

An Open Systems Analysis
of the School as
A Social System

by

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A Thesis

Submitted to

University of Manitoba

in partial fulfillment of the
requirements for the degree of

Master of Arts

Department of Sociology

1971



ACKNOWLEDGEMENTS

I would like to acknowledge and express my sincere appreciation to a number of people who have assisted me in the fulfillment of this thesis. I am greatly indebted to Professor Benjamin J. Hodgkins, whose patient guidance and constructive criticisms have influenced me more than any other person at the University of Manitoba. I would also like to thank Professors A. Hunter, N. Isler, K. MacIntosh, and G. Kristjanson for all their time and assistance.

To my fellow graduate students who offered their valued comments over coffee and in the study carrels, I am indebted. And finally, to my wife Pat, who sacrificed more than anyone else, my daughter Kari and new son Scott, I can never adequately express my appreciation.

ABSTRACT

The traditional approach adopted by sociologists and educators in studying the school as a social organization have been microscopic in perspective in that they have tended to focus upon either individuals within the system or upon the school as a formal organization. Although these approaches have, to a certain extent, been fruitful, they have failed to adequately relate the social nature of the school to the larger society.

In attempting to utilize a more macroscopic perspective in examining the school, this thesis has adopted the open systems theoretical framework as a means of relating certain school input and output attributes to various environmental characteristics. The conceptualization of the sociocultural environment has been primarily an adoption of the conceptual framework utilized by Herriott and Hodgkins. The method of data collection has been primarily that of survey research and the statistical methodology that of correlation coefficient analysis.

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CHAPTER 1

INTRODUCTION

A major assumption of sociologists who study education has been that an individual school system is a product of the larger social order in which it is developed and, as such, reflects its sociocultural environment.¹ Traditionally, theory and research in the sociology of education, as well as in the field of education itself, have been concerned with the factors determining the structure and functioning of the educational system. The vast majority of these works, however, reflect a perspective which has been focused primarily upon either individuals within the system (Biddle, Twyman, Rankin, 1962; Grann et.al., 1956; Bush, 1954, Wilson, 1962)² or upon the school as a formal organization (Bidwell, 1963.)³ These approaches (which, by

¹Robert E. Herriott and Benjamin J. Hodgkins, "Sociocultural Context and the American School; An Open-Systems Analysis of Educational Opportunity," Washington, D.C.: U.S. Department of Health, Education, and Welfare, USOE Final Report No. 602972, (January, 1969).

²Bruce J. Biddle, J. Paschal Twyman, Earl F. Rankin, "The Role of the Teacher and Occupational Choice, " The School Review, LXX (1962), pp. 191-206; L.R. Grann et.al., "The Relationship Between Academic Achievement of Pupils and the Social Structure of the Classroom," Rural Sociology, XXI (1956), pp. 179-180; R.N. Bush, The Teacher Pupil Relationship (New York, 1954); B.R.Wilson, "The Teacher's Role: A Sociological Analysis," British Journal of Sociology, XIII (1962), pp.15-32.

³Charles E. Bidwell. "The School As A Formal Organization," Handbook of Organizations, edited by James G. March (Chicago, 1968), pp. 972-1023

virtue of the conceptual framework utilized, can be termed "microscopic" in nature) have provided much information and led to considerable understanding of the educational system. They fail, however, adequately to relate education to the larger society.⁴ To rectify this weakness, a more "macroscopic" conceptual framework is necessary to consider more fully the interdependent nature of the relationship between education and the larger society. Utilizing such a macroscopic perspective, this study focuses upon selected social factors which, on both theoretical and empirical grounds, may be expected to be associated with significant differences in the social characteristics of the school.

From a more macroscopic but still conventional sociological perspective, educational systems in modern industrial societies can be seen as an attempt to provide members of society with the knowledge and skills essential for the preservation of the society as a modern social system.⁵ This position has been adopted by a number of sociologists

⁴Bruce J. Biddle, J. Paschal Twyman, Earl F. Rankin, "The Role of the Teacher and Occupational Choice," The School Review LXX (1962), pp 191-206, L.R.Grann et. al., "The Relationship Between Academic Achievement of Pupils and the Social Structure of the Classroom," Rural Sociology, XXI (1956), pp 179-180; R.N. Bush, The Teacher Pupil Relationship (New York, 1954); B.R. Wilson, "The Teacher's Role; A Sociological Analysis," British Journal of Sociology XIII (1962) pp. 15-32; Charles E. Bidwell, "The School as a Formal Organization," Handbook of Organizations, edited by James G. March (Chicago, 1968), pp. 972-1023.

⁵Talcott Parsons, "The School Class As A Social System", Harvard Educational Review, XXIX, (Fall, 1959), pp.297-318.

and educators in the formulation of their hypotheses regarding the purpose of the educational system. For example, Malik sees the school as "an agency for socializing the child...conditioning him to the needs and values of the society."⁶ Porter views educational systems as performing the function of training people in sufficient quantity and of sufficient quality for occupational roles in complex divisions of labor.⁷ A more detailed exposition of this view is presented by Parsons:

...the school class functions to internalize in its pupils both the commitments and capacities for successful performance of their adult roles, and... to allocate these human resources within the role structure of the adult society. Commitments may be broken down...into two components: commitment to the implementation of the broad "values" of society, and commitment to the performance of a specific type of role within the "structure" of society...Capacities can also be broken down into two components, the first being competence or the skill to perform the tasks involved in the individual's roles, and the second being "role-responsibility" or the capacity to live up to other people's expectations of the interpersonal behavior appropriate to these roles.⁸

From the above, it is apparent that Parsons views the school class as a system whose purpose is to socialize pupils so that they have both the values and the technical training necessary for their adequate integration into, and contribution to, the viability of the

⁶Anand Malik, Social Foundations of Canadian Education (Scarborough, 1969), p.4.

⁷John Porter, Canadian Social Structure (Toronto, 1967) p.27

⁸Talcott Parsons, "The School Class As A Social System," Harvard Educational Review, XXIX (Fall, 1959) pp.297-318.

larger society.

Less conventional in nature, but logically related to the above view of education, is the "general systems" conceptual framework wherein the individual school can be viewed as a component subsystem contributing to the functioning of the larger sociocultural system. Churchman, who writes within the general systems framework, contends that it is possible to think of a system as a recognizable kind of entity into which are "inputted" various types of resources and out of which comes some kind of product or service.⁹ Churchman refers to the above as the "input-output" approach to the study of systems. Through an adoption of Churchman's input-output approach an attempt is made to determine the relationship of the system inputs and system outputs to the sociocultural environment of the school system.

As previously indicated, a major assumption of sociologists who study education is that individual schools are a product of their particular environment and, as such, reflect that environment. Accepting the validity of that assumption, within the general systems perspective, we would anticipate that this reflection is evident in both the nature of the school inputs and outputs. Accordingly, the general hypothesis of the thesis to be tested is that the nature of

⁹C. West Churchman, The Systems Approach (New York, 1968). p.61

the sociocultural environment of the school is positively related to both its inputs and outputs.

The study has implications for both sociologists and educators. By treating the school as an open system, it is anticipated that the results of the study will elucidate the influence of the sociocultural environment upon both the inputs and outputs of the educational system. It is also anticipated that the results of this study will contribute to a more general understanding of the relationship between inputs and outputs within the school system and of the influence of the environment upon such relationships. Beyond these direct implications, and of more immediate significance to educators, some insight into such educational problems as equality of educational opportunity in Canadian society should be provided.¹⁰ Thus, if the results of the analysis show that school output is significantly influenced by its environment, it indirectly suggests that students in schools located in less advantageous environments may be suffering a form of system-induced inequality associated with the acquisition of knowledge and skills demanded by the larger modern society. So also, establishing a positive relationship between inputs, outputs, and environmental characteristics would suggest to educators

¹⁰ Robert E. Herriott and Benjamin J. Hodgkins, "Sociocultural Context and the American School: An Open-Systems Analysis of the Educational Opportunity," Washington, D.C.: U.S. Department of Health, Education and Welfare, USOE Final Report No. 602972, (January, 1969).

at least one partial solution to the problem of inequality of educational opportunity. The study could also suggest that centralized control of many of the variables under consideration would lead to a more uniform educational system and, hence, to an equalization of educational opportunity.

The theoretical perspective of the thesis is such that the functioning of the school system, as a subsystem of a larger system, is evaluated in terms of its relationship to that larger system - the Canadian society. Canada is assumed to be a modern society. The school system, as a subsystem of a larger social system (Canadian society) attempts to educate and socialize individuals in order that they can contribute positively to the functioning of the larger social system. From the above, then, modernization, as it is promoted and perpetuated by the school system, is viewed as being functional for the larger system. Conversely, schools which fail to promote modernization and those concepts related to it are viewed as being dysfunctional from the perspective of the larger Canadian society. This relationship between modernization and education will be discussed in Chapter II.

In summary , this thesis is concerned with the problem of the relationship of the system inputs and system outputs to certain attributes of the sociocultural environment of the school system. The conceptual approach is macroscopic in nature in that it will assume that a school system, as an open system, is a product of the larger social order and, therefore, reflects variations in

its sociocultural environment in terms of its input and output characteristics. In the following chapters, literature relevant to the problem, as stated above, will be considered, and an extended discussion of the conceptual framework will be advanced. Subsequently, operational hypotheses derived from that framework and designed indirectly to test the general hypothesis noted previously will be formulated and subjected to an empirical test.

CHAPTER II

THEORETICAL DEVELOPMENT

The problem, as developed in Chapter I, proposed that the school, as part of a social institution, functions to socialize and train people to meet the needs of the larger society, in particular, modern industrial Canadian society. As noted in Chapter I, previous research in the sociology of education has dealt with the school as a closed system and has analyzed either the individuals within the organization or the formal organization itself from this closed system perspective--a perspective which, for analytical reasons, views a system as functioning independently of environmental constraints. The question then arises as to whether the differing schools within the larger society perform the same function--that of providing inputs (teachers) and producing outputs (students) that are consistent with the requirements of the larger social system. Such a question is difficult to answer using the traditional perspective. Accordingly, the outcome has shed little light on the influence of the relationship between a school and its environment. Through an open systems analysis of the school, an attempt will be made to determine the extent to which individual schools, as products of their environments, reflect the salient features of their particular environment insofar as system input and system output is concerned.

Within the general systems framework to be employed in

the following discussion, the major concepts of system (open and closed) and environment are of particular relevance. As previously suggested, the idea of conceptualizing the school as an open social system interacting with, and adapting to its environment, is central. Input, output, purpose, and energy, concepts directly related to that of an open system, will be discussed. For the purpose of this study, the concept of environment is dealt with in terms of one distinctive characteristic--its degree of modernity, particularly as it relates to education. This relationship will be discussed, and a rationale developed for the use of the concept of modernization in measuring environmental variation.

