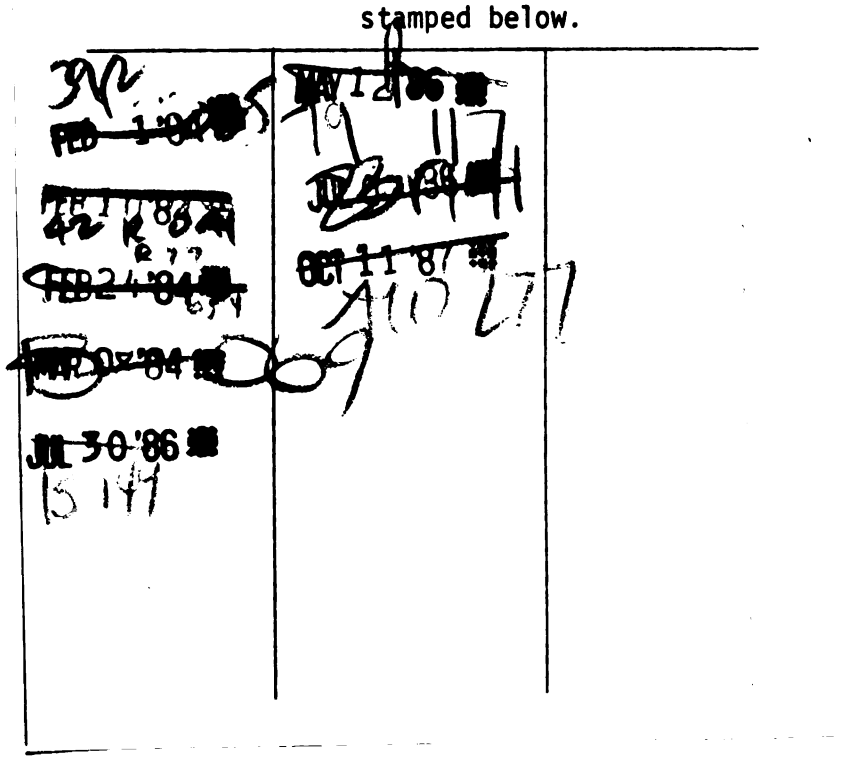

THE DIFFUSION OF A SOCIAL STUDIES TEACHING METHOD THROUGH NATIONAL UNION OF CHRISTIAN SCHOOLS DISTRICT II HIGH SCHOOLS

By

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ABSTRACT

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To what extent have elements of the "New Social Studies" appeared in classrooms, and is there a theory which explains the presence of these elements? An attempt was made in this study to arrive at a partial answer by examining the diffusion of the use of simulation games as a teaching technique through a population which consisted of the eight Christian High Schools in the National Union of Christian Schools District II. The Social Interaction theory of innovation diffusion, as described and developed by Rogers and Shoemaker in The Communication of Innovations: A Cross-Cultural Approach, was used in an attempt to explain this diffusion.

The use of simulation games as a teaching technique was selected as the innovation to be studied, and fifty hypotheses were selected for testing from the ones listed in The Communication of Innovations: A Cross-Cultural Approach. A questionnaire was constructed to test these hypotheses and was administered to the population of 240 teachers in May, 1978. Completed questionnaires were received from 196, or 82% of the teachers surveyed. There were 35 social studies teachers in the population and questionnaires were received from 30, or 86%.

Since the hypotheses called for the establishment of simple

correlations in a predicted direction between two or more variables, the Pearson, Spearman, Chi-Square, Kendal Coefficient of Concordance and Student-t formulas were used in analyzing the data. The significance level in all cases was set at .05. A composite table was prepared indicating which hypotheses were accepted and which were rejected.

An analysis of the data produced the following results:

1. There is a significant negative relationship between size of the school student population and the time of adoption of a simulation game as a teaching technique.

2. There is a significant positive relationship between the aspirations of social studies teachers and the time of adoption of simulation games.

3. There is a significant positive relationship between the source of new ideas and insights regarding education (generally outside the school system) and the time of adoption of simulation games.

4. There is a significant positive relationship between the time of adoption of simulation games and a positive attitude toward education on the part of the social studies teachers.

5. There is a significant positive relationship between time of adoption and non-professional magazine and newspaper reading habits of the social studies teachers.

6. There is a significant positive relationship between knowledge of certain innovations, such as ethnic group studies and the Feminist movement, and the time of adoption of simulation games.

In addition, suggestions are offered for researchers who might replicate the study, using the Social Interaction model of innovation diffusion.

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CHAPTER I

THE PROBLEM

Need

Teaching in the United States in the 1960's was an exciting occupation. The decade began with John Kennedy's call to awaken America's spirit and to follow him onward to bigger and better dreams. The country re-discovered its long-neglected minority groups and embarked on a crusade to end poverty while at the same time fighting "Communist aggression" in Southeast Asia. The air was electric with calls for reform and justice, which could be attained now if the citizens simply united to work for these goals and were serious in their purpose. True, the decade turned increasingly sour as it was discovered that a paradise could not be created now or in the future, but it was exciting while it lasted.

The education establishment was also affected by this change. Schools were the targets of boycotts by minority groups hoping to improve their share in the Great American Dream, while the increasing role of the United States in South Vietnam did a good job of stirring up all sorts of feelings on the part of students. Demands were made on the schools in the 1960's from all directions. Schools were to combat the evils of prejudice and segregation, stop the war, end poverty, keep the United States ahead of the race with the Russians, all while preparing students to participate in whatever it was that the future had in store for them.

The ideas of the great educational thinkers of the 1960's fell

on a receptive audience. Reform was in the air, and the impact of people like Piaget, Bruner, and Skinner had a great effect on the programs developed for schools during the 1960's. Study groups inquired into the structure of the academic disciplines and into the nature of learning and attempted to develop curriculum packages and teaching techniques reflecting this wisdom. Much money and time were devoted to the training of teachers in these new programs, and textbook companies launched slick campaigns to seduce school systems into purchasing these new wares, designed to improve just about everything that others had found wrong with schools. To the readers of educational literature of the 1960's, it seemed that education had finally found the answer, and it would just be a matter of time before schools would be ideal places for learning to occur. But, alas, this was not to be.

The 1970's could be labeled the decade of reaction. Inflation, the endless war in Vietnam, student militancy, all seemed to pose a threat to traditional American values. The public, disillusioned by the failure to deliver on the promises of the 1960's, worried by what they saw as increasing turbulence in the nation, was not in the mood for new crusades and had lost interest in the old ones. On the education front, it seemed that all that had been accomplished by the reforms of the 1960's were increasingly illiterate and militant students turned out by an educational establishment that demanded more money each year. The new "in" fads now were a return to academic standards and discipline which became known as the "back-to-basic's" movement. Society seemed to have come full circle.

This wave of reform and reaction was also paralleled in the

social studies field. Haas describes the many attempts to reform social studies education in the 1960's and the eventual reduced momentum of these efforts in the 1970's. Starting with the pioneering work of Senesh and Fenton, continuing and gaining speed with the onset of several curriculum projects, many funded by Federal money, the "New Social Studies" was in full swing by the mid-60's.[1] The "New Social Studies" represented an attempt to reform social studies education in the nation's schools through a variety of ways, such as improving methodology, content, and teacher training. Many new curriculum materials and teaching methods, such as Man: A Course of Study, the High School Geography Project, a stress on the use of inquiry and simulation gaming and many others came out of this movement and attempts were made to spread this material to the schools.

As the movement to reform social studies education lost momentum in the 1970's as a result of the same forces which slowed the reform movement in other areas of education, such as decreases in government funding and support, an important question remaining has become how much of an impact did all of this invested time and money have on the social studies programs of the nation's many school districts? Haas offers one view: "It appears, though the evidence is scant, that widespread implementation (adoption or adaptation) of New Social Studies curricula, courses or units did not occur, that perhaps five percent of social studies classrooms in the United States were affected by the New Social Studies and that the greatest impact was on

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[1]John Haas, The Era of the New Social Studies (Boulder:Social Science Education Consortium, Inc., 1976) pp. 20-22.

selected suburban schools."[2]

Haas, even though he hedges his statement with the disclaimer of "scant evidence" and thus is open to criticism, raises an interesting question. If a goal of the advocates of the "New Social Studies" was a change in the teaching of social studies in American schools, how effective were they? How many of the new materials and instructional methods were actually used by the classroom teachers, once they left the hands of the developers?

Given the amount of time, money and effort invested in the development of new social studies materials and teaching techniques during the past two decades, and the questionable rate of adoption, any study on this rate of adoption is important. It is hoped that future innovators will be aided by present studies into the innovation process.

Researches on innovation diffusion have been conducted in various school systems throughout the United States. However, none of them has involved the unique population represented by the eight Christian High Schools located in the state of Michigan. These schools, supported and operated by parents of Calvinistic persuasion, are affiliated with the National Union of Christian Schools. This organization operates a curriculum department, and attempts to convince the member schools to use their curriculum materials.

Most of the research on innovation diffusion which uses the Social Interaction model as developed by Rogers and Shoemaker uses only part of that model, concentrating primarily on the characteristics of the individual adopter. This study attempts to use the whole model, as

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[2]Haas, op. cit., p. 79.

described in the following statement: "The innovation, which is communicated through certain channels, over time, among members of a social system."[3] By using the whole Social Interaction model, it is hoped that this study will contribute to the further development of that model.

Purpose

The purpose of this study is to determine the extent to which the teaching technique of simulation gaming, one emphasized by the "New Social Studies" movement, has been diffused through certain social systems in accordance with the Social Interaction model as described by Rogers and Shoemaker.

The social systems are the eight National Union of Christian Schools affiliated Christian High Schools in the state of Michigan. These schools and their locations are:

1. Grand Rapids Christian High - Grand Rapids
2. Calvin Christian High - Grandville
3. South Christian High - Cutlerville
4. Unity Christian High - Hudsonville
5. Holland Christian High - Holland
6. Western Michigan Christian High - Muskegon
7. Northern Michigan Christian High - McBain
8. Kalamazoo Christian High - Kalamazoo

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[3]Everett Rogers and Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach. (New York: The Free Press, 1971). p.18.

Hypothesis

Since the Social Interaction model as described by Rogers and Shoemaker is very extensive, the following statement relating to that model is offered as a working hypothesis:

> The diffusion of simulation gaming among the social studies teachers of the eight Christian High Schools will conform to the Social Interaction model of diffusion as described by Rogers and Shoemaker.

This model will be described in greater detail below, and various sub-hypotheses will be stated in testable form in Chapter Three.

Theory

Jwaideh and Marker describe four models commonly used to explain how a new idea or object spreads through society.[4] Each model has its limitations, but some are more useful than others in any attempt to analyze the change process. A brief description of three of the models is provided below. A more detailed description of the fourth model will conclude this section.[5]

The Research, Development, Diffusion and Adoption model (RDDA) is an attempt to understand change from the logical mind of an engineer. The model assumes that change takes place in a rational sequence of steps, starting with basic research, where the purpose

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[4]Alice Jwaideh and Gerald Marker, Bringing About Change in Social Studies Education. (Boulder:Social Science Education Consortium, Inc., 1973), pp. 53-65.

[5]Jwaideh and Marker use the term "model" extensively in Bringing About Change in Social Studies Education. The term is used to mean "theory", in that it is " a system of assumptions, accepted principles, and rules of procedure devised to analyze, predict and otherwise explain a specified set of phenomena." (American Heritage Dictionary) In keeping with Jwaideh and Marker's usage, the term model here will be used interchangeably with theory.

is to produce knowledge. The knowledge base is not geared to solving specific problems, but is a basis for the production of an innovation.

The basic research is used in the development stage to produce a solution to a problem, which is known as an innovation. In addition to the invention of an innovation, the development stage also includes the production of the innovation for use by society.

After the innovation has been developed, the next step in the change process is the diffusion stage. In this stage, information is disseminated to potential adopters to inform them that the innovation exists. In addition to being provided with information, potential adopters are also given the opportunity to observe the innovation in operation.

The adoption phase of the RDDA model contains three sub-phases. After the potential adopter has been informed of the innovation, and has seen it in operation, the model assumes a trial adoption. If the trial is successful, the innovation is installed, or adopted by the whole institution. The final sub-phase is institutionalization where the innovation becomes a regular part of the institution, thus ceasing to be an innovation.

A major criticism of this attempt to explain the change process is that the model does not fully deal with the role of the potential adopter. It assumes that information about and observation of the innovation will win over the potential adopter, thus ignoring possible social and personal effects on the adopter, should he adopt the innovation. This means that the potential adopter might decide not to adopt, even after he has followed the route described by the model,

because he is concerned with what his colleagues might think of him.

A second model described by Jwaideh and Marker is the Problem-Solver model. According to this model, change occurs only when individuals, groups or organizations determine that they have a problem and begin to search for a solution to that problem. After a need has been determined, the next step in this model is one of problem diagnosis, where an attempt is made to analyze and study the need. This stage is often accomplished with the help of an outside expert. The next stages, after the problem has been analyzed, consist of searching for solutions to the problem, selecting the proper solution, and finally applying that solution. If the solution does not meet the need, the process begins anew.

This model differs from the RDDA model in that it emphasizes the need of the potential adopter, rather than the need of a developer. It focuses its attention on the customer, rather than on the producer. It maintains that a desire for change arises out of a need, a problem, rather than a lack of information. This model also does not take into account possible social or personal effects on the adopter.

The third model is the Linkage model. This model is an attempt to combine the basic research element of the RDDA model with the needs-of-the-adopter focus of the Problem-Solver model. It maintains that change comes about when a bridge or link is created between those doing the researching and developing, and those who have the problem. This bridge is usually a person familiar with both the research and development being done in an area, and with the needs of the client. The job of this change agent consists of knowing who is doing research

and development in that area, and then bringing the two together, or creating a link between the client and the research and development. The adopter sees what the researchers have done, puts into practice what they recommend, and solves his problem.

This model, despite its attempt to combine the best of the two previous models, is also subject to criticism because it, too, does not account for social and personal factors which might make the adopter who has a need reject what might seem to be a rational, well-developed solution to his problem.

The fourth model, the Social Interaction model, attempts to correct this deficiency. It assumes that the research and development have already been done, and concentrates instead on how the innovation spreads through or between groups, rather than how it should, as is done by other models. The basic premise of the Social Interaction model is that an innovation, after coming to someone's attention, spreads through the social network, which is defined as that chain of relationships between individuals and groups. One's group membership, identification, and standing in the group are the important variables governing the diffusion of an innovation.

The major advocates of this model, Rogers and Shoemaker, maintain that "the main elements in the diffusion of new ideas are:

> The innovation . . .
>
> which is communicated through certain channels . . .
>
> over time . . .

among members of a social system."[6]

Each of these four variables in the Rogers and Shoemaker model will be described below.

"The innovation . . . "

Rogers and Shoemaker define an innovation as "an idea, practice, or object perceived as new by an individual."[7] A crucial aspect of this definition is the word "perceived" because this means that something need not be "objectively" new to be called an innovation. If a person has never seen or heard of an automobile, then to him the automobile is an innovation, despite its being around for several decades

The various characteristics of the innovation itself contribute or detract from its rate of adoption. Rogers and Shoemaker maintain that the following characteristics of an innovation help explain its rate of adoption"

1. Relative Advantage

Rogers and Shoemaker define relative advantage as "the degree to which an innovation is perceived as better than the idea it supersedes."[8] If new idea x is perceived as cheaper than already-in-use idea y, then new idea x has more relative advantage than y and stands a better chance of adoption. In addition to money, relative advantage might also be higher social prestige by the user, convenience, or

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[6]Everett Rogers and Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach (New York: The Free Press, 1971) p. 39.

[7]Ibid., p. 22.

[8]Ibid.

satisfaction.

An important point here is that the advantage does not necessarily have to be objectively real, the potential adopter only has to perceive it as such in order to increase the chances of adoption.

2. Compatibility

Rogers and Shoemaker define this as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of the receivers."[9] This means that a potential innovation which deviates sharply from the existing values and norms of the social system of which the adopter is a part will stand less of a chance of being adopted than an innovation which does not deviate so sharply. Innovations which are radically different from present practice stand less of a chance of being adopted than innovations which closely resemble present practice.

3. Complexity

This is defined as "the degree to which an innovation is perceived as difficult to understand and use."[10] A complex innovation, one which requires a high degree of new learning on the part of the adopter has less of a chance of being adopted than does an innovation which requires little or no new learning from the adopter.

4. Trialability

This is defined as "the degree to which an innovation may be experimented with on a limited basis."[11] An innovation represents a

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[9]Rogers and Shoemaker, op. cit., p. 22

[10]Ibid.

[11]Ibid., p. 23

degree of risk to the adopter. If he were to adopt an innovation which turned out not to his liking, he may be out money or prestige. Hence an innovation which can be experimented with, adopted partially or piece-meal, is preferable to one which must be adopted in its entirety, and will have a more rapid rate of diffusion.

5. Observability

Rogers and Shoemaker define this as "the degree to which the results of an innovation are visible to others."[12] An innovation which has immediate and highly visible results will be adopted faster than one which produces results over a longer period of time and which are not so visible.

"which is communicated through certain channels . . . "

Rogers and Shoemaker define communication as "the process by which messages are transmitted from a source to a receiver", and a communication channel as "the means by which the message gets from the source to the receiver."[13] A potential adopter must be informed somehow of the existence of the innovation if it is to be adopted, and this flow of information contributes to the diffusion process. The social relationship between the source and the receiver will determine whether or not the message is passed on, and also how it will be received. The channel is also significant, in that a mass media channel is more suited to passing out information to large groups,

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[12]Rogers and Shoemaker, op. cit., p. 23.

