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An Investigation of The Relationship Between School Management Patterns and The Degree of Implementation of an Innovative Curriculum

By

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TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES

LIST OF TABLES

INTRODUCTION

Since the early 1960's as a result of the curriculum reform movement, a plethora of curricula has been developed. Yet the innovations have generally failed to meet their objectives and atrophied because of the failure to understand the circumstances facilitating and resisting implementation. Goodlad and Klein (1970) and Gross, Giacquinta and Bernstein (1971) reported that a discrepancy existed between reported claims of use and actual classroom implementation of soundly developed and innovative curriculum. In Goodlad and Klein's (1970) words, the innovations of the last decade "have been blunted on the classroom door" (p.3). However, there is little research on the process of implementation of the new curricula in the schools, while much more has been written about the development of the curricula. Correspondingly the change literature is voluminous as indicated by Havelock's (1971) and Maquire's (1971) massive review and cogent synthesis of change literature.

Educational journals have for the last few years featured an increasing number of articles discussing the failure of innovative curricula. There is a clear call for an isolation of the factors facilitating or impeding the implementation of curricular innovations. Beauchamp (1978) described the state of the field when he said "the missing link in American curriculum is the process of implementation" (p.405). Beauchamp and Beauchamp (1972) in their investigation of Western European educational systems stated that in recent years curriculum innovation has become a major objective for school systems in many nations. Regardless of this fact, they conclude that too few schools have been able to surmount the barriers of implementation.

Hampson (1975) predicted that the phenomena of curriculum implementation will probably become the cause célèbre in education of the late 1970's and early 1980's. It is obvious that schools cannot afford many failures in these times of limited resources and accountability. Thus implementation has emerged as a necessary and fertile field for investigation. As there is a need for an expanded knowledge base regarding the process of implementation in education, the identification of general patterns in the process of implementation will hopefully contribute to the state of the art and lead to further testing, refinement and extension of available knowledge.

The study assumes that change, both curricular and non-curricular, will occur and this assumption is based on an accepted organizational principle that change in an organization is an expected force and that organizations, if they are to remain effective, must adapt. Yet studies indicate that change in some organizations occurs at a significantly slower rate than in other organizations and that schools are generally less responsive to change than many other types of organizations (Mort and Carlson, 1968). Curriculum theorizers have suggested that certain existing organizational variables of adopting units play a critical role in whether and to what degree curriculum implementation occurs. There is a need for empirically examining relationships between characteristics of the adopting units and the degree of implementation.

Several studies have indicated the need for the research undertaken by this study. Manning (1973) observed that no systematic categorization of organizational variables as they affect adoption (used in the context of implementation) has been developed. In a comprehensive survey of research on curriculum and instruction implementation, Fullan and Pomfret (1977)

further pointed out the need to examine the relationship between characteristics of the adopting units and the degree of implementation. Common (1978) stated "A plausible contention, in need of solution, is that there must be conditions internal to the school that directly influence implementation".

Copious literature supports the prediction that when a new curriculum is to be attempted by a staff, the principal may be faced with barriers to change. There is a need to examine the role of the principal in respect to changes that may occur. Historically the role of the principal in the elementary school has been evolving in response to a number of external and internal pressures. Despite a lack of consensus it appears that the preferred role set of the principal should involve responsibilities in the areas of curriculum and instruction. Beauchamp (1975) has stated that "the assignment of leadership responsibility and accountability for curriculum engineering is mandatory for the perserverance of the curriculum systems" (p.208). The specific responsibilities in these areas have been the subject of considerable discourse during the past few decades. While a great deal has been written relative to ways in which the principal should perform his role in instructional improvement, the principal's curricular role has been less clearly specified. Further confusion is added by viewing the principal as having curriculum responsibilities in the areas of development, implementation and evaluation and whose functions are variously and discrepantly described as that of curriculum change agent, curriculum worker, curriculum leader, curriculum supervisor, curriculum manager, procedural task master and change facilitator.

Whether or not the principal is viewed as having curriculum development responsibilities or curriculum implementation responsibilities will vary

according to the curriculum decision-making arena. One would expect that principals operating in a centralized decision-making system would have responsibilities for implementing curricular decisions already made and that in a decentralized system the principal would have curriculum development responsibilities.

In the past few years the Department of Education in Manitoba has been reorganized to include a curriculum development section with subject specialists. In addition, working committees of seconded teachers are made available at the regional level for curriculum development, for further translation of provincial guidelines and for the subsequent introduction of the innovative curriculum. Emanating from this expenditure of human and financial resources has been a profusion of curriculum documents in many areas. While curriculum in Manitoba, as elsewhere, has undergone many changes in the past few years, a disproportionate amount of educational development resources has been allocated exclusively to product development rather than to the implementation process. Curricula are increasingly being developed external to the teachers who are the eventual users of the curriculum (Mosher and Purpel, 1972) and often there is little, or no, active role by the user in the speculation, formulation, planning, development, or decision to adopt an innovative curriculum. This situation has resulted in a concern for the proper utilization of curricular plans in the school.

Thus, in the centralized curriculum decision-making setting of Manitoba, principals are presently faced with a situation where the provincial Department of Education is sending to the principal's desk new curriculum guidelines in various subjects at the elementary level. Recently the Department

has initiated the use of more prescriptive curricula in various subject fields. The principal has been delegated with the task of getting these documents into the hands of the teachers and to have them implemented by a specific time. With the coming changes and the conditions that presently exist, there is a need to establish what principals can do to motivate, assist, and help initiate the implementation of the new curricula that is coming into the schools.

It is easy to say that the principal has leadership responsibilities in the area of curriculum, but it is not easy to define distinguishing traits or procedures that will ensure success. It is possible that the advent of union-styled negotiations and the higher levels of teacher training which results in increased teacher expertise may have made the notion of the principal as the functional and status curriculum leader no longer viable. The role of the principal in the area of curriculum may now be that of creating a climate of receptivity to research, experimentation and innovation in the school and the community (Berman, 1978, Walen, 1967, Wood, 1973). Thus the major curriculum implementation responsibility of the principal may be to generate a psychological tone or climate conducive to change. Drucker (1968) stated that the administrator should now be more concerned with having an innovative system as opposed to managing a stable or fixed organization.

A good deal of research indicates that there is no simple relationship among climate and motivation, attitudes and performance. Rensis Likert's (1977) management systems theory is presented as an approach that accommodates the interrelationships among a large number of variables and views them as parts of a meaningful whole. In attempting to categorize

systematically organizational variables as they affect implementation and in linking variables in a manner which is helpful for management of the implementation process, Likert's framework may be a useful reference point.

Likert has suggested that his management systems theory may be used as a predictor of innovation and promoted the idea that a human organization is the best type of organization to promote change. Recent evidence has been found to support the predicted relationship between school management systems and adaptiveness or innovativeness of schools. Consequently, the purpose of this study is to extend the change aspect of Likert's theory by examining the relationship of school management patterns to curriculum implementation as an outcome.

The timeliness of the study is corroborated by the fact that it occurs at a time when provincial educators are emphasizing the importance of school management practices by providing leadership training courses throughout the province and also are articulating a concern about implementation of the numerous provincial curricula that have been developed.

There is little existing implementation research that can be used as a basis for applied organization change by principals. If it is found that certain management patterns are or are not conducive to implementation, then it behooves one to start moving in a direction that would result in effective curriculum implementation. Based on specific feedback from the staff, a principal would be able to take an introspective look at how he has been operating, and if found wanting, could attempt to move the management toward a style that facilitates curriculum implementation. Thus Likert's systems may offer effective organizational development procedures to be followed in order to alleviate some resistance to change and may be an

effective approach to facilitating the implementation process.

The research is reported in four chapters. The investigation and the reported findings are presented in the following manner. The body of the report includes the preceding introductory section and the foundations of the investigation which appears in Chapter One. The first chapter presents the review of the literature pertaining to establishing the theoretical framework for this investigation and concludes with a statement of the problem, its significance, and definitions of the terms related to the study. The presentation, the methodology and procedure incorporated into the research design of this study are given in Chapter Two. The analysis of data and the results from testing the hypotheses are presented and discussed in Chapter Three. A summary of this research, its conclusions and implications are recorded in Chapter Four. A bibliography, appendices and an abstract of the thesis are also included.

CHAPTER I

REVIEW OF THE LITERATURE

Organizational theory, change theory and curriculum implementation theorizing are examined in this chapter in order to establish a theoretical framework for the linking of management patterns and organizational variables to curriculum implementation. First the nature of implementation is examined in terms of its place in the larger process of change, in order to demonstrate the relationship of change theory to implementation theorizing. The section includes both a survey of current views on the field of curriculum implementation and a critical examination of implementation research.

An examination of the dependent variable of the study, degrees of implementation, is provided in the second part, with an emphasis on the Concerns Based Adoption Model and its corresponding Stage of Concern (SoC) and Levels of Use (LoU) instruments.

The third section explores the concept of organizational change. In an attempt to identify those components that may affect the change process in general, and may be expected to affect the implementation process, organizational literature is examined in terms of the two change contexts of organizational innovativeness and organizational adaptiveness as affected by organizational elements.

The concept of organizational systems and its relationship to change is explicated in part four. The section concludes with a summary of Rensis Likert's management systems theory, with specific emphasis on his proposition that the management systems theory can be used as a predictor of innovation.

The final segment establishes a theoretical foundation linking Likert's theory and degree of implementation factors. A review of related studies that have empirically tested the theory and a statement of the problem to be investigated are provided.

CURRICULUM IMPLEMENTATION

THE CHANGE PROCESS IN EDUCATION

As an area of study, implementation is inextricably bound as only one component of the larger process of change. The literature on change is replete with a variety of terms including communications, diffusion, innovation, adoption, and installation and more recently, systems. However, it is difficult to find agreement on what constitutes the change process; in other words, what the stages are within the change process in education.

Rogers (1962), in the first major work on change processes, identified five stages in the adoption process; awareness, interest, evaluation, trial run and final adoption.

Clark and Guba (1967) and Guba (1967) presented an analysis and discussion of the overall field of change and developed a conceptualization of the educational change process. Their classification scheme called attention to the range of processes involved in change strategy. Specifically these writers enumerated four major processes involved in change: research, development, diffusion and adoption. Each of these categories has several dimensions. It is significant that Clark and Guba stratified the processes of installation and institutionalization under the adoption category. These two concepts form the framework for that stage of the change process that will be specifically examined in this study; namely, implementation.

Until recently implementation was not examined beyond the point of official adoption of an innovation. Carlson (1965) and Pellegrin (1975) observed that the failure to establish [implement] an adopted change as intended was a crucial problem in the change process. Hoyle (1970) suggested that in the Guba and Clark (1965) taxonomy of seven stages of change processes, only the first four processes were being pursued with respect to curriculum change. New curricula are being developed, disseminated and demonstrated but little attention is being given to implementation.

Giacquinta (1973) pointed out the necessity of distinguishing among the initial adoption, implementation and incorporation as distinct stages. Pincus (1974) criticized the existing change models for their focus on pre-adoptive behavior. He judged the change models as portraying a sequence of events which takes place in the user systems before a decision to adopt is made and indicated a need for the elaboration of post-adoptive behavior (implementation). Thus, one stage may not necessarily lead to another. Although research on the adoption stage is by no means adequate, research on implementation is especially scarce. A review of pertinent literature reveals that little is known about what influences the extent of implementation after the decision towards full use of an innovation is made. (Bennis, Benne, Chin and Corey, 1976).

In addition to the dearth of studies on implementation, certain methodological shortcomings restrict the applicability of much of the existing research. Much of what is written about implementation consists of generalizations made from other areas of research (Havelock, 1973 - change theory; Rogers, 1962 - agriculture). The studies typically focused

on the adoption and diffusion of rather simple innovations such as audio-visual aids or farm implements. As many of the studies have used agricultural innovations as the data source, the nature of the innovation limits the usefulness of generalizing this knowledge to the implementation of educational innovation.

An increasing number of generalizations and propositions is based on inferences drawn from case studies of the implementation process within particular settings. Usually these case studies involve single schools or at the most a small sample (Roose, 1976), thus offering limited generalizability of findings and necessitating replication of results. Some of the literature consists of personal experience and advocacy statements (Farrington, 1976). Virtually none of the posited generalizations have been empirically tested. In the few studies where empirical testing has occurred, some of the findings must be considered spurious as, until recently, the methods of arriving at indices of implementation degree have been subjective and inadequate (Evans and Scheffler, 1974; Gross, Giacquinta and Bernstein, 1971). The study of implementation has been plagued by a scarcity of evaluative instruments (Evans and Behrman, 1977; Neufield and Firth, 1979). In addition to questionable data gathering instrumentation, data have often been gathered from administrators rather than from the teachers actually making the changes specified by the innovation (Carlson, 1965).

An alternative methodology being used in implementation research is that of model building. Implementation models developed through theorizing have suggested questions that need to be answered and often incorporate assumptions and postulates about implementation that need to be tested

(Common, 1978; Fullan, 1978; Gross et al., 1971; Hall, 1975; Leithwood, 1974, 1977). Too often the developed models are misleading and misrepresentative as the complex phenomena of the implementation process are presented in an overly simplified form or are reduced to a static state. Several recent studies have recognized that curriculum implementation is a more dynamic, complex process (Brantley, 1975; Winklevoss, 1975) than portrayed by the existing models.

A review of the change literature reveals that with a few exceptions the implementation process is not examined. In summary, it can generally be said that much of the literature focuses on initial adoption and overlooks implementation factors as determinants of success or failure. An examination of existing implementation literature reveals numerous methodological shortcomings and the need for empirical testing of generalizations.

DERIVING A METHODOLOGY FOR EVALUATING CURRICULUM IMPLEMENTATION

As this study examines curriculum implementation as a dependent variable, then it is necessary to generalize on the nature of implementation based on the writer's abstraction of the elements of implementation from the literature. Further, as the study involves an evaluation of the degree of curriculum implementation, there is a need to select data collection instruments that are capable of eliciting valid, reliable and meaningful information about the implementation process.

Alkin and Fink (1974), Eichelberger (1974) and Patton (1978) have emphasized the importance of including a measure of degree of innovation use (implementation) in program or product evaluation. Leithwood (1979) identified some issues that the selection of methodology for evaluating curriculum implementation is contingent upon, specifically; the nature

of the implementation process and the function of the implementation data to be obtained. This section examines the nature of curriculum implementation and derives criteria for selecting a methodology for evaluating curriculum implementation.

THE NATURE OF CURRICULUM IMPLEMENTATION

There must be a clear conceptualization of the curriculum implementation process in order to establish criteria for its evaluation. In the curriculum implementation literature there exists substantial agreement as to the nature of implementation. Farrington (1971) and Rutherford (1976) emphasized that implementation is not a static event but is an individualistic process that occurs over time with each person implementing in his own unique fashion. Hall, Wallace and Dossett (1973) stressed that the process occurs within formal organizations (user systems) and that organizational characteristics will effect in varying degrees the implementation processes. They further suggested that implementation is a developmental process in which concerns and levels of individual usage are of significance. The implementation process is viewed as complex; involving relationships between the users (teachers) and the managers (administrators) - (Fullan and Pomfret, 1977), and interplaying between innovation and its setting (Berman and McLaughlin, 1976). Leithwood and Russell (1973) viewed implementation as a problem-solving process directed at solving a recognized need. Leithwood (1976) further described implementation as a linear, logical process. He included formulation of implementation goals in the process and this further implied the purposefulness of implementation and the rationality of the process. In conclusion, this study supposes that implementation is a rational, complex,

developmental process requiring systematic deliberation and responsible planning. As this study further assumes that curriculum implementation is a process of adaptation it will be necessary to elaborate on this assumption.

The implementation literature reveals that implementation studies usually concentrate on determining the degree of implementation of an innovation in terms of a fidelity perspective to innovative prescriptions. In a fidelity orientation, the degree of implementation becomes the degree of curriculum goal realization or the degree of congruence between role change and behavior change prescribed by the innovation. Fullan and Pomfret (1977) examined twelve studies that explicitly dealt with measuring implementation from a fidelity perspective.

Yet contrary to the assumption held in the early 1960's that it was possible to develop teacher-proof curriculum packages, teachers are adapting introduced curricula to fit their situation and pressing needs at various points during implementation (Eisner, 1970, p.8; Tanner & Tanner, 1975, pp. 444-446).

Conversely, an innovative curriculum is often judged merely on its success in achieving the intended outcomes. Beauchamp (1978), Goodlad (1970), Gross, Giacquinta and Bernstein (1971) and Patton (1978) have pointed out the difficulty of assessing the merits of innovations without substantial information as to the degree to which proposed innovations are operating as intended or without information delineating the important nuances of the altered curriculum.

Several theorists have recently suggested that implementation is a process and that it requires an "adaptation model" rather than a fidelity

perspective (Beauchamp, 1978; Berman and McLaughlin, 1977; Dalin, 1975; Leithwood, 1979; Musella, 1971; Nicodemus, 1976, 1977; Russell and Patton, 1978; Leithwood, 1973).

Russell and Leithwood (1973) contended that the teacher is in the best position to determine the changing needs of students and to monitor the effectiveness of any innovation in meeting the students needs. The curriculum is expected to be adapted in light of the recognized situational needs. Thus implementation is viewed as a continual process of revision in the light of formative evaluation data.

The process of adaptation was further explained by Patton (1978) as he suggested that programs were not implemented in the rational fashion of singlemindedly adopting a set of means to achieve a predetermined end. "From an incrementalist, satisficing perspective organizations and decision-makers do not methodically implement a program as if they had found the best means to achieve top priority goals" (p.158). It was posited that a curriculum is shaped as the users reacted to dynamics, uncertainties and complexities that emerged in the local conditions.

Implementation was described by Beauchamp (1978) as a process of moving so as to ensure that the curriculum is used as a point of departure for the development of teaching strategies. Beauchamp supported the concept of implementation as an adaptation process when he suggested that it is the means of transmitting the spirit and the content of the planned curriculum into the instructional process. Specifically he proposed that implementation may be thought of as the "transition from the static nature of the curriculum to an action strategy" (p.406).

Berman and McLaughlin (1976) perceived implementation as the dynamic

complex interplay between the innovation and its setting. In differentiating between successful and unsuccessful implementation efforts they reported that successful implementation is not merely the direct application of a technology. As it is viewed as a process characterized by mutual adaptation there is often not a great degree of fidelity to the original adoption. They hypothesized that there is a shaping over time by the institutional setting as the initial design of an innovative project is adapted to the particular organizational setting of the school or classroom. At the same time the organization and its members are adapting to the demands of the innovation. Thus Berman and McLaughlin's mutual adaptation conceptualization includes two dimensions: adjustments or modifications to the curriculum such as goals, design components, technologies; and user and organizational behavior modification on role set changes. They proposed that curriculum should be modified to meet the local needs while retaining the original essence of the curriculum.

Musella (1971) and Dalin (1975) also examined implementation from an adaptation perspective. They suggested that certain aspects of an innovation are implemented while other elements or parts are not. Musella (1971) proposed that the criteria for evaluation of an innovation should not be merely in terms of fidelity to the original intent but should also include as a basis for judgement a consideration of any spin-offs that may occur. Musella further suggested that continuous development and evolution should be a goal for all implementation efforts. Dalin (1975) explained that successful implementation would mean the ability of the school to be responsive to centrally or externally developed innovations on the one hand and at the same time, be able to develop a creative growth and improvement

process with the school itself. In other words, implementation should be an organizational development process in toto.

The implementation process was perceived by Pressman and Wildavsky (1973) as being developmental. They advocated mutual adaptation of innovations in indicating that circumstances are susceptible to change as initial adoption conditions may change and original goals can erode.

Nicodemus (1976, 1977) examined the use of centrally developed curriculum and reported alternative uses of specific materials and resources. The process of mutual adaptation between curriculum materials and users is indicated by the reported diverse integrations of the materials into differing organizational structures on varying receiving programs.

Many theorists propose that curriculum should be modified to meet local needs, while retaining the original essence of the curriculum There is a need to be able to adapt in light of formative evaluative data. Beauchamp (1978) advised planners to create designs that are amenable to adaptation. Specifically, mutual adaptation is viewed as requiring user input. As the user modifies the curriculum, the amount of user input and impetus may increase until a point is reached when the user has extended the curriculum beyond its original intent and spirit. At that point, the user has moved from the domain of curriculum implementation and has entered into the area of curriculum development. Concurrently, the adopted curriculum may undergo so much extension and possible distention that it undergoes not implementation, but rather re-development. An obvious issue that has not been resolved is at what specific point in the process does mutual adaptation implementation end and curriculum development begin. Researchers at the University of Texas Research Center are currently

developing a concept of innovation configurations for analyzing the adaptations of innovations and refer to a point of drastic mutations as "that point beyond which the integrity of the innovation is not preserved" (Hall and Loucks, 1978, p.10).

The assumption in a curriculum adoption decision is that the curriculum to be used will affect the organization in a positive sense. Implementation for organizational improvement implies shared functions, particularly planning and problem-solving, between the organizational members involved in implementation, namely the user and manager. Thus the organization during the implementation process will change and improve, a premise of the organizational development movement: "the idea of improving an organization's problem-solving and renewal processes" (French and Bell, 1973, p.15).

Recent literature on implementation suggests that it may be inappropriate and misleading to focus only on fidelity of implementation as a measure of the degree of implementation. Many theorists perceive mutual adaptation as the key factor of successful implementation. If implementation is perceived as an adaptation process, then an externally developed innovative curriculum can be expected to be adapted in light of situational needs.

IMPLEMENTATION EVALUATION METHODOLOGY

From this examination of the nature of implementation, criteria may be derived that a chosen methodology for evaluating curriculum implementation would be expected to meet or incorporate. Implementation has been described as an individualistic process that occurs over time, has directionality, involves adaptation of the curriculum and modification of teacher behavior and classroom practice as teachers develop an increasingly sophisticated image of

what the innovation involves. It is recognized that curriculum implementation is not discrete or absolute. As a curriculum may be implemented to varying degrees there is a need to be able to judge the degree of implementation. The various users of a curriculum in a school may demonstrate a wide variation in the degree of their use of an innovative curriculum. This variation in use by each implementer should be behaviorally described and systematically accounted for in the chosen methodology. Yet, reliably judging the degree of implementation is difficult as there may be a variety of legitimate views as to what constitutes implementation depending upon the point of view of the judge and the perceptions of the practices intended by the curriculum. Thus, because of the complexity of the nature of implementation, there is value in viewing implementation in terms of growth stages or levels of use that describe individual teacher knowledge, behaviors and associated classroom practice.

The functions of the evaluation data to be obtained also offer some suggestions as to the type of evaluation methodology to be selected. As it is hypothesized that implementation is related to management patterns and organizational variables, it is necessary that the resulting data from an evaluation of implementation be of the type that provides information that would assist with managerial decisions. There is a need to choose a methodology that will: provide a description of the actual classroom practice in a quantifiable form, identify those conditions under which implementation is likely to succeed, provide a delineation of problems encountered under these conditions and provide strategies for their resolution (Lewy, 1977: Leithwood, 1979).

The implementation evaluation methodology selected included a

teacher self-reporting format. This study assumed that the teacher should be the source of evaluation information as more remote sources have been shown to be unreliable (Berman and Pauly, 1975; Greenwood, Mann and McLaughlin, 1975). For this study, self-reporting was viewed as the best method for obtaining information as subtle changes in a teacher's planning behavior are difficult to detect through a manageable amount of classroom observation.

In summary, an analysis of two issues central to the process of curriculum implementation (the nature of implementation and the function of data to be obtained) suggests a specific methodological focus for the implementation evaluation. Any selected evaluation methodology for the assessment of curriculum implementation has to provide for an empirical recognition of the variance of individual teacher behavior on a number of dimensions, the concept of mutual adaptation, the notion of levels of increasing sophistication in the use of the curriculum, the assessing of varying degrees of implementation and should include a teacher self-reporting format.

Fullan and Pomfret (1977) and Leithwood (1979) suggested that to date one of the most sophisticated, rigorous and explicit conceptualizations for assessing implementation is the Concerns Based Adoption Model developed at the University of Texas Research and Development Center. An elaboration of this model that incorporates both the fidelity and adaption dimensions of assessing implementation and that meets the study's identified criteria for an evaluation methodology appears in the next section.

CONCERNS BASED ADOPTION MODEL

A unique approach to the problem of conceptualizing and measuring the degree and quality of implementation has been developed by researchers

at the University of Texas. The Procedures for Adopting Educational Innovation Project at the University of Texas Research and Development Center for Teacher Education focuses on a model of innovation implementation: A Concerns Based Adoption Model (C.B.A.M.). In this section the assumptions underlying the research at the Research and Development Center are first described and then the two key dimensions of the model, Stages of Concern and Levels of Use, are dealt with respectively. In presenting a developmental conceptualization of the implementation process, the researchers indicated that implementation has not been sufficiently examined as a developmental process in which the individual implementer's extent and manner of use are significant. The major premise of their research is that innovation implementation is individualistic. The researchers contend that there are observable, identifiable, definable and measurable differences in how various individuals approach and use an innovation.

Research conducted at the center has shown that growth in the quality of implementation of the innovation by most individuals is a developmental process. The amount of time required to implement an innovation will vary depending upon such factors as the complexity of the innovation, the amount of support that is provided, the skill of the individuals involved as well as the user system characteristics and conditions. Based on these assumptions regarding the nature of the implementation process, any study of the implementation of innovative curriculum requires that the individual be a unit of analysis and the basic unit for data collection (Hall, 1977).

STAGES OF CONCERN (SoC)

As the Level of Use and Stages of Concern are the two dependent variables of the study, this portion of the literature review will examine

the Concerns-Based Adoption Model in greater detail. The Texas implementation project has conceptualized a generic implementation variable that describes the dynamics and performance of an individual who uses an innovation. The SoC index serves as one way to operationally describe and document whether and how an innovation or treatment is being implemented. It focuses on the user's needs, motivations and problems as he is using the innovation.

The pioneering research in the area of teacher concerns by Gabriel (1957) and Fuller (1969) served as a basis for the development of the Stages of Concern dimension of the Concerns Based Adoption Model. Gabriel (1957) indicated that there were significant differences in concerns, problems and satisfactions between experienced and inexperienced teachers. Fuller (1969) proposed a developmental conceptualization of the concerns of teachers and identified three phases of concern that occurred in a natural sequence: a pre-teaching phase, early teaching phase and a later teaching phase. From these early classifications, and from subsequent investigations into the dynamics of concerns (Fuller, Parsons and Watkins, 1973) and their assessment, arousal and resolution (Fuller and Manning, 1972; Fuller and Brown, 1975) emerged the stages of self, task and impact concerns with the latter concern being further subdivided into several levels.

In a manner paralleling Fuller's studies of concerns of teachers, in the Concerns Based-Adoption Model individuals were hypothesized to have definite categories of concerns that relate to their potential or actual use of an innovation. The developers posited that Fuller's concept of concerns emerging in a logical progression could be generalized to the

innovation implementation process. It was proposed that individuals appeared to go through developmental stages of self-concern when they first encounter an innovation, wondering what it will require of them and as these concerns are resolved more task oriented concerns would emerge. Later concerns were expected to focus on how the innovation affects students, and how to change or replace the innovation to enhance student learning. The Concerns Based Adoption Model has seven stages of concern that reflect this developmental progression and are identified in Figure 1.

Specifically it was assumed by the researchers at the University of Texas that nonusers of an innovation would have relatively more intense stages 0, 1 and 2 concerns and less intense stages 4, 5 and 6 concerns than would users. When use of the innovation began, stages 0, 1 and 2 concerns were expected to decrease in intensity and stage 3 concerns would become more intense. With increased sophistication, stages 4, 5 and 6 concerns would gradually become more intense and the concerns on stages 0, 1, 2 and 3 would correspondingly further decrease in intensity.

The developers viewed a concern as an aroused state of personal feelings and thought about a demand or task. Each person was viewed as uniquely perceiving and contending differently with an adopted innovative curriculum resulting in differential degrees of arousal or intensity of concern. In portraying the SoC as being developmental, the developers contended that in the progression certain types of concerns will be more intense, then less intense, before arousal of other types will occur. In arousal and resolution of concerns, the timely provision of affective experiences and resources may operate as a catalyst for concerns arousal and resolution, thereby facilitating the development of higher level concerns.

FIGURE 1

STAGES OF CONCERN OF A

CURRICULUM INNOVATION DURING IMPLEMENTATION

STAGES OF CONCERN		DEFINITION OF CONCERN
0	AWARENESS:	Little concern about or involvement with the innovation as indicated.
1	INFORMATIONAL:	A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about herself/himself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects and requirements for use.
2	PERSONAL:	Individual is uncertain about the demands of the innovation, her/his inadequacy to meet those demands, and her/his role with the innovation. This includes analysis of her/his role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures of personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.
3	MANAGEMENT:	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.
4	CONSEQUENCE:	Attention focuses on impact of the innovation on students in her/his immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.
5	COLLABORATION:	The focus is on coordination and cooperation with others regarding use of the innovation.
6	REFOCUSING:	The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.

Hall, George, Rutherford (1977)

Hall (1979) identified the following research problem in need of resolution:

> However, arousal of impact concerns is not happening as readily as we had hypothesized! In some schools, stage 4 concerns have been aroused; in other schools they haven't. Amount of experience with the innovation does not appear to be an important independent variable. It appears that the role played by the principal is a key factor. .... [There is a need] to look a lot closer at what principals do and don't do in an attempt to develop hypotheses about the differences (p.2).

LEVELS OF USE (LoU)

A second dimension of implementation is also included in the C.B.A.M. and focuses on eight Levels of Use of an innovation that an individual may demonstrate. These levels range from lack of knowledge that an innovation exists to its active, sophisticated and highly effective use and further to an active searching for a superseding innovation. The Levels of Use (LoU) conceptualization is based on the assumption that growth in quality of use of an innovation (movement toward higher levels) is developmental. The hypothesized developmental progression is viewed as moving from an orientation time, to a decision to use, to a management-oriented use of the innovation and ultimately to an integrated use of the innovation. Prior to actual use an individual becomes increasingly knowledgeable about an innovation. The initial use of the curriculum is usually paralleled with management problems and is often disjointed. With continued use of the curriculum the management becomes routine and the user directs efforts

toward increasing the effectiveness for the clients and integrating his efforts with what others are doing. The operational definitions for the overall eight levels are presented in Figure 2 along with the decision points which indicate the clear demarcation between the levels. Each level is acknowledged as steps in growth toward sophisticated use. Loucks (1977) stated that "the Level of Use has shown strong potential as a measure of the degree and extent of implementation of an innovation" (p.13).

The LoU dimension is not discrete from the SoC as the two integrants are interrelated. The hypothesized eight Levels of Use of an innovation that an individual may demonstrate are accounted for in the C.B.A.M. and incorporated into the Stages of Concern. The developers, Hall, Wallace, Dossett, (1973) stated: "Both Levels of Use and Stages of Concern are aspects of the same developmental process. At each Level of Use there should be a congruent stage of concern if adoption is progressing satisfactorily" (p.16). Hall and Loucks (1977) added, "In theory they will move in nearly one to one correspondence" (p.20). The relationship between Stages of Concern and Levels of Use is shown in Figure 3. As the implementation process unfolds, each individual's use of the curriculum should progress toward sophisticated levels, and concomitantly, the Stage of Concern should progress toward renewal concerns. It is the contention of the developers that strategies should be developed that deal with a user's present SoC and LoU and facilitate growth to higher stages and levels.

It is significant that embodied in the SoC and LoU dimensions are both the fidelity and mutual adaptation orientations of assessing curriculum implementation. The classical fidelity perspective of viewing the extent

FIGURE 2

LEVELS OF USE OF A CURRICULUM DURING IMPLEMENTATION

LEVELS OF USE		DEFINITION OF USE (BEHAVIORAL INDICES)
0	NONUSE	State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.
	Decision Point A	Takes action to learn more detailed information about the innovation.
I	ORIENTATION	State in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system.
	Decision Point B	Makes a decision to use the innovation by establishing a time to begin.
II	PREPARATION	State in which the user is preparing for first use of the innovation.
	Decision Point C	Changes, if any, and use are dominated by user needs.
III	MECHANICAL USE	State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a step-wise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.
	Decision Point D-1	A routine pattern of use is established.
IVA	ROUTINE	Use of the innovation is stabilized. Few, if any, changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.

FIGURE 2 (continued)

LEVELS OF USE		DEFINITION OF USE (BEHAVIORAL INDICES)
	Decision Point D-2	Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.
IVB	REFINEMENT	State in which the user varies the use of the innovation to increase the impact on clients within the immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.
	Decision Point E	Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.
V	INTEGRATION	State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.
	Decision Point F	Begins exploring alternatives to or major modifications of the innovation presently in use.
VI	RENEWAL	State in which the user reevaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.

Adapted from: Hall, G.E., Wallace, R.C., and Dossett, W.F. "A Developmental Conceptualization of the Adoption Process Within Educational Institutions," 1973.