The School As A Social System

Because they are dependent upon the conceptual framework of the theorist, definitions of social systems vary considerably. For example, within traditional sociological theory, there are:

(1) definitions which are very broad and abstract in their perspective--

"Any system of interactive relationships of a plurality of individual actors is a social system";¹ (2) definitions which are more

restrictive in nature-- "It is possible to think of a system as a recognizable kind of entity into which are inputted various types of resources and out of which comes some kind of product of service."²

¹Talcott Parsons, and Edward A. Shils, Toward a General Theory of Action, (Cambridge, Massachusetts: Harvard University Press, 1959), p.26

²C. West Churchman, The Systems Approach (New York: Dell Publishing Co., Inc., 1968), p.61

The foregoing illustrates that no definition is exhaustive, but rather, that a definition merely emphasizes the perspective and concern of its particular author. In viewing the school as an open system, the thesis will focus upon and discuss in depth only the system concepts relevant to this study.

As noted above, social systems are purposive or goal oriented.³ The nature of this goal orientation is determined by the demands of the system's environment. Because the school is essentially a subsystem of the larger social order (its environment), and, as such, exists primarily to fulfill a specific need of that environment, its purpose or goal orientation is, in essence, determined by that environment. Further, in functioning to fulfill the needs of its particular environment, each individual school, as a social system, will reflect that sociocultural environment.

Implicit in the above is the notion that a boundary exists between the social system and its environment. Questions then arise as to the location and nature of the boundary. It must be recognized that the boundary between a social system and its environment is arbitrary, that is, it is dependent upon the intent of the analysis as defined in the study. The school, as a social system is in interaction with its environment at its boundary--inputs enter the

³Robert E. Herriott and Benjamin J. Hodgkins, "Sociocultural Context and the American School: An Open-Systems Analysis of Educational Opportunity," Washington, D.C.: U.S. Department of Health, Education and Welfare, USOE Final Report No. 602972, (January, 1969), p.52.

system vis à vis this boundary and outputs enter the environment vis à vis this boundary.

As indicated earlier in this chapter, the concept of energy is central to the understanding of the functioning of open systems, for it is through an energy exchange between a system and its environment, that a system is able to sustain itself.⁴ Social systems are selective in regards to the differing types of energy that they exchange with their environments, for some energy inputs are more highly valued than others for the system's survival. In the case of an individual school, for example, energy may vary from that which is purely physical (money needed to operate the school) to that which is ideological (ideas of personnel in the school system.)⁵

The concepts of input and output were briefly mentioned in conjunction with the concepts of energy and system-environment boundary. In referring to social or sociocultural systems, energy inputs typically designate those elements (information, personnel, services performed by the personnel, or physical materials of the system) which the system must receive from its environment in order to sustain itself within that environment. Like the inputs, the outputs of a social system may be in the form of information, personnel, services, or physical materials. Every social system (the school) must be judged by its environment as producing a desirable output

⁴ Ibid.

⁵ Energy variations may occur in either inputs or outputs.

(student) if it is to receive the inputs (monies, teachers) necessary for its continued functioning. Such environmental judgment of system worthwhileness is based on positive and negative feedback concerning the deviations of the system from its purpose (students failing to complete their education.)⁶ Both positive and negative feedback result in energy input to the system.

In summation, a social system can be conceptualized as a set of relationships, purposive in nature, open to environmental influence, and exhibiting relative stability over a period of time. Generally, viewed as a subsystem of yet a larger social system which constitutes its sociocultural environment, its purpose is seen to be determined by that environment. At the conceptual level, the boundary between a system and its environment is, of necessity, defined in an arbitrary fashion according to the analytical purpose of the study. Given this definition, energy exchange between a system and its environment is seen to cross this boundary at two points-- initially, input energy passes from the environment and enters a system across this boundary and, subsequently, output energy passes from the system and enters the environment across this boundary.

Environment

The conceptual definitions regard "system" as a unit in

⁶Herriott and Hodgkins, op.cit., p.57.

interaction with its environment. Similarly, it is the contention of this study that the school, as a complex organization, is a social system in interaction with its environment at its boundary-- inputs move into the system across this boundary, outputs move into the environment across this boundary. The boundary, as indicated earlier, is purely arbitrary and, therefore, becomes simply an analytical definition. Implicit within a definition of environment, as it relates to the social system, must be the notion that individual school systems have particular environments dependent upon the unit of analysis and these environments may be considered as "those objects or relationships which exist outside of the system but significantly influence or are influenced by it."⁷ The relationship between the school, as a subsystem of the larger system, and its environment is one of interdependency--the school being dependent upon its environment for inputs, the environment being dependent upon the school for outputs.

The immediate problem, then, is that of determining what types of environments demand what types of outputs and, in turn, supply what types of inputs to their subsystems and, secondly, to differentiate among the types of sociocultural environments in which the subsystems are located. The environment of each individual school will have distinctive features and will exhibit different characteristics vis à vis such things as its degree of economic control

⁷Ibid., p.51.

over the school and the influence of social and cultural variables upon the school. These differences among school environments are pertinent to variant structural and functional characteristics of the individual schools, for it is within its particular environment that the school's purpose (goal orientation) is determined. The school's institutional role, then, is determined in considerable measure by the external pressures exerted upon it by its environment. Criteria are developed which readily distinguish the differences among schools: (1) environmental differences in which schools are located and (2) differences which, as a result of environmental differences, lead to structural and functional variations in the nature of the school inputs and outputs.

The major criteria to be used in determining environmental variations is differences in the degree of environmental "modernization." The term modernization has a variety of meanings.⁸ For example, it often connotes a "faith in science and technology"--both involving a high degree of specialization.⁹ More descriptively, however, Wood writes that "modernization is directly related to the quality of scientific knowledge and technical skills."¹⁰ Further, societies

⁸Myron Weiner, editor Modernization (New York: Basic Books Inc., 1966).

⁹Neil J. Smelser, "The Modernization of Social Relations," Modernization, edited by Myron Weiner (New York Basic Books Inc, 1966) p.4.

¹⁰Robert Wood, "The Future of Modernization," Modernization edited by Myron Weiner (New York: Basic Books, Inc., 1966), p.40.

generally viewed as modern are characterized by transportation, communication, business and educational systems that tend to become larger and more centralized. Per capita income is higher in more modern societies, and the population tends to be more urban.¹¹ It would appear that modernization is directly related to the quality of scientific knowledge and technical skills and can, therefore, be seen as a process in which scientific knowledge and technical skills bring about technical, economic and ecological changes throughout the whole social and cultural fabric of the society.

In summary, it has been suggested that modernization seems to involve: (1) the introduction of a new technology and (2) the social acceptance of the consequences of that technology in both technological and nontechnological areas of social life. Accordingly, following Herriott and Hodgkins, modernization will be defined as the social change..."toward an ideal modern state of society wherein the structure and organization of social behaviour are maximally adapted to the use of the most advanced technological knowledge for the ultimate material benefits to be derived from its efficient utilization."

Given the above definition, it is possible to suggest that knowledge, applied technologically, is the primary input into a society which is becoming more modern. This technological

¹¹Cyril Edwin Black, "Change as A Condition of Modern Life," Modernization, edited by Myron Weiner (New York: Basic Books, Inc. 1966), p.40.

¹²Herriott and Hodgkins, op.cit., p.33.

application need not be only in the form of machine implementation, but can involve the systematic, efficient application of knowledge by a person, as is evidenced in individual specialization (the medical profession.) As the modernization process increases, a greater emphasis is placed on knowledge, training, and educating as the inputs and the outputs of the modernization process. In this process of increasing modernization, educational institutions become the emblems of modernity,¹³ the institutional instruments for the creation of modernization.

From the preceding, it is evident that the relationships between modernization and technology and between technology and education are strong. The effect of education upon the development of modernization within a society is probably greater than the effect of any other single variable.

Canada, a modern society, requires individuals socialized and trained in such a manner that they will be able to further the modernization process within the society. But, if the school is viewed as the institutional instrument for the implementation of modernization, do all Canadian schools, regardless of the sociocultural environment in which they are located, perform the function of training and socializing the individuals within them to meet the needs of the larger society? Following Herriott and Hodgkins, this thesis contends that, within a particular society, it is possible to observe various

¹³ Edward Shils, "Modernization and Higher Education," Modernization, edited by Myron Weiner (New York:Basic Books, Inc.1966), p.81.

institutional and sociocultural contexts which are at varying stages of evolutionary development from the traditionalist to the modern, and further, that the variation in the ideology and values of these different sociocultural contexts within a given society allows for the identification of the variation among the organizations (the schools) themselves.

Earlier, reference was made to the school as a formal organization or, synonymously, a complex organization. A complex organization is simply one type of social system--a social system "...established for the explicit purpose of achieving certain goals."¹⁴ Like definitions of social systems, definitions of complex organizations may be formulated from within the closed or open system perspective. Two of the more relevant definitions, for the purpose of this study, are those offered by Thompson and Parsons. Thompson defines an organization as "...a set of interdependent parts which together make up a whole because each contributes something and receives something from the whole, which in turn is interdependent with some larger environment."¹⁵ From Thompson's definition emerges an awareness of the inter-relationships both within the organization and between the organization and its environment. Parson's definition recognizes the purposiveness and the input-output orientation of an organization--"

¹⁴Herriott and Hodgkins, op. cit., p.54.

¹⁵James D. Thompson, Organizations In Action (New York: McGraw-Hill Book Company, 1967), p.6.

...a system which, as the attainment of its goal, "produces" an identifiable something which can be utilized in some way by another system: that is, the output of the organization is, for some other system, an input."¹⁶ The Canadian school system, as a complex organization is purposive and interdependent--its purpose is determined by the environmental constraints within which it must operate; its interdependency occurs as a result of its receiving inputs from its environment in order to sustain itself while at the same time supplying its environment with outputs suitable for the functioning of the larger system.

In summary, the two preceding sections (social systems and environment) have sought to explicate on the conceptual level the interdependency of a social system and its sociocultural environment. Such an interdependency is seen to focus upon the exchange of energy received from a system's environment (input), and that energy a social system supplies to its environment (outputs). At an abstract level, the significance of this systemmic-environment interdependency was seen to be evident in the nature of the school-environment relationship, insofar as variation in what has been defined as the modernization of the environment influences inputs, structure, and outputs of the school as a social organization.

¹⁶Talcott Parsons, "Suggestions for a Sociological Approach to the Theory of Organizations," Administrative Science Quarterly, I, No. 1 (June, 1956), pp.63-85.

Related Research

Research dealing with the school as a social organization has, traditionally, been dealt with only marginally, especially in the analysis of the Canadian educational system. The perspective proposed by this thesis--open systems analysis--has been considered even less. The review of the literature in the area will concern itself with the major study variables (inputs, outputs, and environment) and the findings, where appropriate, will be interpreted from within the perspective of this thesis.