[13]Ibid., pp. 23-24.

while an interpersonal channel is better suited to bringing about more favorable attitudes on the part of small groups.

What this means for the adoption process is that the receiver's social relationship with a source will determine whether or not he is informed of a possible innovation and will also influence how he reacts to that news. How he receives the information is also significant, in that if he hears of a potential innovation through a mass media channel, he will be less likely to adopt than if a friend informed him.[14]

"over time . . . "

Time is involved in the diffusion process in three ways: 1) in the process by which a potential adopter proceeds from first knowledge of an innovation to a decision to adopt or reject; 2) at the point where the individual decides to adopt an innovation in comparison to his peers; and 3) in the spread of an innovation through a social system.[15]

Rogers and Shoemaker maintain that each potential adopter proceeds through a series of stages on the adoption or rejection of an innovation. These stages are: 1) knowledge; 2) persuasion; 3) decision; and 4) confirmation.[16] A potential adopter enters the knowledge stage when he becomes aware of the existence of an innovation, proceeds to the persuasion stage when he forms a favorable or unfavorable attitude toward the innovation, goes to the decision stage when he decides to adopt or reject, and ends in the confirmation stage when he seeks

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[14]Rogers and Shoemaker, op. cit., p. 24.

[15]Ibid., pp. 24-25.

[16]Ibid., p. 28.

approval of others for the decision he has made.

Since the central purpose of this study is to examine the diffusion of a teaching technique, not to determine if there are stages in the adoption process, the adoption aspect of the Rogers and Shoemaker Social Interaction model will be dealt with only briefly.

When a person decides to adopt an innovation is important, Rogers and Shoemaker maintain, because that time of adoption is determined and influenced by certain personality, socioeconomic and communication characteristics. Adopters are divided into categories depending on the relative earliness or lateness of their time of adoption.

Rogers and Shoemaker describe five types of adopters, but in their review of the research, they construct hypotheses based on only two categories, early and late adopters. On the basis of these two categories, Rogers and Shoemaker maintain that a relationship exists between the following variables and time of adoption:

Table 1.1

"Over Time"
Hypotheses

Independent Variables	Type of Relationship to Dependent Variable (Time of Adoption)
Age	None
Education	Positive
Social Status	Positive
Upward Social Mobility	Positive
Size of Unit	Positive
Specialized Operations	Positive
Empathy	Positive
Dogmatism	Negative
Ability to deal with Abstractions	Positive
Rationality	Positive
Intelligence	Positive
Attitude toward Change	Positive
Attitude toward Risk	Positive
Attitude toward Education	Positive
Attitude toward Science	Positive
Fatalism	Positive
Achievement Motivation	Positive
Higher Aspirations	Positive
Social Participation	Positive
Integration with Social System	Positive
Cosmopoliteness	Positive
Change Agent Contact	Positive
Exposure to Mass Media	Positive
Interpersonal Communication Channels	Positive
Information Seeking	Positive
Knowledge of Innovations	Positive
Degree of Opinion Leadership	Positive
Modern vs. Traditional Norms	Positive
Integration of Systems	Positive

The time dimension is also involved in the speed with which an innovation spreads through a system. The rate of adoption is measured by the length of time required for a certain percentage of the members of a system to adopt the innovation. Rogers and Shoemaker maintain that innovations which have more relative advantage, are more compatible, less complex, can be easily tried, and have more observable results will diffuse more quickly than an innovation which possesses less of these qualities.

"among members of a social system . . . "

Rogers and Shoemaker define a social system as "a collectivity of units which are functionally differentiated and engaged in joint problem solving with respect to a common goal."[17] The units may be individuals, informal groups, complex organizations, or subsystems. Diffusion of an innovation occurs within this social system, and Rogers and Shoemaker describe four factors related to social systems which influence diffusion.

If, in a social system, distinctions are made between the units, then structure exists. A school faculty is usually divided into groups along lines such as good teachers and bad, coaches and non-athletes, male and female, principal and teacher. This arrangement of hierarchical positions influences the diffusion of an innovation in that it affects the flow of information, freedom to act, power, and other factors vital to the spread of an innovation. Further, the diffusion of an innovation may also change the social structure of a system, in

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[17]Rogers and Shoemaker, op. cit., p. 28.

that it could bring the innovator more power, money, or prestige.

A second area of a social system's influence of diffusion are the norms of that system. Rogers and Shoemaker define norms as "the established behavior patterns for the members of a given social system. They define a range of tolerable behavior and serve as a guide or a standard for the members of a social system."[18]

Rogers and Shoemaker formulate two ideal sets of norm systems which influences diffusion, traditional and modern norms. A traditional norm system has the following characteristics:

1. Lack of favorable orientation to change.

2. A less developed or "simpler" technology.

3. A relatively low level of literacy, education and understanding of the scientific method.

4. A social enforcement of the status quo in the social system, facilitated by affective personal relationships, such as friendliness and hospitality, which are highly valued as ends in themselves.

5. Little communication by members of the social system with outsiders.

6. Lack of ability to empathize or to see oneself in other's roles, particularly the roles of outsiders to the system.[19]

By contrast, the modern norm system has the following characteristics:

1. A generally positive attitude toward change.

2. A well developed technology with a complex division of labor.

3. A high value on education and science.

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[18] Rogers and Shoemaker, op. cit., pp. 30-31.

[19] Ibid., p. 32.

> 4. Rational and businesslike social relationships rather than emotional and affective.
>
> 5. Cosmopolite perspectives, in that members of the system often interact with outsiders, facilitating the entrance of new ideas into the social system.
>
> 6. Empathetic ability on the part of the system's members, who are able to see themselves in roles quite different from their own.[20]

Rogers and Shoemaker maintain that systems characterized by modern norms are more open to innovation and change, while systems characterized by traditional norms are less so.[21]

In addition to the modern vs. traditional orientation of the system's norms, it is also important to consider the individual's commitment to those norms. A potential innovator may be a member of a traditional society, yet still be an innovator because he has not committed himself to the norms of that traditional system.

A third area of social system influence on the diffusion process consists of opinion leaders and change agents. Rogers and Shoemaker define opinion leadership as "the degree to which an individual is able to informally influence other individual's attitudes or overt behavior in a desired way with relative frequency."[22] Often the most innovative members of a system are perceived as deviants and given low status. Yet there are members of the system who function in the role of opinion leaders. Rogers and Shoemaker maintain that in a

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[20]Rogers and Shoemaker, op. cit., pp. 32-33.

[21]Ibid., p. 33.

[22]Ibid., p. 35.

social system where the norms are modern, the opinion leaders are likely to be quite innovative, whereas in traditional systems the opinion leaders are more conservative. However, opinion leaders, when compared to their followers, are more likely to have the following characteristics:

1. Be more exposed to all forms of external communication.
2. Be more cosmopolite.
3. Have higher social status.
4. Be more innovative.[23]

Change agents are defined as "professional(s) who influence innovation decisions in a direction deemed desirable by a change agency."[24] Change agents often work with opinion leaders to bring about a desired change.

The fourth area of influence lies in the type of decisions the social system can make concerning an innovation. Rogers and Shoemaker maintain that there are three types of decisions that can be made.[25] An "authority decision" occurs when a supervisor orders his subordinate to adopt an innovation. The adopter's attitude toward the innovation is not considered; he is expected to comply with the order. This type of decision leads to a fast rate of adoption but the order is likely to be circumvented and the innovation

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[23]Rogers and Shoemaker, op. cit., p. 35

[24]Ibid.

[25]Ibid., p. 36.

discontinued at the first opportunity.[26]

A collective decision occurs when the members of a system agree to adopt an innovation. Those who disagree are expected to go along with the majority, but the wishes of the non-adopters are considered.

An optional decision occurs when an individual may decide to adopt an innovation, regardless of what others may do. Of course, the person is still subject to group norms and expectations, but the decision is still the individual's to make.

Overview

Chapter Two of this thesis is a review of the pertinent literature involving diffusion studies constructed under the Social Interaction model of Rogers and Shoemaker dealing with social studies innovations. The design of the study will be described in Chapter Three and the results presented in Chapter Four and analyzed in Chapter Five.

CHAPTER II

REVIEW OF LITERATURE

Introduction

A review of the literature concerned with the Social Interaction perspective on the diffusion of innovations reveals several major sources. The classic source for research on the Social Interaction model itself is still Rogers' and Shoemaker's Communication of Innovations: A Cross-Cultural Approach. In this work, the authors cite more than 1500 studies related to this model. In Review of Research In Social Studies Education: 1970-1975, Carole Hahn reviews the research available on the diffusion of social studies materials using all four models of diffusion. In addition, a search of the Education Research Information Center (ERIC) system, using the descriptors DIFFUSION and SOCIAL STUDIES, revealed other relevant sources published since 1975. A search through Dissertation Abstracts since 1975, using the categories of General Education, Administration, Curriculum and Instruction, and Social Sciences also provided other relevant studies. This chapter will discuss the findings relevant to this study from each source.

The Communication of Innovations: A Cross-Cultural Approach

This work, which is an up-dated version of Rogers' Diffusion of Innovations, attempts to achieve two purposes. One purpose is to construct and describe a model which will explain the spread of an innovation through a society. The other purpose of the book is to

cite relevant research dealing with diffusion from a Social Interaction perspective.

Rogers and Shoemaker postulate that the spread of an innovation is dependent on the interaction of four crucial elements: 1) characteristics of the innovation itself; 2) the communication channel through which the potential adopter learns about the innovation; 3) the time of adoption of the innovation (various personal characteristics of the adopter are involved here); and 4) the characteristics of the social system of the adopter.[1] This model is not a prescriptive one, in that it does not describe how change should occur, but it is claimed to be a descriptive one describing how change does occur.

Rogers and Shoemaker have constructed a series of generalizations for each of the four elements of the model. These generalizations, 103 of them, attempt to describe in greater specificity the operation of the Social Interaction model of diffusion. For each generalization, appropriate research is cited, both supportive and non-supportive.[2]

The bulk of the research cited, however, deals primarily with various characteristics of what the authors call the early adopter, those who are among the first to adopt an innovation. Since early and late adopters are classified on the basis of time of adoption, that part of the Social Interaction model labeled "over time . . . "

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[1]Everett Rogers and Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach. (New York: The Free Press, 1971). p. 18.

[2]Ibid., pp. 347-385.

has the best supporting evidence.[3] The section of the model that has the least supporting evidence are the characteristics of the social system of the adopter.[4]

This book is a valuable contribution to the study of the diffusion of innovations in that it constructs a theory and offers supporting evidence for that theory. However, because of the exploratory nature of many of the hypotheses, it should not be considered the final authority in this field.

Review of Research in Social Studies Education: 1970-1975

In chapter five of this National Council for the Social Studies publication, Carole Hahn reviews the relevant literature on the diffusion of social studies innovations.[5] There are currently four models being used to describe the diffusion of innovations, and she uses these four models to organize the chapter. These models are: 1) Research, Development, Dissemination and Adoption; 2) Problem Solver; 3) Social Interaction; and 4) Linkage. Relevant research in social studies diffusion is reported under the model used to conduct the study. Since this dissertation uses the Social Interaction model of diffusion, her findings in that area will be described. In keeping with the Rogers and Shoemaker description

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[3]Rogers and Shoemaker, op. cit., pp. 352-376.

[4]Ibid., pp. 376-380.

[5]Francis Hunkins, et. al. Review of Research in Social Studies Education: 1970-1975. (Washington, D.C.: National Council for the Social Studies, 1977) pp. 137-177.

that the spread of an innovation is dependent on the characteristics of an innovation, communicated through certain channels, over time, among members of a social system, her findings will be described under these headings. In addition, comments will be made, where appropriate, on the research cited by Hahn, based upon an examination of the source.

"The innovation . . . "

Rogers and Shoemaker hypothesize that certain perceived characteristics of an innovation influence its spread. They label these characteristics Relative Advantage, Compatibility, Trialability, Observability and Complexity. Relative advantage is defined as the degree to which an innovation is perceived as being better than that which it replaces. Compatibility is the degree to which an innovation is seen as being compatible with the potential adopter's needs, values and previous experience. Trialability is the degree to which an innovation can be tried on a limited basis. Observability is the degree to which the results of an innovation are visible to others. Complexity is the degree to which an innovation is perceived as relatively difficult to use and understand.[6]

Hahn cites the following research in social studies diffusion dealing with these five areas. The diffusion of the Materials and Activities for Teachers and Children program was inhibited by its cost, while the lower cost and greater compatibility of the Holt

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[6]Rogers and Shoemaker, op. cit., pp. 22-23.

Social Studies Program contributed to its greater degree of diffusion.[7] Cost and compatibility were also found to be factors in the diffusion of the Georgia Anthropology Curriculum Project.[8]

Hahn also cites her own work in the perceived characteristics of social studies innovations and their relationship to diffusion. In a four-state survey, 412 potential adopters who were familiar with "New Social Studies" project materials were asked to complete questionnaires dealing with their perceptions of the materials.[9] Using factor analyses, she found that items related to observability of valued outcomes, difficulty, costs in money and risk, and similarity to previous experience were crucial factors.[10]

Richburg found that nearly half of the people who purchased sets of the Georgia Anthropology Curriculum Project materials had first used sample sets.[11] Walker found that some adopters of "New Social Studies" projects in Nebraska tried out sample sets of material prior to adoption.[12] Upon examination, this study appears to be an excellent one, involving all of the secondary social studies teachers in Nebraska. An 80% response rate on the questionnaire was achieved, and the methodology involved using the questionnaire combined with

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[7] Hunkins, et. al., op. cit., p. 157.

[8] Ibid.

[9] Ibid.

[10] Ibid.

[11] Ibid., p. 160.

[12] Ibid.

personal interviews. However, the interview confined itself to asking teachers for the source of information on new products, and the names of people who were involved in the selection and implementation process.[13]

"which is communicated through certain channels . . . "

Rogers and Shoemaker hypothesized that mass media channels are relatively more important at the knowledge stage and interpersonal sources are more important at the persuasion stage. Also, mass media, cosmopolite channels are relatively more important than interpersonal, localite channels for earlier adopters as compared to later adopters.[14]

Hahn reports that Richburg found that most of the early adopters of the Georgia Anthropology Curriculum Project's materials first learned about them from professional literature.[15] In Switzer's study of the diffusion of "New Social Studies" project materials, 25% of the respondents said they first learned about projects from professional publications, but 24% said they got this knowledge from friends or colleagues.[16] Orlich et. al. surveyed 175 elementary school principals to determine the sources they used to learn about social studies innovations. Half of the respondents cited

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[13]Robert Edwin Walker, "Factors Affecting the Implementation of National Project Materials in Social Studies Programs in Secondary Schools in Nebraska," Dissertation Abstracts International 35 (1974): 2665-A.

[14]Rogers and Shoemaker, op. cit., pp. 23-24.

[15]Hunkins, et. al., op. cit., p. 159.

[16]Ibid.

commercial publishers, 43% cited district resources such as supervisors, and 33% cited books and magazines.[17] Kinerney studied the diffusion of the High School Geography Project and found that the most frequently named source of knowledge for the respondents was professional literature.[18] However, an examination of this study revealed that it dealt with instructors of college introductory geography courses, which might have influenced the results.[19]

"over time . . . "

Rogers and Shoemaker maintain that the adoption rate of an innovation follows the pattern of a bell-shaped curve. Those who are among the first to adopt are classified as earlier adopters, while those following are classified as later adopters. Rogers and Shoemaker found the following to be true of earlier adopters as compared to later adopters: they have more years of education, have higher social status, have a greater degree of upward mobility, and come from larger-sized units. In addition, earlier adopters have greater empathy, are less dogmatic, have a more favorable attitude toward change and risk, are more highly integrated into the social system, are more cosmopolite, have greater exposure to mass media and interpersonal communication, seek more information about

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[17] Hunkins, et. al., op. cit., p. 159.

[18] Ibid.

[19] Eugene James Kinerney, "The High School Geography Project In Relation To Instructional Practices In Introductory College Geography: An Upward Dissemination Of Educational Innovation," Dissertation Abstracts International 36 (1975): 6591-A.

innovations and have a higher degree of opinion leadership. There also tends to be no difference in age between earlier and later adopters.[20]

In reviewing the relevant research, Hahn cites the studies of Switzer and Turner and Haley which found no relationship between adoption and the age of the adopters of "New Social Studies" projects. There was also no relationship between the number of years of teaching experience and adoption of "New Social Studies" projects.[21] Crowther found no relation between years of teaching experience or the amount of professional training and the adoption of "New Social Studies" curriculum.[22] Walsh found no relation between years of experience and implementation of the Minnesota Project Social Studies.[23] Beckerman and Matula found no relation between years of experience, education and adoption.[24] However, an examination of the Matula study revealed that the results were obtained under simulated conditions, where teachers were asked to assume that they were faced with the decision of whether to use a certain program in their classrooms. This study does not reflect the actual behavior of the teachers, but only their simulated behavior.[25] Robeson and

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[20]Rogers and Shoemaker, op. cit., pp. 185-191.

[21]Hunkins, et. al., op. cit., p. 151.

[22]Ibid.

[23]Ibid.

[24]Ibid.