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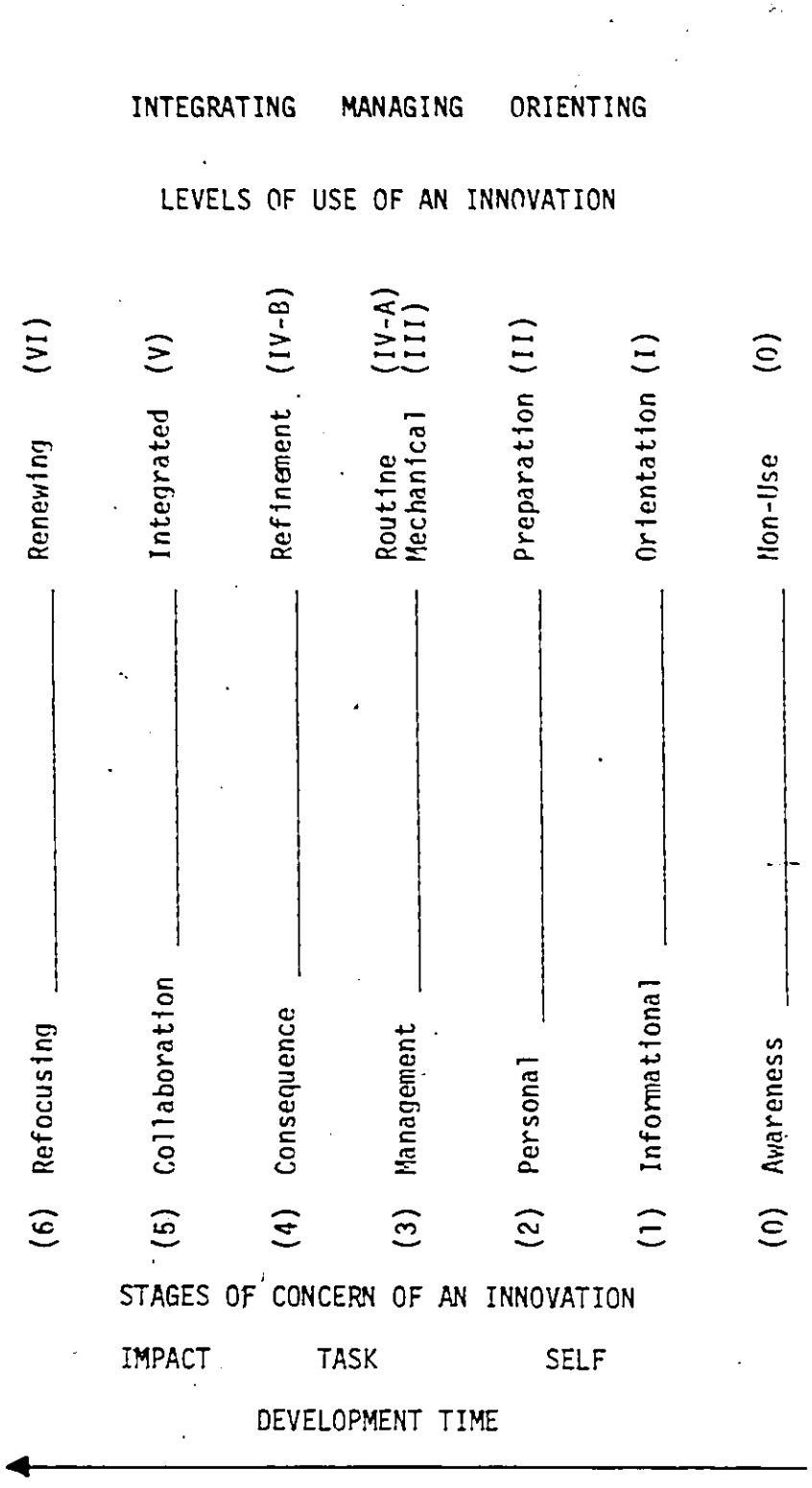
Research and Development Center for Teacher Education
The University of Texas at Austin

FIGURE 3

THEORETICAL RELATIONSHIP BETWEEN

STAGES OF CONCERN AND LEVELS OF USE



of implementation as the degree of congruency between the curriculum prescriptions and the actual usage is represented by the SoC stage 3 management concerns and the LoU managing dimension consisting of Levels III (Mechanical) and IV-A (Routine). The concept of mutual adaptation, in which implementation is viewed as an interactive and adaptive process, is incorporated into the higher Stages of Concern and Levels of Use dimensions. The SoC impact category, comprised of stage 4 (Consequence) 5 (Collaboration) and 6 (Refocusing), refers to concerns about changing the curriculum to increase its effectiveness. Consistent with this study's assumption that the process of mutual adaptation is the greatest degree of implementation, the Levels of Use IV-B, V and VI are considered by the C.B.A.M. developers to be descriptive categories of sophisticated usage of a curriculum. Synthesized in Levels IV-B (Refinement) V (Integration) and VI (Renewing) are the processes of modifying, integrating and collaborating in order to increase the effectiveness of the curriculum. Thus it is proposed that the goal for implementation planners should be to facilitate user growth from a nonuse to a fidelity perspective to an adaptation orientation.

Either of the two dimensions of the C.B.A.M. is hypothesized to be a powerful assessment tool and a critical indicator of an individual's level of performance in implementing a curriculum. Hall and Rutherford (1975) suggested that the C.B.A.M. research has resulted in "Two key developmental dimensions of innovation user growth [having] been identified, described and defined as basic independent variables for monitoring innovation implementation" (p.3). When combined, SoC and LoU provide a detailed description of the individual involved in curriculum implementation;

one dimension focusing on feeling, the other on behavior. The investigator views the C.B.A.M. and the SoC and LoU dimensions as providing the conceptual handle, measurement tools and data base for assessing the extent of implementation of a curriculum as required by this study.

THE AFFECTS OF THE USER SYSTEM ON THE LEVEL OF IMPLEMENTATION OF AN INNOVATION

Hall, Wallace and Dossett (1973) stressed that implementation occurs within a formal organization, usually referred to as the user system. Thus one might expect that organizational characteristics will affect in varying degrees implementation processes. Hall, George and Rutherford (1977) hypothesized that the movement toward higher stages of concerns will depend on "(...) the innovation and the environmental context" (p.6).

Hall (1977) proposed that the following areas of investigation should be pursued: (1) which context variables are important to the implementation process and (2) how do context variables affect implementation. Hall stated:

> Research studies cannot assume a nonuse/use dichotomy. In order to identify teacher effects the affect of the context as it impacts the teacher and the innovation must be accounted for. (...) We invite our colleagues (...) to share in this exploration (p.23).

The assumption of the implementation model is that the primary focus must be upon the individual innovation user. The user system variables can then be looked upon in relation to how they influence and affect the implementation of each of the individuals.

Hall (1975) found that some individual institutions show definite

movement by the majority of the users to the same level of implementation despite his previous assumption that there is a linear development throughout the levels of implementation. He announced:

> We suspect that this movement can be associated with certain adoption strategies, interventions and user system conditions, as well as some characteristics of the innovation. Exploration of the reasons for this movement is one of the chief directions that we would like to take in our future research (p.25).

Hall emphasized that implementation of innovations must be viewed systematically as the entire process of implementing by the classroom teacher occurs within a larger system: the school, school system and community. Thus the primary unit of implementation is the individual classroom teacher with the school building the secondary unit and the school system as the tertiary unit of adoption.

A key component of the Concerns Based Adoption Model is the role played by the implementation agent. The model can provide the practicing implementation agent with strong clues as to the necessary interventions and potential relevance of such interventions to the user's progression through the levels of implementation. The model has utility for a school administrator from a prescriptive viewpoint.

Hall (1973) stated that the implementation agent is "concerned with changes in individuals, in the user system as an organization, and if need be, in the innovation itself that will lead to attainment and continuance (...) of the innovation by the user system" (p.19).

In facilitating the implementation of an innovation the implementation

agent becomes the chief liaison agent for the user system. The agent is expected to provide supportive experience, arrange for training, consultation, data gathering and many other actions that will facilitate the implementation of an innovation. Thus the model provides direction for a principal wishing to improve the level of use of adopted innovations in a school.

In summary it should be noted that there are several important characteristics of the implementation model that make it an appropriate basis for this research. These include:

1. Focusing on assessing the degree of implementation of innovations rather than a nonuse/use dichotomy.
2. Having the individual teacher as the unit of analysis rather than groups or the entire user system.
3. Viewing implementation as a developmental process with definable, predictable and measurable levels.
4. Proposing that implementation of an innovation progresses through a series of definable, predictable and measurable levels.
5. Incorporating the concept of fidelity and mutual adaptation of a curriculum as components of implementation.
6. Providing a systematic means of evaluating the degree of implementation through provision of a set of tested and validated instruments and procedures.
7. Suggesting that implementation must be examined from a systems viewpoint as the entire process takes place within the larger system.
8. Accounting for the role of an implementation agent (principal) in facilitating the user's progression through the levels of implementation.

In total, implementation is viewed as an adaptive, interactive, ongoing developmental process which occurs within a formal organization and the LoU and SoC dimensions are seen as providing a detailed description of the individual involved in curriculum implementation. Since Level of Use and Stage of Concern are well defined generic descriptors of curriculum implementation, it is possible to explore relationships between SoC and LoU of teachers and other variables. The present study is constructed to explore one such relationship: that among SoC and LoU and school management patterns. The relationship between curriculum implementation and management patterns does not as yet have an empirical base in the literature. Therefore, a rationale is developed in the next section for relating these two variables by synthesizing the nascent theoretical notions of the theorists who have recently begun to consider this problem.

ORGANIZATIONAL ELEMENTS AND MANAGEMENT PATTERNS

ORGANIZATIONAL ELEMENTS AFFECTING CHANGE

As the implementation process has been described as occurring within a formal organization, there is reason to expect organizational characteristics to effect the implementation process in varying degrees. The premise of the study is that curriculum implementation is an organizational problem. Organizational literature does not specifically examine the process of implementation and so it will be necessary to generalize from the writing that examines the more general subsuming process of change. This section of the study attempts to identify those components of an organization that may affect the change process.

Generally the concept of organizational change is often based on a

quantitative aspect of change: the tendency of a system to adopt a given innovation or set of innovations. This leads to the conclusion that the more innovations the organization adopts, the more the organization changes. Yet, as discussed in the review of curriculum implementation research, there are indicators to show that adoption does not equal efficient use and does not necessarily mean genuine change. Specifically, organizational literature is found to examine change within the two contexts of organizational innovativeness and organizational adaptiveness. Innovativeness is viewed as implying progress and direction, and adaptiveness is differentiated as implying flexibility, but not necessarily direction or improvement.

Organizational theorists emphasize that organizations must adapt to their environment. Duncan (1972) attempted to establish and define the components and dimensions of the concept, organizational environment. He viewed environment as the totality of the physical and social factors that are taken directly into consideration in the decision-making behavior of individuals in the organization. Duncan separated environment into two distinct components: internal and external. Internal environment consisted of those physical and social factors within the boundaries of the organization or specific decision units that are directly considered in the decision-making behavior of the system's individuals. In the internal environment, Duncan differentiated between a functional and personnel component. The functional component incorporates the technological characteristics and the interdependency of organizational units. The personnel component describes the human fabric: the member's involvement and commitment to system goals, the interpersonal behavior styles and availability of manpower. Rogers

and Shoemaker (1971) emphasized the importance of both dimensions as they stressed that innovative institutions may differ from non-innovative institutions on institutional variables such as communication sources, environmental conditions, organizational structures and characteristics of persons involved in the change process. The next section will examine variables in the functional component and the personnel component as to likelihood of each in predicting innovativeness or successful implementation.

INTERNAL FUNCTIONAL ELEMENTS CONDUCIVE TO CHANGE

Several theorists have suggested that specific types of organizational structural variables can be used to predict detailed ends that an organization is likely to achieve. The sequencing, performance and evolution of the various tasks require organizations to be structured in a manner which will insure effectiveness and efficiency. Weber (1947) described what he believed to be the most efficient type of organization, the bureaucratic structure. Gouldner (1954) and Hall (1961) found organizations varied in their degree of bureaucratization. Burns and Stalker (1961), after studying the work of Hall, Gouldner and others, described and defined two types of organizations: mechanistic and organic. A mechanistic organization was described as an organization using precise definitions of rights, obligations and a hierarchical method of control and authority. The organic model classified organizations that were characterized by shifting definitions of rights and duties and the control and authority was distributed throughout the organization. Burns and Stalker (1961) found that organizations with a relatively organic structure were more adaptive and innovative in a changing environment than mechanistic organizations.

Similar to Burn's and Stalker's model, Hage (1965) identified two ideal types of organizations. The mechanistic model is characterized by low complexity, low adaptiveness, low job satisfaction and is high in centralization, formalization, stratification, production, and efficiency. In contrast the organic model is characterized by high complexity, high adaptiveness, high job satisfaction but is low in centralization, formalization, stratification, production and efficiency. Corwin (1969) dealt specifically with schools and indicated that dual organic and mechanistic structural components have been historically evolving. His analysis suggested that there would be a mixture of organic and mechanistic elements within the educational organization.

Hage (1965) and Hage and Aiken (1970) attempted to link internal organizational variables to the study of innovation implementation. Based on the work of Weber, Thomson and Barnard, Hage developed the axiomatic theory of organizations. Eight structural variables are identified and then interrelated into seven basic propositions and twenty-one corollaries. The following structural variables are categorized as organizational means: complexity, centralization, formalization and stratification. The other four variables are identified as organizational ends: adaptiveness, production, efficiency and job satisfaction.

The above variables are viewed as forming distinct patterns which in turn influence a high or low rate of program change. Consequently, Hage and Aiken (1970) reported that within the sixteen health and welfare organizations they examined there was a strong positive relationship between complexity and organizational adaptiveness.

In dealing with organizational change, Parsons (1951) distinguished

between change within the system and change of the system of variables. The former is similar to Hage's variable of adaptiveness, defined as the amount of change in new programs and techniques; the latter aspect is the consequence of a change in one variable as related to the other seven variables, which effects a change in the entire system of variables. Hage's axiomatic theory indicates how the scores on the other variables should change as a consequence of changing one variable.

Several studies examining internal structural variables have corroborated some of the Hage propositions and proposed relationships among variables. Carver and Sergiovani (1971), controlling for size of organizations, obtained negative relationships between teacher specialization and organizational adaptiveness but found administrative complexity to be significantly correlated with total adaptiveness.

The classic French and Coch study (1948) suggested that resistance to change was overcome by decreasing centralization and permitting employees to discuss proposed changes. The relationship between stratification and program change has been indicated by several studies. Miles (1964) noted that administrators were perceived as authority figures in educational organizations and as such were crucial to the introduction of new programs. Mahan (1970) found that teachers rank the principal and the supervisor as the primary agents behind program change in their schools. Carver and Sergiovani (1971) also observed that a substantial number of program adaptions in the school districts they studied were initiated by administrators.

Hage (1965) measured the adaptiveness or flexibility of an organization by the number of new programs and techniques adopted in a year. Specific relationships between adaptiveness and each of the means structural variables

were hypothesized and certain types of organizational structural patterns were suggested to be more conducive to adaptiveness than other types.

Studies performed at the University of Wisconsin on schools showed that only a few of the Hage variables have applicability to educational settings. Herrick (1974) found that stratification and centralization were the only variables that produced significant differences in innovating and non-innovating schools. Centralization was identified by Walter (1973) as the only Hage variable producing a significant difference. Centralization in Hage's terms referred to the rate of participation in decision-making in organizations. These findings are consistent with the Hage premise that low centralization is a characteristic condition for change.

Slas (1973) found that complexity and stratification were significantly related to implementation of curriculum change. Even if the impact of stratification is significant, its effect on elementary schools examined in this study is probably negligible as the amount of stratification in elementary schools is low. Generally elementary teachers are a group of hierarchically undifferentiated colleagues set apart in rank and salary only from their immediate superior, the principal.

In support of stratification as a key structural variable, Carlson (1965) found that those superintendents who had greater status in terms of education, prestige and income tended to introduce program changes into their school systems more rapidly than did lower status administrators. It appears from these data that a certain amount of stratification is essential if a school organization is to implement program changes and that administrators are important to the level of adaptiveness in the school organization.

From the research cited, it seems that except for the decision-making

component (centralization), the remainder of the Hage structural variables, complexity, formalization and stratification, are difficult to consistently align with change in schools. Thus it appears that Duncan's (1972) functional component of the organizational environment cannot solely be used as a predictor of innovativeness or adaptiveness in schools. It is possible that differences in the personnel component may hold greater promise for predicting successful implementation.

INTERNAL PERSONNEL ELEMENTS CONDUCIVE TO CHANGE

Approaches to the study of change have primarily concentrated on an external focus; on identifying attributes of the innovation itself that affect its rate of adoption (Clinton, 1972; Miles, 1964; Rogers, 1962) or on identifying the characteristics of teachers and administrators who successfully implement innovations (Havelock, 1973; Miles, 1964; Rogers, 1962). Recently organizational theorists (Argyris, 1964, Hage, 1965; Likert, 1961; 1967; Miles, 1965; 1972) argue that organizational characteristics influence the emergence and development of change and that there is a need for an internal emphasis focusing on the dynamics and functioning of the receiving organization as the key to successful change. These organizational theorists suggest that in order for an organization to be effective, an emphasis must be placed on improving the internal dynamics and functioning of the organization: labeled organizational health.

According to Miles (1965), several conditions must be effected before schools can become innovation-producing organizations. Miles provided a list of ten dimensions of organizational health. The dimensions are not mutually exclusive and interact with each other. Two dimensions were included that deal specifically with change characteristics: innovativeness and adaptation.

He suggested the system should be exploring in nature and activity-oriented (innovativeness) and that the system should be maintaining contact and coping with the surrounding system (adaptation).

Miles cautioned that although schools are formal organizations, they present special problems when viewed within the context of organizational theory. He outlined some of the special properties of educational organizations that limit a direct application of the organizational health model. As a consequence of goal ambiquity, low interdependence of parts and vulnerability, Miles expected schools will have 'health' problems in areas of goal focus, communication, innovativeness, autonomy and problem-solving.

It must be noted that Miles stressed the listed conditions are not meant to be pre-requisites to organizational change. The conditions should be goals that emerge during the change process. The need to examine the various organizational variables as they effect change was clearly indicated by Miles. The dimensions proposed by Miles are consistent with Argyris'(1964) recognition of the need for a multiple criterion assessment of organizational health; goal achievement, internal maintenance and ability of the organization to adapt to environmental change.

Organizational health then is viewed as a modeling of organizational effectiveness with agreement that adaptiveness and innovativeness are included as measures of organizational health. Thompson (1965) defined innovativeness as the generation and acceptance of new ideas, processes, products, and services. Innovativeness therefore implies the capacity or tendency to change or adopt. An adaptive organization is flexible but may not necessarily be innovative because it may not generate new ideas. An adaptive organization has problem-solving ability and ability to master the environment effectively.

Thus, organizational literature is generally found to examine change within the two contexts of organizational innovativeness and organizational adaptiveness.

Several theorists have hypothesized that healthy organizations are open systems (Argyris, 1965; Bhola, 1965) and open systems are perceived as being more susceptible to change. Glines (1966), Kimpston and Sonnabend (1973), Marcum (1968) and Miles (1972) proposed that the actualization of educational improvements in school systems (change or adoption of innovations) necessitates an innovative climate.

Miles (1964) viewed innovative climates as a developable property of school systems and provided avenues to change in such climates. The fundamental message is that norms are changeable, not immutable properties and that practical, workable technologies for changing norms are available. He provided strategies for changing group norms to norms which favored innovation and stated that "it is rather difficult to take the risks of innovation unless you feel that the climate is also relatively open, relatively trusting and relatively collaborative" (p.25). Miles hypothesized that educational groups that have become more open, trusting and collaborative with each other seem to be in a favorable position to make the necessary structural decisions required for the support of innovative enterprises.

In a study to determine factors which cause or inhibit change in a school organization, Marcum (1968) found that the most innovative schools in a sample drawn from five western states had open climates. Marcum used an "Education Innovation Checklist" to classify the schools according to

degree of innovativeness and scores on the school climate were obtained through the administering of Halpin and Croft's Organizational Climate Description Questionnaire (O.C.D.Q.).

Glines (1965) also found that schools which are involved in innovative practices are generally open climate schools and that those which are not involved in the implementation of innovations showed the lowest O.C.D.Q. scores. Kimpston and Sonnabend (1973) operationalized Miles' (1965) characteristics of organizational health in a questionnaire and found that innovative schools were viewed as having healthier organizations than the non-innovative.

Halpin and Croft (1963) completed a study at the University of Chicago relative to organizational climate of schools. They developed an instrument entitled Organizational Climate Description Questionnaire (O.C.D.Q.) which purported to measure the behavioral characteristics of the teacher and principal within an organization on a continuum ranging from open to closed climate. Open climate describes an energetic lively organization which is moving toward its goals. Closed climate refers to an organization which is not moving and is characterized by a high degree of apathy on the part of members of the organization. According to Halpin (1966), the behavior of the principal in a closed climate school fails to foster and encourage an environment where teachers are permitted to experiment, to innovate or to initiate new approaches to learning and teaching. In summation of the findings of the many studies examining the impact of organizational climates on the workers, it may be stated that high O.C.D.Q. climate schools (open) promote innovative practices and low climate schools (closed) inhibit innovation.

Hall (1969) studied data from 43 elementary schools in western New York

state to analyze the relationship between Halpin and Croft's O.C.D.Q. and the 1968 version of Likert's Profile of a School instrument. Halpin and Croft attempted to measure organizational climate, while the Likert instrument attempted to measure organizational systems. At that time, the Likert instrument contained 32 items that measured the principal's behavior. Hall correlated the O.C.D.Q. instrument with the 32 Likert items and found a correlation coefficiency of ± .59. Thus, Hall's study suggested a strong link between the O.C.D.Q. and the Profile of a School and, therefore, the previously examined findings relating innovativeness and organizational climate are applicable to Likert's theory.

Thus the literature suggests that change in organization is affected by: direction of knowledge flow, hierarchical organization, degree of interaction accompanied by influence system and leader behavior. It has been shown that some specific organizational characteristics have potency in explaining adaptiveness and innovativeness in organizations and that a number of attempts have been made to group some of these organizational characteristics into patterns or types or to determine what organizational structure and management practices are appropriate for different environmental demands.

Organizational literature contains many similar organizational models of effective and ineffective organizations or dichotomized management types, developed by such theorists as: Argyris, 1965; Blake and Mouton, Hage, 1965; Halpin, 1966; Likert, 1961; McGregor, 1960. In each case there is an organic type model which is considered the more adaptive and innovative in a changing environment and the theorists conclude that it tends to develop greater organizational flexibility, commitment, responsibility and effectiveness in problem-solving and adapting to the environment. Further these scholars report that

the mechanistic organization is considered to be the least effective in change. Hage (1965) pointed out that there is some evidence to suggest that many organizations are moving toward an adaptive type of configuration. This is paralleled by an accelerating rate of change in new programs requiring adaptiveness. Thus the organic model is considered to facilitate organizational adaptability and is viewed as the most appropriate to a rapidly changing environment.

Organizational development writers have addressed themselves to answering the question of what can be done to improve an organization's ability for adaptiveness and innovativeness. French and Bell (1973) described the organizational development movement as long-range efforts to improve an organization's problem-solving and renewal processes particularly through more effective and collaborative management of the organization culture. Increasing effectiveness, problem-solving, adaptability and flexibility are generally accepted as objectives of most organizational development programs. Now the study will examine a specific stem of the organizational development movement known as the survey research and feedback technique and one of its main proponents, Rensis Likert.

A new dimension has been added to the contemporary study of administration. Organizations are being viewed in terms of control mechanisms or interaction-influence systems. McGregor, Argyris, Halpin and Likert provided a basis for a newer theory in administration as they presented conceptual models for the purpose of facilitating analysis of how organizations are actually functioning.

The traditional studies in organizational management have attempted to change organizational outcomes by manipulating organizational inputs. This

focus assumes a mere stimulus-response relationship between the inputs and outputs of the organization. A number of management theories have now concentrated on the 'human' intervening variables of organization.

Sergiovani and Starratt (1971) formulated initiating, mediating and success variables as they attempted to provide a synthesizing theory of supervision.

> One set, the organizational success variables, represents the output which results from school efforts and activites. Another set, the initiating variables, represents those assumptions, actions, belief patterns and modes of operation which are best described as administrative and organizational. The third set, the mediating variables, constitutes the fabric of the human organization of a school. (p.16).

For many years the management literature has been concerned with leadership styles of managers and their relationship to performance. The concern has spanned the twentieth century and ranged from the controlled experimentation of the Lewin, Lippitt and White Study (1937) to Rensis Likert's research (1961, 1967). Definitions of management have frequently included as a behavioral dimension the manager's establishment and influencing of inter-relationships among the many resources such as personnel, facilities and materials. The manager is expected to influence all the elements needed to accomplish both the organizational goals and personal goals of participants. The resource most frequently mentioned as the most important or central to the management process is the human resource (Likert, 1961, 1967; McGregor, 1967). Likert stated that of all the tasks of management,

managing the human component is the central and most important task.

McGregor (1960) incorporated the arguments presented by the behaviorists and the humanists into dichotomous assumptions about the nature of man and the affects on organizational functioning. He developed two constructs, Theory X and Theory Y, and was primarily concerned with the assumption management makes about the human participants of the organization and the implications of those assumptions. Theoretical views and philosophical assumptions were presented to support his arguments and to augment prediction for implications to practice. McGregor asserted that management's assumptions about the nature of the people in that organization they manage will have direct implications on the functioning of the organization and the relationship of members to the organization and to other members within the organizational structure.

He proposed that managers who accept Theory X assumptions will devise a structure and will react to their workers according to their beliefs. Leadership style will be authoritarian and rigid. Structure will be high and tasks clearly defined. The leader's major concern will be organizational goals and consideration for worker needs and satisfactions will be low. Depending on the given situation, productivity may be high, but effectiveness will be low. High worker turn-over, constant complaining and frustration will characterize the organization. The leader may offer rewards such as monetary payments to entreat workers to increased productivity.

McGregor pursued his argument further and offers Theory Y which he claimed is realistically interpretative of human nature. This theory provides for a healthy, creative and productive organization. A manager who holds Theory Y assumptions concerning his subordinates will exercise a

leadership style in contrast to the above-mentioned style and will perceive and conceive a structure contingent upon his expectations of his workers. This leader will delegate responsibility and share decision-making. He and his social unit will function in a democratic fashion. The goals of the organization will still be paramount and still clearly defined, but workers will establish their own definitions of task responsibilities in the goal achievement process and will not need close supervision. The degree of consideration will be high in the leader's behavior. This leader will provide for subordinates exercising their leadership capabilities and worker identification with the organization and this will result in some form of commitment to the organization. Flexibility will characterize the functioning of the organization. Reinforcement of worker's behaviors would again occur through the self-fulfilling prophecy, only the consequences in this situation should be effectively oriented to worker maximization of potential. Theory Y then assumes the need for the integration of human and organizational goals.

While not dealing specifically with the issue of change, McGregor did suggest that organizations operating on Theory Y assumptions will likely be better equipped to deal with the solution of organizational problems. Thus one may infer that the problem of dealing with innovations would be best handled in an organization operating on Theory Y assumptions. In the next section, in a detailed examination of the theories of R. Likert, it may be seen that McGregor's theory provides support for the theoretical position of Likert. McGregor's theories X and Y are comparable in philosophical assumptions to Likert's authoritarian and participatory management systems.

RENSIS LIKERT - MANAGEMENT PATTERNS

It is interesting to note the similarity between McGregor's theory and that of Rensis Likert. The main difference is that McGregor does not provide the same type of evidence that Likert uses to support his theory. McGregor's evidence is logically derived while Likert's evidence is more scientifically derived. Likert extended the work of Argyris (1965); Gross and Herriott (1961); Miles (1965); and McGregor (1960), in examining the relationships among organizational variables. Likert views the school as a social system; an inter-related interdependent assemblage of people with goals, ideas and personnel needs which tend to operate or respond to the various forms of control. The controls may range from the formal imposed organizational demands to more subtle informal pressures. The manager, operating in a social environment, must establish personal, human, interrelationships for the effective and efficient accomplishment of organizational and personal goals.

In 1961 Likert suggested that there are sets of interactional relationships which seem more effective than other sets. On the basis of his research, Likert identified a modified theory of management which incorporates what he perceives as the principles and methods used by those managers getting the best performance from their subordinates. High-producing managers more often than low-producing managers have built their organization into highly effective, highly coordinated social systems characterized by favourable, cooperative attitudes, high motivation, and high levels of job satisfaction based on the principle of supportive relationships.

In determining successful from unsuccessful organizations Likert identified a number of human organizational variables affecting organizational effectiveness. The main thesis of Likert's theory of organizational management is that leaders of successful organizations tend to create working climates in which employees experience a high degree of interaction and a high degree of influence over the decision process. Thus, results achieved by an organization are a manifestation of the effectiveness of the interaction-influence system of its human staff.

Likert categorizes these variables under the following three types: causal, intervening and end result. In 1968 Likert and Likert introduced an instrument based on an adaptation of an earlier instrument developed by Likert to identify industrial organizational types and a revised edition was published in 1977 (see Appendix II.1). The Profile of a School (P.O.S.) Instrument contains 18 organizational variables grouped under five factors. It is not a mere attitudinal survey as it attempts to document the behavior that occurs within an organization as seen by its leaders, subordinate staff and students. As this study views each of the variables as being integral to the implementation process, it is necessary to examine each variable in detail.

The causal variables are only those items on which the organization or its management have the capacity to modify. The causal variables are independent and act directly upon the intervening variables and are further subcategorized into leadership, structure and technology. In the 1977 Profile of a School Instrument the causal variables deal with organizational climate and with the leadership patterns of the immediate superior.

A Climate consists of three dimensions that collectively describe the general environment of the school; namely,

1. Goal commitment with the system.
2. Decision process usually followed.
3. Team co-operation among various groups within school and system.

It is the effect of leadership at all levels and is not an assessment of a specific individual's behavior but the cumulative policies or procedures that operate as constraints upon individual supervisors.

B Leadership - The second causal factor incorporates six leadership variables. The indices measure the perception of behavior of a specific supervisor or leader and measure the supportive behavior of the principal in reference to the faculty.

The premise is that a leader affects the organizational environment and plays an important role in the development of the work group climate in the schools. The Ohio State Leadership studies concluded that a study of leadership is a study of the organization (Fleishman, 1953). Stogdill and Shartle (1956) have stated that leadership is not a unitary trait but a function of individual groups and organizational factors in interaction. Halpin (1956) described the behavior of the leader and the group as being inextricably interwoven and added that the behavior of both is determined to a great degree by the formal requirements of the organization.

It has been documented that the principal occupies a key role in initiating or resisting innovation (Brickell, 1964; Hoyle, 1970; Mackenzie, 1964). The functions of the leadership behavior of the principal in creating an innovative climate can be inferred from several reports (Gross and Herriott, 1965; Halpin, 1966). One surmises from Miles' 1965 list of criteria

as to what he terms organizational health that the health of the school is largely a function of the manner in which the principal performs his role. Theoretically there are a number of ways in which the principal can create a staff perceptiveness to innovation. Hoyle (1970) listed several ways that are consistent with Likert's variables operating in a participatory system. Likert's 1977 leadership variables are:

1. Leader Support - an indication of how well the supervisor is perceived by subordinates as building some sense of personal worth and importance in his subordinates. Two subcomponents of leader support variables are identified:
   A. Receptivity to Subordinates' Ideas - provides an emphasis on how often the leaders ask for and use subordinate's ideas and how free subordinates feel to talk to supervisors about work-related ideas.
   B. Decision-Making - examines how much the respondent participates in major decisions affecting him.
2. Goal Emphasis - the extent to which the leader is perceived as having high goals for educational performance (task-oriented).
3. Team Building - emphasizes the development of frequent and open exchange of ideas between the leader and each of his subordinates. As a system moves towards a more participatory orientation, it increasingly becomes two-way influential and eventually in its most participatory state the man-to-man interaction becomes augmented by leader and subordinates interacting on a group problem-solving basis.

4. Work Facilitation - measured on three aspects:
   A. Planning and setting of priorities.
   B. Providing materials and space (resources).
   C. Offering subordinates useful information and ideas.
5. Technical Competence: The extent to which the leader is perceived to be technically competent as an administrator and educator.

In 1967, the intervening variables were divided into two sub-categories: the intervening attitudinal motivation and perceptual cluster; and the intervening behavioral cluster. Intervening variables are those variables which mediated between the causal variables and the end-result. Generally the intervening variables were incorporated under the concept 'work group climate' and referred to human variables. Intervening variables reflect the internal state and health of the organization.

C Mutual Trust - is seen as both a causal and intervening factor. It is a measure of the reciprocated trust between subordinates and leader. Trust by and in a leader is a cumulative process rather than an initiating factor that can be dealt with directly.

D Other Intervening Variables - examine the extent to which the leader's pattern for dealing with subordinates is reflected in the behavior of the subordinates to each other. Five intervening indices are incorporated within this factor:

1. Influence by subordinates
2. Peer team building
3. Self-motivation of subordinates

4. Student acceptance of goals

5. Communication - measures flow of information, extent of open communication and the direction of the information flow.

It is important to differentiate the causal variables from the intervening variables as gains in intervening variables cannot be achieved directly. Significant lasting improvement requires action focused on the causal factors to move the organization to a more effective, collaborative performance.

End-result variables are dependent variables which reflect the achievements of the organization. The end result variables in industrial organizations were designated in terms of three types of outcomes: productivity, cost factors and relationships.

E End/Result - In schools the end result variables to be measured are:

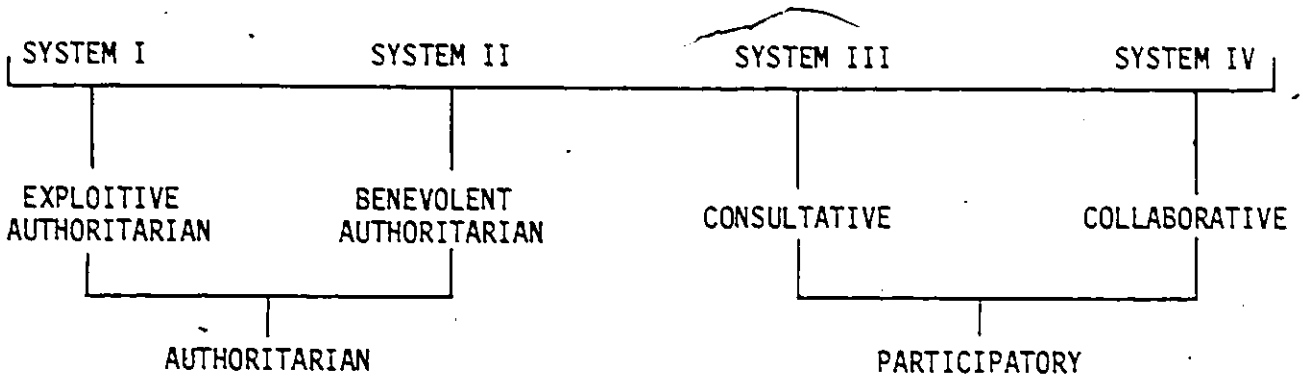
1. School attitude
2. Teacher frustration - based on the amount of influence on school matters that the respondents thinks he ought to have.

