizational Effectiveness. VI. A Survey of Aircraft Workers," Personnel Psychology, Vol. 8, 1955, pp. 79-100.

Costello, Timothy W., Zalkind, Sheldon S. Psychology in Administration. New Jersey: Prentice-Hall, 1963.

Couch, Carl J. "Communication and Change," unpublished report, Institute for Extension Personnel Development, Michigan State University, 1964.

Dex Flem, M L., Westie, F. R. "Verbal Attitudes and Overt Act: An Experiment on the Salience of Attitudes," American Sociological Review, Vol. 23, 1958, pp. 667-673.

Deutsch, Karl W. "On Communication Models in the Social Sciences," Public Opinion Quarterly, Vol. 16, 1952, pp. 356-380.

Deutschmann, Paul J. "A Model for Machine Simulation of Information and Attitude Flow," unpublished paper, San Jose, Programa Interamericano de Information Popular, 1962.

Deutschmann, Paul J., Danielson, Wayne. "Diffusion of the Major News Story," Journalism Quarterly, Vol. 37, 1960, pp. 345-355.

Deutschmann, Paul J., Borda, Orland Falls. Communication and Adoption Patterns in an Andean Village. San Jose, Costa Rica: Programa Interamericano do Informacion Popular, 1962.

Etzioni, Amitai. (ed.). Complex Organization: A Scoiological Reader. New York: Holt, Rinehart and Winston, 1964.

Festinger, Leon. "Behavioral Support for Opinion Change," Public Opinion Quarterly, Vol. 28, 1964, pp. 404-417.

Fleishmann, E., Harris, E., Buitt, H. Leadership and Supervision in Industry: An Evaluation of a Supervisory Training Program. Columbus, Ohio: Ohio State University Bureau of Educational Research, 1955.

French, John P., Israel, Joachim, As, Dagfinn. "An Experiment on Participation in a Norwegian Factory," Human Relations, Vol. 13, 1960, pp. 3-19.

Friedrich, Carl J. "Some Observations on Weber's Analysis of Bureaucracy," in Reader in Bureaucracy (Robert Merton, ed., New York: Free Press, 1952), pp. 27-33.

Garvey, William D., Griffith, Belver C. Reports of the American Psychological Association's Project on Scientific Information Exchange in Psychology. Washington, D.C.: American Psychological Association, Vol. 1, 1963 and Vol. 2, 1965.

Garvey, William D., Griffith, Belver C. "Scientific Communication: The Dissemination System in Psychology and a Theoretical Framework for Planning Innovations," American Psychologist, Vol. 20, 1965, pp. 157-164.

Greenberg, Bradley S. "Diffusion of News of the Kennedy Assassination," Public Opinion Quarterly, Vol. 28, 1964, pp. 225-232.

Greenberg, Bradley S., Parker, Edwin (eds.). The Kennedy Assassination and the American Public. Stanford, California: Stanford University Press, 1965.

Griffiths, Daniel E. "Administrative Theory and Change in Organizations," in Innovation in Education (Matthew B. Miles, ed., New York: Bureau of Publications, Teachers College, Columbia University, 1964), pp. 425-436.

Guion, Robert M. "Industrial Morale: The Problem of Terminology," Personnel Psychology, Vol. 11, 1958, pp. 59-64.

Hagerstrand, Torsten. The Propagation of Innovation Waves. Lund, Sweden: Lund Studies in Geography, 1952.

Hagerstrand, Torsten. "On Monte Carlo - Simulation of Diffusion," unpublished paper, Lund, Sweden, University of Lund, 1960.

Hall, Milton. "Supervising People - Closing the Gap between What We Think and What We Do," Advanced Management, Vol. 12, 1947, pp. 129-135.

Havelock, Ronald G., Benne, Kenneth D. "An Exploratory Analysis of Knowledge Utilization," mimeo report, Center for Research on the Utilization of Scientific Knowledge, University of Michigan, 1965.

Homans, George. The Human Group. New York: Harcourt, Brace, and World, Inc., 1950.