[25]Franklin Vincent Matula, "A Study Of Selected Factors Contributing To The Expressed Willingness Of Elementary Teachers To Try Selected Selected Classroom Innovations," Dissertation Abstracts International 33 (1972): 3207-A.

Switzer found no relation between the number of degrees held and the adoption of "New Social Studies" project materials.[26]

Wells found a positive correlation between adoption of "New Social Studies" materials and membership in the National Council for the Social Studies.[27] However, an examination of the Wells study, conducted on a stratified sample of 300 Oklahoma social studies teachers, found that while there was a positive correlation between adoption and membership in the NCSS, 88% of the population, consisting of all Oklahoma social studies teachers, did not belong to the National Council.[28] In a study of the use of the Sociological Resources for the Social Studies, Switzer found a positive correlation between membership in the National Council for the Social Studies and adoption. He also found that adopters who said they wanted to be doing something else in five years were more likely to adopt SRSS materials than were individuals who did not have these characteristics.[29]

Turner and Haley found that schools with larger graduating classes were more likely to be adopters of "New Social Studies" project materials.[30] Switzer's two studies showed no relation

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[26]Hunkins, et al., op. cit., p. 151.

[27]Ibid., p. 152.

[28]Tim Joe Wells, "Oklahoma Secondary Social Studies Teachers And The Usage Of New National Social Studies Projects," Dissertation Abstracts International 34 (1973): 6509-A.

[29]Hunkins, et al., op. cit., p. 152.

[30]Ibid.

between the size of the graduating class and the use of project materials.[31]

"among members of a social system . . . "

Rogers and Shoemaker emphasize the importance of opinion leadership to diffusion. Opinion leaders are those individuals who informally influence other people's attitudes or behavior with relatively high frequency. In general, opinion leaders are more cosmopolite, have higher status, and are slightly more innovative than other members of their social system.[32]

Hahn found no studies relating to opinion leaders and social studies innovation diffusion. However, she did identify another role, that of advocate.[33] Richburg reported that the most crucial factor that led to the use of the Georgia Anthropology Curriculum Project materials was the presence of a key person who desired the materials because he or she was dissatisfied with the existing elementary social studies curriculum.[34] Reilly's report of the dissemination of Man: A Course of Study concludes that dissemination of a program is most rapid when someone in an area sees personal advancement in some way tied to the success of the program and, hence, takes an advocacy role.[35]

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[31]Hunkins, et al., op. cit., p. 152.

[32]Rogers and Shoemaker, op. cit., pp. 34-36.

[33]Hunkins, et al., op. cit., p. 154.

[34]Ibid., p. 155.

[35]Ibid.

Hahn concludes by stating that most of the research on the diffusion of innovations from the Social Interaction perspective has examined characteristics of people in the adopting systems. Further, most of the studies focus on product adoption. There have been no studies on the characteristics of people who are aware of recent research findings and other "nonpackaged" ideas or who utilize these less than concrete innovations.[36]

Review of Research Since 1975

The Education Research Information Center system (ERIC) and Dissertation Abstracts were used to discover research on the diffusion of social studies innovations, based on the Social Interaction model of Rogers and Shoemaker. With this definition, few examples were found.

Bintner, in a study involving teachers from thirty-five Iowa public high schools, found that 64% of the teachers reported using teaching methods that reflected a combination of traditional and new social studies approaches. 31% indicated that they taught in a traditional manner, while 4% showed a considerable use of new social studies approaches.

Three variables were used: 1) Years of teacher experience; 2) Number of class preparations; and 3) Educational exposure of the teacher to the "New Social Studies". Bintner found no significant relationship between teaching methods, materials, class organization, or teacher opinions and any of the three variables - - - with one exception. Teachers with more than seven years of experience

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[36]Hunkins, et al., op. cit., p. 155.

showed more favorable attitudes toward "New Social Studies" approaches than did teachers with seven or fewer years.[37]

Blaga, in a study involving the distribution of 752 surveys through 149 secondary principals, found that 37% of the social studies teachers had never used a simulation, 5% had used but since had discontinued use, and 58% were regular users.

Of the regular users of simulation games, 57% used them on a light basis, 34% occasionally, and 9% used simulations on a heavy basis. Both users and non-users were asked their perceptions of simulation games, and it was found that non-users were more skeptical about the educational benefit, cost and time needed to prepare and use games. Blaga found no relationship between use and various personal and professional characteristics.[38]

Falkenstein, in a study examining the extent of the diffusion of Man: A Course of Study in Oregon, found that size and location of school district, amount of money spent on program materials, contact with a training center, and attitudes toward MACOS all influenced the diffusion of this program.[39]

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[37]Stuart John Bintner, "A Study Of The Teaching Methods, Materials, Class Organizations, And Opinions Of American History Teachers In Selected Iowa High Schools", Dissertation Abstracts International 39 (1979): 4857-A.

[38]Jeffrey James Blaga, "A Study Of Teacher's Perceptions And Utilization Of Simulations In Public Secondary Social Studies Classrooms In Ohio," Dissertation Abstracts International 39 (1979): 4858-A

[39]Lynda Carl Falkenstein, "Man: A Course Of Study - A Case Study Of Diffusion In Oregon," Dissertation Abstracts International 38 (1977): 3247-A.

Britton, in a survey of 162 Santa Clara County, California, social studies teachers, concluded that there was a very limited amount of innovation in social studies education going on. Very few social studies project materials were being used, and most teachers reported a lack of awareness of most of the materials. She found that recency of educational experience was the only predictor of innovation.[40]

Superka examined innovativeness among high school social studies teachers and departments and found that the two major indicators of innovation were awareness of new project materials and use of innovative practices. The variables which were identified as having the strongest relationships with these indicators included tenure, current position, academic degree, professional memberships and number of college courses relating to social studies teaching.[41]

Conclusion and Summary

This examination of the available research found no studies using the complete Social Interaction model of diffusion as described by Rogers and Shoemaker applied to the diffusion of social studies innovations, in particular simulation games.

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[40]Helen Ann Britton, "Diffusion Of Social Studies Innovation In Santa Clara County, California", Dissertation Abstracts International 37 (1977): 6395-A.

[41]Douglas P. Superka, An Exploration of Social Studies Innovation In Secondary Schools (Arlington, Va.: ERIC Docmument Reproduction Service ED 150 028, 1977).

Research using this model generally focuses on certain parts of the theory, especially characteristics of innovations and the hypotheses associated with the "time" variable. Some work was done using the communication channel section of the model, but the significant variable of the social system was excluded in all studies.

The studies cited were conducted on a variety of populations, ranging from all the secondary social studies teachers in a state to college instructors of an introductory geography course. All studies used a questionnaire as the sole method of gathering data, except the Walker study which used an interview technique for certain select questions. None of the studies cited used the complete Social Interaction model as described by Rogers and Shoemaker.

Studies indicate that the diffusion of an innovation is influenced by certain characteristics of the innovation, among them being cost in both money and risk, compatibility with needs, values and previous experience, observability and complexity. In addition, several studies also indicated that professional publications were an important source of information for adopters of "New Social Studies" project material. Most of the studies cited drew heavily from the "over time . . . " aspect of the model and found that there was no relationship between age, number of years of teaching experience, amount of professional training, number of degrees held and the adoption of "New Social Studies" project materials. Two studies indicate a positive relationship between membership in the National Council for the Social Studies and adoption of "New Social Studies" materials, while another found that adopters who said they wanted to be doing something else in five years were more

likely to adopt than individuals who did not have these characteristics. Size of graduating class was a factor in one study, but not in another. No study involved itself with the "social system" aspect of the model, but two found that the presence of an advocate helped in the diffusion of certain "New Social Studies" project materials.

CHAPTER III

DESIGN OF THE STUDY

Introduction

The general purpose of this study is to determine if the diffusion of the teaching technique of simulation gaming among the secondary social studies teachers of National Union of Christian Schools, District II High Schools, took place according to the Social Interaction model of Everett M. Rogers and Floyd Shoemaker. In this chapter, the research design will be described, concentrating on the following topics:

Rogers and Shoemaker Hypotheses

Simulation Gaming

Instrument

National Union of Christian Schools District II

Data Collection Procedure

Treatment of Data

Rogers and Shoemaker Hypotheses

Selection of Hypotheses

Everett Rogers and Floyd Shoemaker, in Communication of Innovations: A Cross-Cultural Approach (1971) use a Social Interaction model to explain the diffusion of innovations. This model differs from others in that it attempts to explain how diffusion occurred, rather than how it should occur.

The authors used diffusion research from a wide variety of areas, such as agriculture and medicine, and from many areas of the world. More than 1500 publications were used to construct 103 hypotheses dealing with the diffusion of innovations. These statements, because of the broad background from which they were constructed, are intended to describe the diffusion of any innovation under any condition.

In applying the Rogers and Shoemaker hypotheses to education, and in particular to the involved population of this study, a certain amount of selectivity had to be used because certain hypotheses were not applicable. The following criteria were used in selecting hypotheses for this study:

1. The hypotheses used had to apply to schools. For example, Rogers and Shoemaker postulated that earlier adopters of an innovation are more likely to be literate than are later adopters. Since literacy, in spite of certain questions on the part of some, is a prerequisite for teaching, this hypothesis does not apply. Another example is the hypothesis which states that earlier adopters are more likely to have a commercial (rather than a subsistence) orientation than are later adopters. Since teachers are employees of not-for-profit organizations, this hypothesis is not applicable.
2. The hypotheses had to apply to the spread of the teaching technique of simulation gaming. The adoption of this technique is an individual decision made by the classroom teacher, and is generally not dependent upon others, such

as administrators or colleagues, for implementation. As a result, hypotheses dealing with other types of decisions were eliminated.

In addition, since the primary concern here is with the diffusion of an innovation through a population, certain hypotheses which deal with the question of stages in the adoption process are judged not relevant to the scope of this study. Hypotheses dealing with the discontinuation of an innovation are also not used.

3. Since the primary means of gathering information is a self-administered questionnaire, only those hypotheses which lend themselves to this are used. Any hypothesis which requires other means for testing is dropped from consideration.

4. The nature of the surveyed population also influences the choice of hypotheses. The primary focus of the study is on social studies teachers in the eight National Union of Christian Schools high schools, which means that since these teachers are only part of the faculty, certain hypotheses which apply to the whole faculty are not used.

Hypotheses

Rogers and Shoemaker maintain that "the main elements in the diffusion of new ideas are the innovation, which is communicated through certain channels, over time, among members of a social system." The following hypotheses have been selected for this study.

"The innovation . . . "

1. The relative advantage of a new idea, as perceived by members of a social system, is positively related to its rate of adoption.

2. The compatibility of a new idea, as perceived by members of a social system, is positively related to its rate of adoption.

3. The complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption.

4. The trialability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

5. The observability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption.

"communicated through certain channels . . . "

6. Mass media channels are relatively more important at the knowledge function, and interpersonal channels are relatively more important at the persuasion function in the innovation-decision process.

7. Cosmopolite channels are relatively more important at the knowledge function, and localite channels are relatively more important at the persuasion function in the innovation-decision process.

8. Mass media channels are relatively more important than interpersonal channels for earlier adopters than for later adopters.

9. Cosmopolite channels are relatively more important than localite channels for earlier adopters than for later adopters.

"over time . . . "

10. Earlier adopters are no different from later adopters in age.

11. Earlier adopters have more years of education than do later adopters.

12. Earlier adopters have higher social status than later adopters.

13. Earlier adopters have a greater degree of upward social mobility than later adopters.

14. Earlier adopters have larger sized units than later adopters.

15. Earlier adopters have more specialized operations than later adopters.

16. Earlier adopters have greater empathy than later adopters.

17. Earlier adopters are less dogmatic than later adopters.

18. Earlier adopters have a greater ability to deal with abstractions than later adopters.

19. Earlier adopters have greater rationality than later adopters.

20. Earlier adopters have greater intelligence than later adopters.

21. Earlier adopters have a more favorable attitude toward change than later adopters.

22. Earlier adopters have a more favorable attitude toward risk than later adopters.

23. Earlier adopters have a more favorable attitude toward education than later adopters.

24. Earlier adopters have a more favorable attitude toward science than later adopters.

25. Earlier adopters are less fatalistic than later adopters.

26. Earlier adopters have higher levels of achievement motivation than later adopters.

27. Earlier adopters have higher aspirations (for education, occupations and so on) than later adopters.

28. Earlier adopters have more social participation than later adopters.

29. Earlier adopters are more highly integrated with the social system than later adopters.

30. Earlier adopters are more cosmopolite than later adopters.

31.Earlier adopters have more change agent contact than later adopters.

32. Earlier adopters have greater exposure to mass media communication channels than later adopters.

33. Earlier adopters have greater exposure to interpersonal communication channels than later adopters.

34. Earlier adopters seek information about innovations more than later adopters.

35. Earlier adopters have greater knowledge of innovations than later adopters.

36. Earlier adopters have a higher degree of opinion leadership than later adopters.

37. Earlier adopters are more likely to belong to systems with modern rather than traditional norms, than are later adopters.

38. Earlier adopters are more likely to belong to well-integrated systems than are later adopters.

39. Innovations that are perceived by receivers as possessing greater relative advantage, compatibility and the like have a more rapid rate of adoption.

"among members of a social system . . . "

40. When the system's norms favor change, opinion leaders are more innovative, but when the norms are traditional, opinion leaders are not especially innovative.

41. When the norms of a system are more modern, opinion leadership is more monomorphic.

42. The individual's degree of integration into a social system affects his adoption behavior.

43. Interpersonal diffusion is mostly homophilous.

44. When interpersonal diffusion is heterophilous, followers seek opinion leaders of higher social status.

45. When interpersonal diffusion is heterophilous, followers seek opinion leaders with more education.

46. Interpersonal diffusion is characterized by a greater degree of homophily in traditional than in modern systems.

47. In traditional systems followers interact with opinion leaders less (or no more) technically competent than themselves, whereas in modern systems opinion leaders are sought who are more technically competent than their followers.

48. Opinion leaders are more cosmopolite than their followers.

49. Opinion leaders have greater social participation than their followers.

50. Opinion leaders are more innovative than their followers.

The above hypotheses, selected from Communication of Innovations: A Cross-Cultural Approach by Rogers and Shoemaker, will be used in this study.

The Choice of Simulation Games as the Innovation

In deciding which innovation to use in this diffusion study, several elements had to be considered. Simulation gaming was chosen because it met the following criteria:

1. The innovation under study had to be one which could be adopted by the individual teacher. Since the research instrument is a questionnaire given to all teachers over a short period of time, this rules out those more complex adoption decisions that would be best studied by other means, such as interviews and observations.
2. The innovation under study had to have a reasonable chance of already diffusing through the system. A purpose of this study is to determine the validity of the Rogers and Shoemaker Social Interaction model of diffusion and to choose an innovation that had not diffused would have eliminated the opportunity to make any judgements of the model.
3. Simulation games, as opposed to other innovations such as computer assisted instruction, involves a relatively low outlay of money, thus contributing to its

desirability

4. In addition, simulation gaming does involve a degree of change in normal behavior on the part of the teacher, thus making this an observable innovation.

The Instrument

A questionnaire was constructed to gather information from the three groups of teachers that make up the population of this study. (See Appendix B) All teachers were to take the first part, dealing with such matters as system norms, while only the social studies teachers were to take the second part. Of the social studies teachers, only those who had used a simulation game were asked to complete the whole questionnaire.

Since there is no complete existing questionnaire for use in a study like this, one was constructed to gather two basic types of information; demographic data, and information on attitudes. On the attitudinal responses, the teachers were asked to respond on a nine-point Likert Scale, ranging from "Strongly Disagree" to "Strongly Agree".

The Rogers and Shoemaker hypotheses that were to be used in this study were determined beforehand, and questions were constructed which seemed to give the best opportunity to provide the information needed. Several previous studies proved helpful in this regard,

notably the ones by Mortimer (1968),[1] Keller (1974),[2] and Anderson (1975).[3] Personnel in the Michigan State University Office of Research Consultation checked the questionnaire several times.

National Union of Christian Schools District II

The National Union of Christian Schools is a service organization set up to promote the interest and welfare of Calvinistic Christian Day Schools, primarily in the United States and Canada. These schools, based on the Biblical teachings of John Calvin and later those of Dr. Abraham Kuyper of the Netherlands, attempt to translate Calvinism into the field of education.[4]

As of 1977-1978, there were 322 schools affiliated with the National Union, enrolling 62,269 pupils and employing 3,048 teachers. Subtracting the Canadian membership makes the National Union the third largest non-public school movement in the United States, schools operated by the Roman Catholic Church and the Missouri Synod Lutherans being the two largest. The geographical area

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[1]Frederic J. Mortimer, Diffusion of Educational Innovations in the Government Secondary Schools of Thailand, (East Lansing: Michigan State University, 1968).

[2]Clare Keller, The Diffusion of Innovation Within One Michigan School System Using a Communication Flow Inventory, (East Lansing: Michigan State University, 1974).

[3]Thomas Reid Anderson, A Cross-Sectional Case Study of the Results of Community Education Implementation and Diffusion in Process City, USA, (East Lansing: Michigan State University, 1975).

[4]Donald Oppewal, The Roots of the Calvinistic Day School Movement, (Grand Rapids: Calvin College Monograph Series, 1963), pp. 18-26.

covered by the National Union is divided into eleven districts, covering the United States and Canada. Of these, District II covers the state of Michigan.[5] The population for this study consists of all eight secondary schools in District II.