The three types of variables comprise a complex network with interdependent relationships and Likert's research shows the variables to be sequentially linked. Thus there is an orderly, systematic relationship among the variables.

Scores obtained on the Profile of a School Instrument which measures the variables described result in a cumulative organizational score. Likert identifies four discrete types of organizational systems falling at four points on a continuum ranging from the most primitive to the most socially evolved: exploitive-authoritarian, benevolent-authoritarian, consultative and collaborative (Figure 4). The management systems are internally con-

FIGURE 4

COMPARATIVE TERMINOLOGY FOR LIKERT'S MANAGEMENT SYSTEMS THEORY



sistent with each system having a basic integrity of its own component parts.

Likert's systems 1 (exploitive-authoritative) and 2 (benevolent-authoritative) differ somewhat but are described as high control mechanisms, distortion of communication and centralized decision-making. Working under a management style that endorses man-to-man competition, subordinates in these systems will show low group loyalty, less team work and co-operation, lower motivation, and other non-productive characteristics.

System 3 describes an organization which encourages man-to-man consultation and strives to maximize student and teacher self-actualization and achieves moderately satisfying results. It is likely to be an organization in transition.

System 4 endorses a management style characterized by supportive relationships of group members, individual and group self-control and opportunities for professional growth.

Likert reports that there is a failure to consistently find the expected relationships among the variables. Evidence has emerged to show that the time between changes in the causal variables and the related changes in the intervening and finally in the end-result variables took much longer than expected. The changes in the causal variables toward a collaborative management pattern (system 4) apparently require an appreciable period of time before the impact of the change results in corresponding improvement in the end-result variables. It is misleading to assume a simple causal relationship between the variables. As internally consistent managerial styles are the result of high item interdependence, it is difficult to isolate causality. Likert (1961) states this is not a simple direct cause-effect model as "there actually is a high degree of inter-relationship among

the variables. A more accurate concept would be that of a highly complex, highly interrelated system existing at any one moment in a state of equilibrium" (p.205). Likert and Bowers (1973) have cautioned not to over-generalize the causal sequence "since there are feedback loops and circularity among the variables" (p.18).

As the management systems are internally consistent, any modification of a system must be a total shift from one system to another, not an atomistic modification. Generally the data from studies conducted or examined by Likert support the conclusion that the management system of a firm is a major factor in determining productivity. If managers accept that the most effective organizations are the participatory systems then constraints are established for managerial behavior. An adequate measurement of causal and intervening variables will provide clear directions for the manager. The analysis of existing situations will indicate what changes or different conditions are likely to yield better results and provide direction as to the most effective means to produce changes in the desired direction.

It should be noted that several of Miles' (1969) conditions of a healthy organization are similar to the Likert organizational variables (Figure 5) and that the Likert, McGregor, Sergiovani and Starratt portrayal of organizational structure have a similar theoretical basis in their use of stimulus-intervening-response sets of variables. Likert's system four is seen as a synthesis of what Miles considered to be the characteristics of an effective or healthy organization.

FIGURE 5

COMPARISON OF MILES' CONDITIONS AND LIKERT'S ORGANIZATIONAL VARIABLES

Miles' Conditions	Likert's Organizational Variables
Goal Focus	Goal Commitment
Communication	Communication-Interaction
Optimal Power Equalization	Participation-Influence
Morale	Teacher Attitudes
Cohesiveness	

Leavitt (1965) provided a convenient four variables view of organizations: task, people, technology and structure. The interdependency of these four system variables is generally accepted. Bennis (1966) listed eight types of change programs which appeared to involve people, technology and structure. Notably Likert involved a combination of these variables in his management systems theory and this theory may be an especially important theoretical base for understanding innovation and possible implementation. Likert's theory suggested that change in a given school is a function of the characteristics of the school system and of the administrative and subordinate behavior.

As discussed previously, several implementation theorizers have attempted to delineate the organizational variables that are related to the extent of curriculum implementation. It is important to note that each of Likert's organizational variables also correspond to implementation variables

as indicated by a survey of existing implementation studies. The implementation studies that support the relationship of curriculum implementation to one or more of the organizational variables incorporated in Likert's management systems theory are identified in Table 1.

If the implementation variables that are theoretically necessary to the implementation of curriculum are in fact vital to change efforts and are present in a school's attempts to change, then implementation should occur. Many of the implementation studies tend toward oversimplification by their focus on one or two variables or dimensions in the implementation process and exclude many other variables. No individual or combined group of variables examined in existing studies give a complete or practical set of variables which result in their lack of predictive power when applied to practical problems in the school setting. Likert's management systems theory has been presented as an approach that accommodates the inter-relationships among a large number of variables and views them as parts of a meaningful whole pattern.

The theory is especially useful to innovation studies as it includes an accompanying instrument to provide a measure of a given system's development on each of the 18 variables. Thus, Likert's framework may be a useful reference point in linking variables in a manner which is helpful for management of the implementation process.

THEORETICAL RELATIONSHIP OF INTERNAL CHARACTERISTICS OF SCHOOL ORGANIZATIONS AND CURRICULUM IMPLEMENTATION

Many of the studies on implementation examine the strategy factors that may be employed for the purpose of increasing implementation. There is a need to examine the importance of the organizational factors that exist prior

TABLE 1

LINK BETWEEN ORGANIZATIONAL PATTERN AND IMPLEMENTATION FACTORS

Studies Identifying Factors Affecting Implementation	Likert's 'Profile of a School' - Causal and Intervening Variables (1977)
Berman & McLaughlin (1976) Berman & Pauly (1975) Eisner (1970) Farrington (1974) Hall, Wallace & Dorsett (1974) Naumann-Etienne (1975)	(1) Organizational Climate
Berman & McLaughlin (1976) Charters & Pellegrin (1973) Kritek (1976) Starling (1973)	A/ Extent of Goal Commitment
Charters & Pellegrin (1973) Leithwood (1976) Roose (1976) Starling (1973)	B/ Decision Process Followed
Cole & Herlihy (1971) Farrington (1974) Lukas (1977)	C/ Extent of Team Co-operation

TABLE 1 (cont'd)

Badham (1975) Crowther (1972) Evans & Sheffler (1974) Naumann-Etienne (1975) Thier (1971) Widmer (1975)	(2) Leadership
Beauchamp (1971) Keith (1975)	A/ Leader Support
Mahan (1972) Poll (1970) Roose (1975) Smith & Keith (1971)	I/ Receptivity to Subordinates Ideas
Beauchamp (1971) Berman & Pauly (1975) Charters & Pellegrin (1973) Doyle & Ponder (1977) Fullan (1972) Fullan, Eastbrook & Biss (1978) Goodlad (1970) Hestand (1974) Leithwood (1976) Naumann-Etienne (1974) Roose (1975) Whiteley (1971)	II/ Involvement of Respondent in Decision-Making

TABLE 1 (cont'd)

Roose (1975)	B/ Goal Emphasis
Berman & Pauly (1975) Brantley (1975) Farrington (1974) Lukas (1977) MacDonald (1974) Mahan (1972) Poll (1970)	C/ Team Building (Interaction Between Leader and Subordinates)
Atkinson (1976) Berman & Pauly (1975) Brantley (1975) Charters & Pellegrin (1973) Crowther (1972) Gross, et al, (1971) House (1974) Kritek (1976) Shipman (1974) Winklevoss (1975)	D/ Work Facilitation I/ Providing Resources
Fullan (1974) Kritek (1976) MacDonald (1974) Mahan (1972) Pressman & Wildavsky (1973) Tushington (1974)	II/ Planning and Setting Priorities

TABLE 1 (cont'd)

(Change Agent): Bennis (1969) Berman & McLaughlin (1976) Brantley (1975) Brown (1973) Havelock (1973) Roose (1976) Tye (1971) Inservice: Berman & McLaughlin (1976) Patterson (1976) Roose (1976) Shipman (1974) Thier (1971)	III/ Providing Useful Information and Ideas to Subordinates
	E/ Technical Competence
Lukas (1977) Marcum (1968)	(3) Mutual Trust - Reciprocated Trust by and in a Leader
Brantley (1975) Carlson (1970) Connelly (1972) Gross, et al, (1971) Herron (1971) Leithwood (1976) MacDonald (1974) Musella (1971) Simpkins (1967) Feedback: Downey (1975) Charters & Pellegrin (1973)	(4) Communication Across Hierarchies

TABLE 1 (cont'd)

Leithwood, et al, (1976) MacDonald (1974) Naumann-Etienne (1974) Russell & Leithwood (1973)	(5) Other Intervening Variables A/ Influence Felt by Subordinates
Downey (1975) Krey (1968) Lukas (1977) Mahan (1972) Naumann-Etienne (1974) Poll (1970) Walker (1973)	B/ Peer Team Building
Berman & McLaughlin (1976) Brantley (1975) Brown (1973) Gross, et al, (1971) Krey (1968) Poll (1970) Silas (1973) Starling (1973) Winklevoss (1975)	C/ Self-Motivation
Fullan & Pomfret (1977) Mahan (1972) Regan & Leithwood (1974) Tom (1973)	D/ Student Acceptance of Goals

to the innovation or strategy for implementation. Schmuck and Miles (1971) suggested that more attention needs to be placed on organizational development within an educational institution as the many efforts at educational implementation and reform have been unsuccessful because of the failure to understand the organizational context in which the reforms have been attempted. Reynolds, (1971) and Winklevoss, (1975) suggested that prescriptions for implementation will not work. Whatever approach is used must be sensitive to the complex inter-relationships of the variables and to the dynamics of the process as change unfolds.

Several studies suggest that certain existing organizational variables of adopting units play a critical role in whether and how implementation occurs (Berman & McLaughlin, 1976; Berman & Pauly, 1975; Naumann-Etienne, 1975; Shipman, 1974; Slas, 1973). Specifically these studies concluded that high morale of teachers and support of principals and superintendents increased the chance of teacher change and perceived success of implementation of an innovation. Downey (1975), Lukas (1977) and Naumann-Etienne (1974) found that intra-staff co-operation and the support and exchange of ideas were related to implementation.

Crowther (1972), Naumann-Etienne (1974) and Evans & Scheffler (1974) demonstrated that a significant correlation exists between administrative support and the degree of implementation; thus citing the principal as a key factor in the implementation process. Fullan & Pomfret (1977) stated "the role of the principal has often been cited in adoption research. We need to know the exact nature of the role during implementation as well, since it will probably differ in specific ways from that required for adoption" (p.384).

Likert has suggested that his management systems theory can be used as

a predictor of innovation. Likert posits that as organizations approach a participatory style of management they tend to be more innovative in response to environmental changes. Siepert and Likert (1973) maintained that:

> (...) there is a marked relationship between the administration (or management) system of an organization and the extent to which it displays innovative characteristics. Organizations which use a highly developed and productive management system display stronger innovative characteristics than those using less productive management systems. (p.3)

The authors further added that the "characteristics which favor innovative behavior are found most often in system four organizations and least often in system one" (p.4). This proposition is derived from industrial studies and a question for educational researchers is whether these same factors of organizational behavior are applicable to the unique characteristics of school systems.

Recent studies are providing evidence that system four is as effective in educational institutions. For widely different kinds of desirable outcomes, system four appears to be superior to other systems of educational administration. A number of studies have been reported by Likert (1972, 1978) to show the relationship between school management pattern scores and the scores from a number of other school variables. The higher the management pattern score of a school, (the closer the school or school system is to system four), the greater the scores on the following variables:

1. School excellence: Ferris, 1965.
2. Job satisfaction: Byrnes, 1973; Carr, 1971; Prieto, 1975.
3. Interpersonal needs satisfaction of teachers: Smallridge, 1972; Wagstaff, 1970.
4. Educational achievement: Belasco, 1973; Gibson, 1974.
5. Teacher effectiveness: Riedel, 1974.
6. Motivation (Staff and Students): Miller.
7. Morale: Morall, 1974: Smith, 1975.
8. Parental involvement: Blumberg and Feitler, 1971.
9. "Open" Classrooms: MacKillican, 1975; Naumann-Etienne, 1974.
10. Capacity/for change: Ladouceur, 1973.
11. Innovativeness: Broman, 1974.
12. Volunteer satisfaction: Brindisi, 1976.
13. Participation in decision-making: Lepkowski, 1970.

Inverse relationships have been found between school management pattern scores and such variables as:

1. Frequency of teacher strikes: Haynes, 1972.
2. Teacher militancy: Bernhardt, 1972.
3. Negotiation disagreements: Key, 1974.
4. Radical disruptions: Rensis Likert Associates.
5. Pupil dissatisfaction: Cullers, Hughes and McGreal, 1973.

Each of the previous eighteen variables was measured in separate studies examining elementary and secondary schools and collectively support the hypothesis that school management patterns utilizing participatory (consultative and collaborative) techniques are likely to be the most effective form of management.

Recent dissertation studies have indicated that there may be a close relationship between school management patterns and adoptiveness or innovativeness of schools. Thus research indicates that the school management patterns theory may be used as a basis for applied organizational change. Siepert and Likert (1973) noted:

> Recent studies in schools reveal the same pattern of findings as those found in business organizations. (...) With such instruments, we can now measure accurately where along the system one to four spectrum a school organization really operates. From such data, we can predict rather well for a given school or school system the likelihood of its having the innovative characteristics essential for the successful demonstration and application of research findings. (p.4)

Siepert and Likert (1974) suggested that there were at least four essentials in helping a school organization move toward a more effective and innovative pattern of administration.

1. A clear conceptual model of what constitutes an effective management system;
2. An accurate quantitative measurement of the human organization which can provide initial benchmarks and any progress (or erosion) after programmed efforts to improve the administrative patterns;
3. A planned strategy for accomplishing change in leadership patterns within the immediate work environment; and
4. Sufficient involvement by the school leaders themselves so

that they understand, practice, and encourage the desired system of leadership behavior throughout their organization.

Likert (1977) suggested that change is almost always accompanied by tension, anxieties, resistance and conflict and focused on emphasizing aspects of system four management as the most effective way of managing conflict. Thus the system four model seems to be the ideal decentralized model which stresses maximal communication and interaction between participants at all levels of the organization. The system four model suggests potent facilitative mechanisms for change and innovation. The exploitive-authoritarian management model seems to be mostly inhibitive to the dissemination and utilization of new knowledge. Thus, evidence has been found to support the relationship between school leadership and change. Consequently the purpose of this study is to extend the change aspect of Likert's theory by examining the relationship of school management patterns to curriculum implementation as an outcome.

EMPIRICAL SUPPORT FOR THE STUDY

Few studies have directly attempted to test the relationship between Likert's theory and educational innovation. Three doctoral dissertations have examined the relationship between innovativeness and management patterns (Broman, 1974; Gehrman, 1970; Weiner, 1972) and in each case failed to prove significant relationships. Likert (1978) attributed the findings to design weaknesses in each case. Studies conducted by Caul (1976); Kalies (1977); Ladoucer (1973); Naumann-Etienne (1974); and MacKillican (1975) provide support for the link between Likert management systems and effectiveness of implementation.

Gehrman (1970) compared the leadership and organizational climate

profiles of innovative schools with that of non-innovative schools. The data for students showed a statistical difference with the innovative schools having a more participatory (system four) management pattern. The differences for teachers were not found to be statistically significant, possibly because the 'Profile of a School' questionnaire was not administered in a fashion that would assure teachers that their responses would be anonymous and confidential.

The relationship between the innovativeness of elementary schools and the leadership and organizational climate of the schools as measured by the teacher's perceptions on the Profile of a School questionnaire was also examined by Wiener (1972). His study found a relationship in the expected direction with innovative schools having leadership and organizational climate more toward a system four pattern than did the non-innovative schools. Yet the small N's (12) resulted in none of the differences being significant. Likert (1978) argued that if the mean scores of the two groups of schools are viewed as the mean score of two groups of teachers (those in innovative versus non-innovative schools) and the N of teachers used, the difference in the mean overall scores is significant at .01.

In a similar study, Broman (1974) did not find any statistically significant relationship between the principal's leadership, the school's interaction-influence communication, and decision-making processes and the innovativeness of the school. As the relationships were in the expected direction but were not significant, Likert (1978) justified the results by suggesting that the time relationship was an important factor and the innovativeness that a school displays was determined by the leadership, decision-making and interaction processes that existed in a school two or

three years previously. Likert maintained that:

> If Broman were to examine the relationships between his measurements of the principal's leadership, decision-making, and interaction-influence to the school's innovativeness one, two, and three years after he measured these human component scores, he could well find that significant relationships existed (p.37).

Caul (1976) examined middle schools with higher and lower levels of implementation of middle school concepts to determine whether the schools differed in administrative styles. She found that students and teachers in schools adhering to the concepts saw the administrations of their schools significantly closer to system four than did the students and teachers in schools with lower levels of implementation of middle school concepts.

The relationship between the management system of a school and the school's capacity for change was examined in a study by Ladouceur (1973). Data from the P.O.S. questionnaire were related to a research instrument developed by the investigator to measure a school's change capacity, change perspective, climate for change, and teachers' orientation toward involvement in change. The results indicated that there is a significant relationship between the management pattern of a school and school change climate, teachers' innovative orientation, qualitative school change capacity, quantitative school change capacity, school change capacity as a combined index. The study found that the more the school was oriented toward a participative management pattern the more the school was capable of changing. The consultative and participative management profiles seem

to increase the capacity of a school to provide and use new knowledge for making decisions. Thus, the school management pattern and teachers' innovative orientation seemed to be important variables in the study of school change capacity and individual innovative behavior.

Kalies (1977) examined the relationship between Likert's management patterns and the extent of curriculum development in selected elementary schools. The study assessed eight elements of the curriculum development process as proposed by Fredericks (1974); namely, aims, selection criteria, ordering criteria, curriculum organization, evaluation, change, participants in curriculum development and dissemination. The extent of involvement in curriculum development was measured by a questionnaire which required assessment of amount of time spent on each of the eight components.

The study related the composite management pattern scores to curriculum development and obtained further information by analyzing each of the components of the composite Likert score (17 variables). Using Pearson Product Moment correlation a moderate positive correlation was found between the extent of curriculum development and the composite score of a school management system on the Likert scale ($r = .461$, $p < .05$). Seven components of curriculum development were found to be significantly correlated with the Likert Score. In total it was found that in schools where greater time was spent on curriculum development, principals were more receptive to teachers' ideas; attempted to facilitate the work of teachers by providing useful ideas; attempted to provide teachers with necessary materials and space; and made sure that the planning and setting of priorities were well done. It was further found that the more participatory the school management pattern, the more time teachers spent deciding what courses to teach or offer,

evaluating and judging the school curriculum, deciding what units will be included in the courses and assessing the existing method of curriculum development.

The study is significant in that it provided evidence that an environment which supports curriculum development may be described in terms of the Likert management systems theory. It should be noted that dissemination was the final curriculum development element that was examined and was concerned with "the determination of how the curriculum will be routed from the district office to the individual teachers" (p.47). Thus while adoption and diffusion strategies were examined in the study as part of the curriculum development process, implementation was not considered. When related to Beauchamp's (1968) conception of three functions operating within a curriculum system: development of a curriculum; implementing a curriculum; and evaluating the effectiveness of the curriculum, it may be seen that Kalies only examined the first function. The second component of the curriculum engineering process, implementation, will serve as the area of concern for the present research study.

MacKillican (1975) tested the innovative aspect of Likert's management systems theory which stated that organizations with more participative management patterns would be more innovative. The study extended Likert's theory by demonstrating that the management patterns of schools may be related to their ability to adopt an innovation. Specifically the study explored and found a relationship between school management patterns and a specific non-curricular innovation, classroom openness.

An ancilliary outcome of MacKillican's research was the reorganization, through factor analysis, and renaming of the Profile of a School factors.

These variables were designated: principal leadership; teacher leadership; student influence; teacher influence and goal emphasis.

In a similar study, Naumann-Etienne (1974) applied the Likert P.O.S. in an investigation of implementation of the open-school concept. It was found that teachers in schools with greater implementation of the innovation perceived a more participatory system including greater teacher involvement in decision-making and greater peer communication and team building. Naumann-Etienne (1974) suggested from her findings that internal as well as strategy variables are integral to the success of implementation. The study used a small sample (8 schools) and found a significant difference between successfully innovating and unsuccessfully innovating schools and each of the five factors of the Likert (1972) instrument: climate; leadership; mutual trust; other intervening variables and end results. Studies of implementation of innovations need to be performed on innovations that are not part of the school philosophy and do not necessitate participatory management patterns in order to be implemented. A recommended further research topic offered by MacKillican (1975) involved making "a comparison of school management patterns with the school's ability to implement specific innovative curriculum guidelines", (p.190) thus forming the basis for the present study. In short, a firm rationale exists for expecting a strong relation between degree of curriculum implementation and Likert's management patterns.

STATEMENT OF THE PROBLEM

Much of the existing implementation literature is atheoretical with little or inadequate empirical support. Methodological shortcomings restrict

the applicability of much of the existing research on implementation. Few studies have systematically dealt with implementation as a complex process following adoption in the change process and even fewer studies have dealt specifically with curriculum implementation as a complex, individualistic, adaptive process.

Implementation theorists have emphasized that various processes and factors may facilitate or retard implementation. These advocated variables appear to resemble those variables integrated into Likert's management systems model. Likert also suggests that system four organizations will be more innovative. If these similarities exist then system 3 and 4 schools should be implementing curriculum to a greater extent than system 1 and 2 schools.

There is a paucity of empirical evidence and little organized knowledge exists as to A) situational variables that are related to successful and unsuccessful curriculum implementation as determinants; B) the relation between degree of implementation and the management patterns of the adopting institutions.

The purpose of this study is twofold: (1) to extend Likert's theory by examining the relationship of School Management Patterns to curriculum implementation as an outcome and (2) to examine the relationship of specific organizational variables to the curriculum implementation process in elementary schools.

The investigation will seek to answer the following questions:

1. Is there a relationship between the internal organizational characteristics of the adopting units and the degree of

implementation of a curriculum developed external to the users?

2. Are certain types of organizational patterns more conducive to the implementation of innovative curricula than other types?
3. What, if any, is the relationship between an elementary school's management pattern and the degree of implementation of a curriculum developed external to the users?

RESEARCH HYPOTHESES

General Hypothesis:

In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' participatory management pattern schools will exhibit a higher level of implementation than will teachers in more authoritarian management pattern schools.

H_1 In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' school management pattern schools will exhibit a higher degree of Stage of Concern (SoC) than will teachers in low management pattern schools.

H_2 In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' participatory management pattern schools will exhibit a higher degree of Level of Use (LoU) than will teachers in low management pattern schools.

SUBHYPOTHESES

To analyze these hypotheses as if the Stages of Concern and Levels of Use dimensions are unitary concepts would do violence to the

data. The dependent variables, Stages of Concern and Levels of Use, are considered to consist of discrete stages and levels and require separate propositions to be stated for each stage or level. As there are seven Stages of Concern and eight Levels of Use, a possible total of fifteen subhypotheses could be stated in order to test the general hypothesis. As presented in the literature review, curriculum implementation theory suggested some logical groupings of the SoC and LoU categories and the relationship of these collapsed categories to school management patterns is considered worthy of exploration.

Fuller (1969, 1975) categorized teacher concerns as self, task and impact. The seven individual SoC stages can be collapsed into the three categories and the relationship of each category to school management patterns can be examined.

In this study it is expected that lower (authoritarian) management pattern schools will have more non-users of the curriculum than will high (participatory) management pattern schools. The Concerns Based Adoption Model assumes that non-implementers or non-users of the curriculum will be either Levels of Use 0, I or II and will have relatively more intense self concerns (stages 0, 1 and 2) and less intense task and impact concerns (stages 3, 4, 5 and 6). In schools with more competitive climates teachers can be expected to have high concerns about the personal implications of potentially threatening changes.

H_{1_1} Teachers in high management pattern schools will have less intense self concerns about an innovative curriculum than will teachers in low management pattern schools.

It is expected that the more authoritarian management pattern schools will be more resistent to change and will have a greater incidence of non-usage (LoU's 0, I, II) than will teachers in more participatory management pattern

schools. Conversely it is expected that the curriculum will be used to a greater extent by the teachers in high management pattern schools than by teachers in low management pattern schools.

H_{2_1} Teachers in high management pattern schools will have a lower incidence of non-usage of an innovative curriculum than will teachers in low management pattern schools.

H_{2_2} Teachers in high management pattern schools will have a greater incidence of usage of an innovative curriculum than will teachers in low management pattern schools.

The study assumes that in actual usage of the curriculum there exist two types of operations: fidelity and adaptation. Embodied in the SoC and LoU usage dimensions are both the fidelity and mutual adaptation orientations of assessing curriculum implementation. Levels of Use III and IV-A and SoC stage 3 are considered to represent a fidelity orientation in which the curriculum is maintained and used routinely with little in the way of change. The C.B.A.M. model assumes that when the curriculum begins to be implemented, stage 3 task concerns will become more intense and stages 0, 1 and 2 concerns will decrease in intensity.

H_{1_2} Teachers in high management pattern schools will have more intense task concerns about an innovative curriculum than will teachers in low management pattern schools.

H_{2_3} Teachers in high management pattern schools will have a greater incidence of curriculum implementation from a fidelity perspective than will teachers in low management pattern schools.

The study assumes that the highest degree of curriculum implementation occurs when the process of mutual adaptation is in operation. The adaptation

concept is incorporated into the high Stages of Concern and Levels of Use dimensions. The impact concerns of SoC stages 4, 5 and 6 and LoU levels IV-B, V and VI are considered to be categories of sophisticated usage and include the processes of integrating, modifying and collaborating in adapting the curriculum in order to increase its effectiveness. It is expected that there will be a greater incidence of users adapting the curriculum adaptation (orientation) in high management pattern schools than in low management pattern schools.

H_{1_3} Teachers in high management pattern schools will have more intense impact concerns about an innovative curriculum than will teachers in low management pattern schools.

H_{2_4} Teachers in high management pattern schools will have a greater incidence of curriculum implementation from an adaptation perspective than will teachers in low management pattern schools.

A minimum total of seven subhypotheses must be stated in order to test the general hypothesis. The seven subhypotheses are summarized in Figure 6.

FIGURE 6

SUMMARY OF HYPOTHESES

Hypotheses	Aggregates	Levels and Stages Being Aggregated
SoC		
H_{1_1} Hi SMP Self < Lo SMP Self	Self	0-1-2
H_{1_2} Hi SMP Task > Lo SMP Task	Task	3
H_{1_3} Hi SMP Impact > Lo SMP Impact	Impact	4-5-6

FIGURE 6 (continued)

Hypotheses		Aggregates	Levels and Stages Being Aggregated
LoU			
H_{2_1}	Hi SMP Nonusage < Lo SMP Nonusage	Nonusage	0-I-II
H_{2_2}	Hi SMP Usage > Lo SMP Usage	Usage	III-IV-A-IV-B-V-VI
H_{2_3}	Hi SMP Fidelity > Lo SMP Fidelity	Fidelity	III-IV-A
H_{2_4}	Hi SMP Adaptation > Lo SMP Adaptation	Adaptation	IV-B-V-VI

SIGNIFICANCE OF THE STUDY

Various researchers have commented on the need for an expanded knowledge base regarding the implementation process. The study may contribute to implementation theory as it may indicate the importance of existing organizational factors on implementation and may lead to a systematic categorization of organizational variables into management patterns that affect implementation. Thus the investigation may contribute to the state of the art and lead to further testing, refinement and extension of the available knowledge about curriculum implementation.

It is hoped that the study will have further significance as it may establish a link between management theory and curriculum implementation theorizing. The study may make a contribution to management theory as it may lead to an extension of Likert's theory by demonstrating that the degree of implementation of an innovation is related to the managerial patterns of the organization. In terms of management role theory the study may contribute to a clarification of the elementary principal's role in curriculum implementation and may lead to a substantial redefinition of the principal's

generally accepted curriculum supervision role.

Although this research is intended to contribute to a general theoretical framework there are also practical dimensions to this study. It is hoped that the study will have heuristic value for the educational practitioner. Findings which emerge may help administrators and planners identify the relevant patterns that facilitate the implementation process and to plan their strategies accordingly. The results may serve as a guide or provide direction for school administrators as they structure and lead the organization of a school in the area of curriculum and instruction. To ensure implementation, administrators would attempt to move their organization toward a more participatory system. Likert's theory provides direction as it describes those organizational variables for altering the level of school management system.

Concomitantly the study may provide a rationale for Board allocation of funds for leadership training of principals, especially in the causal and intervening variables of Likert's theory. In addition the study may have further training implications as it may indicate a need for reorienting university administrative training programs to provide specific curriculum engineering skills for the principal or supervisor as a curriculum manager.

DEFINITION OF TERMS

The following terms are utilized throughout this treatise in reference to the accompanying definitions.

1. School Management Pattern: (Independent Variable) A composite measure used to describe the pattern of leader behavior and the work group climate that exists in a specific situation. Specifically it is the score obtained by averaging the scores on the Likert Profile of a

School Instrument completed by each teacher and then placing the school on a continuum ranging from exploitive authoritarian to participative.

2. Curriculum Implementation: (Dependent Variable) The process of using a curriculum within the boundaries of the school and the process involves planning for instruction. Beauchamp (1971), and Leithwood (1971), (1976), viewed instructional planning as an integral and critical component of curriculum implementation. Curriculum implementation is the translation of the curriculum for the learning situation by the teacher and the process ends when the actual processes of instruction commence. Implementation is viewed as an adaptive, interactive ongoing developmental process which occurs within a formal organization.

For the purpose of this study degree of implementation is operationally defined in terms of the score obtained on each of the following instruments: Stage of Concern and Level of Use.

Dependent Variables

A. Stage of Concern (SoC): The Stage of Concern about an innovative curriculum that an individual teacher expresses on a continuum containing seven discrete levels ranging from awareness to refocusing. The stages are a set of scale points that describe the individual users' thoughts, feelings and informational needs as he/she is using the innovation.

B. Level of Use (LoU): The Level of Use of an innovative curriculum that an individual teacher demonstrates on a continuum containing eight discrete levels of behavior exhibited by individuals ranging from lack of knowing that

an innovation exists to an orientation time, to a management oriented use and ultimately to active searching for a superseding innovation.

3. Curriculum: A written plan depicting the scope and arrangement of the projected educational program for a school. It is a written document planned prior to the advent of instruction and should contain: (1) statements outlining the goals for which it is designed; (2) a body of content that has the potential for the realization of the goals; (3) an evaluation scheme for determining the effectiveness. The document is designed to be used as point of departure for instructional planning. (Beauchamp 1972).

4. Instruction: The process of influencing learners toward some goal. (Hosford 1973)

5. Innovative Curriculum: In reference to this study the innovation will be curricular in nature. It is a curriculum that is new or novel, in part or in total, to the user and implies some degree of change by the user as he adapts to or reacts to the curriculum. It will not involve change of the fundamental structure of the system itself but will require new skills and orientations on the part of the users.

6. User Group: The personnel associated with or affected by the change; those directly involved on an everyday basis in implementing or putting the innovation into practice (likely students and teachers operating at instructional level).

7. Adopter Groups: Those in decision-making positions who then make the decision that a curriculum is to be used within the organization (most likely administrators at the Board or school level). They are empowered to install an innovation in a given organizational environment.

8. Fidelity: The viewing of curriculum implementation as the extent of the congruency between the curriculum prescriptions and the actual performed roles of the users.

9. Mutual Adaptation: The viewing of curriculum implementation as an interactive and adaptive process in which there is modification over time to the curriculum, user behavior, and the implementing organization. The degree of implementation is the extent of change the elements experience while retaining the original essence of the curriculum.

SUMMARY OF LITERATURE REVIEW

This chapter brought together a discussion of organizational theory and curriculum implementation theory in order to view curriculum implementation as an organizational problem. A number of conclusions drawn from the review of the literature have implications for the present study. They are:

1. Researchers have attempted to identify the wide range of variables affecting curriculum implementation.
2. Very little is known about what organizational factors effect curriculum implementation.
3. There is a lack of empirical data describing how the curriculum implementation process functions and can be facilitated in reality.
4. There is a lack of instrumentation for measuring curriculum implementation.
5. Only the work of Hall and his associates resulted in a measure of curriculum implementation at the individual level and defined the processes of implementation in a manner consistent with the definitions of curriculum used in this study.
6. In addition to industrial research, Likert's management systems theory

is an approach that has application in researching educational problems.

7. There is a theoretical rationale for extending Likert's management systems theory as a predictor of innovation to include an expected relationship between school management patterns and curriculum implementation as an outcome.

8. There exists to date no studies which bear out the relationship between school management patterns and curriculum implementation. This study represents a first step in this direction.

The rest of the study will empirically verify whether there is a relationship between an institution's location on the Likert continuum and degree of curriculum implementation (Hypotheses 1 and 2).

CHAPTER II

RESEARCH DESIGN AND METHODOLOGY

Chapter II presents the background of the research plan and describes the procedure followed in the study. Included are descriptions of the sample selection process; the target population; the method of data collection and data analysis procedures; and a detailed review of the two instruments that were used to collect the data. Data for this study were collected from 43 elementary schools selected in the province of Manitoba, Canada. Responses were collected from 552 elementary teachers.