In recent years, a number of studies dealing with the school and environmental factors as they relate to pupil-teacher attributes and school effectiveness, measured in terms of student achievement and academic aspirations, have been undertaken. The majority of the studies have involved the analysis of education in the United States. A number of variables in these studies are particularly pertinent for this thesis. Generally speaking, these variables can be broken down into four areas: (1) school factors, (2) teacher factors, (3) student or pupil factors, and (4) environmental factors. School factors are dealt with largely in terms of school effectiveness vis à vis student achievement. But, because these variables are primarily structural (age of school, size of school, financial expenditures such as library and textbooks per pupil) and are not to be considered within the framework of this study, literature relative to this particular area will not be discussed.

The vast majority of research in the area suggests the overriding importance of various types of environmental factors in the determination of student aspirations and achievements. Very often, however, the results of the various studies lack conclusiveness in regards to the relative importance of specific environmental factors. The first section of the chapter will outline what the author considers to be the major weakness of current research in the area. An example may serve to explicate this consideration.

Wolfe, in attempting to discover the factors which determine who continues in school in the United States, divided the factors into two categories: (1) factors which are essentially related to school progress--abilities which can be measured by standardized aptitude tests, records of satisfactory school work, money, the student's own desire for an education; (2) factors which are related, but not necessarily essential, to school progress--sex, cultural background, geographic location, and ethnic and religious background.¹⁷ Wolfe's second set of variables, with the exception of sex, are environmental. A close examination of Wolfe's list of essential variables raises the question as to the mutual exclusiveness of the two categories--to what extent is money, desire for education, ability and level of school work a product of environmental conditions?

¹⁷ Dael Wolfe, America's Resources of Specialized Talent (New York: Harper and Brothers , 1954), p.140.

The foregoing suggests that there is a need for research capable of making more macroscopic distinctions among varying types of environments--macroscopic distinctions which could be related to the more specific variables used in the majority of the research to date. The second section of Chapter II will report and comment upon the non Canadian research in the area.

Folger and Nam, in Education of the American Population,¹⁸ provide an excellent review of much of the literature pertaining to education in the United States. As is the case with most of the research, the studies reported deal with the influence of specific environmental factors upon the student population. In summary, the various studies indicate the following:

- (1) Ethnic variation influences student drop-out rate. (Japanese and Chinese have the lowest drop-out rate, Negro and Indian the highest.)¹⁹
- (2) Differentials in enrollment rates by urban-rural residence were slight at ages within the compulsory attendance range. As students increased in age, over 16, the differentials became wider, although not especially great.²⁰

¹⁸ John K. Folger and Charles B. Nam, Education of The American Population. (Washington, D.C.: U.S. Government Printing Office, 1967),

¹⁹ Ibid., pp. 37-38.

²⁰ Ibid., p.37.

- (3) The higher the family income, the higher was enrollment rate of children and youth.²¹
- (4) The higher the parents educational attainment, the lower was the student drop-out rate.²²
- (5) Dropping out of school before high school graduation is more characteristic of youths from low-status families than of youth from high-status families.²³

In regards to higher education, Folger and Nam report:

- (1) The kind of community in which one lives is related to college attendance--proportionally, fewer farm students plan to attend college than is the case with rural non-farm and urban students.²⁴
- (2) Among those students actually attending college in the year they graduated from high school, the proportion coming from white-collar families was about twice that from other families, and the percentage whose family income exceeded \$10,000 was $3\frac{1}{2}$ times as great as the percentage whose family income was less than \$4,000.²⁵

²¹Ibid. p.41.

²²Ibid. p.40.

²³Ibid., p.47.

²⁴Ibid. P.59.

²⁵Ibid., p.60.

- (3) Proximity of a college to a potential student's home is a factor affecting college enrollment-- those potential students living near a college are more apt to attend than are potential students living further away.²⁶

Conclusively, this report by Folger and Nam illustrates the importance of specific environmental factors upon student academic success.

Other studies dealing with environmental factors indicate the importance of the environment upon a student's aspirations and achievement. But, again, these studies often focus upon one, or perhaps two, specific factors, often to the exclusion of other variables which might influence the results of the research. In other words, it might be argued that much of the previous work has not developed a complete picture of the environment. Examples of research dealing with specific variables are those by Haller and Sewell (1957), Middleton and Grigg (1959), Sewell (1964), and Chepra (1968).²⁷

²⁶Ibid., p.65.

²⁷Archie O. Haller and William H. Sewell, "Farm Residence and Levels of Educational and Occupational Aspirations," American Journal of Sociology, LXII (January, 1957), pp.407-411; Russel Middleton and Charles M. Grigg, "Rural-Urban Differences in Aspirations," Rural Sociology XXIV (December, 1959), pp.347-354; Sukhendra Lal Chepra, "Measured Intelligence and Academic Achievement as Related to Urban-Rural Residence," Rural Sociology, XXXIII (June, 1968), pp.214-217.

These studies indicate lower levels of educational and occupational aspirations among farm and rural as opposed to non-farm and urban students. Along the same lines, Burchinal,²⁸ in a sample of tenth and twelfth grade boys, found that the lowest levels of educational and occupational aspirations were observed for farm boys and the highest for metropolitan boys at both grade levels. The results of the above research may be interpreted as indicating that, within urban environments, the predominant value system emphasizes higher educational and occupational aspirations than the value orientation found in rural environments. The question, of course, is what are these value orientations or factors--cultural values, financial inputs, or a combination of a number of factors? Previous research has tended to overlook the underlying reasons for these differences.

Haller,²⁹ in a study of occupational achievement of farm-reared youth in urban-industrial society, concludes that most farm people appear to be more oriented to life styles and beliefs relevant to agriculture than to other ways of life. Haller points out that one belief is that change is of doubtful value and boys who do not plan to farm, need little college or university education.

²⁸ Lee G. Burchinal, "Differences in Educational and Occupational Aspirations of Farm, Small-Town and City Boys," Rural Sociology, XXVI, (June 1961), pp.107-121.

²⁹ Archie O. Haller, "The Occupational Achievement Process of Farm Reared Youth in Urban-Industrial Society," Rural Sociology, XXV, (September, 1960), pp 321-333.

Interpreted from within the perspective of this thesis, it can be seen that environmental factors are extremely important in socializing the individuals within the environment. Viewing the school as a subsystem of the larger sociocultural system, it is reasonable to assume that the school reflects the dominant value perspective of its environment.

Other studies (Bennett and Gist; Sewell; Sewell, Haller and Strauss)³⁰ report that student educational and occupational aspirations are positively related to socio-economic status. Students, whose parents have higher socio-economic status, desire more education and occupations requiring a greater amount of education than do students whose parents have lower socio-economic status. In regards to student achievement, Kahl (1965), Sewell and Armor (1966)³¹ focusing on the relationship between student-community characteristics and the nature of student achievement and aspirations, reported that socio-economic status indices are the greatest predictors of achievement and college attendance rates.

³⁰W.S. Bennett and N.P. Gist, "Class and Family Influences on Student Aspirations," Social Forces XLIII (December 1964), pp.167-173. W.H. Sewell "Community of Residence and College Plans," American Sociological Review, XXIX (February, 1964), pp.24-38. W.H. Sewell, A.O.Haller and M.A.Strauss, "Social Status and Educational and Occupational Aspirations," American Sociological Review, XXII (February, 1957) pp.67-73.

³¹J.A.Kahl, "The 'Common Man' Boys" Education, Economy and Society (New York; Free Press of Glenco, 1961) pp.348-366. W.H. Sewell and J.M. Armor, "Neighborhood Context and College Plans," American Sociological Review, XXXI (1966), pp.159-168.

Research, dealing with the relationship between various teacher attributes on the one hand and the relationship of these attributes to student aspirations and achievement on the other, has concerned itself with such factors as median teacher age, median years of teaching experience, years of education, I.Q. level, and teacher socio-economic factors. Traditionally, studies emphasizing these variables have done so without adequately considering the effects of environmental factors upon both the teachers and the pupils. A number of studies have indicated a positive relationship between teacher qualification and student achievement (Boyle, 1966; Kahl, 1965; Sewell and Armor, 1966; Wilson, 1959).³² The above studies reported that teacher characteristics in terms of their level of education and I.Q. are positively correlated with student achievement and aspirations. Burkhead (1967)³³, who studied high school education in two large American cities, Chicago and Atlanta, found no significant correlation between teacher experience, education, and teacher pupil ratio on the one hand and student drop-out rate on the other. Burkhead's conclusion was that out-of-school variables such as socio-economic ones in Chicago and family income and housing conditions in Atlanta were much more important in determining differences in school outputs than were in-school variables. Stephenson, attempting to determine the relationship between teacher qualification and student

³²Ibid.

³³Jesse Burkhead, Input and Output in Large-City High Schools (Syracuse, New York; Syracuse University Press, 1967), pp. 56 & 72.

achievement, concluded that teacher qualification contributes only moderately to the determination of pupil attributes after environmental factors are statistically controlled.³⁴ From these studies, then, it can be seen that the effect of teacher characteristics upon student achievement and aspirations is not conclusive.

Earlier, it was pointed out that little has been written concerning the education system in Canada, especially from a sociological perspective. Probably the most complete analysis of the Canadian Society, from a sociological perspective, is Porter's work.³⁵ In The Vertical Mosaic, Porter deals with the various aspects of the educational system and its relationship to Canadian society. Porter recognizes that education is an important determination of one's position within the society. He states that "the barriers to equal opportunity are both social and psychological. Although it is analytical useful at times to keep the social and psychological separate, they are in fact intricately interwoven."³⁶ These barriers to equal opportunity are:

- (1) Inequality of income and wealth. The lower income families tend to take their children out of school at an earlier age and put them to work.

³⁴Stephenson , Unpublished Ph.D.Dissertation (Florida,1971).

³⁵John Porter, The Vertical Mosaic (Toronto: University of Toronto Press, 1967).

³⁶Ibid., P.168.

- (2) Family size. Family size and drop-out rate are positively correlated. The matter is further compounded by the fact that lower income groups have larger families.
- (3) Proximity to institutions of higher learning.³⁷

Porter also recognizes that the social milieu, created by differences in geography and ethnic composition, determine, to some extent, the kind of educational facilities which are available. Porter's summary indicates the religion, along with socio-economic status, ethnicity, size of family, and region, is an important variable affecting the availability of education.³⁸

On a more microscopic scale than Porter's work, Carmichael³⁹ reports that in a random selection of children in grades four and seven in Alberta, urban pupils showed significantly higher achievement than did rural pupils on California Reading Tests.

Jenkinson and Coutts,⁴⁰ in a study of Alberta university students, reported that residence in or near a university city is somewhat more likely to ensure that a student will attend university than will residence away from such a centre. Also, in regards to school

³⁷Ibid., P.168.