These schools are a varied lot, yet with many similarities and common ties. All eight schools are located in the western half of the state, primarily in the Holland-Muskegon-Grand Rapids area which contains six of the schools. Northern Michigan Christian High is located in the upper part of the Lower Peninsula, and Kalamazoo Christian High is at the southern edge of this territory. Four of the schools are located in urban areas, two in suburban areas and two in rural areas. These areas constitute the major areas of Dutch settlement in the state.

Table 3.1 shows the size and location of the schools as of 1977-1978:

Table 3.1

Size and Location of Schools Surveyed

School	Pupils	Teachers	Location
Grand Rapids Christian	1073	49	Grand Rapids
Northern Michigan Christian	100	8	McBain
Unity Christian	679	36	Hudsonville
Holland Christian	939	47	Holland
South Christian	552	26	Cutlerville
Calvin Christian	628	33	Grandville
Kalamazoo Christian	505	24	Kalamazoo
Western Michigan Christian	317	17	Muskegon

[5] 1977-1978 Directory, (Grand Rapids: National Union of Christian Schools, 1977) pp. 16-25

All schools and faculty officially subscribe to a common philosophy of education, share a common ethnic heritage and are united in their attempts to provide a unique Christian education, yet there are differences among the schools in the application and interpretation of this philosophy.

The administrators of these schools are members of the Michigan Christian School Administrator's Council, and the teachers form the majority of the Christian Educator's Association, which also includes teachers from Christian Schools in Indiana, Illinois and Wisconsin. The majority of the teachers were trained at Calvin College in Grand Rapids, and are members of the Christian Reformed Church.

The students are primarily from a Dutch background, mostly members of the Christian Reformed Church, although this percentage has decreased slightly as the various schools make more of an effort to recruit pupils.

All schools are financed by tuition charged to the parents, which is paid primarily by them with some contribution made by local churches. The schools, however, are controlled by boards elected from the parents who enroll their children in the schools. There is no formal connection between the schools and the Christian Reformed Church, though informal ones are many.

Data Collection Procedures

The questionnaire was administered during the last two weeks in May of 1978. The administrators of the eight schools were contacted in person and were informed of the survey, and all eight agreed.

The questionnaire was distributed by each administrator to his faculty in a manila envelope, with a cover letter describing the purpose of the study and instructing the faculty member to return the completed questionnaire in the sealed envelope to the school office, where they were later collected. (See Appendix A) A follow-up letter with another copy of the questionnaire was mailed to all of those who did not hand in the original. This procedure produced the returns shown in Table 3.2:

Table 3.2

Summary of Questionnaire Returns

School	Total Number of Faculty	Number Returned	%	Total Number of Social Studies Teachers	Number Returned	%
1	24	21	88	4	4	100
2	49	47	96	6	6	100
3	47	28	60	8	3	38
4	33	29	88	5	5	100
5	8	8	100	2	2	100
6	26	21	81	4	3	75
7	17	16	94	3	3	100
8	36	26	72	4	4	100
Totals	240	196	82%	35	30	86%

Treatment of Data

Since the schools under study constitute all of the National Union of Christian School Christian High Schools in Michigan (District II), for the purpose of this study they are regarded as a population. However, inferential statistics will be used to analyze the data.

The hypotheses chosen for this study are such that complex statistical formulas are not called for. Each hypothesis calls for

the establishment of a simple correlation in a predicted direction between two or more variables. Because of this, the following formulas are used in analyzing the data:

1. The Pearson Correlation formula is used to establish correlations where the data is reported as interval data, data such that the distances between any two numbers on the scale are of known size.
2. The Spearman Rank-Order Correlation formula is used to establish correlations where the data is reported as ordinal data, or data which can be ranked.
3. The Chi-Square formula is used in situations where two or more dependent variables are correlated with two or more independent variables.
4. The Kendal Coefficient of Concordance is used in situations where information on the variation of certain rankings is desired.
5. The Student-t is used in situations where the means of one group are compared to the means of another group.

In addition, certain data will be reported in tabular form.

In all cases, the level of statistical significance is set at .05.

Summary

A total of fifty hypotheses were selected from the four sections of the Social Interaction model of innovation diffusion as developed by Rogers and Shoemaker. Only those hypotheses were selected which applied to schools, involved an individual's decision to adopt or

reject as opposed to the decision of a group, held the promise of being measured by a questionnaire, and applied to a part of the surveyed faculties.

The teaching technique of simulation gaming was chosen as the innovation to be studied because it is a part of the "New Social Studies". In addition, it is a technique that can be adopted by an individual teacher, as opposed to those adopted by a group, and seemed to be already in use. Simulation gaming is a relatively inexpensive innovation, and involves a change in teacher behavior.

A questionnaire was constructed to collect demographic and attitudinal data from the three groups of teachers involved in this study: 1) All faculty members of the eight National Union of Christian Schools Christian High Schools in District II; 2) All social studies teachers in these schools; and 3) Those social studies teachers who had used a simulation game. This questionnaire was given to the teachers over a two week period in May, 1978. A follow-up letter increased the total returns to 82% for all faculty members and 86% for the social studies teachers.

Since the hypotheses called for the establishment of correlations between variables in a predicted direction, the Pearson, Spearman, and Chi-Square formulas were used, along with the Kendal Coefficient of Concordance and Student-t. The significance level in all cases was set at .05.

CHAPTER IV

ANALYSES OF RESULTS

Overview

In this chapter, each Rogers and Shoemaker hypothesis will be stated and explained, analyzed by the proper statistical test, and the results discussed. In keeping with the Rogers and Shoemaker generalization that "the main elements in the diffusion of new ideas are: 1) the innovation; 2) which is communicated through certain channels; 3) over time; 4) among members of a social system," this structure will be used in presenting and discussing the data.[1]

Early-Later Adopter Categories

Since the time of adoption of an innovation plays a crucial role in the Rogers and Shoemaker model, it was necessary to establish this adoption timetable early in the study. Each social studies teacher who had used simulation gaming in the classroom was asked to give the month and year in which this innovation was first used. Each month of the years from 1964 to 1978 was then assigned a number, starting with 001 for January of 1964 and ending with 174 for June of 1978, the month in which the study was conducted. An adopter timetable was then constructed from this information. (See Appendix C)

The group of twenty-four social studies teachers who had used simulation games was then divided in half to produce the early and

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[1]Everett Rogers and Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach. (New York: The Free Press, 1971). p. 39.

later adopter categories. However, because the twelfth and thirteenth teachers both adopted in the same month of the same year, it was decided to include them both in the early adopter category, thus leaving thirteen early adopters and eleven later adopters.

Statistical Tests

Several of the hypotheses were tested using the Pearson Product Moment Correlation. These hypotheses involved the use of data reported as interval data, such as the responses to the nine-point Likert Scale correlated with time of adoption.

The Spearman Rank-Order Correlation was used in correlating other hypotheses dealing with time of adoption and data reported as ordinal, such as size of school population or where school systems are being compared with each other.

The Pearson Chi-Square statistic was used to test hypotheses involving the correlation of two dependent variables such as adopter categories, with two or more independent variables. Yates' Correction was applied where the expected cell sizes were smaller than five.

It was necessary to use the Kendal Coefficient of Concordance in two hypotheses where variations in rankings were measured.

Finally, with certain other hypotheses involving a comparison of means of certain groups, the test statistic used was the Student t. Each test will be identified as it is used. A significance level of .05 was set as the criterion for rejecting or failing to reject all hypotheses.

Results and Discussion of Data

The Rogers and Shoemaker generalization on the spread of an innovation is based upon the relationship between the innovation and the following variables: 1) characteristics of the innovation; 2) type of communication; 3) time of adoption; and 4) type of social system. These four variables will serve as the framework for a discussion of the data generated in this study.

"The innovation . . . "

Rogers and Shoemaker maintain that certain characteristics of an innovation govern its spread. Among these characteristics are relative advantage, compatibility, complexity, trialability and observability.

1. "The relative advantage of a new idea, as perceived by members of a social system, is positively related to its rate of adoption."

The authors define advantage as the idea that what is being adopted is perceived as better than what is being replaced. Earlier adopters should give an innovation a higher score on relative advantage than later adopters.

The Pearson Correlation formula yielded a correlation of -.10 with a level of significance of .33. However, the correlation was not in the expected direction, and since .05 is used as the level of statistical significance for this and all subsequent items, this finding is considered not statistically significant.

2. "The compatibility of a new idea, as perceived by members of a social system, is positively related to its rate of adoption."

Compatibility is defined as the relationship between a new idea and the other ideas already held by the members of the social system.

Earlier adopters should see an innovation as being more compatible with present ideas than later adopters would.

The Pearson Correlation formula yielded a correlation of -.30 with a significance level of .08. However, the correlation was not in the expected direction and this finding is considered not statistically significant.

3. "The complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption."

Rogers and Shoemaker maintain that "those new ideas requiring little additional learning investment on the part of the reader will be adopted more rapidly than innovations requiring the adopter to develop new skills and understandings."

The Pearson Correlation formula yielded a correlation of .12, with a significance level of .39. This correlation was not in the expected direction, and is not considered statistically significant.

4. "The trialability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption."

The authors maintain that "new ideas which can be tried on the installment plan will generally be adopted more quickly than innovations which are not divisible." Earlier adopters should have had more opportunity to try simulation games before adopting them for classroom use than did later adopters.

A Chi-Square analysis of the data produced the following:

	Yes	No	
Early Adopters	6	7	13
Later Adopters	7	4	11
	13	11	24

X^2=.73 p=.29 df=1

The relationship of trialability to rate of adoption is rejected.

5. "The observability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption."

The authors explain that "the easier it is for an individual to see the results of an innovation, the more likely he is to adopt." Earlier adopters are more likely to have seen the innovation in operation than later adopters.

A Chi-Square analysis of the data, with Yates' Correction applied, produced the following:

	Played and/or Saw	Neither	
Early Adopters	9.5	3.5	13
Later Adopters	7.5	3.5	11
	17	7	24

$X^2 = .07$ $p = .21$ $df = 1$

The relationship of observability to rate of adoption is rejected.

Discussion of Results

Rogers and Shoemaker maintain that the relative advantage, compatibility, complexity, trialability and observability of an innovation affect the rate at which the innovation is diffused. They predicted positive relationships between time of adoption and relative advantage, compatibility, trialability and observability, and a negative relationship between time of adoption and complexity.

In this study, no significant relationships were found for any of the five independent variables with time of adoption, although

compatibility was significant at the .08 level. Further, in the three hypotheses where correlation coefficients were used, the relationships were found to be in the opposite direction from that predicted. Earlier adopters found simulation games to have less relative advantage, less compatibility, and were more complex than their regular teaching methods. These correlations were all low.

No relationship was found to exist between time of adoption and the characteristics of trialability and observability.

These results are summarized in Table 4.1:

Table 4.1

Summary of Relationships Between Time of Adoption and Innovation Characteristics

Innovation Characteristics (Independent Variable)	Time of Adoption (Dependent Variable)				
	Predicted Relationship	Pearson	Sig.	X^2	Sig.
Relative Advantage	+	-.10	.33		
Compatibility	+	-.30	.08		
Complexity	-	.12	.39		
Trialability	+			.73	.29
Observability	+			.07	.21

"type of communication channel . . . "

Rogers and Shoemaker use the following definitions:

> Mass Media Channel - radio, TV, magazines and so forth.
>
> Interpersonal Channel- from person to person, either in or out of the social system.
>
> Cosmopolite Channel- from outside the system. Mass Media are almost entirely cosmopolite; interpersonal channels may

be cosmopolite.

Localite Channel-from inside the system. These are primarily interpersonal.

They maintain that the communication channel, "the means by which the message gets from the source to the receiver", has an influence on the adoption of an innovation. Mass media, cosmopolite channels do a better job of informing potential adopters about an innovation, while interpersonal, localite channels do a better job of persuading potential adopters to adopt an innovation.

In addition, mass media, cosmopolite channels are more important sources for both informing and persuading earlier adopters, while interpersonal, localite channels are more important for informing and persuading later adopters to adopt an innovation.

6. "Mass Media channels are relatively more important at the knowledge function, and interpersonal channels are relatively more important at the persuasion function in the innovation-decision process."

A Chi-Square analysis of the data, with Yates' Correction applied, produced the following:

	Mass Media Channels	Interpersonal Channels	
Knowledge Function	4.5	18.5	23
Persuasion Function	3.5	19.5	23
	8	38	46

$X^2 = .15$ $p = .30$ $df = 1$

The hypothesis is rejected.

7. "Cosmopolite Channels are relatively more important at the knowledge function, and Localite Channels are relatively more important at the persuasion function in the innovation-decision process."

A Chi-Square analysis of the data, with Yates' Correction applied, produced the following:

	Cosmopolite Channels	Localite Channels	
Knowledge Function	19.5	3.5	23
Persuasion Function	16.5	5.5	22
	36	9	45

X^2=.67 p=.57 df=1

The hypothesis is rejected.

8. "Mass Media Channels are relatively more important than Interpersonal Channels for earlier adopters than for later adopters."

Rogers and Shoemaker maintain that Mass Media Channels are more important at informing and persuading Earlier Adopters to adopt an innovation, while Interpersonal Channels are more important at informing and persuading Later Adopters to adopt an innovation.

The twenty-four social studies teachers were asked to choose the sources that first informed them about and then convinced them to use simulation games. These answers were then combined and a Chi-Square analysis, with Yates' Correction applied, produced the following:

	Mass Media Channels	Interpersonal Channels	
Earlier Adopters	5.5	18.5	24
Later Adopters	2.5	19.5	22
	8	38	46

X^2=1.02 p=.68 df=1

The hypothesis is rejected.

9. "Cosmopolite Channels are relatively more important than Localite Channels for earlier adopters than for later adopters."

For this hypothesis, the answers for the questions dealing with source of information and persuasion were combined. A Chi-Square analysis of the data, with Yates' Correction applied, produced the following:

	Cosmopolite Channels	Localite Channels	
Earlier Adopters	18.5	5.5	24
Later Adopters	17.5	3.5	21
	36	9	45

X^2=.27 p=.38 df=1

The hypothesis is rejected.

Discussion of Results

Rogers and Shoemaker hypothesize that mass media, cosmopolite channels do a better job of informing potential adopters about an innovation, while interpersonal, localite channels do a better job of persuading potential adopters to adopt an innovation. They also maintain that mass media, cosmopolite channels are more important sources for informing and persuading earlier adopters. while interpersonal, localite channels are more important for informing and persuading later adopters to adopt an innovation.

These hypotheses were all rejected after Chi-Square analysis of the data. A summary of the hypotheses and the findings is presented in Table 4.2.

Table 4.2

Summary of Predicted and Actual Relationships Between Mass Media-Cosmopolite, Interpersonal-Localite Channels and Time of Adoption-Decision to Adopt

		Mass Media-Cosmopolite Channels		Interpersonal-Localite Channels	
		Rogers-Shoemaker Prediction	Findings	Rogers-Shoemaker Prediction	Findings
Decision Process	Knowledge	More Important	No Relationship		
	Persuasion			More Important	No Relationship
Time of Adoption	Early Adopters	More Important	No Relationship		
	Later Adopters				

"over time . . . "

Rogers and Shoemaker maintain that time is involved in the diffusion process in that people who adopt an innovation earlier than others are different on certain criteria from those who adopt later. In addition, innovations which have more or less of the five characteristics of relative advantage, compatibility, complexity, trialability and observability will diffuse through systems at different rates of time.

10. "Earlier adopters are no different from later adopters in age."

The age of the social studies teachers who had adopted simulation games was correlated with the time of their adoption of this innovation. The Pearson Correlation formula yielded a correlation of -.28, with a level of significance of .10. However, this correlation is not statistically significant and the hypothesis is rejected.

11. "Earlier adopters have more years of education than do later adopters."

The number of teachers with AB Degrees, MA Degrees and time of adoption was analyzed according to the Chi-Square method, with Yates' Correction applied, which produced the following:

	AB Degree	MA Degree	
Early Adopters	3.5	9.5	13
Later Adopters	4.5	6.5	11
	8	16	24

X^2=.48 p=.51 df=1

The relationship of years of education to rate of adoption

is rejected.

12. "Earlier adopters have higher social status than later adopters."

The faculties of each school were asked to respond to the following questions:

> a. Among the teachers in this school, name three whom you respect most as teachers.
>
> b. Among the teachers in this school, name three whose opinions you most frequently seek when you have problems related to your teaching performance.
>
> c. Among the teachers in this school, name three teachers whose opinions on crucial educational issues are usually very valuable to you.
>
> d. Among the teachers in this school, name three teachers that you consider to be the most innovative.

The number of times that each adopting social studies teacher was chosen by his colleagues were tallied, and the results were combined by question into the two adopter categories.

A Chi-Square analysis of the data was performed, with the following results:

	Questions				
	a	b	c	d	
Early Adopters	57	41	50	39	187
Later Adopters	31	33	29	37	130
	88	74	76	76	317

X^2=4.06 p=.77 df=3

The relationship of social status to rate of adoption is rejected.

13. "Earlier adopters have a greater degree of upward social mobility than later adopters."

Social studies teachers who had adopted simulation games were asked to list their father's current occupation. Using the National Opinion Research Center's scale of occupational prestige, as found in Occupations and Social Status by Albert Reis, Jr. (1961), each occupation, including that of teacher, was given a value. Using the value for the respondent's present job as a teacher for the base, distances were calculated between the respondent's present position and that of his father. These distances were then ranked and correlated with time of adoption.