BACKGROUND OF THE RESEARCH PLAN

After formulating the researchable questions guiding the study, the researcher searched for potential innovative curricula that could serve as a basis for the study. The following guidelines were used in the search: (1) At the time of adoption, teachers and administrators would be equally unfamilar with the innovative curriculum. (2) The curriculum should have been officially adopted for a minimum period of two years previous to the research in order to provide enough time for a wide range of degrees of implementation. (3) The adopted curriculum would be centrally developed in order to control for the affects of internal development. (4) The adopted curriculum would be innovative to the extent that it would be an alteration or variation of previous practices, but would not call for system restructuring or value changes on the part of implementers. (5) The region selected must have a sufficient number of eligible elementary schools for the purpose of the study.

STATISTICAL CONTROLS

The rationale for the provision of the constraining guidelines is provided in detail in this section as each confounding variable is examined separately.

CONTROL OF EFFECTS OF GRADE LEVEL

Elementary schools were chosen for the sample as there appears to be major differences in change orientations between elementary and secondary levels (Fullan & Easterbrook, 1973). Berman and Pauly (1975) and Poll (1970) indicated that elementary teachers appear to be more successful implementers. Also, virtually all research on implementation factors has examined elementary school populations, thus making generalizations to secondary schools tentative. An elementary school was considered to be an administrative unit (principal, vice-principal, support staff, and teachers) which included at least a grade one to grade six range of grades.

CONTROL OF EFFECTS OF INTERNAL DEVELOPMENT

The argument is frequently offered that participation of all professional members in the complete planning process is essential for commitment and effective implementation (Benne and Bernhaum, 1960; Fullan, 1972; Oliver, 1965; Oufray, 1966; Trump, 1967). Beauchamp (1977) suggested that curriculum implementation can be greatly facilitated when planning groups include the classroom teachers who must do the implementing. Klein (1966) stated "the most important generator of resistance would appear to be the frequent alienation of the planners and adopters from the world of those for whom they are planning" (p.119).

The following arguments are presented by writers in support of their teacher involvement positions; (1) participation leads to higher staff

morale, and high staff morale is necessary for successful implementation, (Bennis, 1960); (2) participation leads to a greater commitment, and a high degree of commitment is required for effecting change,(Goodlad and Anderson, 1963 ; Mann and Hoffman, 1960; Oliver, 1965); (3) participation leads to greater clarity about an innovation, and clarity is necessary for implementation, (Anderson, 1964; Gale, 1967); (4) beginning with the postulate of basic resistance to change, the argument is that participation will reduce initial resistance and thereby facilitate successful implementation, (Argyle, 1967; Oliver, 1965; Peterson, 1966); and (5) subordinates will tend to resist any innovation that they are expected to implement if initiated solely by their superordinates (Agnew and Hsu, 1960; Wigren, 1967).

Despite the opposing theoretical views, curricular change in schools can generally be expected to result from external pressures rather than from internally generated forces. Griffiths (1964) included as two of his propositions relating to change: "the major impetus for change in organizations is from the outside" (p.431) and "when change in an organization does occur, it will tend to occur from the top down not from the bottom up" (p.435). Curriculum decisions are increasingly made by groups outside the instructional level. Thus in curriculum development the general procedure is that expert planners collect and process vast bodies of information into a curriculum design.

Connelly (1972) reconceptualized the roles of the developer and user in curriculum. He concurred with the conclusions of many of the writers as he suggested that the top-down strategy of curriculum changes does not work. Teachers should not be treated as mere transmitters of ideas. In a departure from the views of many who argue for total decentralization of

curriculum development, Connelly argued against making curriculum development a local responsibility as the teacher is not equipped to carry out all the functions of curriculum development. The external developer is portrayed as having different functions from the user. In Connelly's conceptual framework teachers will be responsible for making choices based on their experiential knowledge of the situation. The functions of the external developer are "to elaborate theoretical conceptions of society, knowledge, teacher and learners, and to translate these conceptions into coherent curriculum materials, each of which serves as a clear-cut alternative to teachers" (p.161). The teachers then choose from the available materials in matching the materials with the needs and conditions of their particular classroom.

In support of Connelly's position, Zais (1976) stated that the demand for involvement of all teachers in the planning process is, although logical, unsubstantiated by research and does not account for alternative means of securing commitment and effective implementation (pp.476-479). The findings of the Friesen and Holdaway (1973) Alberta Study indicated that teachers' desire for participation in the planning process is not as widespread as it is claimed by the total involvement proponents.

Difficulty in acquiring user acceptance appears to occur when the innovation is introduced as a 'fait accompli' by the adopters. Many attempts to change instructional techniques and strategies can be traced to what is called top-down method in which the initiatives, procedures and often the product of curriculum development originate with high-level officials. (Loucks, 1975, p.19; Zais, 1976, p.447). Fullan (1972), Leithwood and Russell (1973), affirmed that this approach is a major factor in the impotency of implemen-

tation exercises. Thus certainly the development of curricula by teachers in the school must be considered an independent variable and will be controlled for the purpose of this study. Only an area that had previously adopted an innovative curriculum that had been planned external to the user system will constitute the study sample.

CONTROL OF THE NATURE OF INNOVATIVE CURRICULUM

Several writers have classified innovations on the basis of their potential impact upon the receiving system. Guba (1968) stated that "obviously not all inventions are alike; they pose different problems of adoption, and this fact must be taken into account in developing an appropriate diffusion strategy. One way to view this problem is in terms of the amount of change mandated by the invention." (p.295).

Bolam (1975) categorized curriculum innovations into three forms: information documents, training materials and installable systems. Bolam also hypothesized that each type is related to implementation success. Consistent with Bolam's varying success hypothesis, several writers have suggested that the more complex a curriculum is perceived to be by the users, the less chance there is of high implementation. (Charters and Pellegrin, 1973; Fullan and Pomfret, 1977; Kritek, 1976; Nicodemus, 1977; Rogers and Shoemaker, 1972). Conversely, clarity and explicitness of a curriculum are viewed as pre-requisites to successful implementation (Charters and Pellegrin, 1973; Fullan and Pomfret, 1977; Kritek, 1976; Starling, 1973). Thus the more complex and abstract the curriculum, the more difficult will be the implementation. Fullan and Pomfret (1977) further suggested that the elements, clarity and complexity, may be inversely

correlated. Doyle and Ponder (1978) suggested that teachers will more readily implement curriculum that meets the teachers' "ethic of practicality". They suggest that in order to elicit teacher commitment, the curriculum must meet the practicality criteria of instrumentality, congruence and cost. Clinton (1972) found the perceived relative advantage and cost of an innovation were the most important attribute categories in teachers' judging whether or not to accept an innovation.

Rogers and Shoemaker (1972) devised categories which describe the characteristics of innovations: relative advantage, compatibility, trialability and observability. Obviously, users may react on the basis of these characteristics.

Taba (1962) noted that one could not change a curriculum without changing both people and institutions. Fullan (1972) added that the implementation of an innovation will require new skills and orientations on the part of the users. Chin and Downey (1973) classified innovations as providing the receiving institutions with (1) substitutions (2) alterations (3) variations (4) system restructuring (5) change in value orientation. Innovation categories one through three are largely perturbations and can be readily implemented while the implementation of the latter two categories is more difficult to achieve.

System restructuring referred to "changes which lead to modifications and reorganizations of the fundamental structure of the system itself" (Chin and Downey, 1973, p.525). The authors further stipulated that value change involves "shifts in fundamental orientations which define and shape specific behavior" (p.525).

The sub-grouping of Chin and Downey's five classifications into two

groups results in a classification schema similar to Normann's (1971) two categories: variations and reorientations. Normann's "variations" are consistent to Chin and Downey's categories (1) through (3). The reorientations dimension is akin to Chin and Downey's system restructuring and value changes categories. A major change is implied and is generally associated with changes in the larger system of which the organization is a part. This type of innovation is likely to produce significant change, if by significant one means the number of people fundamentally affected by the innovation.

As the effects of the varying degrees of compatibility, practicality, explicitness, and complexity of various innovative curricula are difficult to control, for the purpose of this study, a single innovative curriculum was chosen that meets the criteria of Normann's (1971) "variation category" (p.203).

The province of Manitoba was selected as the geographical area from which the sample would be drawn for the purpose of this study as it had developed and authorized for adoption an innovative curriculum. The innovative curriculum selected for this study was the provincial elementary science curriculum, developed for Kindergarten to grade six students by provincial working parties consisting of scientists, science educators and Department of Education curriculum development personnel. The curriculum was introduced to provincial educators, piloted over a period of two years, and adopted provincially in September, 1977. Although the new curriculum emphasized an investigative approach to science, it did not require a fundamental change from the existing status quo, thus meeting the study's criteria for an innovative curriculum. The elementary science curriculum included the foll-

owing dimensions: Rationale, Statement of Purposes, Specific Objectives and Concepts, Generalization and Skills to be developed for each grade, kindergarten to grade six. In addition the curriculum consisted of 34 prescribed units that include Content, Teaching Strategies, Evaluation Strategies and Suggested Resources. The curriculum specified the daily and weekly time requirements, required no additional resources and was restrictive in the different ways it could be operationalized.

TARGET POPULATION AND SAMPLE

The population studied was elementary schools in the province of Manitoba. The province is divided into 47 school divisions and 5 special school districts. There are a total of 641 schools in Manitoba that contain the elementary grades 1 to 6. Schools were chosen to participate if they satisfied the criteria of school size, level and stability.

1. Size of School

   A. Schools must be large enough to warrant a principal primarily free of classroom teaching duties in order that an administrative pattern could be clearly established. It was decided that a minimum of 60% administrative time would allow sufficient freedom to provide leadership functions. As the administrative grant varied from division to division based on the local collective agreements, a minimum school size of 12 teachers was applied to ensure sufficient size in all divisions to warrant a 60% administrator.

   B. Schools must have a minimum of five full-time teachers eligible to complete the Profile of a School instrument. Halpin (1963) and Halpin and Croft (1963) suggested that using between 5-10 teachers

would provide an adequate measure of school management practices.

2. Stability of Staff: To be eligible for inclusion in the study:

   A. Principals must have been in the school in that position for a minimum of two years. This would allow sufficient time for an administrator to establish a leadership style that would have noticeable effects (Likert, 1967).

   B. Teachers must be full-time and in at least their second year of implementing the curricular innovation and all itinerant teachers must be eliminated. These criteria allowed for teachers to have adequate exposure to the leadership style of the administrator and the staff peer relations in order to assess them on the Profile of a School instrument.

3. Level: The schools must be elementary and include grades one to six. While eligible teachers at any grade (one to six) could be sampled to complete the Profile of a School instrument, only teachers in the intermediate grades (4-5-6) would be sampled for assessing the extent of curriculum implementation. The grade level criterion was previously explained as a statistical control.

PHASE ONE OF DATA COLLECTION

The researcher was allowed access to the Provincial Educational Data Services and a search revealed that a total of 240 schools met the criteria for inclusion in the study.

The initial sample for this study was selected from the compiled list of eligible schools. It was intended that the sample would be large enough to trust the laws of probability to achieve representativeness. A letter was sent to the principal of each of the 240 qualifying schools

on January 18, 1979, to request participation in the study. The letter, shown in Appendix I, Item I, gave an explanation of the purpose of the study and described the demands that the study would place on participating schools. Principals of schools willing to participate were asked to list eligible teachers in alphabetical order on the "School Information Form" (Item 2, Appendix I). A follow-up telephone call was made to each principal who failed to respond by February 5, 1979. In return for cooperation each school in the study was promised a copy of the findings of the report.

Not all of the population who were invited to participate accepted the invitation to be part of the sample. Because of the demands of the study, only 43 schools of the 240 qualifying schools agreed to participate. There were no schools that failed to respond to either request. Thus selection from those schools qualifying resulted in an accepting sample of 43 schools from which data were collected. Table 2 contains a summary of the demographic characteristics of the 43 elementary schools included in the study. A complete listing of all participating schools is found in Appendix III.

PHASE TWO OF DATA COLLECTION

From the list of eligible staff from each of the participating schools, a randomly selected minimum of 5 and maximum of 10 teachers were selected from each school, yielding 5-10 teacher responses to each of the data collection instruments.

In each school the same format was used. A teachers meeting was held during which data on both surveys were collected. The teachers met in one room and the principal was asked not to be present in the room so that anonymity of data was assured. Administering teachers followed the instruc-

TABLE 2

DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE SCHOOLS

School	District Location	Grade Span	School Enrollment
05	Rural	K-6	275
10	Northern	K-12	389
15	Rural	K-6	321
20	Urban	K-8	544
25	Urban	K-6	638
30	Urban	K-6	618
35	Urban	K-6	282
40	Urban	K-6	508
45	Urban	K-9	468
50	Northern	N-8	420
55	Urban	K-6	666
60	Urban	K-6	477
65	Urban	K-8	658
70	Urban	K-6	485
75	Urban	K-6	635
80	Rural	K-6	584
85	Urban	K-9	844
90	Northern	K-8	280
95	Urban	K-6	418
100	Urban	K-6	524
105	Urban	N-6	756
110	Urban	N-6	613
115	Northern	N-8	385
120	Rural	K-6	250
125	Northern	K-6	335

TABLE 2 (continued)

School	District Location	Grade Span	School Enrollment
130	Urban	K-6	362
135	Urban	N-6	337
140	Urban	N-6	350
145	Urban	K-6	421
150	Rural	K-6	406
155	Northern	K-8	494
160	Urban	N-6	643
165	Urban	N-6	631
170	Rural	N-9	629
175	Northern	K-6	356
180	Northern	K-6	580
185	Northern	K-6	501
190	Rural	K-6	320
195	Northern	K-6	310
200	Rural	K-6	380
205	Rural	K-6	328
210	Urban	K-6	430
215	Northern	K-6	395

tions found in the 'Letter to Administering Teachers' (Appendix I.5). Instructions to both instruments were given both in oral and written form and subsequently teachers individually filled out the forms. Discussion of results was discouraged during the meeting. The sessions took no more than 60 minutes and were either tacked on to the regularly scheduled staff meetings or replaced the regular meeting. In four cases specially scheduled meetings were called to complete the instruments. In all cases an effort was made to ensure that no extraordinary time demands were imposed on the teachers.

INSTRUMENTATION

Three instruments were used during data collection to test the research hypotheses. In their order of presentation, these are Likert's Profile of a School, the Stages of Concern questionnaire and the Levels of Usage questionnaire.

PROFILE OF A SCHOOL

The independent variables in the study, school management patterns, were classified along a continuum by the Profile of a School (P.O.S.) instrument (1977) developed by Jane Likert and Rensis Likert. Several different forms of the instrument have been developed. The researcher utilized Form Three developed to measure teacher perceptions of the school's management systems. The form contains 72 items which explore teachers' relationships to students, the principal and other teachers and subordinate perception of organizational phenomena. The P.O.S. Instrument is reproduced in Appendix II.1.

The Profile of a School form was derived from instruments developed for measuring the human organizations of business firms. These instruments were

based on more than 250 studies, involving more than 200,000 employees and 20,000 managers made over the past twenty-five years. Since 1968, frequent reliability and validity assessments have been conducted. Many educational studies have established the instrument's validity as an accurate predictor of school outcomes from the measure of internal conditions. The reliability coefficient in test-retest situations range from .70 to .90. The split half reliability coefficients range between .90 and .95.

The numerous dissertation studies (as reported in a 1978 compilation by R. Likert) that link educational outcomes to school organizational characteristics demonstrate the ability of the Likert instrument to discriminate between school systems and to identify unique characteristics within school systems. Further evidence that Likert's instrument measures school organization was provided by Hall (1969). Hall correlated Halpin and Croft's measure of organizational climate with the 32 items on the Likert instrument that measure principal behavior. A correlation coefficient of +.59 was found.

The evaluation of the degree of implementation was determined by the Level of Use questionnaire developed for the study and the Stages of Concern (SoC) questionnaire (Hall, George, Rutherford, 1977).

STAGES OF CONCERN QUESTIONNAIRE

The SoC instrument is in the form of a quick scoring pencil-and-paper questionnaire consisting of three parts to be administered. Examples of the three parts, (1) introductory page, (2) two pages of items and the (3) demographic page are included in Appendix II. The introductory page presents the purpose of the questionnaire, explains and shows through examples how to complete the instrument and defines the curriculum innovation the individual is to consider when responding. The second part of the questionnaire consists of the thirty-five items on two pages to which the individual responds

on a 0-7 Likert scale. The hypothesized Stages of Concern described in chapter one provide the basis for the development of the SoC questionnaire. There were five items for each of the seven Stages of Concern (as illustrated in Figure 7) and each item consisted of a statement expressing a concern about an innovation and an indication by the respondent of the degree to which each concern was true of them. On a scale of 0 to 7 high numbers indicated intense concern, low numbers low concern and a zero was indicative of very low concern or irrelevancy of the item. The third part of the SoC questionnaire was the demographic page which was used to gather additional information about the respondents for both sample description and correlation purposes.

The questionnaire was developed in such a manner that high internal reliability was likely. Items derived from an analysis of statements of concerns by innovation users were Q sorted by judges according to the SoC definitions. A 195-item prototype was developed consisting of those items that were agreed on by six or more judges as being indicative of a stage. A large sample completed the prototype measure and the resultant data were factor analyzed. Seven factors were extracted and were varimex criterion rotated. The 35-item Stages of Concern questionnaire was then constructed by selecting from among the strongest items representing each of the rotated factors, and resulted in five items for each factor.

The SoC questionnaire was validated over a three year period and was tested for estimates of reliability, internal consistency and validity with different samples and different innovations. Large scale, nationwide, cross-sectional and longitudinal studies were conducted on individuals implementing innovations in both school and university settings. George (1977) reported the following reliability and validity estimates:(Tables 3 and 4)

FIGURE 7

STATEMENT ON THE STAGES OF CONCERN QUESTIONNAIRE
ARRANGED ACCORDING TO STAGE

Item Number	Statement
	STAGE 0
3	I don't even know what the program is.
12	I am not concerned about this program.
21	I am completely occupied with other things.
23	Although I don't know about this program, I am concerned about things in the area.
30	At this time, I am not interested in learning about this program.
	STAGE 1
6	I have a very limited knowledge about the program.
14	I would like to discuss the possibility of using the program.
15	I would like to know what resources are available if we decide to adopt this program.
26	I would like to know what the use of the program will require in the immediate future.
35	I would like to know how this program is better than what we have now.
	STAGE 2
7	I would like to know the effect of reorganization of my professional status.
13	I would like to know who will make the decisions in the new system.
17	I would like to know how my teaching or administration is supposed to change.
28	I would like to have more information on time and energy commitments required by this program.
33	I would like to know how my role will change when I am using the program.
	STAGE 3
4	I am concerned about not having enough time to organize myself each day.
8	I am concerned about conflict between my interest and my responsibilities.
16	I am concerned about my inability to manage all the program requires.
25	I am concerned about time spent working with non-academic problems related to this program.
34	Co-ordination of tasks and people is taking too much of my time.

FIGURE 7 (continued)

Item Number	Statement
	STAGE 4
1	I am concerned about students' attitudes toward this program.
11	I am concerned about how the program affects students.
19	I am concerned about evaluating my impact on students.
24	I would like to excite my students about their part in this approach.
32	I would like to use feedback from students to change the program.
	STAGE 5
5	I would like to help other faculty in their use of the program.
10	I would like to develop working relationships with both our faculty and outside faculty using this program.
18	I would like to familiarize other departments or persons with the progress of this new approach.
27	I would like to co-ordinate my effort with others to maximize the program.
29	I would like to know what other faculty are doing in this area.
	STAGE 6
2	I now know of some other approaches that might work better.
9	I am concerned about revising my use of the program.
20	I would like to revise the program's instructional approach.
22	I would like to modify our use of the program based on the experiences of our students.
31	I would like to determine how to supplement, enhance, or replace the program.

TABLE 3

COEFFICIENT OF INTERNAL RELIABILITY FOR THE STAGES OF CONCERN QUESTIONNAIRE

Stage	0	1	2	3	4	5	6
Alphas	.64	.78	.83	.75	.76	.82	.71

TABLE 4

TEST-RETEST CORRELATIONS ON THE STAGES OF CONCERN QUESTIONNAIRE

Stage	0	1	2	3	4	5	6
Pearson-r	.65	.86	.82	.81	.76	.84	.71

Rigorous validity studies involving inter-correlation matrices, judgements of concerns based on interview data and confirmation of expected findings in reference to group differences and changes over time, have indicated that the SoC questionnaire measures the defined Stages of Concern in the Concerns Based Adoption Model.

LEVEL OF USE QUESTIONNAIRE

This instrument was specifically designed for the present study as a tool to determine the Level of Use (LoU) of the science curriculum at the classroom level. It was adapted from the work of Hall and his associates at the University of Texas Research and Development Center. Hall and his colleagues determined the Level of Use of the innovative curriculum through

interviewing teachers and subsequent coding of the taped interviews by independent trained raters. The interviewer used a branching technique of questioning in order to establish the specific Level of Use. Although some predetermined questions were asked there was a great deal of flexibility of questioning practiced as further information was gathered through probing behavior relating to the decision points separating each level and eliciting the categorical information that represented additional data points or behavioral indices within a level. An interview took approximately twenty minutes and appeared to be a causal conversation about what the interviewee was doing in relation to the adopted curriculum. The LoU interview format was first reported in 1973 and has since undergone several revisions. The basic format, however, has remained largely unchanged.

A fundamental change in format was made for the purpose of this study. The cost of training interviewers and conducting interviews in a large, province-wide sample was prohibitive for the researcher. For the purposes of this study there was a need to develop a more efficient method of data collection. The researcher believed that an impersonal interaction of teachers responding on paper to questions probing their Level of Use would suffice for establishing a Level of Use of the curriculum. Lashier (1977) in reporting on the development of a Level of Use observational inventory to complement the LoU interview data, stated that the future researcher "may wish to develop a questionnaire perhaps with a forced choice or flow chart format. The validity of the responses to this type of instrument could be established by interviewing or visiting the individuals completing the questionnaire." (p.12).

An open-ended questionnaire format was chosen for its practical advan-

tages of providing for a relatively inexpensive mass coverage of potential respondents, simplicity of administration, easiness of scoring and standardization of the instruction to which respondents are exposed. There was an obvious disadvantage in the questionnaire format in that the questions could not be explained or further interpretation provided. Thus there was a concern that questions must be stated with sufficient clarity to function in the impersonal interaction which characterized the questionnaire.

The investigator was specifically trained in the use of the Level of Use interview instrument to seek information that related to the overall Level of Use of the curriculum. The developers of the instrument provided the investigator with a series of self-training tapes and the investigator travelled to Detroit in March, 1979, in order to attend a three-day Concerns Based Adoption Model in-service session (note 1). Armed with an understanding of the philosophy, procedures and techniques of the LoU dimension and interview format, the researcher attempted to adapt the LoU interview to an LoU questionnaire format.

In the preparation of the instrument, tentative questions were grouped under the various levels contained in the conceptual framework. The LoU conceptual framework (illustrated in Figure 8) provided guidelines for identifying and allotting questions. Transcripts of LoU interviews conducted in previous studies, obtained from Hall and his associates, provided information about the reasonable range of responses that may be expected for a structured question. The length of the instrument was then cut to the barest minimum as common types of information sought were consolidated into a single question, general enough in wording to allow for a variety of responses. A pilot testing with 30 teachers eliminated ambiguity of instruction, space-consuming redundant questions and answers and was followed by further revisions

LEVELS OF USE.

FIGURE 8

LoU CONCEPTUAL FRAMEWORK CHART

SCALE POINT DEFINITIONS OF THE LEVELS OF USE OF THE INNOVATION	CATEGORIES		
Levels of Use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user's development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors, but is limited by a set of identifiable Decision Points. For descriptive purposes, each level is defined by seven categories.	**KNOWLEDGE** That which the user knows about characteristics of the innovation, how to use it, and consequences of its use. This is cognitive knowledge related to using the innovation, not feelings or attitudes.	**ACQUIRING INFORMATION** Solicits information about the innovation in a variety of ways, including questioning resource persons, corresponding with resource agencies, reviewing printed materials, and making visits.	**SHARING** Discusses the innovation with others. Shares plans, ideas, resources, outcomes, and problems related to use of the innovation.
LEVEL 0 NON-USE: State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved.	Knows nothing about this or similar innovations or has only very limited general knowledge of efforts to develop innovations in the area.	Takes little or no action to solicit information beyond reviewing descriptive information about this or similar innovations when it happens to come to personal attention.	Is not communicating with others about the innovation beyond possibly acknowledging that the innovation exists.
DECISION POINT A	*Takes action to learn more detailed information about the innovation.*		
LEVEL I ORIENTATION: State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system.	Knows general information about the innovation such as origin, characteristics, and implementation requirements.	Seeks descriptive material about the innovation. Seeks opinions and knowledge of others through discussions, visits, or workshops.	Discusses the innovation in general terms and/or exchanges descriptive information, materials, or ideas about the innovation and possible implications of its use.
DECISION POINT B	*Makes a decision to use the innovation by establishing a time to begin.*		
LEVEL II PREPARATION: State in which the user is preparing for first use of the innovation.	Knows logistical requirements, necessary resources and timing for initial use of the innovation, and details of initial experiences for clients.	Seeks information and resources specifically related to preparation for use of the innovation in own setting.	Discusses resources needed for initial use of the innovation. Joins others in pre-use training, and in planning for resources, logistics, schedules, etc., in preparation for first use.
DECISION POINT C	*Begins first use of the innovation.*		
LEVEL III MECHANICAL USE: State in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use.	Knows on a day-to-day basis the requirements for using the innovation. Is more knowledgeable on short-term activities and effects than long-range activities and effects of use of the innovation.	Solicits management information about such things as logistics, scheduling techniques, and ideas for reducing amount of time and work required of user.	Discusses management and logistical issues related to use of the innovation. Resources and materials are shared for purposes of reducing management, flow and logistical problems related to use of the innovation.
DECISION POINT D-1	*A routine pattern of use is established.*		
LEVEL IV A ROUTINE: Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences.	Knows both short- and long-term requirements for use and how to use the innovation with minimum effort or stress.	Makes no special efforts to seek information as a part of ongoing use of the innovation.	Describes current use of the innovation with little or no reference to ways of changing use.
DECISION POINT D-2	*Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.*		
LEVEL IV B REFINEMENT: State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients.	Knows cognitive and affective effects of the innovation on clients and ways for increasing impact on clients.	Solicits information and materials that focus specifically on changing use of the innovation to affect client outcomes.	Discusses own methods of modifying use of the innovation to change client outcomes.
DECISION POINT E	*Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.*		
LEVEL V INTEGRATION: State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence.	Knows how to coordinate own use of the innovation with colleagues to provide a collective impact on clients.	Solicits information and opinions for the purpose of collaborating with others in use of the innovation.	Discusses efforts to increase client impact through collaboration with others on personal use of the innovation.
DECISION POINT F	*Begins exploring alternatives to or major modifications of the innovation presently in use.*		
LEVEL VI RENEWAL: State in which the user re-evaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system.	Knows of alternatives that could be used to change or replace the present innovation that would improve the quality of outcomes of its use.	Seeks information and materials about other innovations as alternatives to the present innovation or for making major adaptations in the innovation.	Focuses discussions on identification of major alternatives or replacements for the current innovation.

Procedures for Adopting Educational Innovations Project, Research and Development Center for Teacher Education, University of Texas at Austin, 1975, N.I.E. Contract No. NIE-C-74-0087.

FIGURE 8 (continued)

CATEGORIES

ASSESSING	PLANNING	STATUS REPORTING	PERFORMING
Examines the potential or actual use of the innovation or some aspect of it. This can be a mental assessment or can involve actual collection and analysis of data.	**Designs and outlines short- and/or long-range steps to be taken during process of innovation adoption, i.e., aligns resources, schedules activities, meets with others to organize and/or coordinate use of the innovation.**	**Describes personal stand at the present time in relation to use of the innovation.**	**Carries out the actions and activities entailed in operationalizing the innovation.**
Takes no action to analyze the innovation, its characteristics, possible use, or consequences of use.	Schedules no time and specifies no steps for the study or use of the innovation.	Reports little or no personal involvement with the innovation.	Takes no discernible action toward learning about or using the innovation. The innovation and/or its accouterments are not present or in use.
Analyzes and compares materials, content, requirements for use, evaluation reports, potential outcomes, strengths and weaknesses for purpose of making a decision about use of the innovation.	Plans to gather necessary information and resources as needed to make a decision for or against use of the innovation.	Reports presently orienting self to what the innovation is and is not.	Explores the innovation and requirements for its use by talking to others about it, reviewing descriptive information and sample materials, attending orientation sessions, and observing others using it.
Analyzes detailed requirements and available resources for initial use of the innovation.	Identifies steps and procedures entailed in obtaining resources and organizing activities and events for initial use of the innovation.	Reports preparing self for initial use of the innovation.	Studies reference materials in depth, organizes resources and logistics, schedules and receives skill training in preparation for initial use.
Examines own use of the innovation with respect to problems of logistics, management, time, schedules, resources, and general reactions of clients.	Plans for organizing and managing resources, activities, and events related primarily to immediate ongoing use of the innovation. Planned-for changes address managerial or logistical issues with a short-term perspective.	Reports that logistics, time, management, resource organization, etc., are the focus of most personal efforts to use the innovation.	Manages innovation with varying degrees of efficiency. Often lacks anticipation of immediate consequences. The flow of actions in the user and clients is often disjointed, uneven and uncertain. When changes are made, they are primarily in response to logistical and organizational problems.
Limits evaluation activities to those administratively required, with little attention paid to findings for the purpose of changing use.	Plans intermediate and long-range actions with little projected variation in how the innovation will be used. Planning focuses on routine use of resources, personnel, etc.	Reports that personal use of the innovation is going along satisfactorily with few if any problems.	Uses the innovation smoothly with minimal management problems; over time, there is little variation in pattern of use.
Assesses use of the innovation for the purpose of changing current practices to improve client outcomes.	Develops intermediate and long-range plans that anticipate possible and needed steps, resources, and events designed to enhance client outcomes.	Reports varying use of the innovation in order to change client outcomes.	Explores and experiments with alternative combinations of the innovation with existing practices to maximize client involvement and to optimize client outcomes.
Appraises collaborative use of the innovation in terms of client outcomes and strengths and weaknesses of the integrated effort.	Plans specific actions to coordinate own use of the innovation with others to achieve increased impact on clients.	Reports spending time and energy collaborating with others about integrating own use of the innovation.	Collaborates with others in use of the innovation as a means for expanding the innovation's impact on clients. Changes in use are made in coordination with others.
Analyzes advantages and disadvantages of major modifications or alternatives to the present innovation.	Plans activities that involve pursuit of alternatives to enhance or replace the innovation.	Reports considering major modifications of or alternatives to present use of the innovation.	Explores other innovations that could be used in combination with or in place of the present innovation in an attempt to develop more effective means of achieving client outcomes.

Reproduced by special permission from Hall, G.E. and Loucks, S.F. (Appendix) Procedures for Adopting Educational Innovations, Project; Research and Development Center for Teacher Education, University of Texas at Austin, 1975.

and refinement. The delimitation of less important questions resulted in a list based on the branching format that was considered to be crucial in order to arrive at a LoU designation for each respondent. As the answers to the open type of question have to be recorded in full, the piloting process enabled the researcher to estimate the amount of space to provide for obtaining a complete response. After a lengthy process of rewriting and editing during the instrument development process, a prototype instrument was developed. The prototype was administered to teachers for final feedback and it took respondents approximately 20-45 minutes to complete.

The total number of questions needed to procure sufficient information in order to establish the Level of Use of the curriculum necessitated the construction of a lengthy questionnaire. The magnitude of the questionnaire raised concerns about the ultimate reliability of responses and whether teachers would complete the questionnaires carefully. While this possibility did exist, a study by Parton (1950) showed that there was little difference in the quality of returns of three groups who responded to questionnaires of ten, twenty-five and thirty-five pages in length. She found that the number of unrelated subjects incorporated in a questionnaire, the attention given to respondent incentives and the care displayed in the questionnaire format were variables that more directly affected the degree of response than length (pp.384-385).

Due to the significant changes in the instrument format, validation data derived from the LoU interview could not be used in support of the new instrument. Results of extensive reliability and validity testing by the developers of the LoU interview format suggested that the Level of Use can be identified and rated with a high degree of reliability. Based on a total

of 1,381 tapes representing three innovations, inter-rater reliability ranged from .87 to .96 on the overall Level of Use. A validity study, using an ethnographic methodology, revealed a correlation coefficient of .98 when comparing the ethnographers' Level of Use rating with the trained rater consensus Level of Use rating. It was felt that with the high content agreement the two instruments should be likely to produce similar results. An examination of correlation congruency was conducted in order to assess the congruency validity of the LoU interview validity and reliability results.

Data obtained from the LoU interview format based on a 25-teacher sample were compared with results from the teacher self-completed LoU questionnaire derived from the same teachers. This revealed a significant Spearman RHO correlation coefficient of .77825. The following equation was used in the calculation of the correlation coefficient between the two instruments:

$$s = \frac{3}{n-1}\left[\frac{4\sum_{i=1}^{n} XiYi}{n(n+1)} - (n+1)\right]$$

$$s = \frac{3}{25-1}\left[\frac{4(5236.75)}{25(25+1)} - (25+1)\right]$$

$$= .77825 \qquad \alpha .01$$

Individual rater reliability was evaluated through examination of degree of agreement with other raters. Percentages were used to measure inter-rater agreement for each questionnaire and interview. Percentage agreements are indicated in Table 5.

TABLE 5

PERCENTAGE AGREEMENT FOR LEVEL OF USE RATINGS
ON THE LoU INTERVIEW AND QUESTIONNAIRE FIELD TEST

	Percent of Agreement	Number of Ratings
LoU questionnaire		
Rater 1	60%	25
Rater 2	60%	25
Rater 3	70%	10
LoU interview		
Rater 1	72%	25
Rater 2	72%	25
Rater 3	85.7%	7

The following formula, based on the CHI square procedure, was used to convert the rater agreement percentages into an inter-rater reliability coefficient.

$$X^2 = \frac{(O-E)^2}{E}$$

The inter-rater reliability coefficient of the raters on the LoU interview was 1.634 and the rater reliability of the LoU questionnaire was found to be 1.052. The results indicated that there were no significant differences observed on either questionnaire or interviews by the raters.