³⁸Ibid., p.172.

³⁹A.Carmichael, A Survey of the Achievement of Alberta School Children in Reading. M.Ed., Thesis 1954. University of Alberta.

⁴⁰M.D. Jenkinson and H.T.Coutts, "Who Goes to University in Alberta?" Research Newsletter, University of Alberta, 1965.

outputs, Knowles,⁴¹ in a study of first year students entering the University of Alberta, reported that academic performances of pupils from rural high schools on their grade twelve matriculation exams was poorer than that of the grade twelve pupils from urban areas. Again, interpreted from within the open systems perspective, it may be argued that rural schools, reflecting their socio-cultural environment, place less emphasis upon those educational values and skills necessary to compete in a more modern environment. This lack of emphasis is reflected in the academic achievement of the outputs (students) from the system.

Other Canadian studies (Knill, 1964; Dilling, 1965; and Elder, 1963),⁴² have utilized environmental distinctions (such as ethnic background and rural verses urban background) to differentiate among student achievement and occupational aspirations.

⁴¹Donald W. Knowles, "A Survey of the Literature Relating to Problems of Admission and Particular Reference to the University of Alberta," The Alberta Journal of Educational Research XI No. 1. (March, 1964), pp.3-16.

⁴²William D. Knill, "Occupational Aspirations of Northern Saskatchewan Students," The Alberta Journal of Educational Research, X, No. 1 (March, 1964), pp.3-16; H.J. Dilling, "Educational Achievement and Social Acceptance of Indian Pupils Integrated in Non-Indian Schools of Southern Ontario," Ontario Journal of Educational Research, VIII, No. 1. (Autumn, 1965) pp.47-58; Glen H. Elder, Jr., "Achievement Orientations and Career Patterns of Rural Youth," Sociology of Education, XXXVII (Fall, 1963), pp 30-58.

Studies dealing with socio-economic variables, (Pavalko; Pavalko and Bishop)⁴³ have reported a positive relationship between student educational and occupational aspirations and socio-economic status. A report of the Canadian Research Committee on Practical Education revealed that people from families below average in economic status are likely to be drop-outs and more likely to be early drop-outs.⁴⁴

The literature reviewed indicates that environmental factors do, in fact, influence certain characteristics within the educational system. The limitation of much of the previous research however, has been its inability to integrate a number of environmental variables in order to portray a more complete picture of the environment. Aside from the odd piece of research (Herriott and Hodgkins, 1969), little work has been undertaken in an attempt to systematically formulate a more macroscopic environmental picture, incorporating a number of environmental factors. It is hoped that the attempt to relate degree of environmental modernization to school input and output characteristics will furnish the potential contribution of this thesis.

⁴³Ronald M. Pavalko, "Socio-economic Background, Ability, and the Allocation of Students," Canadian Journal of Sociology and Anthropology, IV (), pp.250-259; Ronald M. Pavalko and David R. Bishop, "Socio-economic Status and College Plans: A Study of Canadian High School Students," Sociology of Education, XXXIX (Summer, 1966), pp.288-298.

⁴⁴"Two Years After School," (A Report of the Canadian Research Committee on Practical Education) Canadian Education, VI, No. 2 (March, 1951), p.34.

The above related research leads us to believe that schools, as social systems, do not exist and function independently of their particular environment, but, instead, reflect the environmental characteristics within which they are controlled. It is from the preceding that the general hypothesis of this study is developed--the modernization of the sociocultural environment of a school is positively related to both its inputs and outputs.

In this chapter, the conceptual framework of the thesis was advanced, literature relevant to the study was presented and interpreted from within the open systems perspective, and the general hypothesis of the study was formulated. Chapter III will concern itself with the operationalization of the concepts as developed in Chapter II and will set forth a series of operational hypotheses which will allow us to indirectly test the general hypothesis presented in this chapter. Finally, the procedure used to test the hypothesis will be set forth, including the nature of the population used, instrumentation, and method of statistical analysis.

CHAPTER III

METHODOLOGY

The second chapter considered the major thesis variables in conceptual terms--inputs were defined as the imported energy received by the system from its environment,¹ outputs as the energy expended by the system in order to sustain itself in its environment,² and environment as those objects or relationships which exist outside of the system but significantly influence or are influenced by it.³ In this chapter, the operational definitions, the operational hypotheses, and the study procedures will be considered.

Operational Definitions

Modernization Index

Earlier, it was pointed out that environmental boundaries are arbitrary, that is, dependent upon the unit of analysis of the particular study. For the purpose of this study, the school's environment was determined largely as a result of pragmatic considerations. A major consideration in the attempt to measure modernization within the province was the selection of an environmental unit of analysis, a unit for

¹See Chapter II, pp.11-12.

²Ibid., pp.11-12.

³Robert E. Herriott and Benjamin J. Hodgkins, "Sociocultural Context and the American School: An Open-Systems Analysis of Educational Opportunity," Washington, D.C.: U.S. Department of Health, Education and Welfare, USOE Final Report No. 602972, (January, 1969), p.51.

which data could be obtained and, at the same time, a unit which appeared intuitively plausible as a theoretical unit for analytical purposes. Because both modernization and education data were readily obtainable, the province was divided into a number of areas roughly corresponding to the census districts within the province. The construction of the modernization index was primarily an adoption of the index developed by Herriott and Hodgkins.⁴

In Chapter II, the concepts relating to modernization (scientific knowledge, technical skills resulting in specialization, the tendency to increased urbanization as well as increased per capita income) were discussed and it was suggested that knowledge, applied technologically, is the primary input into a society which is becoming more "modern". It is from this general rationale that the following indicators of modernization were chosen and an attempt made to apply these indicators to the Manitoba census districts.

Table 3.1

Five Selected Indicators of Modernization Within Manitoba.

Indicators	Rationale for Selection
1. Percent of males in the labor force engaged in nonagricultural work.	Directly reflects the degree of industrialization. Indirectly taps urbanization, specialization, and economic development. Widely used in cross-cultural studies.

⁴Ibid., pp.33-50.

con't

Table 3.1

Five Selected Indicators of Modernization Within Manitoba.

Indicators	Rationale for Selection
2. Number of telephones per housing unit.	Reflects the underlying technological base upon which modernization rests. Widely used in cross-cultural studies.
3. Percent of the population in urbanized areas	Directly reflects the degree of urbanization. Indirectly taps specialization and economic development. Widely used in cross-cultural studies.
4. Per capita annual income (Males over eighteen years of age).	Good measure of current degree of economic development. Frequently used in cross-cultural studies.
5. Ratio-population per medical doctor.	Directly reflects the degree of specialization. Frequently used in cross-cultural studies.

5

In order to apply the above indicators to Manitoba, data was gathered from three sources: (1) the Manitoba Telephone System, which supplied information concerning the number of telephones per housing unit within the various districts; (2) the Manitoba Department of Industry and Commerce, which supplied information concerning the percentage of the population in urbanized areas and the ratio of the population per medical doctor within the various districts; (3) the Canadian Bureau of Statistics (census), which supplied the statistics

⁵ Ibid., p.39.

concerning the percentage of males in the labor force engaged in nonagricultural work, and the per capita income for males over eighteen years of age.

An initial attempt was made to construct the proposed modernization index through a factor analysis of the five original indicators proposed in Table 3.1, using the principal factor procedure. The unrotated factor matrix is presented in Table 3.2.

Table 3.2

Unrotated Principal Factor Matrix; Factor Loadings of the
Five Proposed Indicators of the Degree of Modernization

Variable	Factor Component				
	1	2	3	4	5
1	.83591	.15990	-.01824	-.43898	.28747
2	.63166	.05457	-.75505	.14290	-.07524
3	-.58832	.78822	-.09114	-.10109	-.11854
4	.76410	.35889	.30564	.40298	.17759
5	-.83661	-.02555	-.24507	.11317	.47598
Cumulative % of Variability	54.5	70.1	84.7	92.7	100.0

In the above factor matrix, there are two negative loadings in the first factor--variables three and five. The high negative loading (-.836) for variable five (population per medical doctor) is consistent with the expected relationship between the variable and

modernization, and therefore, was retained with variables one, two and four, for the final index. Although variable three (percent of population in urbanized areas) resulted in a high positive loading in the study in which it was previously used,⁶ it resulted in a relatively high negative loading (-.588) when applied to Manitoba. One possible explanation for this discrepancy is found in a major difference between Canadian and American society--the Canadian, and particularly the Manitoban society, is based, to a larger extent than that of the United States, upon primary industries (farming, fishing, mining, forestry) and, for this reason, much of the population throughout the province is located in nonurban areas. Because this relatively high negative loading (-.588) for variable three (percent of the population in urbanized areas) was empirically inconsistent with the other variables and with prior expectations, it was omitted from the index.

The indicators to be used in the final modernization index are listed below:

Table 3.3

Indicators of the Modernization Index with Factor Loadings

- | | |
|----|--|
| 1. | Percent of males in the labor force engaged in nonagricultural work (.836) |
| 2. | Number of telephones per housing unit (.631) |
| 3. | Per capita annual income of males over eighteen years of age (.764) |
| 4. | Ratio-population per medical doctor (-.837) |
-

⁶Ibid., p.43.

Following the determination of the indicators to be used in the construction of the modernization index, a rank ordering of the thirty two census districts was developed. The modernization index was constructed by obtaining standard scores for the indicators to be used. The method used to determine these scores is indicated in Table 3.4

Table 3.4

Development of Standard Scores For the
Indicators of the Modernization Index

1. Males employed in nonagricultural work:

$$\frac{\text{Percent score} - \text{Mean}}{\text{Standard Deviation.}}$$

2. Telephones per housing unit:

$$\frac{\text{Telephones per housing unit} - \text{Mean}}{\text{Standard Deviation}}$$

3. Mean income for males:

$$\frac{\text{Mean income} - \text{Mean}}{\text{Standard Deviation}}$$

4. Medical doctors per population:

$$\frac{\text{Population per doctor} - \text{Mean}}{\text{Standard Deviation.}}$$

These scores were multiplied by the relevant factor coefficients and summed across the four indicators, yielding an index of modernization for each of the thirty two districts. The thirty two composite indicators ranged from -.309 to 12.34. To determine the final

modernization index score for each census district, it was decided to add a constant of +4 to each score in order to remove the negative sign from those areas reading less than zero. The final index, then, ranges from .91 to 16.34 as indicated in Table 3.5, column 6.