Using the Spearman Rank-Order Correlation formula, the result was a correlation of -.02, significant at the .07 level. This correlation is not in the expected direction, and is not considered statistically significant.

14. "Earlier adopters have larger sized units than later adopters."

The schools were ranked from largest to smallest based on their number of pupils as reported in the 1977-1978 National Union of Christian Schools Directory. This ranking was then correlated with time of adoption, using the Spearman Rank-Order Correlation formula.

The results were a correlation of -.18, significant at the .03 level. Since a significance level of .05 was set as the criterion for significance, this finding is statistically significant. There is a relationship between size of unit and time of adoption, but not the one predicted by Rogers and Shoemaker. In this case, earlier adopters came from smaller schools than did later adopters.

15. "Earlier adopters have more specialized operations than later adopters."

The adopting social studies teachers were asked how many different courses they taught during the school day. These answers were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .02, with a level of significance of .46. However, this correlation is not statistically significant and the hypothesis is rejected.

16. "Earlier adopters have greater empathy than later adopters."

Rogers and Shoemaker define empathy as "the ability of an individual to project himself into the role of another". The adopting social studies teachers were asked to respond on a nine-point Likert Scale to the following statement: "I generally consider myself able to understand and sympathize with other people." These results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .33, with a level of significance of .06. However, this correlation is not statistically significant and the hypothesis is rejected.

17. "Earlier adopters are less dogmatic than later adopters."

Rogers and Shoemaker define dogmatism as "a variable representing a relatively closed belief system, a set of beliefs that are strongly held. The highly dogmatic person does not welcome new ideas; he prefers to hew to the past in a closed manner."

The social studies teachers who had used simulation games were asked to respond on a nine-point Likert Scale to the following statement: "Generally,teaching methods and educational philosophies

used by past generations are more reliable than the newer methods and philosophies of the present generation." These results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .11, with a significance level of .30. However, this finding was not statistically significant and the hypothesis was rejected.

18. "Earlier adopters have a greater ability to deal with abstractions than later adopters."

Rogers and Shoemaker maintain that "innovators must be able to adopt a new idea largely on the basis of abstract stimuli, such as are received from the mass media. But later adopters can observe the innovation in the here-and-now of a peer's operation. Therefore they need less ability to deal with abstractions."

The adopting social studies teachers were asked to respond on a nine-point Likert Scale to the following statement: "Usually, when someone explains something to me that is highly abstract, I find that I understand better if I am shown a diagram or a picture."

The Pearson Correlation formula produced a correlation of -.17, with a significance level of .21. The correlation was not in the expected direction, and the finding was not statistically significant, so the hypothesis was rejected.

19. "Early adopters have greater rationality than later adopters."

Rogers and Shoemaker define rationality as "the use of the most effective means to reach a given end."

Adopting social studies teachers were asked to respond on a nine-point Likert Scale to the following statement: "My friends

consider me to be highly efficient and organized in my work." These results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .09, with a significance level of .34. Since the finding was not statistically significant, the hypothesis was rejected.

20. "Earlier adopters have greater intelligence than later adopters."

Rogers and Shoemaker do not define intelligence. For the purpose of this study it will be defined as college grade point average.

The subjects were asked to indicate what their approximate college grade point average was. This was then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .13, with a significance level of .27. The finding was not statistically significant and the hypothesis was rejected.

21. "Earlier adopters have a more favorable attitude toward change than later adopters."

This hypothesis is not defined by Rogers and Shoemaker.

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "Most changes introduced in the last ten years have contributed very little in promoting education in our schools." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of -.25, with a significance level of .11. The finding was not statistically significant and the hypothesis was rejected. The correlation, however, was not in the predicted direction.

22. "Earlier adopters have a more favorable attitude toward risk than later adopters."

Rogers and Shoemaker do not define this term.

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "One of the best ways to achieve a goal is to take a risk." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of -.11, with a significance level of .31. The finding was not statistically significant and the hypothesis was rejected. The correlation, however, was not in the predicted direction.

23. "Earlier adopters have a more favorable attitude toward education than later adopters."

Rogers and Shoemaker do not define this term.

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "An education is a very important part of being successful." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .43, with a significance level of .02. Since a significance level of .05 was set as the criterion for significance, this finding is statistically significant. There is a relationship between attitude toward education and time of adoption, with earlier adopters having a more favorable attitude than later adopters

24. "Earlier adopters have a more favorable attitude toward science than later adopters."

Rogers and Shoemaker maintain that "because most innovations

are the products of scientific research, it is logical that innovators should be more favorably inclined toward science."

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "Most of man's recent progress has been due to scientific research." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .09, with a significance level of .33. The finding was not statistically significant and the hypothesis was rejected.

25. "Earlier adopters are less fatalistic than later adopters."

Rogers and Shoemaker define fatalism as "the degree to which an individual perceives a lack of ability to control his future."

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "Most of what lies in store for me in the future is beyond my control." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .01, with a significance level of .48. The finding was not statistically significant and the hypothesis was rejected.

26. "Earlier adopters have higher levels of achievement motivation than later adopters."

Rogers and Shoemaker define achievement motivation as "a social value which emphasizes a desire for excellence in order for an individual to attain a sense of personal accomplishment."

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "When I do something, it must be done

perfectly or I am not satisfied." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .30, with a significance level of .08. The finding was not statistically significant and the hypothesis was rejected.

27. "Earlier adopters have higher aspirations (for education, occupations and so on) than later adopters."

Since Rogers and Shoemaker use several examples of higher aspirations, the subjects were asked to respond on nine-point Likert Scales to the four statements that were used to measure this variable. The statements were:

a. "I am satisfied with the thought that I might be a social studies teacher for the rest of my life."

b. "Administration appeals to me."

c. "I can see myself in the future working in some form of business."

d. "College teaching of some type appeals to me."

The result of each statement was then seperately correlated with time of adoption.

The Pearson Correlation formula produced the following correlations:

a. -.37, with a significance level of .04.

b. .47, with a significance level of .01.

c. -.01, with a significance level of .47.

d. .20, with a significance level of .17.

The results for statements c and d were not statistically significant. However, since .05 was set as the level of statistical significance, the results for statements a and b are statistically

significant. The correlation of the results of statement a and time of adoption is a negative one, which means that earlier adopters are less satisfied with the thought that they might be social studies teachers for the rest of their lives, but earlier adopters do find administration to be more appealing than later adopters. If aspirations are defined as dissatisfaction with the idea that their present career as a social studies teacher is a life-long one, and that administration is appealing, then the hypothesis is not rejected.

28. "Earlier adopters have more social participation than later adopters."

Rogers and Shoemaker do not define "social participation."

It was decided to ask each adopting social studies teacher to list the community organizations that he belonged to as a measure of social participation. In addition, since the church plays such an important part in this culture, the respondents were also asked to identify positions of leadership that they held over the past four years. These positions were either in the governing bodies of the church or in various supporting committees.

The number of community organizations that the subjects belonged to was correlated with time of adoption by using the Pearson Correlation formula, which produced a correlation of -.09, with a significance level of .35.

A Chi-Square analysis of the data for the second question produced the following:

	Council Member	Supporting Committees	
Early Adopters	14	11	25
Later Adopters	6	7	13
	20	18	38

X^2=.33 p=.42 df=1

In the relationship of community organizations to time of adoption, the finding was not statistically significant. There was no relationship between time of adoption and church organization membership. The hypothesis was rejected.

29. "Earlier adopters are more highly integrated with the social system than later adopters."

Rogers and Shoemaker define communication integration as "the degree to which the units in a social system are interconnected by interpersonal communication channels." Further, an interpersonal communication channel is one which "involves a face-to-face exchange between two or more individuals."

Two statements were used to test this hypothesis. The subjects were asked to respond on a nine-point Likert Scale to the following statements:

a. "Most of my social life is spent with my colleagues."

b. My colleague's evaluation of me is important to me."

The results were then correlated with time of adoption. Earlier adopters should have more agreement with these statements than later adopters.

The Pearson Correlation formula produced the following results:

a. A correlation of .15, with a significance level of .24.

b. A correlation of .13, with a significance level of .27. Both findings are not considered statistically significant, and the hypothesis is rejected.

30. "Earlier adopters are more cosmopolite than later adopters."

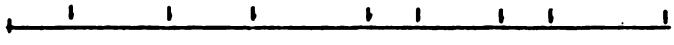
Rogers and Shoemaker maintain that a cosmopolite person is more likely to have his reference groups located outside of, rather than within, his social system. They travel widely and are involved in matters beyond the boundary of their local system.

Three questions were used to measure this variable:

a. "How many professional meetings which involved educators from more than one school have you attended in the last two years?"

b. Respondents were asked to react on a nine-point Likert Scale to the following statement:
"Many of my insights and new ideas regarding education result from discussions with educators

in this school system	outside this school system



c. "List the professional teachers organizations of which you are a member."

The results were all correlated with time of adoption.

The Spearman Rank-Order Correlation formula was used to analyze the data for questions a and c. The results of this analyses were: a) a correlation of -.10, with a significance level of .49; and c) a correlation of -.10, with a significance level of .48. Both findings are not statistically significant.

The Pearson Correlation formula was used to analyze the data for question b. The result of this analysis was a correlation of .33, with a significance level of .05. Since .05 was established as the level of statistical significance, this finding

is considered statistically significant. If cosmopoliteness is defined as source of new ideas regarding education, then earlier adopters feel they get more of them outside of their school system than do later adopters. However, membership in teacher organizations and attendence at professional meetings correlated with time of adoption is not statistically significant.

31. "Earlier adopters have more change agent contact than later adopters."

The subjects were asked if they had ever used the services of a social studies consultant, either from the National Union of Christian Schools or from their local area, and, if yes, how many times they used this service.

Of the twenty-four subjects, only eight answered that they had used such services, four being "early adopters" and four being "later adopters." The four "early adopters" used these services a total of twelve times while the "later adopters" used these services a total of eight times.

32. "Earlier adopters have greater exposure to mass media communication channels than later adopters."

Four questions were used to measure this variable. The results of each were correlated with time of adoption.

a. Subjects were asked how many hours per day they listened to radio. The Pearson Correlation formula produced a correlation of .01, with a significance level of .48.

b. Subjects were asked how many hours per day they watched television. The Pearson Correlation formula produced a correlation of -.15, with a significance level of .24.

c. Subjects were asked to list the titles of books that they had read in the past thirty days. The Pearson Correlation formula produced a correlation of .19, with a significance level of .19.

d. Subjects were asked to list the non-professional magazines and newspapers that they read. The Pearson Correlation formula produced a correlation of .34, with a significance level of .05.

Since .05 was established as the level of statistical significance, the findings for questions a, b, and c are not not considered statistically significant. However, the results for question d are significant and there is a relationship between the number of non-professional magazines and newspapers read and time of adoption. Earlier adopters read more of these than do later adopters.

33. "Earlier adopters have greater exposure to interpersonal communication channels than later adopters."

The subjects were asked to respond on a nine-point Likert Scale to the following statement: "I am usually up on the latest faculty gossip." The results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of .27, with a significance level of .10. The finding is not statistically significant and the hypothesis is rejected.

34. "Earlier adopters seek information about innovations more than later adopters."

The subjects were asked whether they were actively seeking information on any of the following list of innovations in the social studies area:

a. Values Clarification
b. Inquiry Method
c. Simulation Gaming
d. Use of Case Studies
e. Concept Formation
f. Career Education
g. Ethnic Group Studies
h. Feminist Movement
i. Use of Videotape Equipment

The relationship between adopter category and a yes-or-no answer was analyzed by using the Chi-Square formula, with Yates' Correction applied. A summary of this analysis found in Table 4.3.

Table 4.3

A Summary of the Chi-Square Analyses With Yates' Correction Applied of the Data for Hypothesis #34

Innovation	Seeking Information	Early Adopter	Later Adopter	X^2	Sig. Level	Decision
Values Clarification	Yes	4.5	3.5			
	No	7.5	7.5	.07	.21	Reject
Inquiry Method	Yes	4.5	3.5			
	No	6.5	7.5	.19	.33	Reject
Simulation Gaming	Yes	2.5	1.5			
	No	8.5	9.5	.31	.41	Reject
Use of Case Studies	Yes	3.5	2.5			
	No	7.5	8.5	.22	.35	Reject
Concept Formation	Yes	2.5	2.5			
	No	8.5	8.5	.00	.00	Reject
Career Education	Yes	1.5	1.5			
	No	9.5	9.5	.00	.00	Reject
Ethnic Group Studies	Yes	5.5	2.5			
	No	5.5	8.5	1.77	.82	Reject
Feminist Movement	Yes	3.5	2.5			
	No	7.5	8.5	.22	.35	Reject
Use of Videotape Equipment	Yes	2.5	.5			
	No	8.5	10.5	1.54	.78	Reject

The Chi-Square analyses of the data, with Yates' Correction applied, found no relationship between time of adoption and information seeking behavior with any of the nine innovations. The hypothesis is rejected.

35. "Earlier adopters have greater knowledge of innovations than later adopters."

Using the same nine social studies innovations listed under hypothesis #34 above, the respondents were asked to respond on a nine-point continuum ranging from "Have enough information" to "Need more information" to the following question: "If you were asked to use the following in your teaching, would you need more information about them, or would you have enough?" The results were then correlated with time of adoption, using the Pearson Correlation formula.

Table 4.4 summarizes the results of this analysis.

Table 4.4

A Summary of the Pearson Analysis of the data for Hypothesis # 35

Innovation	Correlation	Significance Level	Decision
Values Clarification	.15	.24	Reject
Inquiry Method	.29	.08	Reject
Simulation Gaming	.20	.17	Reject
Use of Case Studies	.01	.49	Reject
Concept Formation	.06	.39	Reject
Career Education	-.14	.26	Reject
Ethnic Group Studies	.38	.03	Accept
Feminist Movement	.34	.05	Accept
Use of Videotape Equipment	-.02	.47	Reject

Since .05 was established as the level of statistical significance, the findings dealing with innovations "Values Clarification" through "Career Education" and "Use of Videotape Equipment" are not significant. However, in two cases, knowledge of "Ethnic Group Studies"and knowledge of the "Feminist Movement", the findings were significant at the .05 level. Early adopters felt that they had enough information on these innovations, more so than did later adopters.

36. "Earlier adopters have a higher degree of opinion leadership than later adopters."

All faculty members of the eight schools surveyed were asked to respond to these questions:

> a. "Among the teachers in this school, name three whose opinions you most frequently seek when you have problems relating to your teaching performance."
>
> b. "Among the teachers in this school, name three teachers whose opinions on crucial educational issues are usually very valuable to you."

The number of times that each of the twenty-four adopting social studies teachers were chosen on each of the two questions was noted, and combined to give each one an opinion leadership score. These scores were then ranked and correlated with time of adoption.

The Spearman Rank-Order Correlation formula produced a correlation of -.07, with a significance level of .32. The correlation was not in the predicted direction (earlier adopters had a lower degree of opinion leadership), and the finding is not considered statistically significant.

37. "Earlier adopters are more likely to belong to systems with modern rather than traditional norms, than are later adopters."

Rogers and Shoemaker maintain that social systems with modern rather than traditional norms have the following characteristics:

> a. A generally positive attitude toward change vs. a lack of favorable orientation to change.
>
> b. A well-developed technology with a complex division of labor vs. a less developed or "simpler" technology.
>
> c. A high value on education and science vs. a relatively low level of literacy, education, and understanding of the scientific method.
>
> d. Rational and business-like social relationships rather than emotional and affective vs. a social enforcement of the status quo in the social system, facilitated by affective personal relationships, such as friendliness and hospitality, which are highly valued as ends in themselves.
>
> e. Cosmopolite perspectives, in that members of the system often interact with outsiders, facilitating the entrance of new ideas into the social system vs. little communication by members of the social system with outsiders.
>
> f. Empathic ability on the part of the system's members, who are able to see themselves in roles quite different from their own vs. lack of ability to empathize or see oneself in other's roles.

Treating each of the eight schools as a social system, it is necessary to rank the systems on a modern-traditional continuum using the Rogers and Shoemaker definitions of the values of each system. The faculties of all eight schools were asked the following questions associated with the six characteristics in an attempt to define each system on the continuum.

a. "A generally positive attitude toward change vs. a lack of favorable orientation to change."

The faculty members were asked to respond on a nine-point

Likert Scale to the following statement: "People here generally look with favor on any kind of change."

The response scale in this case and all others, was scored with 0 assigned to "Strongly Disagree", 2 to "Disagree", 4 to "Neutral", 6 to "Agree", and 8 to "Strongly Agree". The mean score for each school is as follows:

School	1	2	3	4	5	6	7	8
Mean	3.00	4.51	2.59	3.65	3.25	3.90	3.13	3.19
Number	21	47	27	29	8	21	15	26

b. "A well-developed technology with a complex division of labor vs. a less developed or 'simpler' technology."

The question of technology is a difficult one to answer, since teaching involves little technology. The "complex division of labor" part of the statement was handled by asking the teachers how many different courses they taught each day. The mean score for each school is as follows:

School	1	2	3	4	5	6	7	8
Mean	2.60	2.36	2.54	2.51	3.25	2.85	3.06	2.26
Number	21	47	28	29	8	21	16	26

c. "A high value on education and science vs. a relatively low level of literacy, education, and understanding of the scientific method."

Three questions were used to measure this statement.