Homans, George. Social Behavior: Its Elementary Forms. New York: Harcourt, Brace and World, Inc., 1961.

Karlson, George. Social Mechanisms: Studies in Sociological Theory. New York: Free Press of Glencoe, 1958.

Katz, Elihu; Menzel, Herbert. "On the Flow of Scientific Information in the Medical Profession," mimeo report, New York, Columbia University Bureau of Applied Social Research, 1954.

Kelman, Herbert C. "Processes of Opinion Change," Public Opinion Quarterly, Vol. 25, 1961, pp. 57-78.

Kutner, Bernard, Wilkins, Carol, Yarrow, Penny Rechtman. "Verbal Attitudes and Overt Behavior Involving Racial Prejudices," Journal of Abnormal and Social Psychology, Vol. 47, 1952, pp. 649-652.

La Piere, Richard T. "Attitudes versus Actions," Social Forces, Vol. 13, 1934, pp. 230-237.

Lemert, James B. "Dimensions of Source Credibility," paper presented to the Association for Education in Journalism, Department of Communication, Michigan State University, 1963.

Levine, Jacob, Butler, John. "Lecture versus Group Decision in Changing Bheaviors," in Group Dynamics (D. Cartwright and A. Zander, ed., Evanston, Ill.: Row Peterson, 1953), pp. 280-286.

Levinson, David J. "Reciprocation: The Relationship between Man and Organization," Administrative Science Quarterly, Vol. 9, 1965, pp. 370-390.

Likert, Rensis. New Patterns of Management. New York: McGraw-Hill, 1961.

Lionberger, Herbert F. "The Diffusion of Farm and Home Information as an Area of Sociological Research," Rural Sociology, Vol. 17, 1952, pp. 132-140.

Lionberger, Herbert F. Adoptions of New Ideas and Practices. Ames, Iowa: Iowa State University Press, 1960.

McNemar, Quinn. Psychological Statistics. New York: John Wiley and Sons, 1963.

Maccoby, N., Romney, A. K., Adams, J. S. and Maccoby, Eleanor E. "Critical Periods in Seeking and Accepting Information," Stanford, California: Paris-Stanford Studies in Communication, Institute for Communication Research, Stanford University, 1962.

Mandell, Milton M., Duckworth, Pauline. "The Supervisor's Job: A Survey," Personnel, Vol. 31, 1955, pp. 456-462.

Mann, F. C. "Studying and Creating Change: A Means to Understanding Social Organization," in Research in Industrial Human Relations (C. Arensberg, et al., New York: Harper and Row, 1957).

Mechanic, David. "The Power to Resist Change Among Low-Ranking Personnel," Personnel Administration, Vol. 26, 1963, pp. 5-11.

Merton, Robert K., et al. (ed.). Reader in Bureaucracy. New York: Free Press of Glencoe, 1952.

Merton, Robert K. Social Theory and Social Structure. New York: Free Press of Glencoe, 1957.

Miles, Matthew B. (ed.). Innovation in Education. New York: Bureau of Publications, Teachers College, Columbai University, 1964.

Mort, Paul R., Cornell, Francis G. Adaptability of Public School Systems. New York: Bureau of Publications, Columbia University Teachers College, 1938.

North Central Rural Sociology Subcommittee for the Study of Diffusion of Farm Practices. How Farm People Accept New Ideas. Ames, Iowa: Iowa Agriculture Extension Service Special Report, 1955.

Parsons, Talcott. The Social System. New York: Free Press of Glencoe, 1951.

Parsons, Talcott, Shils, Edward A. (ed.). Toward a General Theory of Action. New York: Harper and Row, 1951.

Pitts, Forest R. "Problems in Computer Simulation of Diffusion," Regional Science Association Papers, Vol. 2, 1962.

Powell, Frediric A. "Open- and Closed-Mindedness and the Ability to Differentiate Source and Message," Journal of Abnormal and Social Psychology, Vol. 65, 1962, pp. 47-52.