Table 3.5

Census District	Males in nonag. work	Tele-phones per housing unit	Mean income of males	Pop. per medical doctor	Modernization Index
24 Tuxedo	1.59	.35	8.98	1.42	16.34
21 Metro	1.59	4.41	1.13	1.42	12.55
28 Fort Gary	1.59	.34	2.67	1.42	10.02
32 St. James	1.59	.43	2.25	1.42	9.99
27 Charleswood	1.59	.06	1.65	1.42	8.72
29 E. Kildonan	1.59	.24	1.70	1.42	8.47
22 St. Boniface	1.59	.03	1.34	1.42	8.38
31 W. Kildonan	1.59	-.14	1.46	1.42	8.33
33 St. Vital	1.59	-.18	1.48	1.42	8.31
26 Assiniboia	1.59	.06	1.13	1.42	8.20
30 N. Kildonan	1.59	-.12	1.24	1.42	8.13
23 Transcona	1.59	-.08	1.09	1.42	8.02
25 Brooklands	1.59		.03	1.42	7.04
16	.45	.00	1.51	.71	6.67

Census District	Males in nonag. work	Tele-phones per housing unit	Mean income of males	Pop.per medical doctor	Modern-ization Index
(1)	(2)	(3)	(4)	(5)	(6)
19	.09	-.35	-.23	.83	4.33
12	-.57	-.33	.46	.33	3.89
9	-.79	-.40	-.24	1.04	3.61
6	.00	.02	.21	-.77	3.46
3	-.79	-.19	-.23	.58	3.37
5	-.14	-.24	.48	-.93	3.17
1	-.68	-.27	-.69	.49	2.85
7	.66	-.16	-1.23	-.83	2.51
15	-.39	.03	-.73	-.43	2.48
17	.66	-.16	-1.23	-.83	2.44
13	-.74	-.30	-.99	.09	2.06
8	-1.13	-.11	.27	-.98	2.05
10	-.54	-.08	-.07	-1.64	1.67
2	-.57	-.28	-.80	-.78	1.57
18	-1.29	-.59	-.23	-.36	1.53
11	-.80	-.33	.38	-1.87	1.38
4	-.88	-.14	-1.44	-.27	1.27
14	-1.23	-.34	-1.20	-.32	.91

To determine the strength of the associations among the indicators differentiating the thirty two census districts, Pearson,

product-moment correlation coefficients of the four indicators of modernization were calculated. The results are reported below.

Table 3.6

Pearson Product-Moment Correlations of Four Indicators of the Degree of Modernization of the 32 Manitoba Census Districts

Indicator of Modernization	1	2	3	4
1. Percent males in nonagricultural work	1.00			
2. Telephones per housing unit	.4633	1.00		
3. Mean income for males	.5646	.3182	1.00	
4. Population per medical doctor	-.6118	-.3637	-.5931	1.00

The degree of the rank order relationship varies from a low of .3182 between mean income for males over eighteen years of age and telephones per housing unit, to a high of -.6118 between population per medical doctor and percent males in nonagricultural work.

In the preceding chapter, the theoretical relationship between modernization and variables such as technology, specialization, per capita income, and nonagricultural employment was advanced. The strength of the associations among the four indicators selected to measure modernization appear to give support to the theoretical concepts advanced earlier, thereby indicating the reliability of the indicators.

After developing the modernization index (Table 3.5) and differentiating the thirty two census districts in terms of their degree of modernization, an attempt was made to develop the concept of

organization and the operational hypotheses. However, before proceeding, the major weaknesses of the modernization index, as an instrument for measuring modernization, should be outlined. Because variations occurred in the geographical units utilized by the three sources of data, difficulty was encountered in the construction of the modernization index in the establishment of geographical units from which information pertaining to all variables could be obtained. To obtain a uniform boundary, these areas from which the required information could be obtained were superimposed on each other. This resulted in a loss of accuracy and, consequently, a loss of information. Another difficulty lay in the variables chosen to measure modernization. These variables were by no means exhaustive and, had time and finances permitted, a number of other indicators might have been located and incorporated into the index, thereby improving its reliability. The inability to differentiate variables one and four in terms of the city of Winnipeg, resulted in yet another weakness, in that, for these two variables, Winnipeg was considered as one unit rather than as thirteen separate units as was the case for the other variables. In spite of the above weaknesses, which must obviously be considered a limitation of the study, it was felt that the index did adequately differentiate the various areas in terms of their degree of modernization. The data used in the construction of the index was perhaps the most accurate type of survey information available and, because of its reliability,



the limitations of the index construction tend to be relatively minimal.

Organization: Inputs and Outputs.

Organizations, considered as special types of social systems, are not individual school organizations but, rather, the sum total of all the school organizations within each sociocultural environment. For the purpose of this thesis, the concept "organization" is an analytical construct, designed for the purposes of empirical analysis.⁷

While a variety of inputs and outputs to the school may be identified, only the professional personnel utilized by the school as one type of input and only the students at the time they formally terminate their relationship with the system as one type of output will be considered in this thesis. The inputs, conceptually defined as the imported energy received by the system from its environment, are operationally defined in terms of characteristics of the professional personnel who become part of the school as a social organization. That is, inputs will be measured in terms of:

- (1) years of university education of the school's faculty
- (2) extent of subject specialization by the school's faculty.

⁷John Porter, The Vertical Mosaic (Toronto: University of Toronto Press, 1965), p.28. (Porter uses much the same approach when discussing classes.)

- (3) the extent to which the school utilizes professional assistance beyond that available in its own faculty

A number of considerations prompted the selection of the above variables as measures of inputs. Assuming that the greater the number of years of university education a teacher possesses, the greater is his quality as a teacher, the years of university education possessed by the faculty of the school was chosen as the first variable to measure qualitative distinctions among teachers. As an earlier discussion on modernization indicated, there exists a positive relationship between modernization and specialization, therefore, the degree of subject specialization was selected as the second variable to measure teacher specialization. Previously, it was suggested that knowledge, applied technologically, was the primary input into a society becoming more modern. As technological application may be in the form of efficient application of knowledge by a person, the extent to which the school utilizes professional assistance beyond that available in its own faculty (variable number three) is an attempt to measure this knowledge input.

The outputs, conceptually defined as the energy expended by the system to its environment, are operationally defined as the students when their relationship with the school is formally terminated. Measurements will be made in the following areas:

- (1) student drop-out rate
- (2) rate at which graduating students attend institutions of higher learning.

Because student drop-out rate functions as a form of negative feedback illustrating how the school, as a social system, deviates from its purpose or goal orientation, it was chosen as an indicator of output. The second variable, rate at which graduating students attend institutions of higher learning, attempts to measure positive feedback. If knowledge is the primary input into a society which is becoming more modern, it is reasonable to assume that the longer a student remains within the educational system, the more knowledge and the greater the amount of specialization he will acquire.

Operational Hypotheses

In the previous chapter, it was indicated that more modern social systems place a greater emphasis upon specialization of skills than do less modern systems and that, within more modern systems, education, as it relates to technological development, becomes increasingly more important as both an input and an output of the system. Generally speaking, it is upon this positive relationship between modernization and specialization, and knowledge that the thesis hypotheses are developed.

The following section of Chapter III concerns the development of the operational hypotheses designed to indirectly test the general hypothesis advanced earlier. Six operational hypotheses are formulated-- four are designed to determine the relationship between degree of

sociocultural modernization and school inputs. Individual school inputs and outputs are not the dependent variables, nor is the individual school the unit of analysis. The inputs of the study are the total number of varying types of professional personnel utilized by all the schools within each sociocultural environment. Similarly, the outputs are the total number of students formally terminating their relationship with all the schools in each area. The sociocultural environment, not the individual school, is the unit of analysis.

Because the general hypothesis cannot be directly tested, acceptance or rejection of the general hypothesis will be contingent upon the acceptance or rejection of the operational hypotheses noted below. (At least three of the input hypotheses and one of the output hypotheses must be supported in order to claim indirect support for the general hypothesis.) The degree of support, or lack of support, of the operational hypotheses, in other words, will determine the extent of the acceptance or rejection of the general hypothesis.

The first four hypotheses concern the nature of the school inputs as they relate to the system's environment. Specifically, it is to be expected that more modern areas would place a greater emphasis upon the attainment of a higher level and greater amount of education for all individuals than would less modern areas. Therefore, it is reasonable to assume that the professional staff of a school

located in a more modern area will be more highly educated than will their counterparts in less modern areas. From this rationale, hypotheses one and two are formulated:

Hypothesis I: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers possessing at least a masters degree.

Hypothesis II: The higher the modernization index rating of the sociocultural environment in which the schools are located, the smaller is the proportion of teachers with less than a bachelors degree.

Further, it is to be expected that this positive relationship between modernization and specialization will manifest itself in terms of the subject areas taught by the teaching faculty of the school. That is, teachers teaching one subject only (e.g. science only) are probably located in more modern sociocultural environments. From this rationale, the third hypotheses is formulated:

Hypothesis III: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers teaching one subject area.

Given that modernization, specialization, and knowledge are positively correlated, it seems reasonable to assume that more modern environments are more likely to make available professional personnel to aid in the functioning of their various subsystems (the individual schools.)

Hypothesis IV: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the number of "educational specialists" utilized by the school.

The last two hypotheses, dealing with school outputs, are also developed from the positive relationship between modernization and specialization. It seems logical to expect that more modern sociocultural environments exert a greater amount of pressure upon individuals to reach a higher level of education than do less modern areas and, further, it seems reasonable to expect that the longer a student spends within the formal educational system, the greater is the probability that he will acquire those skills and values necessary for his functioning in a modern society. Hypotheses five and six are developed in conjunction with the above rationale.

Hypothesis V: The higher the modernization index rating of the sociocultural environment in which the schools are located, the lower the proportion of students who will leave the school prematurely.

Hypothesis VI: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater the proportion of high school graduates attending college or university.

Procedure

The procedure followed in the study is discussed under four subheadings: (1) population, (2) instrumentation, (3) method of analysis and (4) method limitations.

Population

The data for this study was taken from a larger study under the direction of Dr. B. J. Hodgkins.⁸ The population studied was a

⁸Dr. B. J. Hodgkins of the Sociology Department, University of Manitoba, is presently (1971) conducting a study concerning the relationship between environmental and school characteristics throughout the province of Manitoba.

universe--all the secondary public schools in the province of Manitoba. Secondary schools, for the purpose of this study, were defined as those schools having at least grades ten through twelve. For those schools having additional grades, only information pertaining to the tenth, eleventh, and twelfth grades were utilized. The analytical units, designed to determine differences in degree of environmental modernization within the province, correspond roughly to the provincial census districts.

Instrumentation

Two different questionnaires were sent to each school in the study--one questionnaire was to be completed by the school principal, the other by the school's guidance director. The questionnaires were designed for a larger more complete analysis of the relationship between modernization and education, of which this thesis is a part.⁹ The questions proposed in the two questionnaires were designed to get at structural and functional aspects of the individual school as well as at certain characteristics of the school environment. The information obtained for this theses pertains specifically to certain aspects of the professional personnel of the school, such as amount of education and degree of specialization, and certain characteristics of the student body, such as drop-out rate and continuation to forms of higher education.