The previous correlational data were offered to show that performance on the Level of Use questionnaire correlated with performance on the already existing and accepted LoU interview measure of implementation. From the correlational data it appeared that the LoU questionnaire was measuring the same characteristics, behavior in usage, as the LoU interview. Thus it was assumed that a reliable and valid instrument had been developed and could be used to assess the Level of Use of curriculum in this study.

In this study the answers resulting from the LoU questionnaire questions were classified by two trained raters according to procedures outlined in the Interview Manual (1977). For the purposes of the research, an absolute rating of overall Level of Use was determined for each individual. The two trained raters gave an overall LoU classification. A rating form developed for this task is illustrated in Figure 9. A special designation is provided at the bottom of the rating sheet for cases where the completed questionnaire does not provide enough information to give a rating. If there was disagreement between the raters in overall Level of Use, the discrepant ratings were resolved by a third trained rater (this investigator) having no knowledge of the previous ratings. Overall LoU was determined when the third rater was in agreement with either of the previous ratings. If all three ratings were in disagreement, the Level of Use was established by consensus reached through discussion. This procedure of 'rating until agreement' was necessary as the LoU categories were considered to be discrete and any averaging which would result in LoU ratings such as II.5 would be theoretically unacceptable.

As in the LoU interview format, the classifying and analyzing of responses from the questionnaire was time consuming and required trained staff. Two individuals were employed as tentative raters of the Level of Use

LEVEL OF USE QUESTIONNAIRE RATING SHEET

Date: Site: I.D.#: Rater:

Level	Knowledge	Acquiring Information	Sharing	Assessing	Planning	Status Reporting	Performing	Overall LoU
Non-Use	0	0	0	0	0	0	0	0
D.P.A. Orientation	I	I	I	I	I	I	I	I
D.P.B. Preparation	II	II	II	II	II	II	II	II
D.P.C. Mechanical Use	III	III	III	III	III	III	III	III
D.P. D-1 Routine	IVA	IVA	IVA	IVA	IVA	IVA	IVA	IVA
D.P. D-2 Refinement	IVB	IVB	IVB	IVB	IVB	IVB	IVB	IVB
D.P. E Integration	V	V	V	V	V	V	V	V
D.P. F Renewal	VI	VI	VI	VI	VI	VI	VI	VI
User is not doing:	ND	ND	ND	ND	ND	ND	ND	
No information in response	NI	NI	NI	NI	NI	NI	NI	

Is the individual a past user? Yes No

How much difficulty did you have in assigning this person to a specific LoU? None 1 2 3 4 5 6 7 Very much

Comments about responses:

General Comments --

FIGURE 9

Adapted From Concerns Based Adoption Model Rating Sheet, Hall, G.E., Loucks, S.F., Newlove, B.W., 1975. Procedures for Adopting Educational Innovations Project, University of Texas, Austin.

questionnaires. Both were already somewhat knowledgeable regarding the innovation under study gained from their experience as teachers in elementary schools in the province. It was hoped that this would result in increased acumen in examining the questionnaire responses. The investigator subsequently trained the two raters for the rating of LoU responses. Each rater underwent a two-day concentrated training workshop conducted by this researcher. It should be noted that this investigator had earlier travelled to Markdale, Ontario, in November 1978 to conduct a LoU training workshop for 15 interviewers and raters. Feedback from participants in that workshop were incorporated into the structuring of the Manitoba workshop. The training involved an in-depth examination of the LoU chart to assure knowledge about decision points and category definitions and an orientation to the innovation under study, the Manitoba elementary science curriculum. Following a session on rating procedures, the raters practiced rating training tapes, transcripts and exercises provided by the researchers at the Texas Research and Development Center. A number of practice questionnaires prepared by this investigator were also assessed and each rating was subsequently critiqued. Through the training session the raters became familiarized with the typical responses for each Level of Use and to the subtleties involved in making a skillful rating. In the training program each questionnaire or transcript was considered rated when the two rater trainees assigned the implementer to the same Level of Use.

For the purposes of this study the recommended minimal rating proficiency of 65% interrater agreement was accepted (Hall, Loucks and Newlove, 1975, p.42). Upon completion of the two day workshop the raters had reached the pre-set mastery level in their ratings and were assumed to have sufficient expertise

to participate in this study.

PLAN FOR STATISTICAL PROCEDURES

The study required the use of multivariate analysis of variance to test the hypotheses. The investigation used both the Hotelling T^2 and CHI square tests of significant differences in the statistical treatment of its data. In Figure 10 the dependent and independent variables are identified.

FIGURE 10

DEPENDENT AND INDEPENDENT VARIABLES OF THE STUDY

Variables	
Independent Variables	Dependent Variables
(1) School management patterns	(1) Degree of implementation A 7 Stages of Concern B 8 Levels of Use

The study may be classified as Ex Post Facto Research. Kerlinger (1973) states: "Ex Post Facto Research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables" (p.379). Direct control in this type of research is not possible as neither experimental manipulation nor random assignment can be used by the research.

LIMITATIONS

The present study may be useful in linking organizational variables that underlie the degree of curriculum implementation as demonstrated in the province of Manitoba. There are a number of limitations inherent in the design of the

study.

1) The study is restricted to a specific innovative curriculum. Generalizations to similar implementation efforts with different innovations will therefore have to be drawn with caution. The study is limited to an attempt to determine quantitatively the degree of implementation of a specific curriculum and the quality of the curriculum is not a consideration in this study.

2) A difficulty in establishing clearly defined causal relationships between the independent and dependent variables in ex post facto research rests with the fact that the independent variables may have undergone change as a result of their effect upon the dependent variable. Therefore, to relate organizational characteristics in a one-way direction to the outcome of the change effort is not possible with the present research design.

3) Limits of time and funds imposed on the candidate's thesis research prevents the optimal 3-5 year duration study suggested by McGregor (1967) and Likert (1967). As the study is not longitudinal, no comparable data taken at any other period of the implementation process are available.

4) The study is restricted to the province of Manitoba. Yet it should be noted that Manitoba is not exceptional in its development of province-wide planned curriculum change as it is occurring in many provinces in Canada.

5) Despite being province-wide, the sample is limited because of its stratification according to the statistical controls of years of teaching experience, school size and staff stability. This elimination of some schools and teachers is not random and the results of this study can only be generalized to the extent that a population shares the characteristics

of the final sample.

SUMMARY

Elementary teachers of the public school system of the province of Manitoba constitute the population and 43 schools and 552 members of this population constituted the sample for this investigation. Two instruments accompanied by a Personal Data sheet were utilized to collect the necessary data. A multi-variate analysis of variance in the data was used in testing the hypotheses.

CHAPTER III

PRESENTATION AND ANALYSES OF DATA

Data were collected from 552 teachers in 43 elementary schools in the province of Manitoba to test the hypotheses of the study. The purpose of the chapter is to describe the statistical procedures and analyses of data that were used to determine if there is a relationship between school management patterns and degree of curriculum implementation. The analysis is divided into four phases with the results that pertain to each test of an hypothesis being reported. In the first stage of the analysis the schools are arrayed on a continuum from high to low school management pattern scores. Two different methods of assessing extent of curriculum implementation were employed in the study and the data from the SoC and LoU questionnaires are presented in the second and third section respectively. Specifically phase two of the statistical treatment involves examining the relationship between SMP scores and Stages of Concern about a curriculum using a test of multivariate analysis of variance. Section three of the chapter presents the data from the second dependent variable, LoU, and reports on a test of significant frequencies for each LoU aggregate between the high and low SMP schools. A final section of the chapter reports on an extended analysis in which relationships between school management patterns and each individual Level of Use and Stage of Concern are explored. The findings relevant to the testing of the hypotheses are reported in Tables 15 to 26 inclusive.

PRESENTATION AND ANALYSIS OF LIKERT DATA

The independent variable in the study, according to the hypotheses stated in Chapter I, was school management patterns as derived by scores on the Likert (1977) instrument Profile of a School. Tabulation of the data collected

on the Likert P.O.S. Instrument was the first step in testing the hypotheses. Teacher means scores on all organizational indices were plotted in a profile for each school. As Likert and his associates (1978) suggested reporting results by indices, indices were determined on the basis of item means. Rather than comparing means on each individual question, item responses were summed to form mean index scores. These are grouped into the five major theoretically derived organizational clusters: climate, leadership, trust, communication and other variables. A listing of clusters and indices is presented in Table 6.

By averaging the score on each of the 72 items, an average Likert score was calculated for each teacher in the school. By averaging the Likert score for each teacher, a school composite Likert score was generated for each elementary school. The composite school management pattern (SMP) score is an overall indicator of where a school fell on the Likert continuum of school systems, and is a measure of the leader behavior pattern, work group climate and teacher-principal relationship that exists in each school.

Data were transformed from the teacher scores to school scores using the "Statistical Package for the Social Sciences Subprogram Aggregate" (1975). Calculations were made to reduce all the data to a global SMP score and items were grouped to form scores on 18 indices and 5 factors. The scores on the indices and factors were calculated based on the Scoring Guide for the Profile of a School (1978) obtained from Rensis Likert Associates at a meeting in Ann Arbor, Michigan (Note 2). The computer programming was validated by the manual scoring of one school.

A major concern in analyzing the Likert data was whether or not there was a significant difference among the composite Likert scores of the

TABLE 6

PROFILE OF A SCHOOL INDICES USED TO DESCRIBE ORGANIZATIONAL CHARACTERISTICS IN SCHOOLS

Indices
1. Climate
A Extent of Goal Commitment
B Decision Process Followed
C Extent of Team Co-operation
2. Leadership
A Leader Support
Receptivity to Subordinates Ideas
Involvement of Respondent in Decision-Making
B Goal Emphasis
C Team Building
D Work Facilitation
Providing Resources
Planning and Setting Priorities
Providing Useful Information and Ideas to Subordinates
E Technical Competence
3. Mutual Trust
4. Communication Across Hierarchies
5. Other Intervening Variables
A Influence Felt by Subordinates
B Peer Team Building
C Self-Motivation
D Student Acceptance of Goals

elementary schools. Initially it was intended that from the sample of 43 schools, those schools which had high or low scores on the Profile of a School questionnaire and were at the polar extremes of the continuum would be selected as the experimental group. The experimental sample would be based on selecting the bottom third and top third of a trichotomy (approximately 30 schools and 240 teachers). It was intended that these extreme schools would then be examined in terms of degree of implementation as evidenced by the SoC and LoU instruments.

Figure 11 is a histogram of the Likert composite management pattern scores for all of the schools in the sample. The horizontal axis of Figure 11 represents a section of the Likert continuum of school social systems in which Likert identified four types of organizations. On the vertical axis is the number of schools that fell within certain sections of the Likert continuum. Representatives of each of the four types of organizations delineated by Likert were not found. The mean SMP score of 5.68 for the 43 schools indicated that most of the schools were in a consultative (system three) type of system. The SMP scores ranged from the upper limits of system two to the lower limits of system four and no school in the sample scored in system one. These results coincided with Likert's (1972) provision of a mean score of 5.36 from the schools contained in his data bank. The results were also consistent with the limited variability of management pattern scores found in several previous studies (Dow, 1971; Kalies, 1977; MacKillican, 1976; Donnelly, Note 1).

Thus, for the purposes of this study, the schools were considered as falling on a continuum from the least developed (authoritarian) to most developed (democratic), rather than being classified according to Likert's four types.

FIGURE 11

HISTOGRAM OF LIKERT COMPOSITE SCORES
FOR 43 ELEMENTARY SCHOOLS

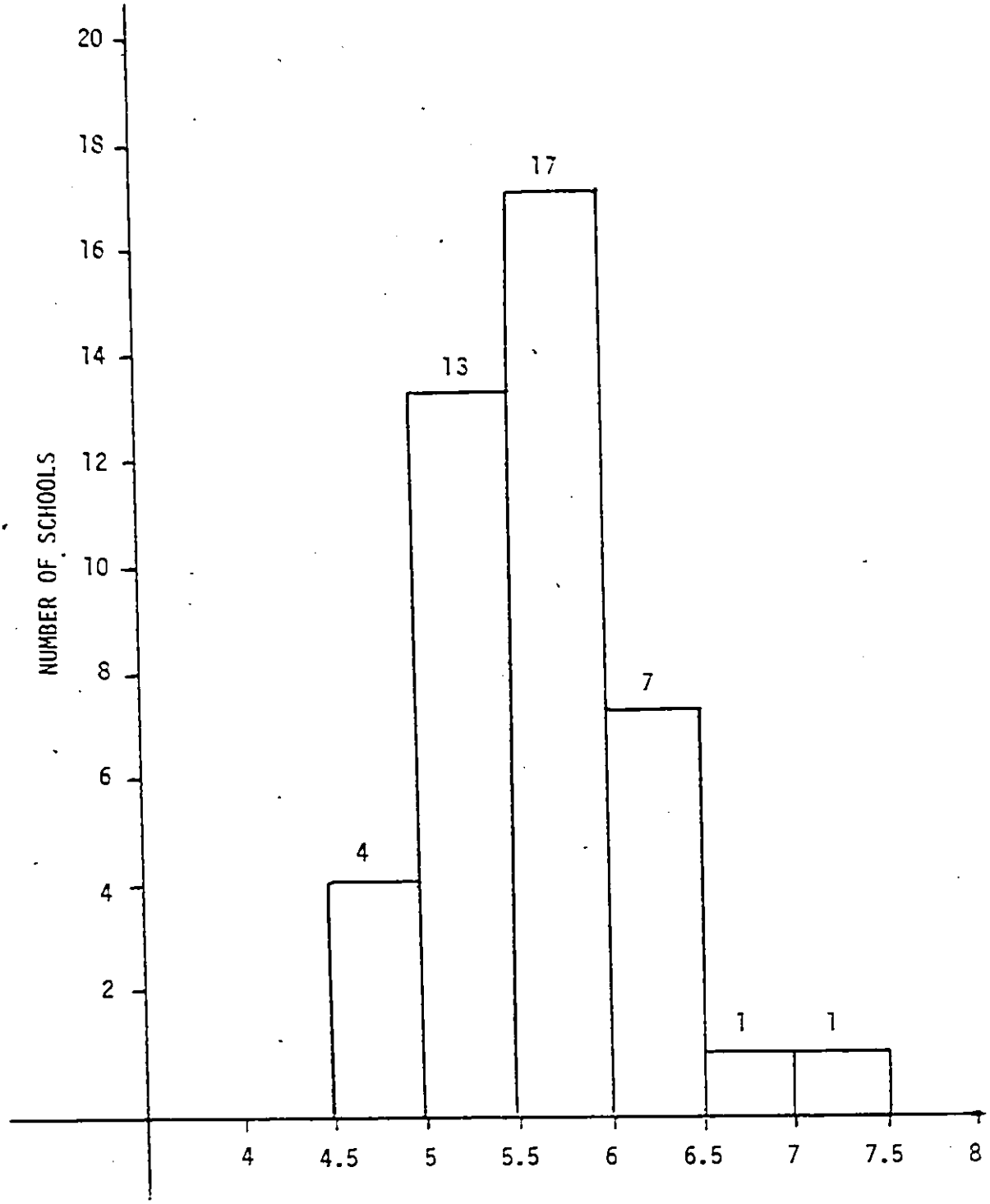


Table 7 contains a listing of the 43 elementary schools in the sample and their corresponding composite management pattern scores. Each school in the sample was coded using a numerical designation in the order in which the data were received.

The poor distribution of teachers across Likert's school management pattern continuum could be considered a limitation for the study. The composition of the sample was limited by the voluntary nature of the study. The investigator found that in approaching principals for permission to conduct the study, many principals responded immediately to the request and refused access to the staff. It was assumed that such schools likely had the type of administration which did not practice participatory decision-making and decided in an autocratic manner for the entire staff. This was consistent with the findings of Kalies (1977) as he reported that democratic principals required more time to communicate and share the decision to participate with the staff which resulted in later dates for data collection (p.78). Concomitantly, a number of staffs decided to refuse participation in the study as they doubted the guarantee of anonymity of response due to the inclusion of a detailed demographic data sheet. The researcher assumed that this reaction of finding the study potentially threatening was congruent with that expected of a staff working in a highly accountable, authoritarian climate. These reasons are offered to account for the lack of representation in the more extreme authoritarian systems of Likert's continuum of school management patterns. It would appear that the constraints of receiving authorization and permission to conduct the study resulted in a bias based sample.

AGGREGATING SMP DATA

Because of the unequal distribution of schools on the Likert contin-

TABLE 7

LISTING OF SAMPLE SCHOOLS AND CORRESPONDING MEAN SCORES OF TEACHER PERCEPTION OF SCHOOL MANAGEMENT PATTERN (N-2S1)

Sample School	Number of Teachers (N)	Composite Likert Score (SMP) (X)	Rank
05	7	5.7	27
10	7	5.2	6
15	7	5.7	26
20	9	4.9	3
25	5	6.0	34
30	8	6.2	37
35	7	5.5	17
40	6	5.5	16
45	6	5.7	25
50	7	5.1	5
55	9	5.8	28
60	9	5.4	12
65	6	5.5	15
70	8	5.3	8
75	5	6.4	41
80	7	7.1	43
85	5	5.5	14
90	8	5.6	18
95	8	5.6	19
100	9	5.3	9
105	7	6.2	36
110	5	6.3	38
115	7	5.4	13
120	5	6.1	35

TABLE 7 (continued)

Sample School	Number of Teachers (N)	Composite Likert Score (SMP) (X)	Rank
125	7	5.9	31
130	7	5.2	7
135	6	6.3	40
140	6	5.3	10
145	6	6.0	32
150	6	5.7	24
155	6	6.0	33
160	8	5.9	30
165	8	6.3	39
170	6	4.9	2
175	8	4.7	1
180	8	5	4
185	5	6.9	42
190	5	5.3	11
195	7	5.6	20
200	5	5.9	29
205	5	5.7	23
210	7	5.7	22
215	6	5.6	21

uum, it was decided to use all of the schools in the sample in the initial testing of the hypotheses. The 43 schools in the sample were split at the median (5.7) into two groups consisting of 21 schools in each. A description of the two groups is provided in Table 8.

TABLE 8

DESCRIPTIVE PROFILE OF THE LOW AND HIGH MANAGEMENT PATTERN GROUPS

Administrative Groups	N	Range	$\bar{X}$	Identification
1. Lo - Lower SMP	21	4.7 - 5.6	5.3	10,20,35,40,50,60,65, 70,85,90,95,100,115,130, 140,170,175,180,190,195,215.
2. Hi - Higher SMP	21	5.7 - 7.1	6.0	05,15,25,30,45, 55,75,80,105,110, 120,125,135,145,150, 155,160,165,185,200,205.

There was a necessity to compare the two groups in terms of their composition to observe whether differences existed that might explain any discovered variance in degree of curriculum implementation between the two groups. Information from responses to the demographic data sheet (see Appendix 2) was tabulated to determine the similarities between the low SMP group and the high SMP group on certain variables that could intervene in this investigation. CHI square comparisons were made of frequencies of high and low SMP teachers on a number of possible intervening variables. Whenever CHI square values reached a level of significance of .05, a difference in the groups was assumed. Data from these comparisons are summarized in Tables 9 to 13 inclusive.

TABLE 9

PERCENTAGES OF TEACHERS FROM HIGH AND LOW SMP GROUPS IN EACH OF THREE GRADE LEVELS

Grade Level	High SMP		Low SMP	
	f	%	f	%
Grade Four	42	33.6%	52	37.41%
Grade Five	42	33.6%	44	31.65%
Grade Six	41	32.8%	43	30.93%
Total	125	100%	139	100%

TABLE 10

AVERAGE NUMBER OF YEARS TEACHING EXPERIENCE FOR TEACHERS IN HIGH AND LOW SMP GROUP

Grade	High SMP Group	Low SMP Group
Fourth Grade	10.597	9.938
Fifth Grade	9.636	9.909
Sixth Grade	8.207	8.931
Total	9.484	9.605

In the CHI square computations, no significant differences were observed in age comparisons or range of professional training for teachers in the high and low groups. There were no significant differences between the groups in distribution of teachers at each intermediate grade level. The variation between the two groups on the average total years experience of teachers was examined. Again no differences were found. The two groups had

TABLE 11

PERCENTAGES OF TEACHERS FROM HIGH AND LOW SMP GROUPS
IN EACH OF THREE CATEGORIES OF PROFESSIONAL PREPARATION

Educational Level	Fourth Grade				Fifth Grade				Sixth Grade				Total			
	Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Certificate	11	22%	13	31.70%	15	34.09%	12	28.57%	14	31.81%	10	24.39%	40	28.98%	35	28.22%
Bachelor	38	76%	27	65.85%	28	63.63%	29	69.04%	30	68.18%	30	73.17%	96	69.56%	86	69.35%
Masters	1	2%	1	2.43%	1	2.27%	1	2.38%	0		1	2.43%	2	1.44%	3	2.41%
Total	50		41		44		42		44		41		138		124	

TABLE 12

PERCENTAGES OF TEACHERS FROM HIGH AND LOW SMP GROUPS IN EACH OF THREE CATEGORIES OF GEOGRAPHIC DISTRIBUTION

Geographic Distribution	Fourth Grade				Fifth Grade				Sixth Grade				Total			
	Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Rural	4	7.69%	15	35.71%	4	9.30%	13	30.95%	3	6.97%	9	22.5%	11	7.97%	37	29.83%
Urban	31	59.61%	24	57.14%	25	58.13%	22	52.38%	27	62.79%	24	60%	83	60.14%	70	56.45%
Northern	17	32.69%	3	7.14%	14	32.55%	7	16.66%	13	30.23%	7	17.5%	44	31.88%	17	13.70%
Total	(52)		(42)		(43)		(42)		(43)		(4)		(138)		(124)	

TABLE 13

PERCENTAGES OF TEACHERS FROM HIGH AND LOW SMP GROUPS IN EACH OF THE FIVE AGE CATEGORIES

Age	Fourth Grade				Fifth Grade				Sixth Grade				Total			
	Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP		Low SMP		High SMP	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
20-29	18	33.96%	11	25%	16	37.20%	21	50%	18	39.13%	20	48.78%	52	36.61%	52	40.94%
30-39	23	43.39%	22	50%	15	34.88%	8	19.04%	17	36.95%	10	24.39%	55	38.73%	40	31.49%
40-49	8	15.09%	7	15.90%	11	25.58%	8	19.04%	8	17.39%	6	14.63%	27	19.01%	21	16.53%
50-59	4	7.54%	4	9.09%	1	2.32%	5	11.90%	3	6.52%	5	12.19%	8	5.63%	14	11.02%
60-69																
Total	53		44		43		42		46		41		142		127	

significantly different geographic distributions of teachers from rural (CHI-square = 17.04.ρ<.05) and northern schools (CHI-square = 9.47 .ρ<.05). It was found that there were more rural teachers in the high management pattern schools and more northern teachers in the low management pattern group than would be expected by chance.

It was concluded, on the basis of the preceding data, that the high and low SMP groups were similar when compared on several critical variables: age of teachers, grade distribution, professional preparation, geographic distribution and years teaching experience. Therefore, it was also concluded that differences in degree of curriculum implementation between the two groups would be due to factors other than these.

In addition to dividing the 43 schools into two groups split at the median, the decision was made to repeat the testing of each hypothesis using more extreme groups: high and low SMP aggregates. The rationale for the decision was that by applying the statistical analysis to a wider range of groups, the findings of the earlier analysis should be strengthened. In the extended data analysis the most extreme schools in the sample were divided into high and low SMP categories as described in Table 14.

The rationale for considering the two groups as representing high and low SMP scores is derived from Likert's (1972) identification of 5.36 as the mean score of the schools in his data bank.

After the two sets of analyses were completed, (the initial analysis using all the schools split into two groups at the median and the subsequent second analysis using more extreme groups) it was found that the initial analysis did not result in findings of significant differences as strong as did the subsequent analysis. This was expected because of the lack of varia-

TABLE 14

DESCRIPTIVE PROFILE OF THE EXTREME LOW AND HIGH MANAGEMENT PATTERN GROUPS

Group	N	$\bar{X}$	Range	S.D.	Identification
1. Hi - High SMP	16	6.216	5.80-7.10	0.364	#25,30,55,75,80, 105,110,120,125, 135,145,155,160, 165,185,200
2. Lo - Low SMP	13	5.176	4.70-5.40	0.189	#10,20,50,60,70, 100,115,130,140, 170,175,180,190

bility of SMP scores for the 43 schools. However in both analyses the differences in means for the groups were in the same direction as was expected based on the theory. It was therefore decided to report the results of both of the analyses.

The remainder of the chapter reports on the investigation of the relationship between school management patterns and the degree of curriculum implementation. The following general hypothesis was tested:

> In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' participatory management pattern schools will exhibit a higher level of implementation than will teachers in more authoritarian management pattern schools.

The dependent variable in the study's research hypothesis was the extent of curriculum implementation. To assess the extent of curriculum implementation, the two key implementation diagnostic tools of the Concerns Based Adoption Model were utilized. The general hypothesis was tested using the Stages of Concern and Levels of Usage questionnaire, and the results that pertain to each C.B.A.M. dimension are reported in the next two sections.

PRESENTATION OF SoC DATA

The SoC scores were processed using-Fortran Program X score (1977) provided by the developers in the appendix of Measuring Stages of Concern About the Innovation (pp.77-103). The computer programming was corroborated by a set of test data provided to test the program.

In personal communication with the developers of the SoC instrument, it was recommended by George (Note 3) that for the testing of this study's hypothesis the raw scores of the SoC should be processed rather than comparing percentiles. An absolute value for each stage was obtained by averaging the individual responses in each group. Figure 12 presents a profile of the SoC raw scores for the entire sample.

George and Rutherford (1978, p.6) suggested that it was also useful to plot a group's profile based on the average of the individual member SoC scores and to examine the highest SoC percentiles to better understand the concerns of a group of users. Using a percentile conversion table provided by the developers of the instrument to score the SoC questionnaire data, a SoC profile was developed for the total sample. Figure 13 represents the group profile for the 271 teachers in the sample based on percentile scores.

Hall, George and Rutherford (1977, p.53) provided the following guidelines for interpreting the SoC profiles: (1) establish a holistic perspective in which a gestalt is developed based on all the Stages of Concern, (2) check the relative high and low stage scores, (3) examine individual item responses.

From a holistic perspective a number of trends could be noted for the entire sample. As suggested by the C.B.A.M. propositions, in the provincial sample concerns were expressed on all of the Stages of Concern in

FIGURE 12

PROFILE OF STAGE OF CONCERN RAW SCORES FOR TOTAL SAMPLE (N=271)

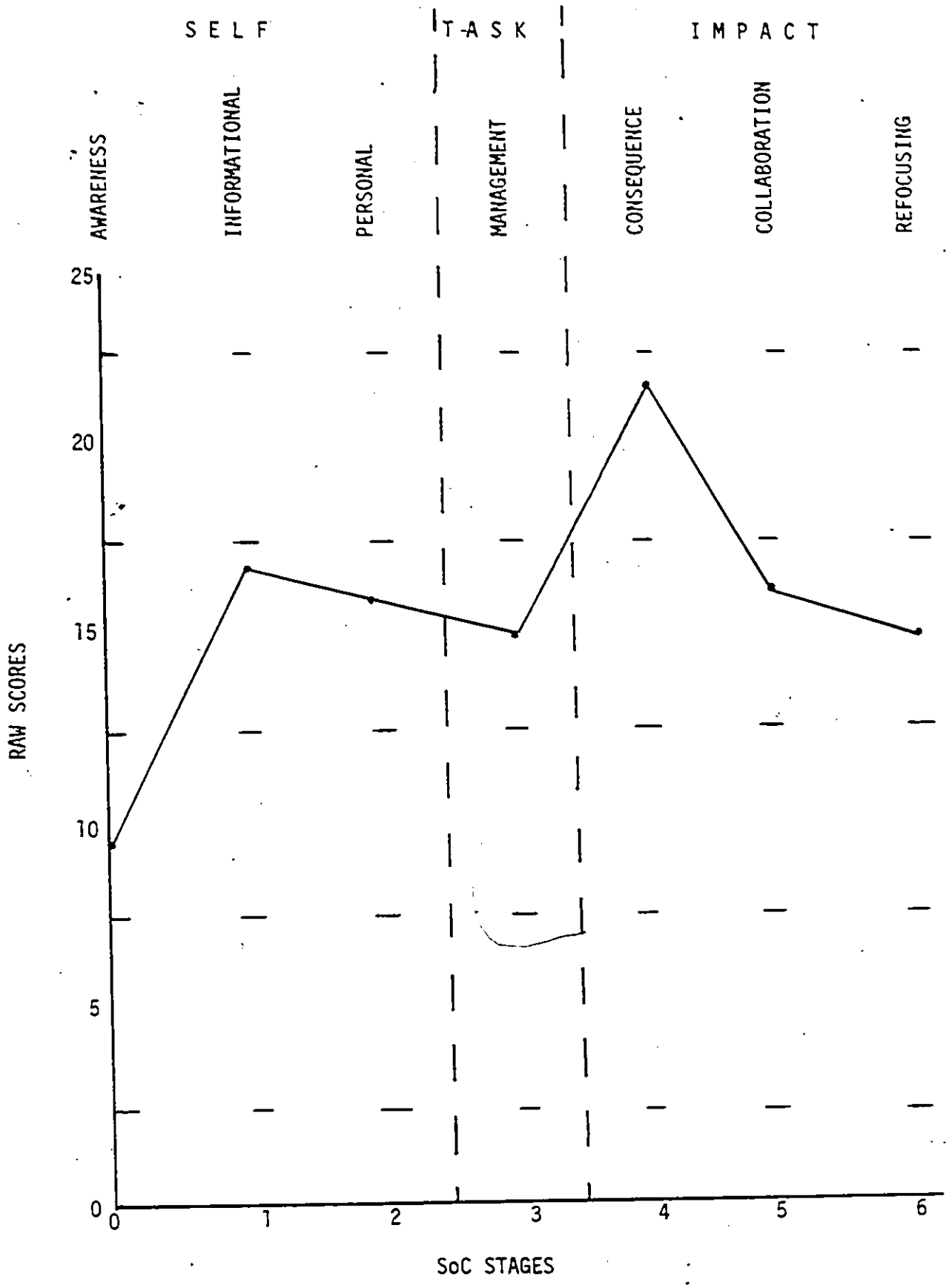
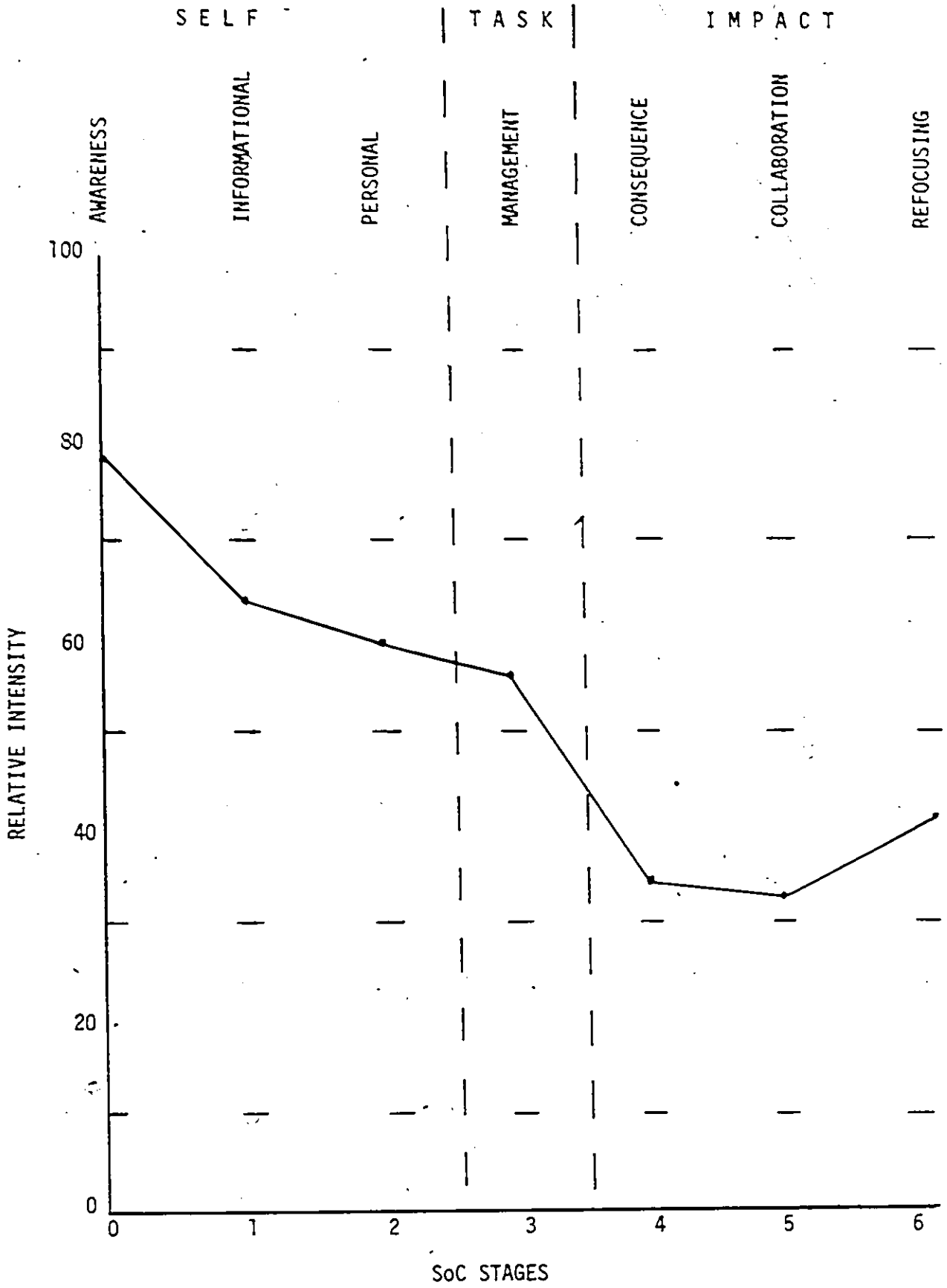


FIGURE 13

PROFILE OF STAGE OF CONCERN PERCENTILES FOR TOTAL SAMPLE (N-271)



varying degrees of intensity. In examining percentile scores, the most outstanding pattern in the data was the relative intensity of self concerns (stages 0, 1 and 2) as compared to stages 3, 4, 5 and 6 concerns. This group profile was very similar to what the developers hypothesized would exist when there were a large number of nonusers in the group. It seemed that there were numerous nonusers who were just becoming aware of the curriculum and had concerns regarding its consequences for them. It was expected that the LoU investigation would also confirm that there was a large number of non-users of the curriculum in the provincial sample.