Rogers, Everett M. Diffusion of Innovations. New York: Free Press of Glencoe, 1962.

Rogers, Everett M., Cartano, David G. "Methods of Measuring Opinion Leadership," Public Opinion Quarterly, Vol. 26, 1962, pp. 435-441.

Rogers, Everett M. "Toward a New Model for Educational Change," paper presented at the Conference on Strategies for Educational Change, Washington, D.C., Department of Communication, Michigan State University, 1965.

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

Ross, D. H. Administration for Adaptability. New York: Metropolitan School Study Council, 1958.

Roy, Donald. "Efficiency and the 'Fix': Informal Group Relations in a Piece-Work Machine Shop," American Journal of Sociology, Vol. 60, 1954, pp. 255-266.

Ryan, Bryce, Gross, Neal C. "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology, Vol. 8, 1943, pp. 15-24.

Seashore, Stanley E. "Group Cohesiveness as a Factor in Industrial Morale and Productivity," American Psychologist, Vol. 9, 1954, p. 468.

Seashore, Stanley E. Group Cohesiveness in the Industrial Work Group. Ann Arbor, Michigan: Survey Research Center, Institute for Social Research, University of Michigan, 1954.

Simon, Herbert A. "Decision-Making and Administrative Organization," Public Administration Review, Vol. 4, 1944, pp. 16-25.

Simon, Herbert A. Administrative Behavior. New York: Macmillan Company, 1945.

Troldahl, Verling C., Powell, Fredric A. "A Short Form Dogmatism Scale forUse in Field Studies," Social Forces, Vol. 44, 1965.

Vidulich, Robert N., Kaiman, Ivan P. "The Effects of Information Source Status and Dogmatism upon Conformity Behavior," Journal of Abnormal and Social Psychology, Vol. 63, 1961, pp. 639-642.

Vroom, Victor H. Some Personality Determinants of the Effects of Participation. Englewood Cliffs, New Jersey: Prentice-Hall, 1960.

Walker, Helen M., Lev, Joseph. Statistical Inference. New York: Holt, Rinehart and Winston, 1953.

Weber, Max. The Theory of Social and Economic Organization. England: Oxford University Press, 1947, pp. 329-340.

Wiener, Norbert. The Human Use of Human Beings. New York: Houghton Mifflin Company, 1950.

Wilkening, Eugene A. "A Sociopsychological Approach to the Study of the Acceptance of Innovations in Farming," Rural Sociology, Vol. 15, 1950, pp. 352-364.

APPENDIX

THE FINAL SCALES

FOR THE FOLLOWING ITEMS, YOU MAY CIRCLE THE NUMBER OF THE ONE (AND ONLY ONE) CATEGORY WHICH YOU FEEL IS APPROPRIATE.

Example:

Teenagers in this country are very energetic compared with those in other countries.

(1) strongly agree

2. somewhat agree

3. not sure

4. somewhat disagree

5. strongly disagree

For purpose of this study, schedule modification (flexible sechduling) is defined as a secondary school situation where class size, length of class meetings, number and spacing of classes are varied according to an assessment of the nature of the subject, type of instruction, and ability and interest of students.

Innovation Internalization*

1. Schedule modification could constitute an improvement in educational practices in any school.

    1. agree very much

    2. agree on the whole

    3. agree a little

    4. don't know

    5. disagree a little

    6. disagree on the whole

    7. disagree very much

*Variable names did not appear in the questionnaire.

2. I think schedule modification represents an improvement in educational practices at my school.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

3. I think schedule modification is unnecessary in our educational system.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

4. To me, schedule modification is one of the worst things to come into our educational system.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Relevant New Information About the Innovation

1. Do you know approximately how many kinds of class period lengths are being used in your school?

   1. No 2. Yes

   There are

   _____ minute class
   _____ minute class
   _____ minute class
   _____ minute class
   _____
   _____
   _____

2. Do you know when your school started using schedule modification?

   1. No 2. Yes

   Please specify the year and month.

   in _____ (month), _____ (year)

Dogmatism*

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

   1. agree very much
   2. agree on the whole
   3. agree a little
   4. don't know
   5. disagree a little
   6. disagree on the whole
   7. disagree very much

---

*Troldahl and Powell's 20-item short form of Rokeach's Dogmatism Scale (40 items).