Method of Analysis

The method of data collection was primarily that of survey research. The principal statistical technique used was correlation

⁹ Ibid.

analysis.¹⁰

Methods Limitations

The limitations of the study are confined primarily to the areas of the questionnaire, the environment, and the sampling and measurement error. In regards to the questionnaire, limitations arise out of a lack of factual data--the study, depending to a large extent upon estimates by principals and guidance directors, raises the question as to how consistent the estimates are, both within the particular school and among the principals and guidance directors. As stated earlier, the delimitation of environment is to some degree arbitrary. Perhaps the environment could have been more ideally operationalized, but, limitations were placed on the boundary selected by the availability of data in specific geographical areas. Pertaining to the environment, the criteria or indicators used to measure modernization are not exhaustive--the sample, however, was based upon the available data of the possible indicators. As in the questionnaire, limitations in the sampling and measurement error arise from a lack of complete cooperation from all the schools selected for participation in the study. (For the principal questionnaire, 146 schools were mailed questionnaires, 86 or approximately 58% of the questionnaires were

¹⁰ It was felt that the type of data (primarily interval) provided by the questionnaires could best be analyzed by the use of the statistical technique of correlation analysis.

completed and returned. In regards to the guidance director's questionnaire, 68 of the 146 schools or about 47% of the questionnaires were returned and completed.) Another source of limitation within the sampling and measurement error is the lack of a complete breakdown of the major variables used in the analysis of the sociocultural environment. As it now stands, the accuracy of the measurement of the environment-school relationship is questionable.

In Chapter III, the operationalization of the conceptual definitions was undertaken, the modernization index was developed, the rationale for the usage of the various indicators was outlined, the modernization of the various census districts in the province were measured and a modernization score was assigned to each. Subsequently, operational hypotheses, along with their rationale were set forth concerning two major areas: system inputs and system outputs as each is affected by environmental modernization. Finally, the procedure of the study was discussed.

In Chapter IV, the results of the analysis testing the hypotheses developed in Chapter III will be reported and discussed.

CHAPTER IV

RESULTS

Chapter III operationally defined the major system concepts used in the study; developed the modernization index; put forth the operational hypotheses; and considered the nature of the population in terms of its instrumentation, method of analysis, and methodological limitations. This chapter reports the results of the analysis of the data gathered from the research population outlined in the preceding chapter.

Earlier, it was pointed out that the general hypothesis could not be tested directly and, for this reason, six operational hypotheses were formulated in order to indirectly test the general hypothesis. Chapter IV deals with the statistical results of these operational hypotheses and the evaluation of these results in terms of their supporting, or not supporting, the general hypothesis.

Hypotheses I through IV concern themselves with the relationship between environmental modernization and the nature of the school inputs. These hypotheses and their subsequent results are reported as follows:

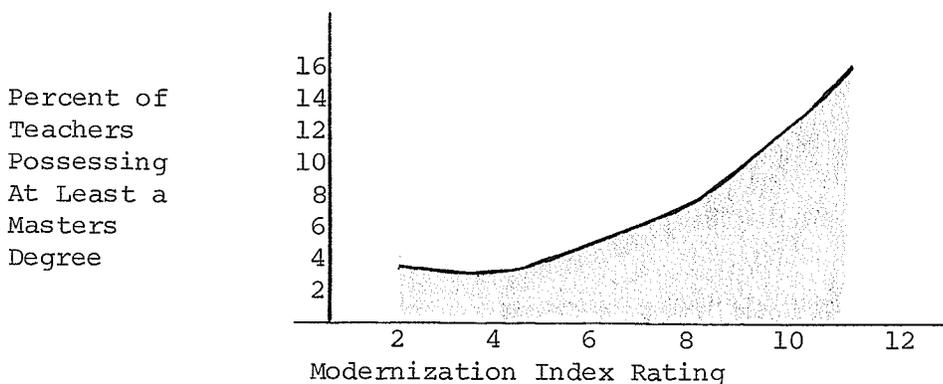
Hypotheses I: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers possessing at least a masters degree.

As indicated earlier, the formulation of the first two hypotheses is an attempt to empirically determine, through measurement of the amount of university training, the extent to which

teachers in the various areas are qualified--quality being inferred from quantity or amount of university education. Preliminary analysis, using zero order correlation between degree of modernization as the independent variable and teachers possessing at least a masters degree as the dependent variable, (not controlling for total number of teachers) resulting in a moderate correlation of .31. However, it appears to make intuitive sense to suppose that the total number of teachers within an area affects the total number of teachers possessing, or not possessing, a particular amount of university education. For this reason, operational hypothesis was based upon the acceptance or rejection of the first order partial correlation between environmental modernization and teachers possessing at least a masters degree, the control variable being the number of teachers within each area. The results of the first order partial correlation are as follows:

Table 4.1

First Order Partial Correlation Between Degree of
Environmental Modernization And Proportion of Teachers
Possessing At Least A Masters Degree



First Order Partial .10

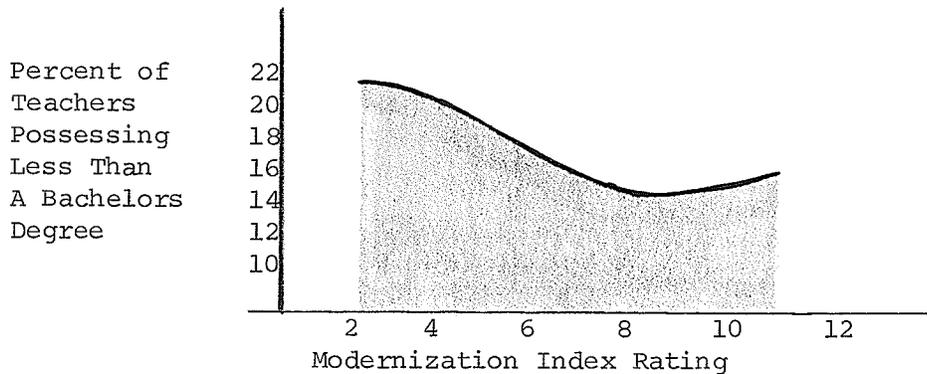
From the data in Table 4.1, the weak positive correlation .10 prevents the acceptance of the first hypothesis. It is interesting to note that the zero order correlation of .31 was reduced considerably to .10, when the control variable, total number of teachers, was introduced. This appears to indicate the possibility of a significant positive correlation between the total number of teachers and teacher qualification. Although not directly tested in the thesis, size, as a function of modernization and its relationship to teacher qualification, may offer a more valid interpretation of the results of the first hypothesis.

Hypothesis II: The higher the modernization index rating of the sociocultural environment in which the schools are located, the smaller is the proportion of teachers with less than a bachelors degree.

The rationale for the advancement of the second hypothesis, as stated earlier, is similar to that for Hypothesis I. The resulting zero order correlation $-.23$ between the independent variable (modernization) and the dependent variable (teachers possessing less than a bachelors degree), and the first order partial correlation, controlling for the total number of teachers, did not vary significantly. As the results of the first order partial correlation were used to lend support, or lack of support, to the hypothesis, it is for illustrative purposes, reported in graphic form below.

Table 4.2

First Order Partial Correlation Between Degree
Of Environmental Modernization and Proportion
Of Teachers Possessing Less Than A Bachelors
Degree



First Order Partial $-.23$

The above correlation ($-.23$) between modernization and teachers possessing less than a bachelors degree lends at least marginal support to the second hypothesis, and, for this reason, the second hypothesis is accepted.

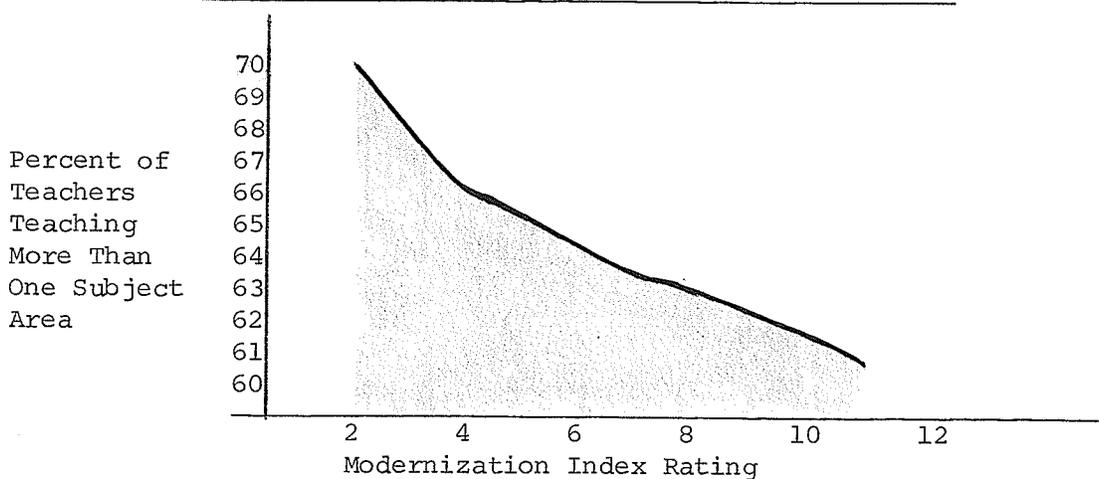
Earlier, reference was made to the positive relationship between modernization and specialization, and between modernization and education. Assuming that the first two hypotheses have been correctly interpreted, it is interesting to note that more modern areas appear to be more concerned with employing teachers who are not underqualified than they are with employing teachers who may be defined as being overqualified.

Hypothesis III: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers teaching one subject area.

In Chapter II, the relationship between modernization and specialization was advanced. The third hypothesis is designed to empirically test this relationship. An immediate concern, in regards to teacher specialization, is the size of the schools in the various environments, measured in terms of the total number of teachers within each area. It was felt, as was the case in Hypothesis I, that the total number of teachers within the areas might significantly influence the results, and, for this reason, a first order partial correlation (controlling for faculty size) was calculated. The following results were obtained:

Table 4.3

First Order Partial Correlation Between Degree
Of Environmental Modernization and Teachers
Teaching More Than One Subject Area



First Order Partial $-.36$

The results of hypothesis III, the moderate negative correlation $-.36$ between the two variables, support the hypothesis and it is, therefore, accepted.

Hypothesis IV: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the number of "educational specialists" utilized by the school.

This hypothesis was empirically tested by the formulation of three separate dependent variables. These dependent variables were: (1) number of "educational specialists" visiting the school, (2) number of representatives from faculties of education at provincial universities, and (3) proportion of student teachers within the various schools.