Another identified pattern was that there were a number of users with relatively intense refocusing concerns. In general the experienced users had relatively intense management concerns (stage 3) and were more concerned about logistics, time and management concerns than on modifying the curriculum to improve its effectiveness.

ANALYSIS OF SoC DATA

This section of the data analyses chapter was designed to test the hypothesis that:

H_1 In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' school management pattern schools will exhibit a higher degree of Stage of Concern (extent of implementation) than will teachers in low management pattern schools.

Stated differently it was proposed that teachers in low SMP schools would score significantly differently on each of the SoC stages than teachers in the high SMP schools. The seven stages of the dependent variable SoC were subdivided into three aggregates.

As reviewed in chapter one, Fuller (1969, 1975) found that teacher concerns about teaching shifted from initial unconcern to having intense self concerns, to having intense task concerns, to having intense impact concerns. Although the types of concerns incorporated in the C.B.A.M. are somewhat different, as they deal with concerns of innovation users, "the same general development from self to task to impact concerns was hypothesized" (Hall, 1977, p.2). Several of the C.B.A.M. stages could be collapsed to represent Fuller's four categories as illustrated in Figure 14.

FIGURE 14

COMPARISON OF FULLER'S CATEGORIES AND THE SoC STAGES

SoC Stages	Fuller Categories
0 + 1 + 2	Unconcern + Self (S)
3	Task (T)
4 + 5 + 6	Impact (I)

The C.B.A.M. assumed that non-implementers would have relatively more intense stages 0, 1 and 2 concerns and less intense stages 3, 4, 5 and 6 concerns. For this investigation it was hypothesized that the lower SMP schools would have more non-users and higher intensity of self concerns than would the higher SMP schools.

H_{1_1} Hi SMP self < Lo SMP self

When the curriculum was initially implemented stage 3 concerns were expected to become more intense and stages 0, 1 and 2 concerns were expected to decrease in intensity.

H_{1_2} Hi SMP task > Lo SMP task

With increased sophistication of usage, stages 4, 5 and 6 concerns were expected to become more intense and so it was expected that the higher management pattern schools would have higher intensity of impact concerns on these stages than would lower SMP schools.

H_{1_3} Hi SMP impact > Lo SMP impact

The data and analyses relevant to these hypotheses are presented in Table 16. The analysis was conducted using a Hotelling T^2 test "Comparison of Two Groups with T-Tests" program from the University of California B.M.D.P. - 3.D, P series (1977, p.174). The statistical technique involved a multivariate analysis of variance using group means as the unit of analysis. The Hotelling T^2 value was used to test for significant differences between the two groups on scores on each of the SoC aggregates.

As summarized in Table 15, hypotheses H_{1_2} and H_{1_3} were accepted as it was found that the high management group had greater task and impact concerns than the low management pattern group. Although the lower SMP group had higher scores on the SoC self stages of 0, 1 and 2, the two groups were not found to differ significantly and hypothesis H_{1_1} was not accepted.

As discussed in the previous section, to strengthen the findings of the earlier analysis in which the sample was divided into two groups, the analysis was conducted again using more extreme groups on the Likert continuum. In the repeated analysis, the school sample was divided into extreme high and low SMP categories, consisting of 29 schools. The high group included those schools with SMP scores ranging from 5.71 to 7.10. The lowest group incorporated schools with SMP scores from 5.40 to 4.70. The remaining medium group, consisting of those schools ranging from an SMP score 5.7 to 5.41,

TABLE 15

RESULTS OF HOTELLING T^2 TEST FOR SIGNIFICANT DIFFERENCES ON SoC COLLAPSED STAGE SCORES BETWEEN HIGH AND LOW GROUPS (N-42 Schools)

SoC Stages	Hotelling T^2	High - Low F Value	d/f Degrees of Freedom	ρ Value
0-1-2 Self	17.5315	1.1079	15 ,255	0.349
3 Task	18.9139	3.7265	15 ,265	0.003 *
4-5-6 Impact	26.5219	1.6761	15 ,255	0.056 **

* .01 Level of significance

** .05 Level of significance

were not included in the retesting of the hypotheses.

The three hypotheses tested in section two of this chapter were re-tested using the more extreme high and low groups.

H_{1_1} Hi SMP Self < Lo SMP Self

H_{1_2} Hi SMP Task > Lo SMP Task

H_{1_3} Hi SMP Impact > Lo SMP Impact

The findings relevant to these hypotheses are presented in Table 16.

It was found that there were some clearcut concern differences between the high and low SMP groups. Teachers in high SMP schools were found to score differently than teachers in low SMP schools on the aggregated concern categories of self, task and impact concerns and hypotheses H_{1_1}, H_{1_2} and H_{1_3} were supported.

In the next section of the chapter, the data from the second dependent variable, Levels of Use, are presented and analyzed.

PRESENTATION OF LoU DATA

The Level of Use of the curriculum was determined by assessing the responses to the LoU questionnaire. In assessing the usage statements, the raters' goal was to develop a global picture of the implementer's Level of Use. In probing for the overall LoU the analysts were trained to first read through the entire individual's responses to the questionnaire and to begin differentiating whether the described actions were self, task or impact oriented. Following the overview examination, the raters focused in more detail on the substance of each answer. In this quantitative examination of the responses all statements were scored according to the LoU conceptual framework and LoU operational definitions. Each complete thought, idea or piece of new

TABLE 16

RESULTS OF HOTELLING T^2 TEST FOR SIGNIFICANT DIFFERENCES ON SoC COLLAPSED STAGE SCORES BETWEEN EXTREME HIGH AND LOW SMP GROUPS (N-29)

SoC Stages	Hotelling T^2	Low - High F Value	d/f	p
0-1-2 Self	30.7101	1.8898	15 ,168	0.027 **
3 Task	12.2298	2.3922	5 ,178	0.040 **
4-5-6 Impact	35.3154	2.1732	15 ,168	0.009 *

* .01 Level of Significance

** .05 Level of significance

information was rated and assigned a tally mark on the appropriate column on the provided rating chart. Few users were found to be consistent at a single Level of Use in all responses. The final LoU rating was not merely a direct derivation from the summed category ratings but was a gestalt of all of the responses. In an attempt to maintain a high inter-rater reliability, the raters held regularly scheduled meetings throughout the rating period and this provided an opportunity to discuss any problems that were arising. On three occasions during the rating period, questionnaires that had already been rated were selected and any discrepancies were discussed. If the overall LoU could not be decisively rated, it was so indicated in the column labled Not Enough Information (N.I.).

Each LoU questionnaire was rated twice by the two trained raters. As indicated in Table 17, 34.40% of the questionnaires required a third rating

TABLE 17

PERCENTAGE AGREEMENTS OF RATERS ON THE TOTAL NUMBER OF QUESTIONNAIRES RATED

Total Number of Question-naires	Question-naires with Sufficient Information to be Rated an LoU	Question-naires Unable to be Rated Because of Insufficient Information	Question-naires with Initial Agreement by Raters	Question-naires Decided by Third Rater	Question-naires Decided by Consensus of Three Raters	Question-naires Initially Discrepant by One Level of Use
f 274	218	56	125	75	18	35
%	79.56%	20.43%	57.33%	34.40%	8.25%	37.63%

because of discrepant ratings. A large percentage of these ratings were discrepant by only one Level of Use. In 80.64% of these remaining 93 cases the third rater agreed with one of the first two. Eighteen of the questionnaires showed three-way disagreement. These questionnaires were eventually rated by consensus reached through discussion by the three raters. In 56 cases the questionnaires could not be rated because of a lack of information.

Because of vagueness of teacher responses, it was frequently found that many answers were too questionnable to rate. Some ambiguity of response occurred because it was difficult to judge the intensity of use or the degree of commitment to future action. Despite earlier field testing the LoU questionnaire was found to have methodological problems in that insufficient information was provided in numerous cases so that raters were unable to rate an overall LoU. The frequency of failure to rate the specific Level of Use is presented in Table 18.

TABLE 18

FREQUENCY OF FAILURE TO RATE LoU BECAUSE OF INSUFFICIENT INFORMATION (N-274)

	%	F
Successful rating as to Specific LoU	79.56%	218
Rated only as Nonuser	6.56%	18
Rated only as User	5.47%	15
Unable to distinguish between either 4-A or 4-B	7.29%	20
Unable to rate at all	1.09%	3
	100%	274

Specifically there were 53 cases in which the respondents were identified as either users or nonusers but could not be further rated as to a specific LoU. As 20 of these cases occurred when raters attempted to distinguish the respondents as being either IV-A or IV-B users, obvious weaknesses in this portion of the instrument were identified. This problem area was accounted for by the fact that in assessing LoU IV-A, IV-B, V and VI, the analysis of change was vital. In establishing an individual's Level of Use it was critical that sufficient information be provided as whether changes were made, the exact nature and extent of the change and the motivations behind the changes. Frequently individuals responded in a cursory fashion to questions that solicited information regarding changes to the curriculum and insufficient information was provided. When this happened, unlike in the LoU interview format, there could be no probing for further information. In three cases so little information was provided that raters were unable to even distinguish whether or not the respondents were users of the curriculum. A specific difficulty that existed in attempting to distinguish between some IV-A and IV-B users was that some of the routine IV-A users alluded to changes made in the past (suggesting IV-B operations) but that the changes had now become routine. Individuals of this type were categorized by the raters as 'unable to distinguish between IV-A or IV-B user.' In analysing the changes or adaptations to the curriculum made by the users it was useful to examine the responses to questions 21 to 29 of the LoU questionnaire. This section of the questionnaire was developed to assess the treatment of specific science units and attempted to ascertain the following: specific omissions or additions to required content, deviations from suggested time allotments and deviations in extent of coverage of required content.

In general the members of the user system demonstrated a wide variation in their use of the curriculum. Individuals were identified at all but the sixth Level of Use (renewal); thus verifying the Concerns Based Adoption Model concept of differing Levels of Use. The distribution of the rated LoU's in the sample are presented in Table 19.

As illustrated by the findings presented in Table 20, it was found that a sizeable number (36.16%) of the teachers sampled who were supposedly using the innovation were, in fact, not implementing the curriculum.

Figure 15 depicts the distribution at all of the levels and shows that 58.67% of the sample population was implementing the curriculum at LoU III or higher. It was found that the distribution of these individuals across the various levels was not equal with the largest proportion of the sample (30.39%) being clustered at the IV-A established routine use of the curriculum. This finding of the heaviest distribution of users at LoU IV-A is consistent with the results of other C.B.A.M. studies (Hall, 1977, p.12).

The spread of the users included 13.72% of the sample teachers using the curriculum in a poorly co-ordinated manner (LoU III) and 16.66% of the teachers were refining, expanding and changing their use based on student feedback and collaboration with other users (LoU IV-B and V). No one was reported as seeking a more effective alternative to the curriculum (LoU VI) although several of the identified past-users reported eventual rejection of the curriculum for alternatives. Fourteen individuals were not presently using the curriculum but had used it in the past. It was useful to try to discover why the decision was made to discontinue using the curriculum. Specific questions in the LoU questionnaire were addressed to the past-users and space was provided on the rating sheet to indicate whether the respondent was a

TABLE 19

PERCENTAGE DISTRIBUTION OF OVERALL LEVEL OF USE

Levels of Use		Absolute Frequency	Percentage
0	Nonuse	23	11.27
I	Orientation	34	16.66
II	Preparation	23	11.27
III	Mechanical Use	28	13.72
IV-A	Routine	62	30.39
IV-B	Refinement	28	13.72
V	Integration	6	2.94
VI	Renewal	0	0
		204	100%

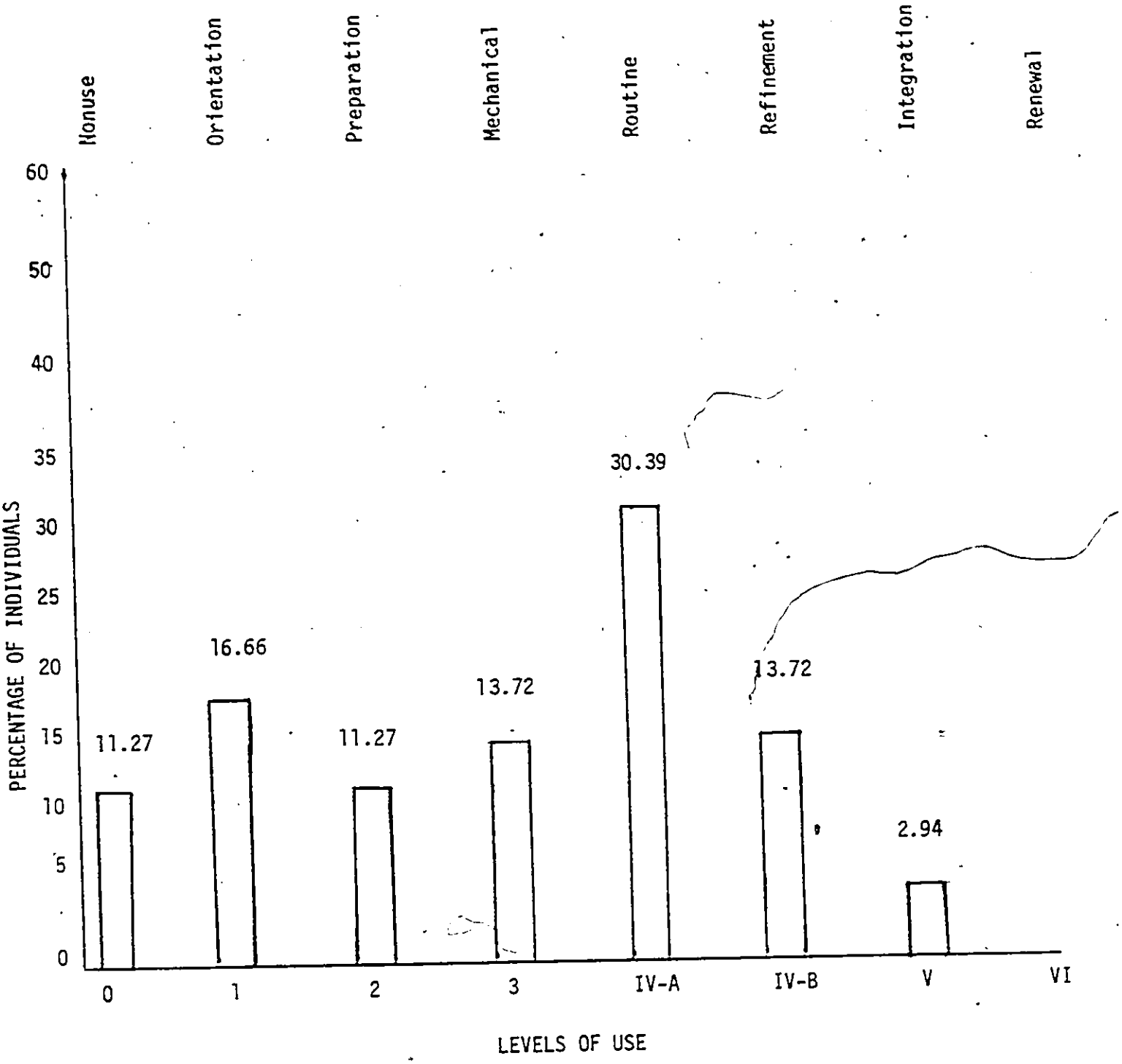
TABLE 20

PERCENTAGE DISTRIBUTION OF OVERALL NONUSERS VERSUS USERS

	Absolute Frequency	Percentage
Nonusers (LoU 0,I,II)	98	36.16
Past Users	14	5.16
Users (LoU III,IV-A,IV-B)	159	58.67
	271	100%

FIGURE 15

LoU DISTRIBUTIONS OF INDIVIDUALS IN SAMPLE (N-204)



past user. It is possible that of the 14 identified past-users, five teachers might previously have been at Level VI prior to replacing the curriculum. The distribution of few individuals (2.94%) at LoU V and none at LoU VI is explicable as research to date has found few users at LoU V and even fewer at LoU VI. Hall (1975) warned that LoU V and VI individuals are rare and easy to miss in rating (p.37).

ANALYSIS OF LoU DATA

This section of the data analysis chapter was designed to test the hypotheses that:

H_2 In elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' participatory management pattern schools will exhibit a higher degree of Level of Use (extent of implementation) than will teachers in low management pattern schools.

The second dependent variable, Levels of Use, consisted of eight discrete levels and it was necessary to subdivide the hypothesis into four subhypotheses.

As presented in chapter I the C.B.A.M. assumed that non-implementers or non-users would be at either Levels of Use 0, I or II, ranging from lack of knowledge (0) to an orientation phase (I) to preparation to begin to use (II). It was hypothesized that the lower SMP schools would be more resistant to change and would have a greater incidence of nonusage of an innovative curriculum than would high SMP schools. All individuals at LoU 0, I, II and those teachers identified only as nonusers due to a lack of information were included in the testing of this hypothesis.

H_{2_1} Hi SMP Nonusage < Lo SMP Nonusage

Conversely, it was hypothesized that the curriculum would be implemented (used) to a greater extent by the high SMP group than the low SMP group. All individuals at LoU levels III, IV-A, IV-B, V, VI and those identified only as users because of a lack of information were included in the testing of this hypothesis.

H_{2_2} Hi SMP Usage > Lo SMP Usage

The study assumed that in the curriculum implementation process there existed two types of operations: fidelity and adaptation. LoU levels III and IV-A were considered to represent a fidelity orientation in which the curriculum is maintained and used routinely with little in the way of changes.

It was hypothesized that the curriculum would be implemented to a greater extent from a fidelity perspective in high SMP schools than in low SMP schools. Teachers at levels III and IV-A were used to test this hypothesis.

H_{2_3} Hi SMP Fidelity > Lo SMP Fidelity

In this investigation it was assumed that the highest degree of curriculum implementation occurred when a process of mutual adaptation was in operation. It was hypothesized that there would be a greater incidence of curriculum adaptation to increase its impact in high SMP schools than in low SMP schools. Teachers at levels IV-B, V and VI were used to test this hypothesis.

H_{2_4} Hi SMP Adaptation > Lo SMP Adaptation

The 43 schools were grouped into high and low SMP groups according to perceived SMP. Data for each of the Levels of Use were tallied for the two groups. As a test of significant differences between the groups for each LoU aggregate, CHI square was computed. A table of probabilities associated with CHI square values was used to determine the significance of each of the values. Alpha was set at the .05 level of significance for the purposes of analyzing the

data.

The findings relevant to the testing of hypotheses H_{2_1}, H_{2_2}, H_{2_3} and H_{2_4} are presented in Table 21.

TABLE 21

SIGNIFICANCE OF PRESENCE OR ABSENCE OF TEACHERS AT COLLAPSED LEVELS OF USE IN HIGH AND LOW SMP GROUPS (N-42 SCHOOLS)

Aggregated Categories	Levels of Use Integrated	f Low SMP Group	f High SMP Group	CHI Square X^2	df	p
Usage	III, IV-A, IV-B, V, VI, User	64	95	7.489	1	.006 *
Nonusage	0, I, II, Not User, Past User	76	36	12.586	1	.001 *
Fidelity	III, IV-A	58	32	6.414	1	.011 **
Adaptation	IV-B, V, VI	1	33	31.557	1	.001 *
Past Usage		3	11	4.933	1	.026 **

* .01 Level of significance

** .05 Level of significance

In this stage of analysis, comparing the two groups on the Levels of Use aggregates, it was found that the high management patterns group had proportionately a greater frequency of usage than the low management pattern group. Conversely, the low management pattern group had proportionately a greater percentage of frequency of ratings on the nonusage levels than did the high management pattern group. The significant CHI square on combined nonusage levels (0, I, II) and on the usage levels (III, IV-A, IV-B, V and VI) confirmed hypotheses H_{2_1} and H_{2_2}.

The participatory management pattern group more frequently implemented a curriculum from an adaptation perspective than did teachers in the more authoritarian schools and hypothesis H_{2_4} was accepted. The lower SMP group had proportionately a greater frequency of ratings on usage from a fidelity perspective, but as this distribution was not in the hypothesized direction hypothesis H_{2_3} was not accepted.

The four LoU hypotheses were retested using the more extreme high and low SMP groups.

H_{2_1} Hi SMP Nonusage < Lo SMP Nonusage

H_{2_2} Hi SMP Usage > Lo SMP Usage

H_{2_3} Hi SMP Fidelity > Lo SMP Fidelity

H_{2_4} Hi SMP Adaptation > Lo SMP Adaptation

As summarized in Table 22, in examining the distribution differences on the aggregated LoU categories, teachers in high SMP schools were found to use the curriculum differently than teachers in low SMP schools. In an examination of the users (LoU III, IV-A, IV-B, V, VI) and nonusers of the curriculum (LoU 0, I, II), it was found that the low SMP group had a greater incidence of nonusage and a lower incidence of usage than did the high SMP group, thus hypothesis H_{2_1} and H_{2_2} were confirmed.

Teachers in high SMP schools were found to use the curriculum differently than teachers in low SMP schools on the aggregated usage categories of fidelity and adaptation. As the high SMP group was found to have a higher incidence of usage of the curriculum from an adaptive orientation (LoU levels IV-B and V) than the low SMP group, hypothesis H_{2_4} was confirmed. The low SMP group had a higher incidence of usage of the curriculum from a fidelity perspective

(LoU levels III and IV-A) than the high SMP group. As this difference between the two groups was not in the expected direction hypothesis H_{2-3} was not accepted.

TABLE 22

SIGNIFICANCE OF PRESENCE OR ABSENCE OF TEACHERS AT COLLAPSED LEVELS OF USE IN EXTREME SMP GROUPS (N-29 SCHOOLS)

Aggregated Categories	Levels of Use Integrated	f Low SMP Group	f High SMP Group	CHI Square X^2	df	p
Usage	III, IV-A, IV-B, V, VI	33	74	17.575	1	.001 *
Nonusage	0, I, II, Nonuser, Past User	54	22	12.108	1	.001 *
Fidelity	III, IV-A	31	15	4.886	1	.027 **
Adaptation	IV-B, V, VI	1	33	31.557	1	.001 *
Past Usage		3	10	4.085	1	.043 **

* .01 Level of significance

** .05 Level of significance

Thus, as a result of the analyses of data described in sections two and three of this chapter, six of the study's seven hypotheses were accepted.

EXTENDED ANALYSIS

In testing of the previous seven hypotheses, the study provided an opportunity for an extended analysis which resulted in a generation of additional propositions and findings. The results of the analyses used to test the main hypotheses indicated a tendency for the LoU and SoC aggregates to be related to the school management patterns. However, in an effort to prevent over

generalizing from these findings and as a first step in substantiating and further defining the relationship between the C.B.A.M. dimensions and school management patterns, it was thought to be important to analyze the trends that occurred in distribution on each stage and level. This section of the study reports on the further exploration of the differences between the SMP groups for each of the seven Stages of Concern and eight Levels of Use applying the same tests of significant differences and frequencies as used in the testing of the main hypotheses.

SoC ANALYSIS

The Hotelling T^2 value was used to test for significant differences between the two groups on scores on each of the SoC stages. In this stage of analysis, using the two groups (evenly split high and low SMP groups), it was found that the two groups had fundamentally different scores on some of the individual Stages of Concern. Table 23 indicates that there were significant differences in the teachers' scores on the SoC stages 3 and 6. Hall (1975, p.18) recommended that, in addition to conducting a series of tests of statistical differences, any patterns or trends in the data should be identified. Although not statistically significant, certain tendencies were found in the analyses. In general it was found that the high SMP group had distinctly higher concerns on stages 3, 5 and 6 than did the lower SMP group. Conversely, the low SMP group had higher scores on the SoC stages 0, 1 and 2. The anomaly was stage 4 in which the lower SMP group's concerns were slightly more intense than the high SMP group.

The analysis was repeated using the more extreme SMP groups and the findings are presented in Table 24. On examining differences between the two groups on scores for each stage, significant differences occurred in three

TABLE 23

RESULTS OF HOTELLING T^2 TEST FOR SIGNIFICANT DIFFERENCES ON SoC SCORES BETWEEN HIGH AND LOW GROUPS. HIGH(N-134) LOW(N-139)

SoC Stages	Hotelling T^2	F Value	d/f Degrees of Freedom	ρ Value
0 Awareness	8.0925	1.5944	5 ,265	0.162
1 Informational	4.8873	0.9629	5 ,265	0.441
2 Personal	6.0762	1.1972	5 ,265	0.311
3 Management	18.9139	3.7265	5 ,265	0.003 *
4 Consequence	3.2287	0.6361	5 ,265	0.672
5 Collaboration	3.4893	0.6875	5 ,265	0.633
6 Refocusing	14.8209	2.9201	5 ,265	0.014 **

* .01 Level of significance

** .05 Level of significance

TABLE 24

RESULTS OF HOTELLING T^2 TEST FOR SIGNIFICANT DIFFERENCES BETWEEN EXTREME HIGH AND LOW GROUPS

SoC Stages	Hotelling T^2 Low - High	F Value	d/f	ρ
0 Awareness	12.6041	2.4654	5 ,178	0.035 **
1 Informational	11.0266	2.1569	5 ,178	.061
2 Personal	5.1732	1.0119	5 ,178	0.412
3 Management	12.2298	2.3922	5 ,178	0.040 **
4 Consequence	8.1575	1.5956	5 ,178	0.164
5 Collaboration	2.4525	0.4797	5 ,178	0.791
6 Refocusing	20.3235	3.9754	5 ,178	0.002 *

* .01 Level of Significance

** .05 Level of Significance

cases, stages 0, 3 and 6 and a near significant difference occurred on stage 1.

LoU ANALYSIS

As a test of significant differences between the groups for each Level of Use, CHI square was computed. The data concerning the presence or absence of teachers at each LoU and the statistical significance of the differences between SMP groups are presented in Table 25.

It was found that the two evenly split SMP groups had fundamentally different frequencies of ratings on some of the individual Levels of Use. As the confirmation of hypothesis H_{2_1} and H_{2_2} showed that there were more users of the curriculum in the high SMP group than in the low SMP group; it was logical to expect a higher incidence of ratings at each usage level. There were significant differences in the distribution of teachers in the expected direction at Levels of Use 0, I and IV-B. The two groups differed significantly on LoU III but the distribution differences were not in the expected direction.

Although not statistically significant, certain tendencies were found in the analyses. In general it was found that the high SMP group had a greater frequency of rating at level V than did the lower SMP group. Conversely, the low SMP group had a higher frequency of ratings on Level of Use II. Thus, the differences in distribution of these levels were in the expected direction. The distribution of teachers in the low and high SMP group for each Level of Use is illustrated in Figure 16.

The findings relevant to the re-examination of these differences on the individual Levels of Use using the extreme SMP groups are presented in Table 26. Figure 17 illustrates the LoU distributions for the two extreme SMP groups.

It was found that there were some clearcut differences between the high

TABLE 25

SIGNIFICANCE OF PRESENCE OR ABSENCE OF TEACHERS AT EACH LEVEL OF USE (N-42 SCHOOLS)

LoU	f Low SMP	f High SMP	df	CHI Square X^2	ρ
0	19	4	1	9.138	.003 *
I	30	4	1	18.764	.001 *
II	15	8	1	1.834	.176
III	20	8	1	4.631	.031 **
IV-A	38	24	1	2.577	.108
IV-B	0	28	1	29.260	.001 *
V	1	5	1	2.847	.092
VI	0	0			

* .01 Level of Significance

** .05 Level of Significance

FIGURE 16

LoU PERCENTAGE DISTRIBUTION OF TEACHERS IN LOW AND HIGH SMP GROUPS ACCORDING TO OVERALL LEVELS OF USE

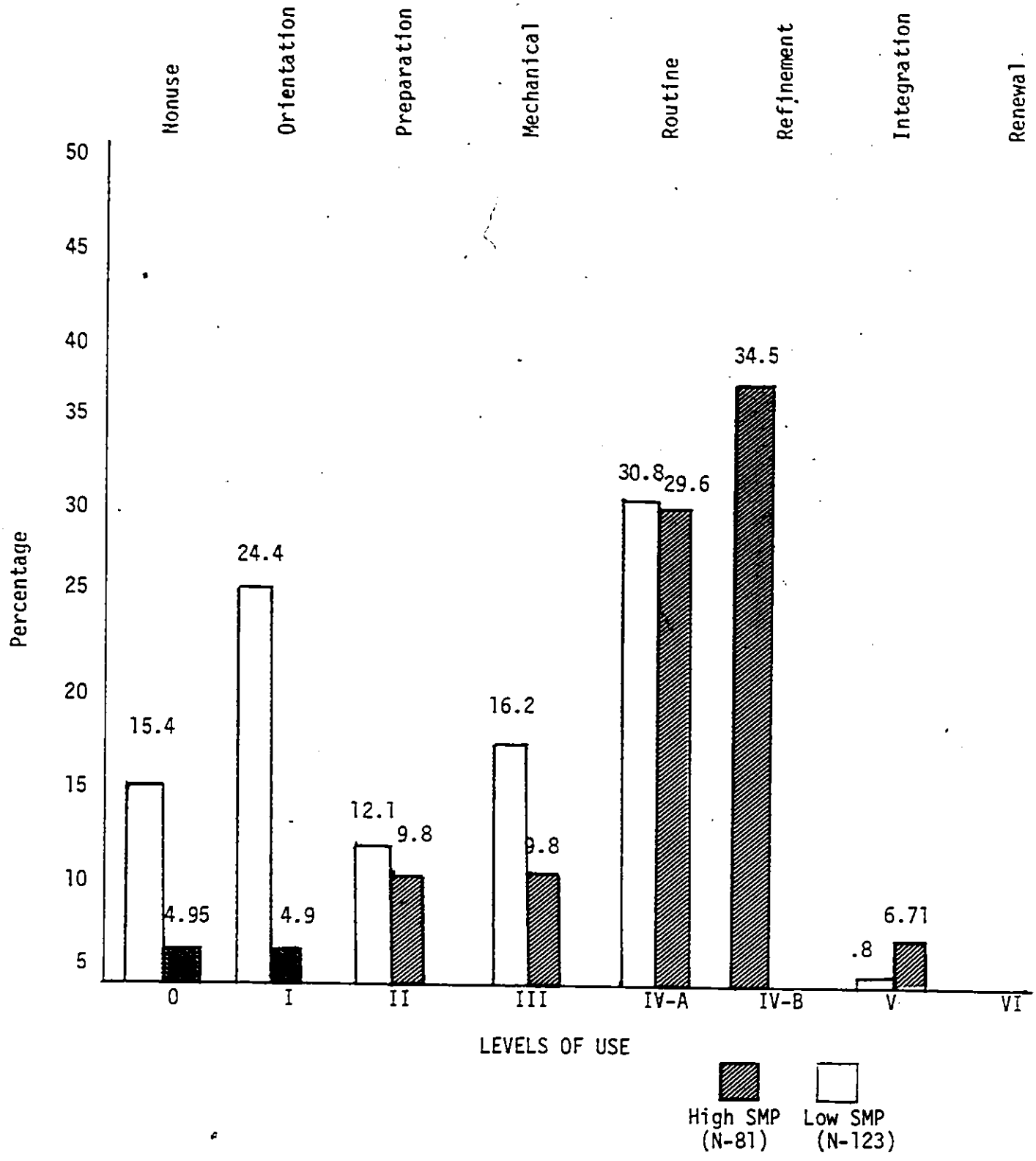


TABLE 26

SIGNIFICANCE OF PRESENCE OR ABSENCE OF TEACHERS AT EACH LEVEL OF USE IN EXTREME HIGH AND LOW SCHOOLS (N-29 Schools)

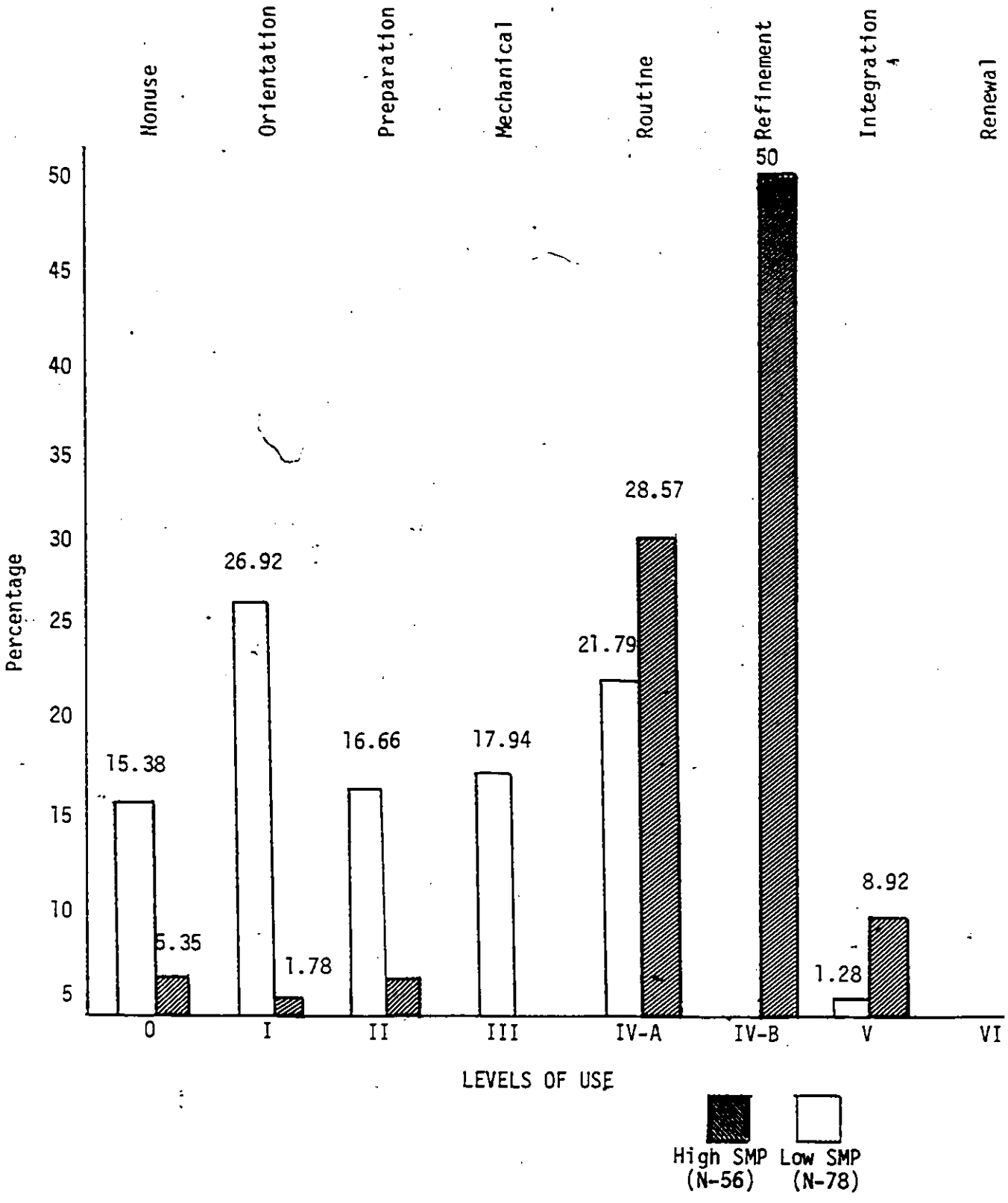
LoU	f Low SMP	f High SMP	CHI Square X^2	df	p
0	12	3	5.014	1	.025 **
I	21	1	17.321	1	.001 *
II	13	3	5.821	1	.016 **
III	14	0	13.397	1	.001 *
IV-A	17	15	0.053	1	.819
IV-B	0	28	29.260	1	.001 *
V	1	5	2.897	1	.092
VI	0	0			

* .01 Level of Significance

** .05 Level of significance

FIGURE 17

LoU PERCENTAGE DISTRIBUTION OF TEACHERS IN EXTREME LOW AND HIGH SMP GROUPS ACCORDING TO OVERALL LEVEL OF USE



and low SMP groups in teacher usage of the curriculum. On examining differences between the two groups on frequency ratings for each level, significant differences occurred on LoU levels 0, I, II, III and IV-B.