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

10. Man on his own is a helpless and miserable creature.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

14. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

18. While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein, or Beethoven or Shakespeare.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

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

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Need for Autonomy*

1. When I have a problem I like to think it through myself first without help from others.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

2. Everybody is responsible for his own life and no one else can live the life for him, so I make my own decisions and judgments.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

---

*Item 1 is from Vroom's Need for Independence Scale (1960).

3. I go ahead and do things which I believe are right, regardless of what other people would think.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Psychological Distance*

1. The principal refuses to explain his actions to us teachers.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

---

*The first six items are the scale for between the principal and the teachers in general and the last six items are for between the principal and the respondent teacher. Items 1, 2, 3, 4, 7, 8, 9, 10 are revised items from Fleishman's Supervisory Behavior Scales (1955).

2. The principal acts without consulting teachers first.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much
3. He makes teachers feel at ease when speaking with him.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much
4. He is friendly and can be easily approached by teachers.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

5. He is usually very warn and understanding when he talks with the teachers.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

6. He mixes with the teachers very well even when there is no official business involved.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

7. My principal usually doesn't explain his decisions to me about matters in which I am involved.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

8. He acts on things which may involve me without consulting me first.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

9. He makes me feel at ease when speaking with him.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

10. He is friendly to me and I can easily approach him.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

11. He is usually very warm and understanding when he talks with me.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

12. He gets along with me very well even when there is no official business involved.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Feedback

1. As compared with other teachers, the principal talks to me about my class room work . . .

    1. much more frequently
    2. more frequently
    3. just about the same amount
    4. less frequently
    5. much less frequently

2. He gives me encouragement in my work . . .

    1. very frequently
    2. quite frequently
    3. just about the same amount as he does other teachers
    4. quite infrequently
    5. never

3. He offers suggestions to help improve my teaching performance . . .

    1. very frequently
    2. quite frequently
    3. just about the same amount as he does other teachers
    4. quite infrequently
    5. never

4. He lets me know ifhe has heard any criticisms about my teaching performance . . .

    1. very frequently
    2. quite frequently
    3. just about the same amount as other teachers
    4. quite infrequently
    5. never

Change Orientation of the Principal

1. "Personally, I feel I can adjust to changes easily."
    1. he would agree very much
    2. he would agree on the whole
    3. he would agree a little
    4. he would not be sure
    5. he would disagree a little
    6. he would disagree on the whole
    7. he would disagree very much
2. "Most changes introduced in the last ten years have contributed very little in promoting education in our schools."
    1. he would agree very much
    2. he would agree on the whole
    3. he would agree a little
    4. he would not be sure
    5. he would disagree a little
    6. he would disagree on the whole
    7. he would disagree very much
3. "If we want to maintain a healthy, stable educational system we must keep it the way it is and resist the temptations to change."
    1. he would agree very much
    2. he would agree on the whole
    3. he would agree a little
    4. he would not be sure
    5. he would disagree a little
    6. he would disagree on the whole
    7. he would disagree very much

4. "I really believe we could have done a much better job, or at least done just as well, if things hadn't been changed so much in our schools."

    1. he would agree very much
    2. he would agree on the whole
    3. he would agree a little
    4. he would not be sure
    5. he would disagree a little
    6. he would disagree on the whole
    7. he would disagree very much

Vertical Communication

1. Compared with an average teacher he talks to me about discipline problems . . .

    1. much more frequently
    2. more frequently
    3. about the same amount
    4. less frequently
    5. much less frequently

2. Compared with an average teacher, he talks to me about the problems of teaching my subject matter(s) . . .

    1. much more frequently
    2. more frequently
    3. about the same amount
    4. less frequently
    5. much less

Participation*

1. I don't think I can influence the decisions of the principal regarding things about which I am concerned.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