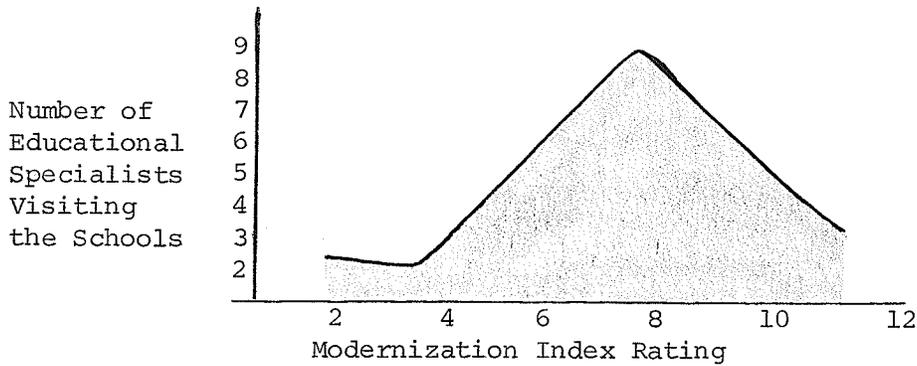
The first dependent variable was used to measure the use of "outside" professional personnel by the system. The rationale underlying the second dependent variable was that, if universities are a major source of new ideas within the society, it would seem reasonable to assume that personnel from these universities are likely to transmit these new, modern ideas and techniques to the various schools with which they come in contact. The third dependent variable must be considered a proxy variable insofar as student teachers were viewed as the vehicles by which new ideas and techniques, originating in the universities, might be transmitted to the schools. It was felt that this variable would allow for at least a rough measure of specialization and technology in terms of new educational ideas and methods.

The results of the relationship between independent

variable (modernization) and the first dependent variable (number of educational specialists visiting the school) are reported below.

Table 4.4

Zero Order Correlation Between Degree of
Environmental Modernization and Number of
Educational Specialists Visiting the School



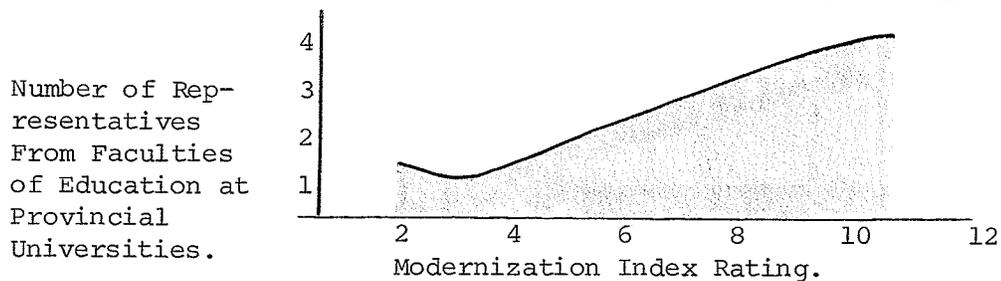
Zero Order Correlation .27

The above correlation shows a moderate positive correlation between the two variables, thereby supporting the hypothesis.

The results of the relationship between modernization and independent variable number two are as follows:

Table 4.5

Zero Order Correlation Between Modernization and
Number of Representatives From Faculties Of
Education At Provincial Universities



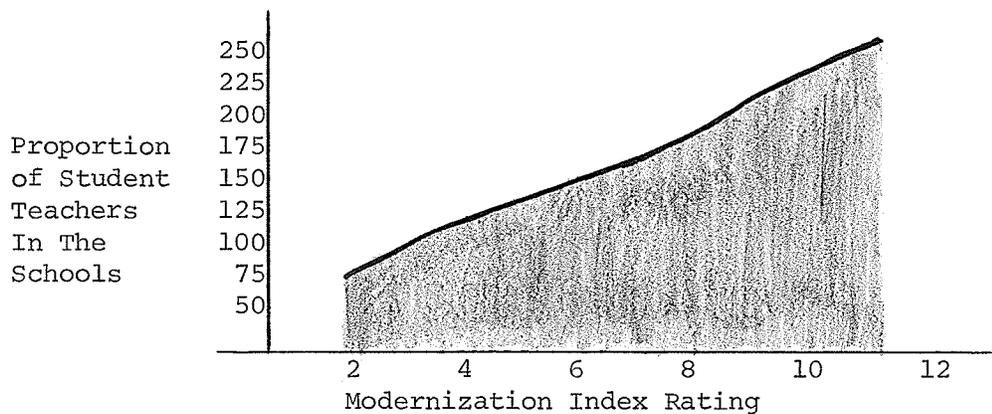
Zero Order Correlation .48

The results reported in Table 4.5 indicate a relatively strong correlation between the two variables, thereby supporting the operational hypothesis.

In using variables one and two to test the fourth operational hypothesis, a zero order correlation, rather than a first order partial correlation, was used. As preliminary analysis indicated no significant difference when controlling for school size, it was felt that the size of the schools would not significantly influence the number of professional personnel utilized by the schools.

Table 4.6

First Order Partial Correlation Between Modernization
And the Proportion of Student Teachers in the Schools



First Order Partial .70

It is evident from the high correlation reported above that the relationship between degree of environmental modernization and proportion of student teachers in the schools is sufficient to warrant acceptance of the hypothesis.

The results of the preceding relationships between modernization and the three dependent variables designed to empirically determine support of the operational hypothesis indicate that schools located in more modern environments do, in fact, utilize more "educational specialists" than do schools in less modern areas. The fourth hypothesis is accepted.

The first four hypotheses were designed to determine the relationship between environmental modernization and school inputs. In summation, the results of these hypotheses are as follows. Schools in more modern areas do not necessarily employ, proportionally, more teachers with at least a masters degree than do schools in less modern areas. Schools in more modern areas do, however, employ, proportionally fewer teachers with less than a bachelors degree than do schools in less modern areas. This suggests that lack of qualification may be of more concern to more modern areas than is high qualification. Teacher specialization, in terms of teaching only one subject area, is evidenced to a greater extent in more modern areas. Also, more modern areas avail themselves of educational specialists to a much greater extent than do less modern areas.

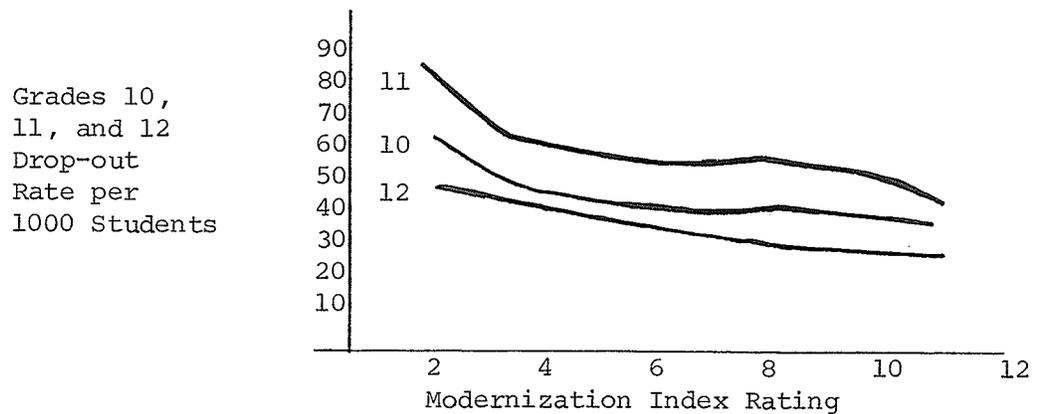
The last two hypotheses concern the relationship between modernization and school outputs.

Hypothesis V: The higher the modernization index rating of the sociocultural environment in which the schools are located, the lower is the student drop-out rate.

Student drop-out rates were calculated for grades ten, eleven, and twelve. The correlations were determined by using, as a base figure, the number of students entering the various schools in grade ten and their subsequent drop-out rate between grade ten and grade twelve. Once again, size, in terms of total number of students in each area, was felt to be important and, for this reason, a control variable (number of students in each area) was introduced. The results are reported in Table 4.7.

Table 4.7

First Order Partial Correlation Between Modernization
And Grades 10, 11, and 12 Drop-Out Rate



First Order Partial	Grade 10	Grade 11	Grade 12
	-.38	-.63	-.31

The results reported above indicate a moderate negative correlation between modernization and student drop-out rate in grades ten and twelve and a fairly strong negative correlation between modernization and student drop-out rate in grade eleven. The overall

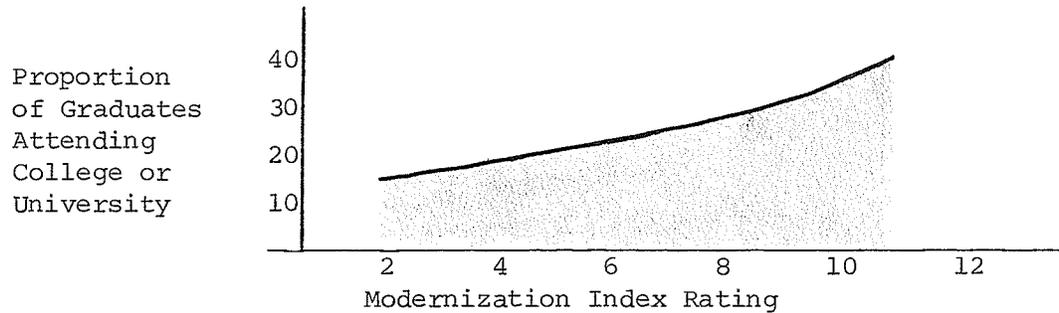
relationship between student drop-out rate and modernization indicates support of the hypothesis. It is interesting to note the differential drop out rates between grade eleven on the one hand, and grades ten and twelve on the other. Although not empirically verified by this thesis, it is possible that this differential is due to the availability of work for students in less modern areas when they reach the age at which they can legally leave school--this age usually occurs when the student is in grade eleven.

The sixth operational hypothesis was designed to get at the relationship between sociocultural modernization and the value placed upon education by the environment. It was assumed that the longer the time an individual spent in school, the greater was his value of education.

Hypothesis VI: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of high school graduates attending college or university.

The results, reported in Table VIII, were calculated by determining the proportion of graduates from each area attending institutions of higher learning.

First Order Partial Correlation Between Degree Of
Environmental Modernization and Graduates
Attending College or University



First Order Partial .73

The results of the above indicate support of the hypothesis and suggest that more modern areas are able to encourage students to continue to forms of higher education than are less modern areas.

In order to conclude the findings of the six operational hypotheses, a summary of the results are presented in Table 4.9 below. Either zero or first order partial correlations were calculated to determine support, or lack of support, of the general hypothesis.