It must be noted that the results and interpretations related to the individual LoU levels must be considered tentative because of the limited number of teachers in some of the Levels of Use. In the LoU dimension it was expected that the large sample would control for any number of contaminating variables that might affect curriculum implementation. This was the case when the sample was divided into aggregates such as users and nonusers, as in testing hypotheses H_{2_1} and H_{2_2}. However testing some of the differences related to specific LoU's required dividing the sample into individuals representing each level. This presented a problem as in a number of levels (particularly at LoU V) few individuals were identified. Thus, although the sample size was not small, in a number of cases the few teachers per cell in the individual Levels of Use analysis increases the probability that the outcome would be influenced by variables other than school management patterns.

DISCUSSION OF RESULTS

In previous sections, results of data analysis were reported objectively with a minimum of interpretation. It is the purpose of this section to provide some interpretations of the findings and tendencies reported and suggest possible causes for their existence in this sample.

In general it was found that the high SMP teachers had more intense concerns on Stages of Concern 3, 5 and 6 than did the teachers in low SMP schools. Conversely, the low SMP group had higher scores on the SoC stages 0, 1 and 2 than did the teachers in the high SMP schools. The anomaly was stage 4 in which the lower SMP group's concerns were slightly more intense than the

high SMP group on four of the five items making up the stage.

The unexpected findings on stage four may be explainable in that several stage 4 SoC items have frequently failed to load on the factor. In a factor analysis of the SoC instrument used in a 1974 study, George (see Note 4) observed that items 24 and 32 of stage 4 loaded on other stages. Item 24 - "I would like to excite my students about their part in this approach" was apparently seen more as a sharing item than an evaluating of impact item and loaded with stage 5 items. The other wandering stage four item, Item 32 - "I would like to use feedback from students to change the program" loaded in stage 6. The questionability of the items incorporated into stage 4 is further evidenced by the subdivision of its LoU counterpart in the Concerns Based Adoption Model into two levels. Initially in the C.B.A.M.'s early development, the LoU dimension consisted of a level IV usage called the independent level. Based on data it became apparent to the developers that there were two kinds of users under this single classification. There were users who were comfortable in their usage and changed little, and there were those involved in changing the curriculum to increase student outcomes. Subsequently level IV was divided into IV-A routine users and IV-B refinement users. It is likely that the SoC stage 4 classification has similar problems.

Although significant differences could not be found between the two groups on all seven SoC categories, the high SMP teachers were more concerned about pupil benefit than the low SMP teachers. The high group's scores were higher and more of them had pupil concerns than the low SMP teachers. In total, the high SMP teachers had lower self concerns and expressed more intense concerns about pupils and impact of the curriculum than the low SMP teachers.

In the examination of the Levels of Use of the curriculum, the proportion

of users at each LoU were found to be unequal for the two SMP groups. Those LoU's that were not significantly related to school management patterns were IV-A and VI. Despite the differences in distribution, both groups had the greatest frequency of ratings on LoU IV-A. The tendency for this LoU to predominate is found in other LoU research (Loucks, 1975).

The failure to find anyone operating at level VI is explainable as Hall (1975), p.37) indicated that LoU V and VI individuals are rare and easy to miss in rating. It is possible that with a larger sample, a few teachers operating at LoU VI could be found and included in the testing of hypotheses H_{2_4}.

The C.B.A.M. theory proposed that some past users of a curriculum may be former LoU VI individuals who actively sought for another curriculum to replace or extend the effects of the curriculum being used. It was expected that as a result of extreme distention, adaptation and alternatives-seeking, many LoU VI individuals become past users. It was useful to examine the differences between the two groups in their frequency of past users, in order to gain insights into the existence of LoU VI individuals and their relationship to school management patterns. A CHI square test of significant frequencies found that the high SMP group had a greater incidence of past users than the low SMP group (X^2 4.085, $\rho<.043$). Thus this finding may give partial support to the proposition that teachers in high management pattern schools will have a greater incidence of level VI (renewal) usage than will teachers in low SMP schools.

As the confirmation of hypothesis H_{2_2} showed that there were more users of the curriculum in the high SMP group than in the low SMP group; it was logical to expect a higher incidence of ratings at each usage LoU and LoU user aggregates (fidelity and adaptation). As anticipated, there were differences

in the means in the expected direction for the high and low SMP groups with respect to each Level of Use with the exception of LoU III. The findings on LoU III were perplexing as they largely contributed to the rejection of hypothesis H_{2_3}. Teachers at levels III and IV-A were used to test hypothesis H_{2_3} that the curriculum would be implemented to a greater extent from a fidelity perspective in high SMP schools than in low SMP schools. Because of the contrary findings of LoU III a significant difference was found in a direction not predicted by the hypothesis. The significance found for LoU III appears to be at variance with the expectations derived from the literature.

At LoU III the user is assumed to be primarily engaged in attempting to master the tasks required by the curriculum and any changes made are for the convenience and comfort of the user. The difference in LoU III usage for the two SMP groups may be explained by Likert's assumption that when working under a management style that endorses member competition and direction supervision, subordinates will show little team work, co-operation, group loyalty and experience frustration. In a potentially threatening situation in which a new curriculum is introduced it may be expected that the more authoritarian managed group will be characterized by frequent complaining and member frustration. Thus it was understandable that the user in the low management pattern group tended to use the curriculum in a manner congruent with LoU III usage in which survival tactics were practiced and management constraints, logistics and time were reported as the focus of personal efforts to use the curriculum.

In general, the findings showed that of the users of the curriculum, teachers in the high SMP group tended to operate at Levels of Use IV-A or above, while teachers in the low SMP group tended to operate at LoU III or IV-A. To go beyond the IV-A routine usage plateau to sophisticated usage necessitated

implementers being involved in the processes of changing, collaborating and integrating. It appeared that the participatory management system offered a climate that was conducive to the functioning of these processes.

SUMMARY OF FINDINGS

Schools were classified into high management pattern (more participatory) schools and low management pattern (more authoritarian) schools on the basis of SMP scores derived from the Profile of a School instrument.

The relationships between school management patterns and the four Levels of Use aggregates were investigated using the CHI square test for significant frequencies.

The low SMP group was found to have a greater incidence of nonusage and a lower incidence of usage of the curriculum than did the high SMP group. Teachers in the high SMP group had a higher incidence of usage of a curriculum from an adaptation perspective and lower incidence of usage from a fidelity orientation than did teachers in the low SMP group. Thus, hypotheses H_{2_1}, H_{2_2} and H_{2_4} were accepted.

When the seven Stages of Concern were collapsed into the three Fuller (1975) aggregates, the two SMP groups were found to score differently on each of the three categories. The relationships between school management patterns and the three Stages of Concern aggregates were investigated using the Hoteiling T^2 multivariate test of significant differences. The high SMP group had more intense concerns about pupils and impact of curriculum and task concerns and had lower self concerns than did teachers in the low SMP group, supporting hypotheses H_{1_1}, H_{1_2} and H_{1_3}.

There were differences in the means in the expected direction for the high and low SMP groups with respect to all Stages of Concern and Levels of Use,

with the exception of Stage of Concern 4 and Levels of Use III and VI. The differences on stages 1, 2, 4, 5 and levels IV-A and V were too small to account for statistically acceptable results at $p<.05$. An examination of the relationship between school management patterns and each individual Level of Use and Stage of Concern revealed some significant relationships. Teachers in high management pattern schools had a lower incidence of level 0 (nonuse), level I (orientation) and level II (preparation) usage of the curriculum than did teachers in low management pattern schools. In addition, teachers in high management pattern schools had a greater incidence of level IV-B (refinement) usage of the curriculum than did teachers in low management pattern schools.

Teachers in high management pattern schools had more intense stage 6 (refocusing) and stage 3 (management) concerns and less intense stage 0 (awareness) concerns about the curriculum than did teachers in low management pattern schools.

The acceptance of the 6 subhypotheses resulted in an acceptance of the general hypothesis examined in the study. School management patterns were found to be related to extent of curriculum implementation.

SUMMARY OF CHAPTER

The chapter reports on the tests of the hypotheses and analysis of data that provided information concerning the relationship between school management patterns and degree of curriculum implementation.

A summary, review of the analyses, recommendations for future research and implications of the findings in this investigation are included in Chapter IV.

CHAPTER IV

SUMMARY, CONCLUSIONS AND IMPLICATIONS

The basic information contained in the preceding chapter is summarized in this chapter. The conclusions, recommendations and implications elicited from this research also are included.

SUMMARY

The population of this investigation was the elementary school teachers in the province of Manitoba, Canada. There was a sample of 552 teachers and 43 schools used in the study. The teachers in the sample responded to one of two data gathering instruments to provide the information necessary for the analyses. The independent variables, school management patterns, were classified along a continuum by the Profile of a School instrument developed by Rensis Likert and Jane Likert (1977). The implementation questionnaire consisted of two sections, Stages of Concerns and Levels of Use, and was utilized to determine the extent of curriculum implementation. The Stages of Concern questionnaire was developed and validated by researchers at the University of Texas Research and Development Center (1977). The second part of the implementation questionnaire, Levels of Use, was developed by this researcher to provide further information concerning teachers' perceived use of the curriculum. The curriculum innovation chosen for study was the Manitoba elementary science curriculum.

The writer hypothesized that management patterns were related to degrees of curriculum implementation. Each of the study's hypotheses was submitted to analysis by using the Hotelling T^2 test or the CHI square test of significant differences. The results of the study, discussed in Chapter III and summarized in Table 27, show that significant relationships were found between teacher

TABLE 27

RESULTS OF TESTING OF HYPOTHESES

Hypotheses	Aggregates	Levels of Use and Stages of Concern being Integrated	Evenly Split SMP Groups (N-42)		Extreme Split SMP Groups (N-29)	
			Differences	ρ	Differences	ρ
SoC						
H_{1_1}	Self	0-1-2	T^2	0.349	T^2	.027 **
H_{1_2}	Task	3	T^2	.003 *	T^2	.040 **
H_{1_3}	Impact	4-5-6	T^2	.056 **	T^2	.009 *
SoU						
H_{2_1}	Nonusage	0,I,II	X^2	.006 *	X^2	.001 *
H_{2_2}	Usage	III,IV-A,IV-B,V,VI	X^2	.001 *	X^2	.001 *
H_{2_3}	Fidelity	III,IV-A	X^2	.011 **	X^2	.027 **
H_{2_4}	Adaptation	IV-B,V,VI	X^2	.001 *	X^2	.001 *

* .01 Level of significance

** .05 Level of significance

perceptions of school management patterns and the extent of curriculum implementation.

CONCLUSIONS

The following discussion presents the major findings and conclusions of this analysis of school management patterns as it relates to curriculum implementation. To research the problem, a series of hypothesis were developed and tested.

Two major hypotheses were tested in the investigation. The first hypothesis examined the relationship of school management patterns to Stages of Concern about an innovative curriculum. The first hypothesis was divided into three subhypotheses and the following hypotheses were accepted:

H_{1_1} Teachers in high management pattern schools had less intense self concerns about an innovative curriculum than did teachers in low management pattern schools.

H_{1_2} Teachers in high management pattern schools had more intense stage 3 (management) concerns about an innovative curriculum than did teachers in low management pattern schools.

H_{1_3} Teachers in high management pattern schools had more intense impact concerns about an innovative curriculum than did teachers in low management pattern schools.

The second major hypothesis examined the relationship of school management patterns to the Level of Use of an innovative curriculum. The hypothesis was divided into 4 subhypotheses. In the testing of the Levels of Use hypotheses, the following hypotheses were accepted:

H_{2_1} Teachers in high management pattern schools had a lower incidence of

nonusage of an innovative curriculum than did teachers in low management pattern schools.

H_{2_2} Teachers in high management pattern schools had a greater incidence of usage of an innovative curriculum than did teachers in low management pattern schools.

H_{2_4} Teachers in high management pattern schools had a greater incidence of curriculum implementation from an adaptation orientation than did teachers in low management pattern schools.

In addition, the authoritarian managed schools were found to have a greater incidence of curriculum implementation from a fidelity orientation than did teachers in more participatory management pattern schools. Teachers in high management pattern schools had a lower incidence of level 0 (nonuse), level I (orientation), and level II (preparation) usage and a greater incidence of level IV-B (refinement) usage of the curriculum than did teachers in low management pattern schools. Concomitantly, teachers in high management pattern schools had more intense stage 6 (refocusing) and stage 3 (management) concerns and less intense stage 0 (awareness) concerns about the curriculum than did teachers in low management pattern schools.

The acceptance of the previous 6 subhypotheses resulted in an acceptance of the general hypothesis examined in the study:

> In elementary schools with an innovative curriculum developed externally to the user group, teachers in high participatory management pattern schools will exhibit a higher level of implementation (Level of Use and Stage of Concern) than will teachers in more authoritarian management pattern schools.

Three major questions were asked in the study:

1. Is there a relationship between the internal organizational characteristics of the adopting units and the degree of implementation of a curriculum developed external to the users?
2. Are certain types of organizational patterns more conducive to the implementation of innovative curricula than other types?
3. What, if any, is the relationship between an elementary school's management pattern and the degree of implementation of a curriculum developed external to the users?

The findings of the study are summarized below according to the three guiding questions.

A relationship was found to exist between the internal organizational characteristics of the adopting units and the degree of curriculum implementation. Certain school management patterns were more conducive to implementation of innovative curricula than were other types. Specifically, teachers in schools with high management pattern scores were found to implement curriculum to a greater extent than did teachers in schools with low management pattern scores. School management patterns utilizing participatory (consultative and collaborative) techniques are likely to be the most effective form of management for facilitating curriculum implementation.

The study provided evidence that an environment which supports curriculum implementation may be described in terms of Likert's management systems theory. Likert's theory that his management systems conceptualization may be used as a predictor of innovation and his proposition that a human organization

is the best type of organization to promote change were supported. Thus these findings empirically supported the innovative component of Likert's theory and extended the generalizability into the area of curriculum implementation extent as an outcome of SMP patterns.

IMPLICATIONS

The implications of relating the Concerns Based Adoption Model dimensions to school management patterns are many. The implications of this study are primarily directed at administrators and supervisors who are concerned with facilitating the curriculum implementation process at the school building level. The conclusions supported by this investigation are sufficient to provide those administrators responsible for curriculum implementation with a procedural plan for expediting implementation. An elucidation of those factors and management patterns which are related to extent of curriculum implementation should be of assistance in implementation planning. By increasing the predictive power of the theoretical link, there is potentiality for administrators to directly manipulate variables. The SoC and LoU dimensions and Likert's SMP framework can be used as heuristic devices in which their value is in providing a rational basis for planned change. The SoC, LoU and P.O.S. instruments offer ways of evaluating the school system and the implementation process. In addition, the curriculum implementation questionnaire allows the administrator to monitor changes in the curriculum implementation process in a school over a period of time. Inherent in the C.B.A.M. and Likert models are suggested relevant procedures and planned intervention strategies to accomplish the goal of curriculum implementation.

Likert's management systems model incorporates a 'human' system of management which has proven itself in business and industry and it is time

that educational management recognized the benefits of a participatory style of administration. Educational administrators should adopt more democratic principles in their school management. The association between the Likert management pattern scores and the SoC and LoU scores that was found in this study indicates that school systems interested in facilitating curriculum implementation would find the entire Likert management model a useful one.

This finding is important because with this knowledge a system of priorities can be established and developed into an overall strategy for implementation. The strategy would include; (1) institutional self-study, (2) organizational development, (3) planned change. The effective administrator would need to diagnose the user system and plan strategies to facilitate the implementation process. The administrator or principal would become a diagnostician and identify the existing environment so that appropriate change strategies could be planned. Preceding implementation efforts, the management patterns theory combined with the Profile of a School assessment instrument could indicate the capacity of the organization for implementation. The managerial styles in most of the schools studied indicated that there was substantial opportunity throughout the province for change toward more participative management. The results of this study support the recommendation that such a shift be made. In order to then plan to move an organization toward a human management model, administrators (superintendents, principals) need to acquaint themselves with the specialized techniques of participative management through study and attendance at appropriate seminars and subsequently provide in-service training for their staffs. The leadership training should stress strategies for co-operative problem-solving, team-building, participatory decision-making, open communication, goal setting and other patterns that

form the interaction-influence system of management.

Specifically the findings stress the importance of the principal leadership and staff relations to curriculum implementation. The results of this study place a large proportion of the responsibility for implementation success upon the building principal and the findings suggest that principals should spend a great deal of time interacting and communicating with the faculty. Thus it would seem fruitful and even necessary for principals to delegate the more routine administrative matters to assistants.

This research showed that in implementing a curriculum the concerns of some individuals within an institution could and did vary markedly from the group. The message contained in this research was clear: actions and planned interventions must focus on individuals not only groups and must respond to the needs of individuals. In planning for implementation, there is a need to match curriculum users with various types of presentations or interventions geared specifically to their individual needs.

It was significant that a large number of nonusers of the curriculum was found. Thirty-six percent of the sampled teachers who were supposedly using the curriculum were, in fact, not implementing it. Obviously curricular change is not accomplished just because a decision-maker or adopter has announced it.

RECOMMENDATIONS FOR FUTURE RESEARCH

A great deal of additional research is suggested by these results and the accompanying interpretations. The major recommendation of this study is the continued application of management theory to curriculum implementation research probes. The hypotheses of this study were derived from the application of management theory to the process of curriculum implementation. To gain

further understanding of the relationship between curriculum implementation and the school management system, the following is a list of further areas of research as suggested by this study:

1. The study involved gathering information about the schools at one point in time. In industry, longitudinal studies have been conducted in which the effects of the introduction of the elements of the Likert model have been measured over time to determine their relationship with outcome variables. Concomitantly, as the C.B.A.M. dimensions are considered to be developmental, numerous assessments would be required to assess the progression through the Levels of Use and Stages of Concern. Changes in school governance and degrees of curriculum implementation over time should be analysed in order to monitor their effects. A repeated measures experiment could be devised in which the questionnaires used in the study could be readministered to a unit from time to time in order to investigate the relative relationship among the variables.

2. The study involved investigating natural settings with extremely complex fields of interacting variables. This precluded the possibility of identifying the cause-effect relationships between the variables under investigation. The impact of the process of implementation upon the structure of the school should be examined in future studies. It needs to be determined what the schools were like prior to the implementation process. Thus there is a need to monitor the implementation process in a longitudinal study that includes an analysis of the historical antecedents to change.

In deriving cause-effect relationships the general patterns identified by this research could be more fully tested over time using experimental and control groups: one group could have training in the causal variables noted

by Likert and a second group with no training could serve as a control. Pre and post measures of curriculum implementation could provide the means to determine the effectiveness of the training.

3. Replications of this research with a larger or different population would be useful in substantiating or nullifying any information that may have been gained from this research and permit generalization concerning the relationship of school management patterns to curriculum implementation. This study provided some analysis of the implementation differences between different types of schools in a centralized decision-making setting. It would also be advantageous for similar analysis to be conducted in a de-centralized decision-making setting. Since the schools in this study fell in a narrower range of management patterns than that of the Likert continuum, testing the same variables under conditions that would include a wider variation of SMP scores would provide a more powerful test of the relationship between the variables.

Given the importance of the principal's administrative style on curriculum implementation, the significance of any other school administrator's style should also be analyzed in depth. It is possible that in schools which are organized along department lines, the administrative styles of the department chairmen may also significantly affect the implementation process. Since elementary schools were examined in this study and few units included had departments, administrative style at this level was not included as a variable. In general, the entire study should be replicated in middle schools, junior high schools, high schools and universities.

This study was restricted to a specific innovative curriculum in its assessment of implementation. The selected curriculum was categorized

according to the amount of change mandated by the curriculum and was classified as a variation innovation according to Normann's (1971) conceptualization. To increase the generalizability of the implementation findings, the hypotheses should be retested using different categories of innovations. Specifically an innovation from Normann's reorientation category, which requires system restructuring and value changes, should be studied.

4. The general preference found in this study was for more participatory management patterns in order to facilitate curriculum implementation. Another area worthy of further investigation would be the identification of the management techniques used by certain building principals who are perceived to be in the 'consultative' or 'participative' categories of management style. There is a need to know how these administrators actually organize and resolve the problems and decisions that arise during the implementation process. The results of the research could assist in developing more effective organizational structures for curriculum development.

More specifically, there is a need to study the interaction-influence system as it is related to specific change strategies. The effects of various implementation approaches on teachers' feelings of influence need to be determined. There is a need to study whether certain interventions by principals can change teachers LoU and SoC and to discover what are the optimal interventions for each stage and level.

5. A final major recommendation of this study is that researchers continue to explore those variables interacting within the curriculum implementation process. The identification of an increasing number of variables that interact in the curriculum implementation process will require efficient methods of data collection. A great need in research on curriculum

implementation is for instrumentation that will reliably and validly measure the conditions under study. A valuable asset in the area of implementation would be the development of various types of instrumentation for describing and analyzing curriculum implementation. This study could then be replicated using other appropriate instruments to assess the dependent variable, curriculum implementation.

Two different methods were employed to measure the extent of curriculum implementation. The first method (SoC) was a relative measure in which individual concerns were assessed for each stage. As the concerns were developmental rather than discrete, several types of concerns were experienced concurrently rather than concerns being expressed at a single stage. The second method of assessing curriculum implementation (LoU) attempted to obtain an absolute measure for curriculum implementation by asking respondents to describe their usage of the curriculum.

The relative measure proved to be the most accurate measure of the curriculum implementation process. While much was learned about the individual teachers in the implementation process by using the Stages of Concern questionnaire, the absolute measuring technique (LoU) did not prove as effective. Twenty per cent of the teachers in the sample could not be assessed as to LoU. A specific disadvantage of the LoU questionnaire was its frequent failure to obtain sufficient information regarding the specific changes. The nature of the data leads this researcher to believe that the questionning technique lacked the refinement necessary in detecting the nature and extent of change exerted on the curriculum. An advantage of the LoU questionnaire method of measurement was that it reduced ambiguity in terminology resulting from such relative terms used in the SoC as 'very true

of me' and 'somewhat true of me'. However, the above results concerning the problems of determining a measure of curriculum implementation using the LoU questionnaire do not mean that the technique should be abandoned in the future, but that the questionnaire approach of measuring Levels of Use or other alternatives to the interview technique should be further explored.

If future studies of curriculum implementation continue to view implementation as an organizational problem and employ management systems frameworks in attempting to identify the wide range of organizational variables affecting curriculum implementation, real advances will be made in curriculum implementation theory building.

In summary, in the dynamic society in which today's schools exist, curricular change is a fact of life. Available in the organizational literature are concepts and frameworks that can help principals improve their diagnostic skills, utilize people effectively and develop appropriate change strategies. Research results derived from the continued examination of school management patterns as a basis for applied organizational change should assist administrators in developing more effective structures of organization and governance.

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CONTENTS OF APPENDICES

APPENDIX I

CORRESPONDENCE

MANITOBA
DEPARTMENT OF EDUCATION

Program Development and Support Services
CurriculumServices
Telephone: 786-0317
Robert Fletcher Building
411 – 1181 Portage Avenue
Winnipeg, Manitoba
R3G 0T3

January 18, 1979

Dear

I am writing to request your help with the gathering of some information that is necessary to complete a research study I am conducting. This would involve the completion of two questionnaires by up to 10 randomly selected elementary teachers from your school. The first questionnaire is Rensis Likert's "Profile of a School" that asks general questions about the school environment and the second is a 'Stages of Concern' and Levels of Usage questionnaire that asks teachers to categorize their concerns about and use of the Manitoba Elementary Science program. The combined time required to complete both questionnaires is approximately forty minutes.

The main purpose of the research is outlined in the attached proposal abstract.

As you consider participation in this study, please be assured that all responses will be completely anonymous. If you indicate a willingness to help on the attached "School Information Form", the questionnaires will be mailed to you in a few weeks. When they are received it is recommended that you have all respondents complete them at the same time in one common location. These should then be placed in the large, stamped, return envelope and sealed while all are present. Since neither the questionnaires nor the envelope will contain any identifying marks, not even this researcher will be able to identify a given school or individual.

The two instruments being used in this research have been well developed with care being given to the statistical procedures that ensure reliability and validity. In addition to the way in which they are being utilized here, there are other ways that they can be used in schools. An extra copy of each questionnaire will be included for you to keep in the event that you may wish to make some future use of them.

It is my sincere concern that the study will aid administrators in facilitating the implementation process directed at improving education in schools in Manitoba. With this in mind I will provide you with a summary of my final report for your personal use and for sharing with your staff. I would be happy to provide additional information about any part of this study that might be of interest. May I express my appreciation for the time that you have already taken to consider this request and to return the attached "School Information Form."

Yours sincerely,

Ron Common

Enclosure: Research Proposal Abstract

SCHOOL INFORMATION FORM

(Please return this in the stamped, self-addressed envelope).

Name of Principal_____

School Telephone_____

School Name and Address_____

_____

_____

Will your school be able to participate in the study that has been described?

Yes ☐ No ☐

If you have answered yes, please list, in alphabetical order by surname, the full-time teachers who work at the Grade 1 - 6 level. Include only those teachers who have taught in your school for at least one full year.

Please indicate with an asterisk (*) those teachers currently teaching intermediate science (Grades 4-5-6).

This information will be used to randomly select a maximum of 10 teachers to complete the questionnaires.

1. _____	11. _____
2. _____	12. _____
3. _____	13. _____
4. _____	14. _____
5. _____	15. _____
6. _____	16. _____
7. _____	17. _____
8. _____	18. _____
9. _____	19. _____
10. _____	20. _____

MANITOBA

DEPARTMENT OF EDUCATION

Program Development and Support Services
Curriculum Services
Telephone: 786-0317
Robert Fletcher Building
411 — 1181 Portage Avenue
Winnipeg, Manitoba
R3G 0T3

Dear Teacher:

Thank you for your willingness to assist me in my research efforts. I am currently involved in studying the process of change in education, what happens to individuals involved in change and why. Because your school is working with a specific innovative program, I feel you are one of the best sources of information for me as I seek to learn more about the process of change. At this time, the program I would like to focus on is the new Manitoba Elementary Science Program (Interim Document - published 1974).

I am asking you to fill out the attached questionnaire which seeks to measure your present concerns about the science program. Please place the completed questionnaire in the envelope included and hand it in to the office. They will then be sent to me. As you will notice, I do not ask for your name, but I would like a number to use in my data processing. I ask that you use the last three numbers of your Social Insurance number for this.

Thank you for your help. I will be certain to report my findings to you in the hope that they will be of value in your teaching.

Sincerely,

Ron Common

Attachments:

GENERAL INSTRUCTIONS FOR 'PROFILE OF A SCHOOL'

ADMINISTERING TEACHERS

It is essential that the school principal not be present when the teachers are completing the questionnaire. For this reason you have been selected to administer them to your colleagues. As well, please complete one yourself. Administration of the questionnaire will involve:

1. Reviewing the instructions before meeting the teachers so that you are thoroughly familiar with all procedures

2. Distributing a package of materials to each teacher that includes the following:

   i) "Teachers' Information and Instructions" with attached answer sheet;

   ii) "Profile of a School" questionnaire

3. Making sure that each teacher understands that the answers are to be placed on the answer form and not on the questionnaires. Show them the sample if necessary.

4. Asking the teachers not to discuss the answers until after they have completed the questionnaires. Then collect the following materials and place them in the return envelope.

   i) "Teachers' Information and Instructions" with the attached answer form;
   ii) "Profile of a School" questionnaire.

Thank you for your cooperation and assistance.

Ron Common

INSTRUCTIONS TO ADMINISTERING TEACHER FOR THE SoC AND LoU QUESTIONNAIRE

1. Call all identified teachers together for a meeting in order to respond to the questionnaire.

2. Distribute questionnaires, along with letter explaining the purposes of the study. Briefly remind teachers of the guarantee of anonymity of responses and summarize the procedures developed to ensure anonymity.

3. Have teachers remove the identifying name tag stapled to the corner of their questionnaire.

4. Ask teachers to complete the questionnaire, place it in the blank envelope provided and seal it.

5. At the end of the session, place all sealed questionnaires in the provided mailing envelope and mail to this investigator.

6. Request any identified teacher unable to attend the meeting to complete the questionnaire at home, seal it in the envelope and return it.

INSTRUCTIONS TO PRINCIPALS

1. Arrange for the questionnaires to be completed by all teachers at the same time and same place. Please accommodate the teachers so that they will not be interrupted during the period required to complete the two questionnaires.

2. Please note that the 'Profile of a School' Instrument requires approximately 20 minutes to complete and that the 'Stages of Concern and Levels of Usage' questionnaire requires approximately 40 minutes to complete. It is not necessary that the two questionnaires be completed at the same session.

3. It is essential that the principal not be present when teachers are completing the questionnaires. For this reason select the first teacher on the list to administer the questionnaires. Ask him/her to examine the materials ahead of time to ensure that all procedures are understood. (S)he should not discuss the contents of the questionnaires with fellow teachers until all have completed them.

4. Once you have turned over all the materials to the administering teacher your involvement with the data collection is completed.

RENSIS LIKERT ASSOCIATES, INC.
Consultants in Organization Diagnosis and Human Resource Development

July 13, 1979

Mr. R.W. Common
Program Development and
Support Services
Department of Education
Robert Fletcher Building
411 - 1181 Postage Building
Winnipeg, Manitoba R3G 0T3
CANADA

Dear Mr. Common:

This is to verify that permission was given to you by Jane Gibson Likert and Rensis Likert, through Rensis Likert Associates, Inc., to use the Profile of a School survey instruments in your doctoral dissertation research. You may include a copy of the Profile of a School questionnaire in your dissertation.

Sincerely,

Raymond C. Seghers
Research Associate

RCS:pw

The Research and Development Center for Teacher Education
University of Texas Austin 78712

August 22, 1979

Mr. Ron Common
Social Studies Consultant
Department of Education
Robert Fletcher Building
411 - 1181 Portange Avenue
Winnipeg, Manitoba
CANADA R3G 0T3

Dear Ron:

Thank you for your letter of August 8th, and I am glad to know that your thesis is nearing time for reproduction. You certainly have our permission to enclose the various quotations and figures that you have outlined in your letter.

If there is any other way that we can be of assistance, please feel free to let me know.

Sincerely,

Gene

Gene E. Hall
Program Director
Procedures for Adopting
Educational Innovations/
Concerns-Based Adoption Model

/lsm

APPENDIX II

INSTRUMENTS

Concerns Questionnaire

Date Completed _____

It is very important for continuity in processing this data that we have a unique number that you can remember. Please use:

Last 3 digits Social Insurance Number ____ ____ ____

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various innovations to many years experience in using them. Therefore, a good part of the items may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale, according to the explanation at the top of each of the following pages.