2. The principal usually asks my opinion when a problem comes up that involves my work.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Perceived Legitimacy of Participation

1. It is unusual for me to take part in discussion which results in decisions regarding school problems and activities.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

2. It isn't really the job of the teachers to take part in any decision-making discussions regarding the school matters.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

3. If the superintendent or the principal wants to get anything done, he should go ahead, without asking teachers, with what he thinks will benefit the school.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Equalitarian Relationship

1. The principal and I don't have any close friendship.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

2. The principal likes me to talk with him the way a person chats with his buddy.

    1. agree very much
    2. aggre on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

3. The relationship between my principal and me is more or less like a partnership.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Horizontal Communication

1. Compared with an average teacher, I talk with other teachers about non-academic school activities . . .

    1. much more frequently
    2. more frequently
    3. just about the same amount
    4. less frequently
    5. much less frequently

2. Compared with an average teacher, I talk with other teachers about discipline problems . . .

    1. much more frequently
    2. more frequently
    3. just about the same amount
    4. less frequently
    5. much less frequently

Feeling of Security

1. I really don't feel secure and relaxed as a teacher in this school.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

2. Compared with an average teacher, I would say I get along well with other teachers.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

3. I really feel at home in this school as nothing makes me nervous or uneasy.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Group Cohesiveness*

1. I feel I am really a part of this faculty.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

---

*Revised Seashore's Group Cohesiveness Scale (1954).

2. If I had a chance to do the same kind of teaching for the same pay in another school, I would consider moving.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

3. The teachers in this school get along with one another better than those in other schools in this district.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

4. The teachers really help each other on the job in this school as compared with teachers in other schools in this district.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Role Satisfaction

1. Generally speaking, I don't like being a teacher.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much
2. I like my teaching job in this school.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much
3. I am far from satisfied with the school environment here.
    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

4. I have some very good reasons to refute the general feeling that anyone can be a teacher.

    1. agree very much
    2. agree on the whole
    3. agree a little
    4. don't know
    5. disagree a little
    6. disagree on the whole
    7. disagree very much

Opinion Leaders

1. Among the teachers in the school, name three whom you respect most as teachers.

    A. _____

    B. _____

    C. _____

2. Name three teachers whose opinions you most frequently seek when you have problems related to your teaching performance.

    A. _____

    B. _____

    C. _____

3. Name three teachers in your school whose opinions on crucial educational issues are usually very valuable to you.

    A. _____

    B. _____

    C. _____

Information Level on Education

1. Do you happen to know what the main issue is about in the Amish school controversy in Hillsdale County, Michigan?

   1. No 2. Yes

   What is it? _____

   _____

   _____

2. Do you happen to know who the Oakland County Superintendent of Schools is?

   1. No 2. Yes

   Who is it? _____

3. Do you happen to know who the president and executive secretary of the Michigan Educational Association are?

   1. No 2. Yes

   Who are they? The President is _____

   _____

   and the Executive Secretary is _____

   _____

4. Do you happen to know the method of selection of the Superintendent of Public Instruction in Michigan?

   1. No 2. Yes

   What is it? _____

   _____

   _____

5. How many members are there on the State Board of Education?

   _____ members (approximately)

Source Credibility*

Please evaluate your principal in terms of the following adjective pairs. Check one and only one of the seven points of each item.
For example:

active ___extremely active___ ___quite active___ ___not sure___ ___somewhat active___ ___quite inactive___

					___extremely inactive___			inactive
	extremely	quite	somewhat	not sure	somewhat	quite	extremely	
1. educated								uneducated
2. untrained								trained
3. informed								uninformed
4. inexperienced								experienced
5. subjective								objective
6. honest								dishonest
7. safe								dangerous
8. close-minded								open-minded
9. frank								reserved
10. introverted								extroverted

*Lemart and Berlo's Source Credibility Scale (1963). Items 1-4 are of the dimension of competence, items 5-8 are of the dimension of safety, and items 9-10 are of the dimension of dynamism.