Summary of Results of Analysis of the Association Of
Environmental Modernization and Input/Output
Characteristics of the School System

Input Hypotheses	Zero Order Correlations	First Order Correlations	Support of General Hypothesis
1		.10	-
2		-.23	+
3		-.36	+
4	.27		+
4	.48		+
4		.70	+
Output Hypotheses			
5		-.38	+
5		-.63	+
5		-.31	+
6		.73	+

The above results, with the exception of the first operational hypothesis, do support the general hypothesis that the modernization of the sociocultural environment is positively related to both its inputs and outputs. The conclusions and limitations of these results, along with their implications for further research, will be discussed in Chapter V.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

In summary, this thesis has been based upon the premise that a more complete understanding of the functioning of social systems is possible only when that system is evaluated within its environmental context. To this end, the open systems perspective, in contrast to the more traditional closed systems perspective, is most useful. Accordingly, social systems can be viewed as systems which are open to selective environmental inputs and which, in return, export usable products (outputs) into their particular environment. All social systems, as open systems, reflect their particular environment insofar as they are component subsystems of that environment.

In the educational context, to more fully understand the functioning of the school as a social system, it is necessary to understand and to be able to relate the characteristics of the individual school to its environment. Following Churchman, this thesis has attempted to analyze the school from the perspective that, as a social system, the school can be viewed as a recognizable kind of entity, into which various types of environmental resources enter the system (input), and out of which comes some kind of product or service (output). For analytical purposes, at the operational level, the thesis considered only professional personnel as one form of input utilized by the school

and system outputs as the students when their relationship with the school was formally terminated. The environment was conceptually defined as those objects or relationships which exist outside of the system but significantly influence or are influenced by it. For purposes of analysis, the environment was operationally defined in terms of its degree of modernization (the modernization index developed in Chapter III). The connotative and denotative aspects of "modernization" were considered and its relationship to education was subsequently developed. From this theoretical discussion, the general hypothesis of the study was advanced, that the modernization of the sociocultural environment of a school is positively related to both its inputs and outputs.

To test the general hypothesis regarding the nature of the relationship between degree of environmental modernization and the nature of the school inputs and outputs, six operational hypotheses were formulated. These were:

Hypotheses I: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers possessing at least a masters degree.

Hypothesis II: The higher the modernization index rating of the sociocultural environment in which the schools are located, the smaller is the proportion of teachers with less than a bachelors degree.

- Hypothesis III: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the proportion of teachers teaching one subject area.
- Hypothesis IV: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater is the number of "educational specialists" utilized by the school.
- Hypothesis V: The higher the modernization index rating of the sociocultural environment in which the schools are located, the lower the proportion of students who will leave the school prematurely.
- Hypothesis VI: The higher the modernization index rating of the sociocultural environment in which the schools are located, the greater the proportion of high school graduates attending college or university.

To empirically test the operational hypothesis, it was necessary to obtain information pertaining to environmental modernization and to the nature of school inputs and outputs. A measure of environmental modernization was obtained through the development of an "index" of modernity. Information essential to the development of that modernization index was obtained from three sources: (1) The Manitoba Telephone System, (2) The Manitoba Department of Industry and Commerce, and (3) the Canadian Dominion Bureau of Statistics. To obtain the necessary information pertaining to school characteristics, data was obtained from different questionnaires administered to the principal and guidance director of every secondary public school in the province of Manitoba.

Analysis of the data gathered indicated support for five of the six operational hypotheses. Such results were interpreted to be indirectly supportive of the general hypothesis, and, therefore, the general hypothesis was accepted.

Limitations of The Study

The major limitations of the study are of two types-- methodological and theoretical. The theoretical limitations appear to be centered upon the inability of the model (largely because of its orientation towards the macroscopic perspective) to deal with individually oriented (social psychological) variables. For example, by examining teacher qualification in terms of amount of university education and relating this qualification to the degree of environmental modernity, it was determined that more modern sociocultural environments were more apt to employ higher qualified teachers than were less modern environments. The question then arises as to why teachers with more university education are more likely to be found in more modern areas. This study, by virtue of the model adopted, assumed that more modern areas were more inclined to hire more qualified teachers. What the model did, in effect, was assume that all areas have the same opportunity to employ more or less qualified teachers when, in effect, it may be that more qualified teachers simply do not apply to teach in those areas designated by this study as being less modern. The inability to take into account more microscopic and,

in particular, social psychological variables is a study limitation. Perhaps a solution to this limitation may lie in the development of a form of eclectic model encompassing both "macro" and "micro" perspectives. Some of the major methodological limitations include the population studied. The population of the study was, in fact, a universe-all secondary public schools in the province of Manitoba. The responses from the schools, in terms of the number of schools completing and returning the two questionnaires, was somewhat disappointing. Of the 146 schools included in the study, only 86 schools (57%) returned the principal's questionnaire and 68 schools (47%) returned the guidance director's questionnaire. This response rate, while acceptable, hinders the formulation of generalizations. So, also, much of the information supplied by the school personnel was based upon estimates rather than upon factual data. While a previous study (Herriott and Hodgkins, 1969) has found that principal and guidance director estimates are very close to factual data, nevertheless, as estimates they are inferior to factual information and, therefore, become a limitation in terms of accuracy of data analysis and results interpretation. Other limitations pertaining to the operationalization of the sociocultural environment and the development of the modernization index are listed below. Unfortunately, the physical boundaries from which the data was available were not the same for the three sources used in the construction of the index and it was necessary to

superimpose the arbitrary boundaries upon each indicator to determine, as accurately as possible, a common boundary. It is recognized that a certain amount of information was lost in the process. Further, the validity of the indicators used to measure environmental modernization is justified primarily in terms of apparent appropriateness. This is most evident in the previously noted difficulty experienced in differentiating the areas within Winnipeg on two of the indicators, percent urban population and population per medical doctor.

Finally, the lack of controls (social, economic, religious) upon the major variables used in the analysis, although to some extent subsumed under the broader heading of modernization, make any conclusions from these findings highly tentative in nature. Still, given this and the other limitations noted above, it is possible to tentatively advance several conclusions, always keeping in mind the need for improved study design and methodological techniques in future research on the subject.

CONCLUSIONS

Several tentative conclusions within the theoretical framework of the thesis may be advanced regarding education in the province of Manitoba. The results of the operational hypotheses supported the general hypothesis that, within the province, the modernization of the sociocultural environment of a school is positively related to both its

inputs and outputs. While there are several implications associated with this conclusion, it is possible to suggest that, insofar as educational opportunity is concerned, this may be interpreted to mean that students located in less modern environments would appear to be subject to a form of system induced inequality of educational opportunity. This means that if we assume that schools in a more modern environment are more likely to have the better inputs, then it logically follows that students in less modern areas of the province are less likely to be receiving the type of education which will allow them to function within a Canadian society which is becoming increasingly modern.

Theoretically, schools in more modern environments are more concerned than schools in less modern environments with insuring that their educating personnel are not underqualified in terms of years of university education. It must be recognized however, that inherent in the logic of this analysis is the assumption that all sociocultural environments in the province were afforded equal opportunity to hire teachers with varying degrees of university training. A possible alternative explanation (not investigated in this study) is that the more highly qualified teachers do not apply for teaching positions in those areas designated as less modern by this study. In other words, factors other than school preference may be operating to limit the quality of system inputs. Also, more modern areas are more apt to encourage teachers to specialize (teach one subject only) than are less

modern areas. Further research might focus upon an investigation of this particular aspect of the study.

More modern sociocultural environments utilize "educational specialists" from outside the school to a greater extent than do schools located in less modern areas. It is interesting to note that, in testing hypothesis four (Table 4.4) it becomes evident that the number of outside specialists utilized by schools peaks in schools located in areas which rank approximately eight on the modernization index. From this point on, the number of outside educational specialists utilized by the schools steadily declines. Although not empirically investigated, it is possible that schools located in more modern areas are more apt to employ what they consider to be their own specialists, and, for this reason, are less inclined to employ outside specialists. Regarding inputs, the apparent value placed upon education by the environments can be interpreted as being manifest in terms of the type and number of professional personnel, degree of specialization, and implementation of new educational ideas into the school systems. To the degree that this is true, the positive relationship between modernization and these input variables gives an indication of the orientation towards these variables by the more modern, as opposed to less modern,¹⁰ areas.

Directly related to the above, are the implications regarding the significance of the differences found in outputs among schools in environments of greater or lesser modernity. We assume that an indirect indication of the value placed upon education by

the various sociocultural environments manifest itself in terms of: (1) the proportion of students within each area completing their high school education, or conversely, by the student drop-out rate within the areas; and (2) the proportion of graduating students attending institutions of higher education. In assuming the above, it will be remembered that schools located in more modern sociocultural areas have a lower student drop-out rate than do schools in less modern areas. Also, students attending high schools in more modern areas are more likely to continue their education by attending college or university than are students attending high school in less modern areas. The initial interpretation of this hypothesis suggested that the attendance of students at institutions of higher learning was a function of the emphasis placed upon education by the sociocultural environment of the schools. However, a second possible conclusion, not empirically verified, is that the attendance of students at institutions of higher learning may be a function of their physical proximity to these institutions. (Students may find it more feasible financially, to attend institutions of higher learning located close to their homes--these institutions are almost invariably located in the more modern areas).

One interesting implication derived from this thesis and possibly warranting further empirical investigation, is the apparent association between inputs and outputs which might lead to speculation concerning student achievement as a product of certain input characteristics such as years of university education or specialization by the teaching staff.

IMPLICATIONS FOR FURTHER RESEARCH

Ideally, one of the most significant contributions of a study should rest in its implications for further research. It is felt that the theoretical framework used and the results obtained do suggest the opportunity and need for further research in this area. By this is meant that the theoretical framework utilized in the thesis was unique to the study of Canadian education and, for this reason, the author believes the study has made a significant contribution. However, as a first attempt, the theoretical framework and particularly the methodology needs further development in terms of the development of the modernization index, the method of data collection, and the type of data pertaining to the school inputs and outputs and the modification of the model to fit variations within Canadian society.

The importance of the influence of environment, as opposed to individual factors in determining the structure and functioning of the educational system suggests the need for further research in order to determine the influence of other environmental factors (such as religion and ethnicity) upon the educational system.

By indicating that schools are influenced by the degree of modernization of their respective sociocultural environments, the direct implication of the study is that students in less modern areas are subjected to an unequal opportunity to acquire the values and skills demanded by the larger modern society. Further applied research, particularly for educators, is warranted in this area — research, which might indicate possible ways of achieving the ideal of equality of educational opportunity. In regards to the above, the apparent

positive relationship between the nature of the professional personnel and the type of student outputted by the schools may indicate a departure point from which this question of inequality of educational opportunity can be approached.

The original intent of the thesis, adopting a macroscopic perspective, was to study the relationship of certain school system inputs and outputs to certain attributes of the sociocultural environment of the school system. The literature relevant to the problem, along with a discussion of the conceptual framework was advanced. Operational hypotheses, formulated to indirectly test the general hypothesis, were subjected to an empirical test. The results of these operational hypotheses supported the general hypothesis. Following this, the conclusions and implications of the thesis, the limitations and the more specific conclusions (in terms of the results) were advanced and, finally, the implications of the thesis for further research were outlined.

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