1. All faculty members were asked to list their highest degree. These were scored as follows:

1 = Bachelor's Degree
2 = Bachelor's Degree plus hours beyond
3 = Master's Degree
4 = Master's Degree plus hours beyond
5 = Specialist Degree
6 = Doctor's Degree
8 = Other

The mean level of degree was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	3.33	3.23	3.07	2.90	2.38	3.43	2.88	3.15
Number	21	47	28	29	8	21	16	26

2. All faculty members were asked to react on a nine-point Likert Scale to the following statement: "An education is a very important part of being successful." The mean response was calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	5.75	6.17	6.34	5.89	4.14	5.14	5.66	6.08
Number	20	47	28	28	7	21	15	26

3. All faculty members were asked to react on a nine-point Likert Scale to the following statement:"Most of man's recent progress has been due to scientific research." The mean response was calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	4.57	5.02	4.89	3.50	4.43	4.71	4.79	4.46
Number	21	46	28	28	7	21	14	26

d. "Rational and business-like social relationships rather than emtional and affective vs. a social enforcement of the status quo in the social system, facilitated by affective personal relationships, such as friendliness and hospitality, which are highly valued as ends in themselves."

Two statements were used to measure this. Each asked the faculties to respond on a nine-point Likert Scale, and the means were calculated for each school. The results are as follows:

1. "Most of my social life is spend with my colleagues."

School	1	2	3	4	5	6	7	8
Mean	2.76	2.30	3.10	2.00	4.50	2.61	2.47	3.39
Number	21	47	28	29	8	21	15	26

2. "My colleague's evaluation of me is important to me."

School	1	2	3	4	5	6	7	8
Mean	5.61	5.87	5.89	5.83	5.75	5.52	5.53	6.19
Number	21	47	28	29	8	21	15	26

e. "Cosmopolite perspectives, in that members of the system often interact with outsiders, facilitating the entrance of new ideas into the social system vs. little communication by members of the social system with outsiders."

Five questions were used to measure this variable.

1. Faculty members were asked to list the community organzations that they belonged to. The mean number of organizations was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	.76	.68	.79	.55	.50	.71	.25	.54
Number	21	47	28	29	8	21	16	26

2. Faculty members were asked to give the number of professional educational meetings that they attended in the last two years that involved educators from more than one school. The mean number of meetings was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	4.43	5.04	4.71	4.97	2.63	4.76	4.63	5.08
Number	21	47	28	29	8	21	16	26

3. All faculty members were asked to respond on a nine-point continuum, where 0 was assigned to "outside" and 8 to "inside", to the following statement:"Many of my insights and new ideas regarding education result from discussions with educators in this school system/ outside this school system." The mean response was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	4.09	4.02	4.07	3.72	4.71	3.52	4.64	4.00
Number	21	47	28	29	7	21	14	26

4. Faculty members were asked to list the professional teachers organizations that they belonged to. The mean number of organizations was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	2.19	2.87	2.25	2.24	2.00	1.91	2.50	2.73
Number	21	47	28	29	8	21	16	26

5. Faculty members were asked to respond on a nine-point Likert Scale to the following statement: "Most of my social life is spent with my colleagues." The mean response was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	2.76	2.30	3.10	2.00	4.50	2.61	2.47	3.39
Number	21	47	28	29	8	21	15	26

f. "Empathic ability on the part of the system's members, who are able to see themselves in roles quite different from their own vs. lack of ability to empathize or see oneself in other's roles."

The faculty members were asked to respond on a nine-point Likert Scale to the following statement: "I generally consider myself able to understand and sympathize with other people." The mean response was then calculated for each school. The results are as follows:

School	1	2	3	4	5	6	7	8
Mean	6.23	6.30	6.57	6.44	6.13	6.52	5.87	6.23
Number	21	47	28	29	8	21	15	26

Using the results of the preceding questions dealing with system norms, each mean was ranked and the results placed in order from highest to lowest. A summary of the ranks, arranged by school and variable, is shown in Table 4.5.

Table 4.5

A Summary of Ranks, Arranged By Variable and School

Variable	School							
	1	2	3	4	5	6	7	8
Change	7	1	8	3	4	2	6	5
Preps	5	2	4	3	8	6	7	1
Degrees	2	3	5	6	8	1	7	4
Ed/Success	5	2	1	4	8	7	6	3
Progress/Research	5	1	2	8	7	4	3	6
Social Life	5	2	6	1	8	4	3	7
Colleague's Evaluation	3	6	7	5	4	1	2	8
Comm. Organizations	2	4	1	5	7	3	8	6
Prof. Ed. Meetings	7	2	5	3	8	4	6	1
Insights and New Ideas	6	4	5	2	8	1	7	3
Prof. Teacher Organizations	6	1	4	5	7	8	3	2
Social Life	5	2	6	1	8	4	3	7
Empathy	5	4	1	3	7	2	8	6

The Kendal Coefficient of Concordance was used to determine the extent to which the set of rankings of the thirteen items was similar. This formula, which measures the extent of the variability among the respective sums of the ranks, produced a W of .29. The test for significance of the W produced the calculation of a X^2 of 26.39, which was significant at the .05 level with seven degrees of freedom. There is a high degree of agreement among the schools on the ranking of the variables.

Any attempt, then, to rank the schools on a Modern-Traditional System continuum would be futile because of the significantly high

degree of agreement on the ranks, and would also preclude any attempt to correlate the time of adoption with this continuum. Because of this hypothesis thirty-seven is unanswerable.

38. "Earlier adopters are more likely to belong to well-integrated systems than are later adopters."

Rogers and Shoemaker define communication integration as " the degree to which the units in a social system are interconnected by interpersonal communication channels." A "well-integrated" system should have a higher degree of this interconnection than a less "well-integrated" system.

To test this hypothesis, all faculty members were asked to respond on a nine-point continuum to the following statement: "Many of my insights and new ideas regarding education result from discussions with educators in this school system/outside this school system." Mean response was then computed for each school and the results were ranked:

School	Mean	Rank	(in this school system)
5	5.25	1	
7	4.33	2	
3	4.07	3	
2	4.04	4	
8	4.00	5	
4	3.72	6	
6	3.53	7	(outside this
1	2.05	8	school system)

Each social studies teacher was then given a school rank (example: teacher #613 was given the rank of 7) and these ranks were then correlated with time of adoption.

The Spearman Correlation formula produced a correlation of -.09, with a significance level of .22. The finding is not considered to

be statistically significant, and the hypothesis is rejected.

39. "Innovations that are perceived by receivers as possessing greater relative advantage, compatibility and the like have a more rapid rate of adoption."

Only one innovation, simulation games, was used in this study, thus eliminating comparisons between different innovations. However, if the eight school system scores on the five characteristics are compared, then those schools which have higher scores on the characteristics should have social studies teachers who were earlier adopters than those systems with lower scores.

The responses of the social studies teachers to the questions dealing with advantage, compatibility, complexity, trialability and observability were averaged according to school. A summary of the ranks, arranged by school and variable, is shown in Table 4.6.

Table 4.6

A Summary of Ranks, Arranged by Variable and School

Variable	School							
	1	2	3	4	5	6	7	8
Advantage	2.5	5	7	6	2.5	8	2.5	2.5
Compatibility	4	7	5.5	3	2	1	8	5.5
Complexity	2.5	6	4.5	8	2.5	1	7	4.5
Trialability	8	2	2	5.5	2	4	5.5	7
Observability	8	5	2.5	6	2.5	2.5	2.5	7

The Kendal Coefficient of Concordance was used to determine the extent to which the set of rankings of the five items was similar. This formula, which measures the extent of the variability among the respective sums of the ranks, produced a W of .22. The test for significance of the W involved the calculation of a X^2 of 7.70, which

was significant at the .05 level with seven degrees of freedom. There is a high degree of agreement among the schools on the ranking of the variables.

Since there is a significantly high degree of agreement among the schools on the five characteristics, no attempt can be made to rank the schools on their reaction to the characteristics of the innovation. This also eliminates any attempt to correlate this rank with time of adoption. Because of this, hypothesis thirty-nine is not answerable.

Discussion of Results

Rogers and Shoemaker hypothesized that earlier adopters are no different in age from later adopters, have more years of education and higher social status, are more upwardly mobile, come from larger size units, have more specialized operations, greater empathy, and are less dogmatic.

In addition, earlier adopters have a greater ability to deal with abstractions and are more rational, intelligent, and more favorably inclined toward change, risk, education and science. Earlier adopters are also less fatalistic, have higher levels of achievement motivation, aspirations, social participation, and are more highly integrated with the social system. Earlier adopters are also hypothesized to be more cosmopolite, have more change agent contact, greater exposure to mass media, interpersonal communication channels, have greater knowledge of innovations, a higher degree of opinion leadership, are more likely to belong to systems with modern rather than traditional norms, and are more likely to belong

to well-integrated systems.

Finally, it was hypothesized that innovations with more of the characteristics of advantage, compatibility and the like have a more rapid rate of adoption.

These twenty-nine hypotheses all involve the dependent variable of time, and the contention of the authors is that those who adopt an innovation earlier are different from later adopters in twenty-eight areas. Time is involved in the twenty-ninth hypothesis in that an innovation which has more of the five characteristics will diffuse at a faster rate.

Because most of the hypotheses were found to be not significant, constructing a profile of the earlier adopter is relatively simple. Based on the results, an earlier adopter is one who has more favorable attitudes toward education, teaches in a smaller school, has higher aspirations in that he is not content with the idea of being a social studies teacher for the rest of his life and finds administration appealing, gets most of his insights and new ideas from educators outside his school system, reads more non-professional magazines and newspapers, and would need more information about the topics of ethnic group studies and the feminist movement before he could teach them.

It was not possible to rank the eight schools on a Modern-Traditional Value System continuum because of the high degree of agreement among the schools on the values chosen. It also was not possible to determine if the characteristics of the innovation influenced the rate of diffusion between schools because of the high degree of agreement among the schools on the characteristics.

The variables, predictions and findings are summarized in Table 4.7.

Table 4.7

A Summary of Independent Variables, Predictions, and Results for TIME Hypotheses

Independent Variables	Predictions	Results
Age	No difference	Not Significant
Education	More	Not Significant
Social Status	Higher	Not Significant
Upward Social Mobility	Greater	Not Significant
Size of Unit	Larger	Significant, but not in predicted direction
Specialized Operations	More	Not Significant
Empathy	Greater	Not Significant
Dogmatism	Less	Not Significant
Ability to Deal with Abstractions	Greater	Not Significant
Rationality	Greater	Not Significant
Intelligence	Greater	Not Significant
Attitude toward:		
Change	More Favorable	Not Significant
Risk	More Favorable	Not Significant
Education	More Favorable	Significant
Science	More Favorable	Not Significant
Fatalism	Less	Not Significant
Achievement Motivation	Higher	Not Significant
Aspirations	Higher	1. Significant 2. Significant 3. Not Sig. 4. Not Sig.
Social Participation	More	1. Not Sig. 2. Not Sig.
Integration with Social System	More	1. Not Sig. 2. Not Sig.
Cosmopoliteness	More	1. Not Sig. 2. Significant 3. Not Sig.
Change Agent Contact	More	Numbers Reported
Mass Media Communication Channels	Greater	1. Not Sig. 2. Not Sig. 3. Not Sig. 4. Signigicant
Interpersonal Communication Channels	More	Not Significant
Information Seeking	More	Not Significant

Table 4.7 (cont'd.)

Independent Variables	Predictions	Results
Greater Knowledge	More	Items a-f:Not Sig. g,h:Sig. i:Not Sig.
Opinion Leadership	More	Not Significant
System Norms	Modern	Unanswerable
Integration of Systems	More	Not Significant
Innovations	More	Unanswerable

"among members of a social system . . . "

Rogers and Shoemaker maintain that the diffusion of an innovation occurs within a social system, and that the social structure and norms of the system affect the pattern of diffusion in several ways.

40. "When the system's norms favor change, opinion leaders are more innovative, but when the norms are traditional, opinion leaders are not especially innovative."

Faculty members of all eight schools were asked to respond to the following three questions which were used to establish the opinion leaders of each school. The fourth question was used to establish which faculty members were looked on by their colleagues as innovators.

> a. Among the teachers in this school, name three whom you respect most as teachers.
>
> b. Among the teachers in this school, name three whose opinions you most frequently seek when you have problems related to your teaching performance.
>
> c. Among the teachers in this school, name three teachers whose opinions on crucial educational issues are usually very valuable to you.
>
> d. Among the teachers in this school, name three teachers that you consider to be the most innovative.

The results were then tabulated by noting how many times each teacher was listed. The top three totals in each school were then selected as the faculty choices for each question. This resulted in three to five teachers being selected.

The results are presented in Table 4.8. The teacher's number is given, followed by the number of times he or she was selected by their colleagues. Social Studies teachers are indicated by the line drawn under the teacher number.

Table 4.8

A Summary of Choices of Opinion Leaders and Innovative Teachers Made By All Faculty Members of the Eight Schools

School	Opinion Leadership Questions						Innovation Question	
	Question 1		Question 2		Question 3		Question 4	
	# Teacher	Times Chosen	# Teacher	Times Chosen	# Teacher	Times Chosen	# Teacher	Times Chosen
1	2	15	2	10	2	9	20	10
	9	11	6	5	10	7	24	7
	10	13	10	7	6	4	13	6
2	44	24	43	8	43	13	31	18
	43	24	44	8	5	12	49	18
	9	10	24	7	44	9	48	18
	6	10			24	9		
	5	10			6	9		
3	23	17	23	8	23	12	46	15
	46	14	37	6	37	10	23	10
	34	9	46	5	34	8	21	6
	37	9						
4	21	12	7	8	20	24	31	9
	20	25	32	6	21	11	5	8
	32	7	21	6	32	7	7	7
5	2	7	2	4	2	6	8	6
	9	4	5	4	8	4	9	3
	8	3	8	3	9	3	2	3
	11	3						
6	13	15	21	5	13	17	20	6
	21	8	13	5	21	5	21	6
	26	6	19	5	19	5	17	5
			7	5			27	5
							2	5
7	14	10	14	11	14	11	15	9
	7	6	2	6	2	9	8	7
	2	6	7	6	15	4	14	6
							2	6
8	22	19	22	7	18	18	22	17
	18	13	10	6	7	11	7	10
	32	8	18	6	33	10	25	8
	33	8	7	6				

The teachers who appear in both the opinion leadership and the innovative columns, and thus are considered by their colleagues to be both innovative and opinion leaders, are as follows:

School	Teacher Number	Total Appearing In Both Columns
1	-	0
2	-	0
3	#23	1
4	#7	1
5	#2	3
	#8	
	#9	
6	#21	1
7	#15	3
	#14	
	#2	
8	#22	2
	#7	

However, since it was not possible to rank the schools on a Modern-Traditional Norm continuum, a comparison with the number of innovative opinion leaders per school is not valid. Hypothesis #40 is unanswerable, given the available data.

41. "When the norms of a system are more modern, opinion leadership is more monomorphic."

Rogers and Shoemaker define monomorphism as "the tendancy for an individual to act as an opinion leader for only one topic." Its opposite, polymorphism, is defined as "the degree to which an individual acts as an opinion leader for a variety of topics."

The results shown in Table 4.7 were used to measure this hypothesis. The number of different names that appeared most in response to the three opinion leadership questions were tallied, and the results were then ranked, as shown:

School	Number of Names	Rank
1	4	6.5
2	6	1.5
3	4	6.5
4	4	6.5
5	5	3.5
6	5	3.5
7	4	6.5
8	6	1.5

However, since it was not possible to rank the schools on a Modern-Traditional Norm continuum, a comparison of the degree of mono-polymorphism per school with system norms is not valid. Hypothesis #41 is unanswerable, given the available data.

42. "The individual's degree of integration into a social system affects his adoption behavior."

Rogers and Shoemaker maintain that the individual's degree of commitment to his social system influences his adoption behavior. Those individuals with a low degree of commitment are likely to be earlier adopters of an innovation because they are not as committed to maintaining the status quo of the system.

All social studies teachers were asked to respond on a nine-point Likert Scale to the following statement: "There are a lot of things around here that need to be changed." These results were then correlated with time of adoption.

The Pearson Correlation formula produced a correlation of -.04, with a significance level of .10, which was not significant. The hypothesis is rejected.

43. "Interpersonal diffusion is mostly homophilous."

Rogers and Shoemaker define homophily as "the degree to which

pairs of individuals who interact are similar in certain attributes, such as beliefs, values, education, social status, and the like." According to the hypothesis, in cases of person-to-person diffusion, as opposed to mass media-to-person diffusion, the pairs of individuals should be homophilous.

Table 4.9 describes the sources that convinced the twenty-four social studies teachers to try simulation games.

Table 4.9

Summary of Sources That Convinced Teachers to Try Simulation Games

Type of Diffusion	Source	Number
Interpersonal	Fellow teacher	8
	Professor	6
	Meeting	6
Mass Media	Article	3
	Book	0
	No Reply	1

In the twenty cases of interpersonal diffusion, 40% occured between teachers.

44. "When interpersonal diffusion is heterophilous, followers seek opinion leaders of higher social status."

Rogers and Shoemaker define heterophily as "the degree to which pairs of individuals who interact are different in certain attributes."

In the twenty cases of interpersonal diffusion, six cases or 30% occured between a teacher and a college professor.

45."When interpersonal diffusion is heterophilous, followers seek opinion leaders with more education."