For example:

0	1	2	3	4	5	6	7	This statement is very true of me at this time.
0	1	2	3	4	5	6	7	This statement is somewhat true of me now.
0	1	2	3	4	5	6	7	This statement is not at all true of me at this time.
0	1	2	3	4	5	6	7	This statement seems irrelevant to me.

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with the Manitoba Elementary Science Program. We do not hold to any one definition of this innovation, so please think of it in terms of your own perception of what it involves. Since this questionnaire is used for a variety of innovations, the name Elementary Science Program never appears. However, phrases such as "the innovation," this approach, and "the new system" all refer to The Manitoba Elementary Science Program. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with Elementary Science Program .

Thank you for taking time to complete this task.

0	1	2	3	4	5	6	7
Not true of me now				Somewhat true of me now			Very true of me now

0 1 2 3 4 5 6 7	I am concerned about students' attitudes toward the new science curriculum.
0 1 2 3 4 5 6 7	I now know of some other approaches that might work better.
0 1 2 3 4 5 6 7	I don't even know what the new curriculum is.
0 1 2 3 4 5 6 7	I am concerned about not having enough time to organize myself each day.
0 1 2 3 4 5 6 7	I would like to help other faculty in their use of the new science curriculum.
0 1 2 3 4 5 6 7	I have a very limited knowledge about the new science curriculum.
0 1 2 3 4 5 6 7	I would like to know the effect of reorganization on my professional status.
0 1 2 3 4 5 6 7	I am concerned about conflict between my interests and my responsibilities.
0 1 2 3 4 5 6 7	I am concerned about revising my use of the new science curriculum.
0 1 2 3 4 5 6 7	I would like to develop working relationships with both our faculty and outside faculty using this new curriculum.
0 1 2 3 4 5 6 7	I am concerned about how the new science curriculum affects students.
0 1 2 3 4 5 6 7	I am not concerned about this new science curriculum.
0 1 2 3 4 5 6 7	I would like to know who will make the decisions in the new system.
0 1 2 3 4 5 6 7	I would like to discuss the possibility of using the new curriculum.
0 1 2 3 4 5 6 7	I would like to know what resources are available if we decide to adopt this new science curriculum.
0 1 2 3 4 5 6 7	I am concerned about my inability to manage all that the curriculum requires.
0 1 2 3 4 5 6 7	I would like to know how my teaching or administration is supposed to change.
0 1 2 3 4 5 6 7	I would like to familiarize other departments or persons with the progress of this new approach to the study of science.

Adapted From Procedures for Adopting Educational Innovations/CBAM Project
R&D Center for Teacher Education, The University of Texas at Austin (1974).

0	1	2	3	4	5	6	7
Not true of me now				Somewhat true of me now			Very true of me now

0 1 2 3 4 5 6 7	I am concerned about evaluating my impact on students.
0 1 2 3 4 5 6 7	I would like to revise the curriculum's suggested instructional approach.
0 1 2 3 4 5 6 7	I am completely occupied with other things.
0 1 2 3 4 5 6 7	I would like to modify our use of the new science curriculum based on the experiences of our students.
0 1 2 3 4 5 6 7	Although I don't know about this new curriculum, I am concerned about things in the area.
0 1 2 3 4 5 6 7	I would like to excite my students about their part in this approach.
0 1 2 3 4 5 6 7	I am concerned about time spent working with nonacademic problems related to implementing this curriculum.
0 1 2 3 4 5 6 7	I would like to know what the use of the curriculum will require in the immediate future.
0 1 2 3 4 5 6 7	I would like to coordinate my effort with others to maximize the new curriculum's effects.
0 1 2 3 4 5 6 7	I would like to have more information on time and energy commitments required by this new curriculum.
0 1 2 3 4 5 6 7	I would like to know what other faculty are doing in this area.
0 1 2 3 4 5 6 7	At this time, I am not interested in learning about the new science curriculum.
0 1 2 3 4 5 6 7	I would like to determine how to supplement, enhance or replace the new curriculum.
0 1 2 3 4 5 6 7	I would like to use feedback from students to change the program.
0 1 2 3 4 5 6 7	I would like to know how my role will change when I am using the new science curriculum.
0 1 2 3 4 5 6 7	Coordination of tasks and people is taking too much of my time.
0 1 2 3 4 5 6 7	I would like to know how this new science curriculum is better than what we have now.

Adapted From Procedures for Adopting Educational Innovations/CBAM Project
R&D Center for Teacher Education, The University of Texas at Austin (1974).

PLEASE COMPLETE THE FOLLOWING:

1. What percent of your job is:

   teaching ___% administration ___% other (specify) _____ %

2. Do you work: full time _____ part time ___ Grade Levels you teach N-K,1-3,4-6,7-

3. Female _____ Male _____

4. Age: 20-29 ___ 30-39 ___ 40 - 49 _____ 50 - 59 _____ 60-69 _____

5. Highest degree earned:

   Certificate _____ Bachelor _____ Masters _____

6. Year degree earned: _____ 7. Total years teaching: _____

8. Number of years at present school: _____

9. In how many schools have you held full time appointments?

   one _____ two _____ three _____ four _____ five or more _____

10. How long have you been involved in the elementary science program not counting this year?

    never _____ 1 year _____ 2 years _____ 3 years _____ 4 years _____ 5 years or more _____

11. In your use of the elementary science program, do you consider yourself to be a:

    nonuser _____ novice _____ intermediate _____ old hand _____ past user _____

12. Have you received formal training in the elementary science program (workshops, courses)?

    yes _____ no _____

13. Are you currently in the first or second year of use of some major innovation or program other than the elementary science program?

    yes _____ no _____

    If yes, please describe briefly.

14. Please check to see that you have written the last three-digits of your Social Insurance number on the front page of this questionnaire. Thank you for your help.

OPEN ENDED STATEMENTS OF USAGE QUESTIONNAIRE

Please do not say what others are doing, but only what you are doing in using the new curriculum. Please write in complete sentences and please be frank. Despite the open-endedness of the questions, in most cases they should not require very extensive responses.

(1) Are you currently using the new curriculum?
Yes No

If you answered NO please turn to page 7 of the questionnaire.

(2) What do you see as the strengths of the new curriculum in your situation?

(3) What do you see as the weaknesses of the new curriculum?

(4) Have you made any attempt to do anything about the weaknesses? If so, what?

(5) Do you find using the curriculum to be somewhat overwhelming? Yes No

(6) Do you find that the demands of the curriculum make it difficult to plan more than a day or week in advance? Yes No

(7) Have you made any changes in your use of the curriculum to make your role easier? If so, please specify:

(8) What do you see as being the effects of the new curriculum? In what way have you determined this?

(9) Do you work with more than one group in the same classroom in your use of the program? Yes No. If so, how is what you teach to these groups different?

(10) Are you doing any evaluating, either formally or informally of your use of the new curriculum? If so - for what purpose?

(11) Have you received any feedback from the students? If so, what have you done with the information that you get?

(12) Are you using or following the curriculum exactly as suggested by the curriculum guide and as specifically outlined in the individual units or modules?

Yes No

If not, in what way are you using it differently and why have you made these changes (either major or minor)?

12.1 How recently were the changes made?

(13) Are you considering making any changes in the future? What? Why?

(14) As you look ahead to later this year and next, do you have any plans in relation to your use of the curriculum?

(15) Are you working with others (either teachers on staff or teachers outside your school) who are using the curriculum in your use of the curriculum?

Yes No

(15.1) If so, in what way do you work together?

(15.2) How frequently do you meet?

(15.3) What do you see as the strengths and weaknesses of this co-ordination and collaboration?

(15.4) What is the outcome of your working with other teachers in using this curriculum?

(16) Have you made any changes in your use of the curriculum based on this collaboration with other teachers?

(17) Are you exploring the possibility of making major modification to the new curriculum or are searching for other resources that could be used to replace parts of or the entire new curriculum?

Yes No

Please elaborate on any planned modifications:

(18) Would you like further assistance with the implementation of the curriculum?

Yes No

If so, please indicate as specifically as possible what kind of assistance would be most appropriate for you at this time.

FOURTH GRADE QUESTIONNAIRE

Only the classroom teacher can adjust the curriculum so that it best suits a group of students. This section of the questionnaire is concerned with the curriculum adjustments that you may make in your use of the curriculum.

Follow directions for each item. Most of the questions can be answered with a check (✓), by circling something or naming something.

19. This year, has your teaching situation required you to omit some things from the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comment?

_____

_____

20. This year, has your teaching situation required you to add some things to the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comments?

_____

_____

21. Has your teaching situation this year required you to adjust the amount of time spent on certain units or areas?

Yes ☐ No ☐

Any comments?

_____

_____

GRADE FOUR SCIENCE

22. Have you taught the following fourth grade science units? Check the appropriate column (yes or no) for each unit.

UNIT	YES	NO
1. Interdependency and interaction among organisms.		
2. Electricity		
3. Sound		
4. Structures and Forces		
5. Earth, space, and time		

23. Have you taught any science units that you believe are additions to the fourth grade curriculum? ☐ Yes ☐ No

If your answer to question 23 was yes, list the science units you added to the fourth grade curriculum.

A.

B.

C.

Use the back of this sheet for further additions.

24. If you taught the science unit on Interdependency and Interaction Among Organisms circle the number below that best describes your estimate of the extent of your teachings of this unit (circle the zero if you did not teach it).

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

25. In the same manner, circle the appropriate number for the science unit on Electricity.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

26. Do the same for the science unit on Sound.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stresse or Emphasize

27. Do the same for the unit on Structures and Forces.

0	1	2	3	
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

28. Do the same for the unit on Earth, Space and Time.

0	1	2	3	
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

29. Circle the number of minutes below that best describes the Average Daily Time spent teaching science this year. This should be an indication of your daily average, even though you may not teach science every day.

Number of Minutes

5 10 15 20 25 30 35 40 45 50 55 60

30. Do you feel that this open-ended 'statements of usage' questionnaire adequately provides an accurate description of your use of the curriculum?

Yes No

Comments:

_____

_____

_____

_____

FIFTH - GRADE QUESTIONNAIRE

Only the classroom teacher can adjust the curriculum so that it best suits a group of students. This section of the questionnaire is concerned with the curriculum adjustments that you may make in your use of the curriculum.

Follow directions for each item. Most of the questions can be answered with a check (✓), by circling something or naming something.

19. This year, has your teaching situation required you to omit some things from the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comment?

_____

_____

20. This year, has your teaching situation required you to add some things to the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comments?

_____

_____

21. Has your teaching situation this year required you to adjust the amount of time spent on certain units or areas?

Yes ☐ No ☐

Any comments?

_____

_____

GRADE FIVE SCIENCE

22. Have you taught the following Fifth Grade Science Units? Check the appropriate column (Yes or No) for each unit.

Unit	Yes	No
1. Adaptations to the environment.		
2. Forces and motion		
3. Physical and chemical changes.		
4. The earth in space.		
5. The changing earth		

23. Have you taught any science units that you believe are additions to the fifth grade curriculum? ☐ Yes ☐ No

If your answer to question 23 was yes, list the science units you added to the fifth grade curriculum.

A.

B.

C.

Use the back of this sheet for further additions.

24. If you taught the science unit on Adaptations to the Environment, circle the number below that best describes your estimate of the extent of your teachings of this unit (circle the zero if you did not teach it).

0	1	2	3	4
Did not teach	Introduced Only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

25. In the same manner, circle the appropriate number for the science unit on Forces and Motion.

0	1	2	3	4
Did not teach	Introduced Only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

26. Do the same for the science unit on Physical and Chemical Changes.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

27. Do the same for the unit on The Earth in Space.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

28. Do the same for the unit on The Changing Earth.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

29. Circle the number of minutes below that best describes the average daily time you spent teaching science this year. This should be an indication of your daily average, even though you may not teach science every day.

5 10 15 20 25 30 35 40 45 50 55 60

30. Do you feel that this open-ended 'statement of usage' questionnaire adequately provides an accurate description of your use of the curriculum?

Yes No

Comments:

_____

_____

_____

_____

SECTION A PART 2

SIXTH GRADE QUESTIONNAIRE

Only the classroom teacher can adjust the curriculum so that it best suits a group of students. This section of the questionnaire is concerned with the curriculum adjustments that you may make in your use of the curriculum.

Follow directions for each item. Most of the questions can be answered with a check (✓), by circling something or naming something.

19. This year, has your teaching situation required you to omit some things from the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comment?

_____

_____

20. This year, has your teaching situation required you to add some things to the new Provincial Science Curriculum?

Yes ☐ No ☐

Any comments?

_____

_____

21. Has your teaching situation this year required you to adjust the amount of time spent on certain units or areas?

Yes ☐ No ☐

Any comments?

_____

_____

GRADE SIX SCIENCE

22. Have you taught the following sixth grade science units? Check the appropriate column (yes or no) for each unit.

Unit	Yes	No
1. Interaction of populations with the environment.		
2. Changing and preserving our environment.		
3. Forces and machines.		
4. Electric charges.		
5. Weather		

23. Have you taught any science units that you believe are additions to the sixth grade curriculum? ☐ Yes ☐ No

If your answer to question 23 was yes, list the science units you added to the sixth grade curriculum.

A.

B.

C.

Use the back of this sheet for further additions.

24. If you taught the science unit on Interaction of Populations within the Environment, circle the number below that best describes your estimate of the extent of your teachings of this unit (circle the zero if you did not teach it).

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

25. In the same manner, circle the appropriate number for the science unit on Changing and Preserving our Environment.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

26. Do the same for the science unit on Forces and Machines.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

27. Do the same for the unit on Electric Charges.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

28. Do the same for the unit on Weather.

0	1	2	3	4
Did not teach	Introduced only	Taught Lightly	Gave Routine Attention	Stressed or Emphasized

29. Circle the number of minutes below that best describes the average daily time you spent teaching sciene this year. This should be an indication of your daily average, even though you may not teach science every day.

Number of Minutes

5 10 15 20 25 30 35 40 45 50 55 60

30. Do you feel that this open-ended 'statement of usage' questionnaire adequately provides an accurate description of your use of the curriculum?

Yes No

Comments:

_____

_____

_____

_____

IF YOU ANSWERED NO TO QUESTION #1, PLEASE ANSWER THE FOLLOWING QUESTIONS:

B. 1. Have you used the new curriculum in the past? Yes No

2. If you answered NO please turn to page 8.

3. If you answered YES please answer the following questions:

* FOR PAST USERS *

1. Why did you stop using the curriculum?

2. Can you describe for me how you organized your use of the curriculum, what problems you found, what its effects appeared to be on students?

3. When you assess the curriculum at this point in time, what do you see as the strengths and weaknesses for you?

4. Do you feel that this open-ended 'statements of usage' questionnaire adequately provides an accurate description of your use of the curriculum?

Yes No

Comments:

_____

_____

_____

_____

C. **IF YOU ANSWERED NO TO QUESTION B.1, PLEASE ANSWER THE FOLLOWING QUESTIONS:**

1. What do you see as the strengths and weaknesses of the new curriculum for your situation?

2. Are you currently looking for any information about the curriculum? What kind? For what purposes? What kind of assistance would be most appropriate for you at this time?

3. Have you decided to use the new curriculum in the future?
   Yes No

4. Have you set a date to begin use of the new curriculum?

5. What plans have you made with respect to the new curriculum?

6. Do you feel that this open-ended 'statements of usage' questionnaire adequately provides an accurate description of your use of the curriculum?

   Yes No

   Comments:

   _____

   _____

   _____

PROFILE OF A SCHOOL

form 3

teachers

This questionnaire is designed to learn more about how students, teachers, school principals, and others can best work together. The aim is to use the information to make your teaching more satisfying and productive.

If the results are to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. This is not a test, and there are no right or wrong answers.

The answers to the questions are processed by computers which summarize the responses in statistical form so that individuals cannot be identified.

To ensure complete confidentiality, please do not write your name anywhere on the questionnaire or answer sheet.

INSTRUCTIONS

1. Each question has eight possible responses. Please answer by filling in one of the numbered circles on the answer sheet. *For example, suppose that the question were:*

If you think that the sun shines "often," you would fill in circle (5) or (6). You would fill in (5) if you feel that the situation is closer to "sometimes." You would fill in (6) if you feel that the situation is closer to "very often."

2. When questions are asked about teachers or students in general, answer the questions to describe the average situation or reaction. If you do not find an answer to exactly fit your needs, use the one that is closest to it. If the question is not applicable to your situation, please omit answering that question.

3. The answer sheet is designed for automatic processing by a computer. Therefore, be sure to follow carefully the specific directions on the answer sheet for marking your responses. BE SURE TO USE THE ANSWER SHEET FOR MARKING YOUR RESPONSES, and not the questionnaire itself.

4. On the back of the answer sheet, please write the name of your school in the space provided. Also, fill in the circle that best describes your position.

   The person who is administering the survey should provide you with coding information to identify your school district, your school, department, and type of school *(elementary, junior high, etc.)*. Write the code numbers in the boxes provided. For each number, fill in the circle to the right of the box that corresponds to that number. IF YOU DID NOT RECEIVE CODING INFORMATION, PLEASE ASK THE SURVEY ADMINISTRATOR FOR IT.

5. When you have filled in the coding information, turn to the front of the answer sheet and start with question No. 1.

		RARELY		SOMETIMES		OFTEN		VERY OFTEN	
1.	How often is your behavior seen by students as friendly and supportive?	1	2	3	4	5	6	7	8
		VERY LITTLE		**SOME**		**QUITE A BIT**		**A VERY GREAT DEAL**	
2	How much confidence and trust do you have in students?	1	2	3	4	5	6	7	8
3	How much confidence and trust do students have in you?	1	2	3	4	5	6	7	8
4	How much interest do students feel you have in their success as students?	1	2	3	4	5	6	7	8
		NOT FREE		**SOMEWHAT FREE**		**QUITE FREE**		**VERY FREE**	
5	How free do students feel to talk to you about school matters?	1	2	3	4	5	6	7	8
		RARELY		**SOMETIMES**		**OFTEN**		**VERY OFTEN**	
6	How often do you seek and use students' ideas about academic matters, such as their work, course content, teaching plans and methods?	1	2	3	4	5	6	7	8
7	How often do you seek and use students' ideas about non-academic school matters, such as student activities, rules of conduct, and discipline?	1	2	3	4	5	6	7	8
		VERY LITTLE		**SOME**		**QUITE A BIT**		**A VERY GREAT DEAL**	
8	How much do students feel that you are trying to help them with their problems?	1	2	3	4	5	6	7	8
9.	How much influence do students have on what goes on in your school?	1	2	3	4	5	6	7	8
10	How much influence do you think students *should* have on what goes on in your school?	1	2	3	4	5	6	7	8
11.	How much are students involved in major decisions affecting them?	1	2	3	4	5	6	7	8
		DISLIKE IT		**SOMETIMES DISLIKE IT, SOMETIMES LIKE IT**		**USUALLY LIKE IT**		**LIKE IT VERY MUCH**	
12.	What is the general attitude of students toward your school?	1	2	3	4	5	6	7	8
		VERY LITTLE		**SOME**		**QUITE A BIT**		**A VERY GREAT DEAL**	
13.	How much accurate information concerning school affairs is given to you by students?	1	2	3	4	5	6	7	8
		VIEWED WITH GREAT SUSPICION		**SOME VIEWED WITH SUSPICION, SOME WITH TRUST**		**USUALLY VIEWED WITH TRUST**		**ALMOST ALWAYS VIEWED WITH TRUST**	
	How do students view communications from:								
	14 you	1	2	3	4	5	6	7	8
	15. the principal	1	2	3	4	5	6	7	8
		NOT WELL		**SOMEWHAT WELL**		**QUITE WELL**		**VERY WELL**	
16.	How well do you know the problems faced by students in their school work?	1	2	3	4	5	6	7	8

		VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
17.	To what extent is the communication between you and your students open and candid?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
18.	To what extent do students help each other when they want to get something done?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
19.	To what extent do students look forward to coming to school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
20.	To what extent do students feel excited about learning?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
21.	To what extent do you look forward to your teaching day?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		RARELY		SOMETIMES		OFTEN		VERY OFTEN	
22.	How often do you see the principal's behavior as friendly and supportive?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
23.	How much confidence and trust does the principal have in you?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
24.	How much confidence and trust do you have in the principal?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		NOT FREE		SOMEWHAT FREE		QUITE FREE		VERY FREE	
25.	How free do you feel to talk to the principal about school matters?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

	How often do you try to be friendly and supportive to:	RARELY		SOMETIMES		OFTEN		VERY OFTEN	
26.	the principal	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
27.	other teachers	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	How often does the principal seek and use your ideas about:								
28.	academic matters	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
29.	non-academic school matters	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		USUALLY A WASTE OF TIME		SOMETIMES A WASTE OF TIME		OFTEN WORTH-WHILE		ALMOST ALWAYS WORTH-WHILE	
30.	In your job, is it worthwhile or a waste of time to do your best?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

	How much influence do the following *have* on what goes on in your school:	VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
31.	principal	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
32.	teachers	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
33.	central staff of your school system	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
34.	students	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	How much influence do you think the following *should have* on what goes on in your school:								
35.	principal	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
36.	teachers	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
37.	central staff of your school system	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
38.	students	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		RARELY	SOMETIMES	OFTEN	VERY OFTEN
How often are students' ideas sought and used by the principal about:					
39.	academic matters	1 2	3 4	5 6	7 8
40.	non-academic school matters	1 2	3 4	5 6	7 8

		VERY LITTLE	SOME	QUITE A BIT	A VERY GREAT DEAL
41.	How much do you feel that the principal is interested in your success as a teacher?	1 2	3 4	5 6	7 8

		RARELY	SOMETIMES	OFTEN	VERY OFTEN
42.	How often does the principal use small group meetings to solve school problems?	1 2	3 4	5 6	7 8

		VERY LITTLE	SOME	CONSIDER-ABLE	VERY GREAT
43.	To what extent does the principal make sure that planning and setting priorities are done well?	1 2	3 4	5 6	7 8
44.	To what extent does the principal try to provide you with the materials, equipment and space you need to do your job well?	1 2	3 4	5 6	7 8
45.	To what extent does the principal give you useful information and ideas?	1 2	3 4	5 6	7 8
46.	To what extent are you encouraged to be innovative in developing more effective and efficient educational practices?	1 2	3 4	5 6	7 8

		NOT SATISTYING	SOMEWHAT SATISFYING	QUITE SATISFYING	VERY SATISFYING
47.	How satisfying is your work at your school?	1 2	3 4	5 6	7 8

		FROM THE TOP DOWN	MOSTLY DOWN	DOWN AND UP	DOWN, UP AND LATERALLY
48.	What is the direction of the flow of information about academic and non-academic school matters.	1 2	3 4	5 6	7 8

		VIEWED WITH GREAT SUSPICION	SOME VIEWED WITH SUSPICION, SOME WITH TRUST	USUALLY VIEWED WITH TRUST	ALMOST ALWAYS VIEWED WITH TRUST
49.	How do you view communications from the principal?	1 2	3 4	5 6	7 8

		USUALLY INACCURATE	OFTEN INACCURATE	FAIRLY ACCURATE	ALMOST ALWAYS ACCURATE
50.	How accurate is upward communication to the principal?	1 2	3 4	5 6	7 8

		NOT WELL	SOMEWHAT WELL	QUITE WELL	VERY WELL
51.	How well does the principal know the problems faced by the teachers?	1 2	3 4	5 6	7 8

		VERY LITTLE	SOME	CONSIDER-ABLE	VERY GREAT
To what extent is communication open and candid:					
52.	between principal and teachers	1 2	3 4	5 6	7 8
53.	among teachers	1 2	3 4	5 6	7 8

		USUALLY IGNORED		APPEALED BUT NOT RESOLVED		RESOLVED BY PRINCIPAL		RESOLVED BY ALL THOSE AFFECTED	
54.	In your school, how are conflicts between departments usually resolved?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
55.	How much do teachers in your school encourage each other to do their best?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		EVERY MAN FOR HIMSELF		LITTLE COOPERATIVE TEAMWORK		A MODERATE AMOUNT OF COOPERATIVE TEAMWORK		A VERY GREAT AMOUNT OF COOPERATIVE TEAMWORK	
56.	In your school, is it "every man for himself" or do principals, teachers, and students work as a team?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
57.	How much do different departments plan together and coordinate their efforts?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		AT MUCH TOO HIGH LEVELS		AT SOMEWHAT TOO HIGH LEVELS		AT QUITE SATISFACTORY LEVELS		AT THE BEST LEVELS	
58.	Are decisions made at the best levels for effective performance?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		INADEQUATE		SOMEWHAT INADEQUATE		QUITE ADEQUATE		VERY ADEQUATE	
59.	How adequate are the supplies and equipment the school has?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
60.	To what extent are you involved in major decisions related to your work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
61.	How much does the principal try to help you with your problems?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
62.	How much help do you get from the central staff of your school system?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
63.	To what extent are decision makers aware of problems, particularly at lower levels?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		HIGHLY AUTHORITARIAN		SOMEWHAT AUTHORITARIAN		CONSULTATIVE		PARTICIPATIVE GROUP	
	What is the administrative style of:								
	64. the principal	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	65. the superintendent of schools	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		NOT COMPETENT		SOMEWHAT COMPETENT		QUITE COMPETENT		VERY COMPETENT	
	How competent is the principal:								
	66. as an administrator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	67. as an educator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		LOW		ABOUT AVERAGE		QUITE HIGH		VERY HIGH	
68.	How high are the principal's goals for educational performance?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

	To what extent do the following feel responsible for seeing that educational excellence is achieved in your school:	VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
69.	principal	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
70.	department heads	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
71.	teachers	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
72.	To what extent do students accept high performance goals in your school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

IF YOUR SCHOOL HAS DEPARTMENT HEADS, GRADE LEVEL CHAIRPERSONS, OR TEAM LEADERS RESPONSIBLE FOR COORDINATION, PLEASE ANSWER THE FOLLOWING QUESTIONS. WHEN A QUESTION IS ASKED ABOUT "DEPARTMENTS" THE APPROPRIATE UNIT FOR YOUR SCHOOL IS MEANT *(DEPARTMENT, GRADE LEVEL, OR TEAM)*

IF *YOU* ARE A DEPARTMENT HEAD, GRADE LEVEL CHAIRPERSON, OR TEAM LEADER, DO NOT ANSWER THE FOLLOWING QUESTIONS. INSTEAD, ASK THE SURVEY ADMINISTRATOR TO GIVE YOU FORM 3DS.

IF THERE ARE NO DEPARTMENT HEADS IN YOUR SCHOOL, PLEASE GO DIRECTLY TO QUESTION no. 94.

		RARELY		SOMETIMES		OFTEN		VERY OFTEN	
73.	How often is the head of your department friendly and supportive?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
74.	How much confidence and trust do you have in your department head?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
75.	How much confidence and trust does your department head have in you?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		NOT FREE		SOMEWHAT FREE		QUITE FREE		VERY FREE	
76.	How free do you feel to talk to your department head about matters related to your work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

	How often does your department head seek and use your ideas about:	RARELY		SOMETIMES		OFTEN		VERY OFTEN	
77.	academic matters	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
78.	non-academic school matters	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
79.	How much influence do department heads *have* on what goes on in your school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
80.	How much influence do you think department heads *should have* on what goes on in your school?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
81.	How much do you feel that your department head is interested in your success as a teacher?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		RARELY		SOMETIMES		OFTEN		VERY OFTEN	
82.	How often does your department head use departmental meetings to solve work problems?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
83.	To what extent does your department head make sure that planning and setting priorities are done well?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
84.	To what extent does your department head give you useful information and ideas?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

		VIEWED WITH GREAT SUSPICION		SOME VIEWED WITH SUSPICION, SOME WITH TRUST		USUALLY VIEWED WITH TRUST		ALMOST ALWAYS VIEWED WITH TRUST	
85	How do you view communications from your department head?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		NOT WELL		SOMEWHAT WELL		QUITE WELL		VERY WELL	
86	How well does your department head know the problems you face?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
87	How much interaction is there between the department head and teachers in your department?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		CONSIDERABLE		VERY GREAT	
88	To what extent is communication open and candid between the department head and teachers in your department?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
89	To what extent does your department head involve you in major decisions related to your work?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VERY LITTLE		SOME		QUITE A BIT		A VERY GREAT DEAL	
90	How much does your department head try to help you with your problems?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		LOW		ABOUT AVERAGE		QUITE HIGH		VERY HIGH	
91	How high are the goals of your department head for educational performance?	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		NOT COMPETENT		SOMEWHAT COMPETENT		QUITE COMPETENT		VERY COMPETENT	
	How competent is your department head:								
92	as an administrator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
93	as an educator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

THE FOLLOWING QUESTIONS ARE FOR GROUPING YOUR RESPONSES WITH THE RESPONSES OF OTHER PERSONS OF SIMILAR BACKGROUND AND EXPERIENCE. YOUR ANSWERS WILL NOT BE USED TO IDENTIFY YOU INDIVIDUALLY.

94. Sex — MALE (1) FEMALE (2)

95. Race — BLACK (1) WHITE (2) OTHER (3)

96. Age — 25 YEARS OR UNDER (1) 26-35 YEARS (2) 36-45 YEARS (3) 46-55 YEARS (4) 56 YEARS OR OVER (5)

97. When did you first come to this school? — LESS THAN 1 YEAR (1) BETWEEN 1 AND 5 YEARS AGO (2) BETWEEN 5 AND 10 YEARS AGO (3) BETWEEN 10 AND 15 YEARS AGO (4) MORE THAN 15 YEARS AGO (5)

IF THERE ARE SUPPLEMENTARY QUESTIONS ATTACHED TO THIS BOOKLET, PLEASE MARK YOUR RESPONSES IN THE EXTRA SPACES PROVIDED ON THE ANSWER SHEET.

WHEN YOU HAVE FINISHED, PLEASE BE SURE THAT YOU HAVE FILLED IN THE *CODING INFORMATION* ON THE BACK OF THE ANSWER SHEET. THEN RETURN THIS BOOKLET WITH YOUR ANSWER SHEET. THANK YOU FOR YOUR HELP.

APPENDIX III

ABSTRACT OF:

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN SCHOOL MANAGEMENT PATTERNS AND THE DEGREE OF IMPLEMENTATION OF AN INNOVATIVE CURRICULUM

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THE PROBLEM

The problem was to determine whether there was a relationship between school management patterns and the degree of curriculum implementation.

The problem presented three questions: first, was there a relationship between the internal organizational characteristics of the adopting units and the degree of implementation of a curriculum developed external to the users? Secondly, were certain types of organizational patterns more conducive to the implementation of innovative curricula than other types? What, if any, was the relationship between an elementary school's management pattern and the degree of implementation of a curriculum developed external to the users?

The Likert school management patterns theory and the Concerns Based Adoption Model provided the theoretical frameworks in which to answer the research questions.

The study tested the hypothesis: in elementary schools with an innovative curriculum developed externally to the user group, teachers in 'high' participatory management pattern schools will exhibit a higher level of implementation than will teachers in more authoritarian management pattern schools.

PROCEDURES

The population of this investigation was elementary school teachers in the province of Manitoba, Canada. Data for this study were collected from a sample of 552 teachers in 43 schools. Three data gathering instruments were used to collect the information required to test the research hypotheses. The

independent variable, school management pattern, was classified along a continuum by the Profile of a School instrument (Likert and Likert, 1977). School management pattern was a composite measure describing the pattern of leader behavior and work group climate that exists in a specific organization. The dependent variable, extent of curriculum implementation, was assessed utilizing a Stages of Concern questionnaire (Hall, George, Rutherford, 1977) which provided a description of the individual user's thoughts, feelings and informational needs as he/she is using the curriculum. A third instrument, Levels of Usage questionnaire, was specially developed for the study to provide further information concerning teachers' perceived use of the curriculum.

In assessing degree of curriculum implementation there was a need to statistically control for the effects of the varying degrees of complexity, practicality and explicitness of various innovative curricula.

The investigation used both the Hotelling T^2 and CHI square tests of significant differences in the statistical treatment of its data.

FINDINGS

Between schools with different management patterns it was found that there were clearcut differences in the extent to which teachers implemented an innovative curriculum. The results of the study show that teacher perception of school management pattern is strongly and positively related to degree of curriculum implementation.

In general, the participatory managed schools had a greater incidence of usage of the curriculum than was found in the more authoritarian managed schools. More specifically, teachers in schools with participatory management patterns tended to modify the curriculum in light of formative evaluative data

to fit their local situation and pressing needs. Thus, the adopted curriculum underwent a process of extension and distention, while retaining its original essence. The more authoritarian managed schools tended to use the curriculum from a fidelity perspective in which there was a congruency between the curriculum prescriptions and the actual performed roles of the users. Teachers in the participatory managed schools had more intense concerns about pupils, about the impact of the curriculum and in performing their assigned tasks and had lower self concerns than did teachers in the more authoritarian schools. Concomitantly, teachers in the authoritarian schools had a greater incidence of curricular nonusage, and curricular usage from a fidelity perspective than found in the high management pattern schools. Thus, school management patterns utilizing participatory (consultative and collaborative) techniques are likely to be the most effective form of management for facilitating sophisticated usage of a curriculum.

CONCLUSIONS AND RECOMMENDATIONS

Following these main findings it was concluded that curriculum implementation was an organizational problem and that the Likert model of human management and the democratic principles embodied in it should be adopted in order to facilitate the implementation process. The findings confirm Likert's management systems theory as a predictor of innovation and extend its generalizability to curriculum implementation as an outcome.

Suggestions for further research included the undertaking of:

1. Replicative studies in a longitudinal format or with a larger or different population or using different categories of innovations.

2. Replicative studies using other appropriate instruments to assess the dependent variable, curriculum implementation.