The six teachers involved in this situation have Master's Degree's, and the professor involved has a Ph.D.

46. "Interpersonal diffusion is characterized by a greater degree of homophily in traditional than in modern systems."

Cases of homophilous diffusion were tallied for each school, and the schools were then ranked on the basis of the number of cases they had:

School	Cases	Rank
2	3	1.5
4	3	1.5
8	1	3.5
1	1	3.5
3	0	7.5
5	0	7.5
6	0	7.5
7	0	7.5

However, since it was not possible to rank the schools on a Modern-Traditional Norm continuum, a comparison of the degree of homophily per school with system norms is not valid. Hypothesis #46 is unanswerable, given the available data.

47. "In traditional systems followers interact with opinion leaders less (or no more) technically competent than themselves, whereas in modern systems opinion leaders are sought who are more technically competent than their followers."

All faculty members were asked to respond to the following question, which was scored as follows:

"What degree do you hold?"
_1_ Bachelor's Degree
_2_ Bachelor's Degree plus hours beyond
_3_ Master's Degree
_4_ Master's Degree plus hours beyond
_5_ Specialist Degree
_6_ Doctor's Degree
_8_ Other

In each school, the average degree held by the opinion leaders and the rest of the faculty was then calculated. The differences between the two were also calculated and then ranked, as shown:

School	Difference	Rank
5	1.00	1.5
3	1.00	1.5
2	.68	3
1	.59	4
7	.50	5
6	.46	6
4	.12	7
8	-.07	8

However, since it was not possible to rank the schools on a Modern-Traditional Norm continuum, a comparison of the technical competency of opinion leaders with system norms is not valid. Hypothesis #47 is unasnwerable, given the available data.

48. "Opinion leaders are more cosmopolite than their followers."

All faculty members were asked to respond to the following questions to determine their degree of cosmopoliteness:

> a. "Please list the professional teacher's organizations of which you are a member."
>
> b. "How many professional educational meetings which involved educators from more than one school have you attended in the last two years?"
>
> c."Many of my insights and new ideas regarding education result from discussions with educators in this school system/outside this school system."

The following shows the average number of professional teacher's organizations reported by opinion leaders and the rest of the faculty:

School	1	2	3	4	5	6	7	8
Opinion Leaders	1.66	3.83	3.00	2.25	2.66	2.00	4.50	3.33
Rest	2.70	2.73	2.53	2.24	1.60	1.88	2.58	2.55

A t-test performed on the data produced a score of 1.76, with a significance level of .47, which is not statistically significant.

The following shows the average number of professional educational meetings attended by opinion leaders and the rest of the faculty:

School	1	2	3	4	5	6	7	8
Opinion Leaders	5.00	5.00	6.00	4.75	3.00	5.00	5.00	5.16
Rest	4.33	5.49	4.61	5.00	2.40	4.70	4.66	5.05

A t-test performed on the data produced a score of 1.62, with a significance level of 1.48, which is not statistically significant.

The following shows the average responses of the two groups to the question dealing with the sources of new ideas and insights regarding education:

School	1	2	3	4	5	6	7	8
Opinion Leaders	5.00	4.00	5.00	5.00	4.33	2.50	3.40	4.33
Rest	3.95	4.02	4.00	3.52	5.80	3.76	5.00	3.40

A t-test performed on the data produced a score of .03, with a significance level of .57, which is not statistically significant.

Since the results for all three questions were not statistically significant, the hypothesis is rejected.

49. "Opinion leaders have greater social participation than their followers."

All teachers were asked to list the community organizations that they belonged to. The following shows the average number of community organizations for each group:

School	1	2	3	4	5	6	7	8
Opinion Leaders	.33	.67	.00	.75	.67	.75	.25	1.00
Rest	.77	.68	.85	.52	.40	.71	.25	.40

A t-test performed on the data produced a score of -.13, with a significance level of .32, which is not statistically

significant. Since the result is not significant, the hypothesis is rejected.

50. "Opinion leaders are more innovative than their followers."

If this hypothesis is valid, then the faculty members of all the schools should look on those they choose as opinion leaders as also being innovative teachers. The data in Table 4.8 was used to answer this question. The number of opinion leaders in each school was tallied, along with the number of innovative teachers. The names of the teachers who were chosen as being both innovative and opinion leaders were also tallied, with the results shown in Table 4.10.

Table 4.10

Summary of Totals of Choices Of Opinion Leaders, Innovative Teachers and Names in Both Categories

School	Number of Opinion Leaders	Names in Both Columns	Number of Innovative Teachers
1	4	0	3
2	6	0	3
3	4	1	3
4	4	1	3
5	5	3	3
6	5	1	5
7	4	3	4
8	6	2	3

Of the 65 names listed in both the opinion leader and innovative teacher columns, 11 or 17% appear in both columns. It would seem that opinion leadership and being an innovative teacher are quite seperate matters. Being an opinion leader seems to preclude being an innovative teacher and vice-versa, in the eyes of the faculty. Thus it would appear that in this case opinion leaders are not more innovative than their followers.

Discussion of Results

Rogers and Shoemaker hypothesized that the norms and structure of a social system would affect the diffusion of an innovation in that when the system's norms favored change, opinion leaders would be more innovative, but when the norms were traditional, opinion leaders would be less innovative. In addition, when the norms of the system were more modern, opinion leadership would be more monomorphic.

The authors also theorized that the degree of integration of an individual into a system would affect his adoption behavior. Further, interpersonal diffusion was postulated as being mostly homophilous, and in cases where it was heterophilous, the followers sought out opinion leaders of higher status who had more years of education. Homophily was also thought to be greater in traditional systems in cases of interpersonal diffusion.

In traditional systems, followers were supposed to interact with opinion leaders less or no more technically competent than themselves, while the reverse was supposed to hold in modern systems. Finally, opinion leaders were theorized to be more cosmopolite, have greater social participation, and be more innovative than their followers.

Since it was impossible to create a Modern-Traditional Norms rank because of the high degree of agreement among the schools on the norms, hypotheses #40, #41, #46 and #47 were unanswerable. The results for hypotheses #42, #48 and #49 were found to be not significant.

Hypothesis #43 maintains that interpersonal diffusion is mostly homophilous. Only 40% of the cases of interpersonal diffusion were found to be homophilous.

Hypothesis #44 maintains that when interpersonal diffusion is heterophilous, followers will seek opinion leaders of higher social status. In only 30% of the cases of interpersonal diffusion was this found to be the case.

Hypothesis #45 maintains that when interpersonal diffusion is heterophilous, followers seek opinion leaders with more education. The six teachers involved had a Master's Degree, while the professor had a Ph.D.

Finally, Hypothesis #50 said that opinion leaders would be more innovative than their followers. Only 17% of the names given by the faculties as innovative teachers and opinion leaders were considered to be both.

The results of this section of the Rogers and Shoemaker model are summarized in Table 4.11.

Table 4.11

Summary of the Findings for SOCIAL SYSTEM Hypotheses

Hypothesis	Finding
When the system's norms favor change, opinion leaders are more innovative, but when the norms are traditional, opinion leaders are not especially innovative	Not Answerable
When the norms of a system are more modern, opinion leadership is more monomorphic	Not Answerable
The individual'a degree of integration into a social system affects his adoption behavior	Not Significant
Interpersonal diffusion is mostly homophilous	In 40% of the cases
When interpersonal diffusion is heterophilous, followers seek opinion leaders of higher social status	In 30% of the cases
When interpersonal diffusion is heterophilous, followers seek opinion leaders with more education	Yes
Interpersonal diffusion is characterized by a greater degree of homophily in traditional than in modern systems	Not Answerable
In traditional systems followers interact with opinion leaders less (or no more) technically competent than themselves, whereas in modern systems opinion leaders are sought who are more technically competent than their followers	Not Answerable
Opinion leaders are more cosmopolite than their followers	Not Significant
Opinion leaders have greater social participation than their folowers	Not Significant
Opinion leaders are more innovative than their followers	17% of the cases were both innovative and opinion leaders

Simulation Games

Each social studies teacher was asked to list the simulation games that he had used. This list is presented in Table 4.12.

Table 4.12

Simulation Games
Used By Teachers

Game	Number of Teachers Reporting Use
STARPOWER	6
PANIC	4
GHETTO	3
LEGISLATIVE ASSEMBLY	3
REBELS AND REDCOATS	3
DIG	2
STRIKE	2
FRENCH REVOLUTION	1
SPANISH ARMADA	1
PROPAGANDA	1
ABOLITION	1
ECONOMIC MONOPOLIES	1
MAN AND WOMAN	1
DANGEROUS PARALLEL	1
INTERNATION SIMULATION GAME	1
RAILROAD	1
BLACK AND WHITE	1
CITIES	1
FARMING	1
CIVIL WAR	1
SIMSOC	1
INFLUENCE	1
"Many"	1
Teacher constructed	6
No Response	2

The games that were used the most were STARPOWER, PANIC, GHETTO, LEGISLATIVE ASSEMBLY and REBELS AND REDCOATS. A number of teachers reported that they made their own simulation games, while one person

reported that he used simulation games in his classroom, but he could not remember the names of the games that he used.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

> "Perhaps this was what Henry Adams meant when he wrote, in the early years of this century, that the test of twentieth-century Americans would be their capacity for adjustment. Change is a constant theme in the American past. The United States is the only nation in the world to worship it for its own sake, and to regard change and progress as indistinguishable. 'We want change. We want progress,' Lyndon Johnson said in 1965, 'and we aim to get it.' [1]

The spirit of America in the 1960's is captured in the above quote from Lyndon B. Johnson, President at a time when change was equated with progress and both were to be had for the asking. In keeping with this spirit, the American educational establishment produced a large number of curricular and instructional reforms, often with governmental assistance, to improve education.

But how was this change to be accomplished? How much actually was accomplished? "The Great Society" of the 1960's ran afoul of the war in Vietnam and its attendant backlash in the 1970's, and the educational sector was also affected. Government and public support for educational reform decreased, leaving questions of how much improvement was actually brought about and to what extent did the reforms reach their intended audience.

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[1] William Manchester, The Glory and the Dream (Boston: Little, Brown and Company, 1974), p. 1588.

An examination of the degree to which the reforms of the 1960's and 1970's reached their audiences leads to an examination of the various theories explaining the spread or diffusion of an innovation. There are four models dealing with diffusion that are explained in the literature. The Research, Development, Diffusion and Adoption (RDDA) model assumes that change takes place in a rational sequence of steps, the Problem-Solver model assumes that change is brought about by change agents who bring together people with problems and the information needed to solve those problems. These models are prescriptive in that they attempt to describe how change should take place, and they do not deal with the role played by the social environment in the change process.

The Social Interaction model attempts to remedy these deficiencies by including an examination of the role of the social environment, and by attempting to be a descriptive model, explaining how change occurs, rather than how it should occur.[2] The Social Interaction model proposes that the diffusion of an innovation is dependent on certain characteristics of the innovation itself, which is communicated through certain channels over time among members of a social system. Rogers and Shoemaker, in the development of this model, propose many hypotheses, of which fifty were chosen for this study.

The researcher studied the diffusion of the teaching technique

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[2]Francis Hunkins, et. al. Review of Research in Social Studies Education: 1970-1975. (Washington, D.C.: National Council for the Social Studies, 1977) p. 149.

of simulation gaming, part of the "New Social Studies", among the thirty-five social studies teachers of the eight Christian High Schools in the National Union of Christian Schools District II, using the Social Interaction diffusion model. Self-administered questionnaires were given to the faculty members of all eight schools, and the data were analyzed by using the Pearson and Spearman Correlation formulas, Chi-Square, Kendal Coefficient of Concordance and Student-t tests. These statistics were chosen because of the need to establish simple correlations between the variables and the time of adoption of the innovation.

Conclusions

The only significant findings were those associated with the "time" variable of the model. No significant findings were associated with the characteristics of the innovation, the type of communication channel or the social system.

Based on the data produced by this study, there is a significant relationship between the time of adoption of the innovation and the following variables, as shown in Table 5.1.

Table 5.1

Summary of Significant Findings

Variable	Correlation	Significance Level	N
Size of Unit	-.18	.03	8
Aspirations:			
a. Satisfaction with thought of being social studies teacher for rest of life	-.37	.04	24
b. Appeal of administration	.47	.01	24
Source of insights and new ideas regarding education (outside of school system)	.33	.05	24
Attitude toward education	.43	.02	24
Non-professional magazine and newspaper reading habits	.34	.05	24
Knowledge of innovations:			
a. Ethnic group studies	.38	.03	24
b. Feminist movement	.34	.05	24

Almost all of the results were in the predicted direction. Earlier adopters had higher aspirations, got most of their insights and new ideas regarding education from sources outside their educational system, had more favorable attitudes toward education, read more non-professional magazines and newspapers, and had more knowledge of ethnic group studies and the feminist movement than did later adopters. The exception occurred with the size of unit

variable. It was hypothesized that earlier adopters would be part of larger units, while the reverse was found to be true, that is, earlier adopters were part of smaller units than later adopters.

Rogers and Shoemaker also predicted that in situations where diffusion between people occurred, these people would be similar in certain attributes. It was found that in twenty cases of interpersonal diffusion, 40% occurred between teachers. However, in cases where people are different in certain attributes, Rogers and Shoemaker predicted that the followers would seek opinion leaders of higher social status and more education. It was found that in twenty cases of interpersonal diffusion, 30% occurred between teachers and a college professor with a Ph.D. Finally, Rogers and Shoemaker predicted that opinion leaders would be more innovative than their followers. Only 20% of the teachers listed as opinion leaders or innovative teachers were considered by their colleagues as both.

Discussion

This study examined the spread of an innovation through a population using fifty hypotheses from the Social Interaction model of diffusion as formulated by Rogers and Shoemaker. Statistical significance was found in six of the fifty hypotheses, thus leading to some speculation on the reasons for such a situation.

One possible answer is that the model is not adequate to explain the diffusion of this innovation in this situation. The Social Interaction model attempts to explain <u>how</u> change occurs, as opposed to how it <u>should</u> change, yet in this case many questions are left

unanswered. This raises the distinct possibility that further work should be done on the model itself.

For example, the model, as described in Communication of Innovations: A Cross-Cultural Approach, is designed to describe the spread of any innovation through any population. An innovation is defined as anything perceived as new by a population, ranging from objects to ideas. The population could be anyone from a group of Brazilian peasants to Madison Avenue ad writers. It would seem that any theory with such global claims to validity would encounter difficulties, given the diversity of the human experience.

That many of the terms used by Rogers and Shoemaker are not defined or explained in their book poses difficulties for a researcher attempting to test their predictions. For example, these authors assert that "Earlier adopters have greater intelligence than later adopters", yet their definition of intelligence is not given. This could lead to varied interpretations on the part of researchers. Other terms are defined, yet in a sketchy manner which again poses problems for anyone attempting to work with this model.

Another possible area of concern with the model is the matter of the combined effects of several of the variables in varying degrees. Each of the Rogers and Shoemaker hypotheses are treated in Communication of Innovations: A Cross-Cultural Approach as though they are seperate, independent phenomena, yet the possibility may exist that the spread of an innovation through a population is a function of combinations of these variables in varying degrees. For example, it is conceivable that the spread of an innovation through a population with less modern norms depends primarily on

that innovation being rated higher on observability than on the other characteristics of the innovation. Yet the model does not take into account this interrelation, assuming that all the parts are seperate and of equal importance.

An examination of the sources which informed teachers about simulation games indicates that most of the teachers (nine of twenty-four) first heard about them from their Social Studies Methods professor while student teaching, thus indicating the role of teacher preparation in any theory of educational change. However, eight of the twenty-four teachers reported that their fellow teachers were the ones who finally convinced them to try simulation games in their classrooms. Also important in convincing teachers to try simulation games were meetings (six of twenty-four) and the same college Social Studies Methods professor (six of twenty-four).

This last fact indicates the importance of an eclectic approach to any attempt to explain change, in particular change in education. Change can occur from many causes. For example, change can occur by altering structures, such as the change brought about in people's behavior by changing the economic or political structures of their societies. Change can also occur through the use of incentives such as the offering of a reward for increased production.

The Social Interaction perspective of Rogers and Shoemaker, with its emphasis on communication, might not be an adequate description of the change process, which can be an exceedingly complex and multi-faceted affair. It would seem that a single theory explaining this process has yet to be formulated.

The methodology used and the population surveyed might also

have contributed to the number of significant findings. This study used a self-administered questionnaire as the means for gathering the data, with the possibility that this was not an adequate tool to gather the needed information. All teachers were asked to place their name on the questionnaire, and, when finished, place the questionnaire in an envelope, seal it, and return it to the office. Despite assurances of anonymity, some teachers might have felt threatened by this enough so that their answers were not a true indication of their opinions. Given the fact that several of the schools faced reductions in staff for 1978-1979 because of declining enrollment, this questionnaire, with its personal questions, might have been looked on by certain faculty members as an administrative attempt to determine who was to be released, especially since it was the administrator who handled the distribution and collection of the questionnaires.

The survey was distributed during the last two weeks in May, 1978, only one and a half weeks before school was to end for the year. Teachers traditionally are not at their best at that time of the year, many are emotionally and physically exhausted after teaching for a year. This factor may have influenced the data in that teachers may have viewed filling in the questionnaire as one more onerous bureaucratic detail to plague their lives. The questionnaire also contained items which asked the teachers to recall events which, in some cases, occurred as early as 1967. It is difficult for anyone, even a harried teacher in the last weeks of school, to recall with any degree of accuracy events and feelings which, in some cases, occurred eleven years ago when they first adopted simulation games.

Given the nature of the Social Interaction model with the sensitive nature of many of the hypotheses, such as those dealing with system norms or opinion leadership, perhaps a better method to use to study the diffusion of an innovation through a population would be the participant-observer one, where the researcher would be present to interview each subject. This might have the effect of reducing possible suspicion on the part of the teachers, and the researcher would also be in a position to clarify and check on the accuracy of answers.

However, in spite of certain difficulties with the study, there are some features that should be noted. The use of simulation games as a teaching technique had diffused through the systems generally by 1974, and the games were being used by most of the social studies teachers of the eight schools. In effect this means that the innovation had diffused through the systems in approximately seven years, which is a fairly rapid rate of diffusion, since Rogers and Shoemaker report diffusion rates of anywhere from five to fifty years for various innovations. In the field of education, they report that U.S. public schools required fifty years to adopt the idea of the kindergarten, and about five or six years to adopt "modern math."[3]

Based on the findings, the early adopter is one who fits Rogers' and Shoemaker's definition of a cosmopolite person. This person is one who looks outside his social system for ideas and inspiration, and sees his present situation as temporary. This person is oriented

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[3]Everett Rogers and Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach. (New York: The Free Press, 1971). p. 16.

more toward outside groups and forces than he is toward the situation that he finds himself in.

An interesting finding involved the sociogram where teachers were asked to choose those opinion leaders and innovative teachers from among their colleagues. Of the fifty-five names given by the teachers, eleven or 20% were teachers considered by their colleagues to be both innovative teachers and opinion leaders. This means that 80% of the names given, or 44, were considered by their colleagues to be either an opinion leader, or an innovative teacher, BUT NOT BOTH. It would seem that in this situation opinion leaders are not considered innovative, while innovative teachers are not considered to be opinion leaders. It is interesting to recall that Rogers and Shoemaker predicted that opinion leaders would be more innovative than their followers, but that is generally not the case in this study.

Implications for Future Study

Parents, teachers and students have a vital interest in change in education. In order to do a better job of educating students, new methods and materials must be developed and used in the classroom. Yet the question of how and why change occurs, particularly in education, is a complex one needing more research than has previously been done. Change does occur, but a better understanding of the process is vital for planned change. Therefore some specific recommendations growing out of the present study are the following:

1. That the study be replicated as a controlled experiment using a current innovation.

This study involved an innovation that spread through the population during the period of 1967 to 1977, with most of the subjects first using the innovation during 1967 to 1974. The questionnaire, administered in May, 1978, was such that the subjects were asked to rely on their memories for the answers to some very complicated questions. It is possible that the general lack of statistically significant findings in the study was caused by the subjects' reliance on their faulty memories.

In addition, the questionnaire did not provide for the possibility of change in the subjects over the years since they first used the innovation under study. The earlier adopters may have met the standards of the Social Interaction model at the time they adopted the innovation, but they may have changed over the period between adoption and the administration of the questionnaire.

This raises the possibility that a self-administered questionnaire is inadequate for studying the diffusion of certain innovations. Therefore it is suggested that the study be replicated as a controlled experiment, where the researcher supplements questionnaire data with observations made as a participant-observer of the experiment. In addition, the researcher would be able to study any innovation that might come into the system while he or she is present.

2. That the study be replicated using larger numbers and more and different schools.

This study used eight schools classified as a population. There is a possibility that the twenty-four subjects involved in the adoption

of the innovation were too small a number for the statistics that were used. Therefore it is suggested that future studies of this kind be carried out using a larger population or sample.

There is also the possibility that the eight schools are more alike than different, thus making it difficult to detect differences in values and other criteria between schools. For example, Hypothesis #37 involved an attempt to distinguish among the schools which ones had more modern or which ones had more traditional values. This attempt failed because of the significantly high degree of agreement among the schools on the criteria used to measure these values. A replicated study, using different schools, such as public and non-public, urban and rural, or middle and lower class might eliminate this problem.

3. That the study be replicated after a re-evaluation of the Social Interaction model of Rogers and Shoemaker.

There were thirty-five social studies teachers in the surveyed population. Questionnaires were received from thirty of them, and of these thirty, twenty-four had used simulation games by May, 1978. Yet, given the many variables studied and the small number of statistically significant findings, the Social Interaction model described by Rogers and Shoemaker does not do an adequate job of explaining the rate of diffusion reported in this study.

A replicated study should concern itself with possible revisions, major and minor, in the theory. Attempts should be made to clarify several of the definitions used in the hypotheses, and consideration should be given to the possible effects of the interaction of several of the hypotheses, since in this situation the

theory was not adequate to explain the high rate of diffusion.

APPENDICES

APPENDIX A

COVER LETTER FOR TEACHER QUESTIONNAIRE

APPENDIX A

COVER LETTER FOR TEACHER QUESTIONNAIRE

May 17, 1978

Dear Faculty Member;

I would appreciate your cooperation in this survey I am giving as part of the requirements for my doctoral program at Michigan State University.

The survey is an attempt to determine if a theory of change and innovation, as formulated by E. M. Rogers and F. Shoemaker, is valid when applied to teachers in the eight NUCS related Christian High Schools in Michigan. I am focusing on the use of simulation games by social studies teachers, but the theory is such that all faculty members are asked to participate in the survey.

Please be assured that your anonymity is guaranteed. I will be the only person who will see these questionnaires, and the data will be handled in such a way so that neither you nor your school will be recognized.

Answer each question as honestly and completely as you can. Please return the completed questionnaire in the sealed envelope to the office.

Thank you for your participation and cooperation.

Yours truly,

LeRoy Stegink

APPENDIX B

TEACHER QUESTIONNAIRE

APPENDIX B

TEACHER QUESTIONNAIRE

PART ONE: All faculty members are requested to answer the questions in this section.

1. Name_____

2. How many different courses do you normally teach each day? (NOTE-courses, not sections of each. Government is one course, even though the instructor may have three sections of it.)

_____

3. What is the grade level of most of the students that you teach?

__Mainly 12th grade
__Mainly 11th grade
__Mainly 10th grade
__Mainly 9th grade
__A mixture

4. What degree do you hold?

__Bachelor's Degree
__Bachelor's Degree plus hours beyond
__Master's Degree
__Master's Degree plus hours beyond
__Specialist Degree
__Doctors Degree
__Other (Please specify)_____

5. Please list the community organizations that you belong to.

a.
b.
c.
d
e.

6. How many professional educational meetings which involved educators from more than one school have you attended in the last two years? (Such as the CEA Convention, various subject matter conventions, etc.)

_____

7. Please list the professional teachers organizations of which you are a member.

a.
b.
c.
d.
e.

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

a.
b.
c.

9. Among the teachers in this school, name three whose opinions you most frequently seek when you have problems related to your teaching performance.

a.
b.
c.

10. Among the teachers in this school, name three teachers whose opinions on crucial educational issues are usually very valuable to you.

a.
b.
c.

11. Among the teachers in this school, name three teachers that you consider to be the most innovative.

a.
b.
c.

PLEASE INDICATE YOUR DEGREE OF AGREEMENT WITH THE FOLLOWING STATEMENTS BY PLACING AN APPROPRIATE MARK ON THE CONTINUUM.

12. People here generally look with favor on any kind of change.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

13. Most of my social life is spent with my colleagues.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

14. My colleague's evaluation of me is important to me.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

15. There are a lot of things around here that need to be changed.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

16. An education is a very important part of being successful.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

17. Most of man's recent progress has been due to scientific research.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

18. I generally consider myself able to understand and sympathize with other people.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

19. Many of my insights and new ideas regarding education result from discussions with educators

in this school system				outside this school system

PLEASE CONTINUE IF YOU ARE CURRENTLY TEACHING ANY COURSES IN THE SOCIAL STUDIES AREA. ALL OTHER TEACHERS ARE REQUESTED TO STOP AT THIS POINT AND PLACE THE COMPLETED QUESTIONNAIRE IN THE ENVELOPE, SEAL IT, AND RETURN IT TO THE OFFICE.

PART TWO: All social studies teachers are requested to answer the questions in this section.

20. Have you ever used a simulation game in your classroom?

Yes_____ No_____ (If no, please stop here and return the questionnaire in the sealed envelope to the office. Thank you.

21. If yes, please list the ones that you have used.

a.
b.
c.
d.
e.

22. Age (Please check)

__20-25
__26-30
__31-35
__36-40
__41-45
__46-50
__51-55
__56-60
__61-65

23. What is(was) your father's occupation?

_____

24. What social studies subjects are you currently teaching?

__United States History
__World History
__Government
__Sociology
__Psychology
__Economics
__Other (Please specify)_____

25. What was your grade point average upon graduation from college?

__1.50-2.0
__2.01-2.5
__2.51-3.0
__3.01-3.5
__3.51-4.0

26. Which church positions have you held in the past four years?

__None
__Elder
__Deacon
__Committee member
__Other (Please specify)_____

27. Have you ever used the services of a social studies consultant, either from the National Union of Christian Schools or from your local area?

__Yes
__No

If yes, how many times have you used this service?

_____

28. About how many hours per day do you listen to radio?

_____

29. About how many hours per day do you watch television?

_____

30. List the titles of the books that you have read during the past 30 days.

a.
b.
c.
d.
e.

31. List the non-professional magazines and newspapers that you read.

a.
b.
c.
d.
e.

32. My best estimate of the hours per week that I spend in seeking information about new educational innovations in my field is

_____ hours per week

33. Please indicate the approximate month and year when you first tried a simulation game with your class.

_____ Month _____ Year

34. As best as I can remember, the main source where I first heard about simulation games was (CHECK ONE)

__ A college instructor
__ A fellow teacher _____(Name)
__ An article in an educator's magazine, such as Social Education
__ A book
__ A principal _____(Name)
__ A newspaper
__ An article in a popular magazine, such as Newsweek
__ An educational meeting
__ TV or radio
__ Other (Please specify) _____

35. As best as I can remember, the main source that convinced me to try simulation games was (CHECK ONE)

__ A college instructor
__ A fellow teacher _____(Name)
__ An article in an educator's magazine, such as Social Education
__ A book
__ A principal _____(Name)
__ A newspaper
__ An article in a popular magazine, such as Newsweek
__ An educational meeting
__ TV or radio
__ Other (Please specify) _____

36. I was able to experiment with simulation games before I introduced them to my classes.

__Yes
__No

37. Before I used simulation games in my classroom, I

__was able to observe one being played
__participated in the playing of a simulation game
__both of the above
__neither of the above

PLEASE INDICATE YOUR DEGREE OF AGREEMENT WITH THE FOLLOWING STATEMENTS BY PLACING AN APPROPRIATE MARK ON THE CONTINUUM

38. When I first heard about simulation games as a teaching method, I thought they were

superior — no different — inferior

to the teaching methods I normally used.

39. When I first heard about simulation games, I thought they were

an acceptable method — not an acceptable method

to be used, considering the values of my school and community.

40. If you were asked to use the following in your teaching, would you need more information about them, or would you have enough?

a. Values Clarification

Need more information — Have enough information

b. Inquiry Method

Need more information — Have enough information

c. Simulation Gaming

Need more information — Have enough information

d. Use of Case Studies

Need more information — Have enough information

e. Concept Formation

Need more information — Have enough information

f. Career Education

Need more information — Have enough information

g. Ethnic Group Studies

Need more information — Have enough information

h. Feminist Movement

Need more information — Have enough information

i. Use of Videotape Equipment

Need more information — Have enough information

41. At the present time, are you actively seeking information about any of the following?

a. Values Clarification
___Yes ___No

b. Inquiry Method
__ Yes ___No

c. Simulation Gaming
__ Yes ___No

d. Use of Case Studies
__ Yes ___No

e. Concept Formation
__ Yes ___No

f. Career Education
___ Yes ___ No

g. Ethnic Group Studies
___ Yes ___ No

h. Feminist Movement
___ Yes ___ No

i. Use of Videotape Equipment
___ Yes ___ No

42. Generally, teaching methods and educational philosophies used by past generations are more reliable than the newer methods and philosophies of the present generation.

Strongly Agree — Agree — Neutral — Disagree — Strongly Disagree

43. Usually, when someone explains something to me that is highly abstract, I find I understand better if I am shown a diagram or a picture.

Strongly Agree — Agree — Neutral — Disagree — Strongly Disagree

44. My friends consider me to be highly efficient and organized in my work.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

45. Most changes introduced in the last ten years have contributed very little in promoting education in our schools.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

46. One of the best ways to reach a goal is to take a risk.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

47. Most of what lies in store for me in the future is beyond my control.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

48. When I do something, it must be done perfectly or I am not satisfied.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

49. I am satisfied with the thought that I might be a social studies teacher for the rest of my life.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

50. Administration appeals to me.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

51. I can see myself in the future working in some form of business.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

52. College teaching of some type appeals to me.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

53. I am usually up on the latest faculty gossip.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

THANK YOU FOR YOUR COOPERATION. PLEASE PLACE THE COMPLETED QUESTIONNAIRE IN THE ENVELOPE, SEAL IT, AND RETURN IT TO THE OFFICE.

L. STEGINK

APPENDIX C

ADOPTER CURVE

APPENDIX C

ADOPTER CURVE

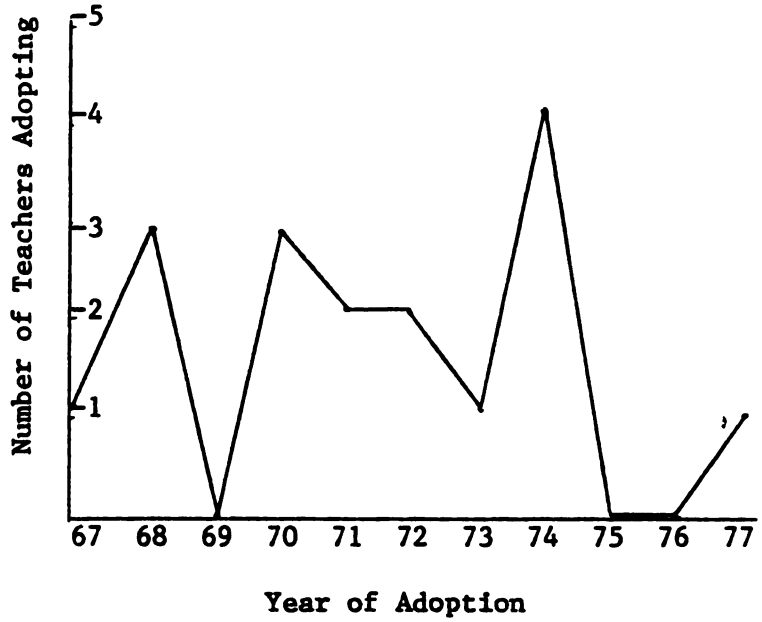

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Table 4.7

A Summary of Independent Variables, Predictions, and Results for TIME Hypotheses

Independent Variables	Predictions	Results
Age	No difference	Not Significant
Education	More	Not Significant
Social Status	Higher	Not Significant
Upward Social Mobility	Greater	Not Significant
Size of Unit	Larger	Significant, but not in predicted direction
Specialized Operations	More	Not Significant
Empathy	Greater	Not Significant
Dogmatism	Less	Not Significant
Ability to Deal with Abstractions	Greater	Not Significant
Rationality	Greater	Not Significant
Intelligence	Greater	Not Significant
Attitude toward:		
Change	More Favorable	Not Significant
Risk	More Favorable	Not Significant
Education	More Favorable	Significant
Science	More Favorable	Not Significant
Fatalism	Less	Not Significant
Achievement Motivation	Higher	Not Significant
Aspirations	Higher	1. Significant 2. Significant 3. Not Sig. 4. Not Sig.
Social Participation	More	1. Not Sig. 2. Not Sig.
Integration with Social System	More	1. Not Sig. 2. Not Sig.
Cosmopoliteness	More	1. Not Sig. 2. Significant 3. Not Sig.
Change Agent Contact	More	Numbers Reported
Mass Media Communication Channels	Greater	1. Not Sig. 2. Not Sig. 3. Not Sig. 4. Signigicant
Interpersonal Communication Channels	More	Not Significant
Information Seeking	More	Not Significant

Table 4.7 (cont'd.)

Independent Variables	Predictions	Results
Greater Knowledge	More	Items a-f:Not Sig. g,h:Sig. i:Not Sig.
Opinion Leadership	More	Not Significant
System Norms	Modern	Unanswerable
Integration of Systems	More	Not Significant
Innovations	More	Unanswerable

"among members of a social system . . . "

Rogers and Shoemaker maintain that the diffusion of an innovation occurs within a social system, and that the social structure and norms of the system affect the pattern of diffusion in several ways.

40. "When the system's norms favor change, opinion leaders are more innovative, but when the norms are traditional, opinion leaders are not especially innovative."

Faculty members of all eight schools were asked to respond to the following three questions which were used to establish the opinion leaders of each school. The fourth question was used to establish which faculty members were looked on by their colleagues as innovators.

> a. Among the teachers in this school, name three whom you respect most as teachers.
>
> b. Among the teachers in this school, name three whose opinions you most frequently seek when you have problems related to your teaching performance.
>
> c. Among the teachers in this school, name three teachers whose opinions on crucial educational issues are usually very valuable to you.
>
> d. Among the teachers in this school, name three teachers that you consider to be the most innovative.