THE DIFFUSION OF INNOVATION WITHIN ONE MICHIGAN SCHOOL SYSTEM USING A COMMUNICATION FLOW INVENTORY

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ABSTRACT

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Purposes of the Study

The purpose of this study was to analyze the diffusion of innovation within a school system with the consideration that diffusion occurs within a bureaucratic structure. The unit of analysis was the relationship among the individuals within the system rather than the individual as a separate entity. Specifically the study attempted to answer the following questions:

1. Will a network analysis identify groups, liaisons (individuals who are not group members, yet have links with two or more groups), and bridges (group members who have one or more links to another group [or groups] in the network) in the sample district through which innovation can be disseminated more effectively by a change agent?

2. What is the awareness-implementation level of a new innovation after a four-month diffusion effort by a change agent?

3. How are the characteristics, external contacts, and district decision-making perceptions of the population related to the awareness-implementation level of the innovation?

4. What differences, if any, exist in the relationship of the characteristics, external contacts, and perceptions of the population to the awareness-implementation level of the innovation?

5. What groups within the school system exist for communication in the functions of maintenance, production, and innovation?

Procedures

The study was accomplished in a suburban school district in Michigan during the 1973-1974 school year. Seventy-one per cent of the professional staff members participated in the study.

Data were gathered by using a three-part survey instrument which consisted of the following: Form One, Awareness-Implementation Level of the Innovation; Form Two, Characteristics, External Contacts, and perceptions of the Population; and Form Three, Within Individual School Contacts and Outside Contacts With Other Schools

Within the District. The data gathered for Form One were analyzed by the ACT at six levels ranging from awareness to implementation of an innovation, after a four-month diffusion effort. Form Two data were then analyzed by the ACT and Finn Programs providing the correlations of predictor variables with the awareness-implementation level of the innovation. Additionally, Form Two was used to measure individual schools in relationship to each other on selected characteristics, external contacts, and perceptions of staff. Form Three data were analyzed using the computer program devised by Richards and others for use in large organizations.

Major Findings

Awareness-Implementation Level

1. Sixty-three per cent of the population were at some awareness stage regarding the innovation after a four-month diffusion effort.

Characteristics of the Population

1. There was a positive correlation between awareness-implementation level of the innovation and: (a) teaching level of the respondents; (b) highest degree held; and (c) years of teaching experience.

External Contacts

1. There was no significant relationship between awareness-implementation level of the innovation and: (a) number of courses taken beyond the last degree; (b) frequency of contact with a university staff member; and (c) frequency of communication about educational programs with staff from other school districts.

2. There was a positive correlation between awareness-implementation level of the innovation and: (a) frequency of attendance to inside conferences and (b) frequency of attendance to outside conferences.

Perceptions of Professional Staff

1. There was no significant relationship between the awareness-implementation level of the innovation and: (a) perceptions of the staff about the district trying new programs; (b) perceptions of the staff about immediate superior encouragement to try new instructional programs; (c) perceptions of staff concerning who gets asked about or is involved in discussing the merits of a new program; (d) perceptions of the staff about who on the teaching staff is given

the final vote in the decision-making process; and (e) perceptions of staff concerning the type of decision-making process in the school system.

2. There was a positive correlation between the awareness-implementation level of the innovation and: (a) perceptions of the staff as to the proportion of staff participating in the final decision on the adoption/nonadoption of a new program and (b) perceptions of staff concerning the proportion of time administrator implements new programs recommended by the vote of the teachers.

Individual School Analysis

When the data were analyzed school by school, there was a positive correlation between perceptions of staff and the characteristics postulated.

Network Data

Bridges and Liaisons

1. Each organizational function studied--maintenance, production, and innovation--generally has a different set of liaison members. Members are seldom liaisons in more than one function.

2. Liaisons differ markedly in the number and scope of their contacts in the innovation function.

3. Liaisons are most frequently members of the organization with special positions that bring them into contact with different schools and groups within the system for the innovation function.

4. Bridge links are likely to maintain their bridge status in all three of the organizational functions surveyed.

5. Bridges differ markedly in the number and scope of their contacts in the innovation function both within schools and among schools.

6. More bridges than liaisons are found within an organization for the innovation function.

7. The number of external contacts per liaison member is generally greater than the number of external contacts per bridge member in the innovation function.

General Information on Individual and Total Functions of the District

1. There are no linkages and minimal group formation outside of each individual school for the maintenance function.

2. Members who form the small external groups for the maintenance function are special staff such as music or physical education teachers.

3. There are few external linkages for the innovation function of the district.

4. Only a small percentage of the individuals in the total system have group membership, liaison, or bridge roles in the external groups formed for the three functions studied. The majority of the school system members are isolated and have no contact with other staff members outside of their own school.

5. Where change agent contact has been the greatest, the schools involved fall consistently above the mean in: (a) the awareness-implementation level of the innovation and (b) in the characteristics and perceptions of staff hypothesized as positively related to the awareness-implementation level of the innovation. The tendency is also for these schools to have more liaison and bridge connections in the district for the innovation function.

6. When schools fall below the mean awareness-implementation level, there is a tendency for

them to fall below the mean individual school level in characteristics and perceptions of staff which were analyzed in the study.

7. This has been essentially a case study approach. Conclusions from the study can be generalizable only to the extent to which the systems are similar.

DEDICATION

This dissertation is dedicated to my children, Kimberlee, Kurt, and Kit who understand, support, and respect my need to climb mountains.

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Finally, the author wishes to extend a thank you to her mother who imparted to her daughter determination and to her father who taught her to reach for the stars.

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CHAPTER I

THE PROBLEM

Purposes

The purpose of this study is to analyze the diffusion of innovation by introducing an innovation (School Within a School) into a school system. The first portion of the study will survey the individual and group characteristics and perceptions of staff about the district, in relationship to the awareness-implementation level of the innovation. Secondly, a distinctive feature of the study will be the consideration that educational diffusion occurs within a bureaucratic structure. The unit of analysis in this case will be the relationship among the individuals within the system rather than the individual as a separate entity. A network analysis of the school system is administered, analyzed, and then used by a change agent to determine if the innovation can be diffused more effectively by using the liaisons and bridges identified by the network analysis. The final purpose of the study is to use the theoretical knowledge acquired to set up a pilot, School Within a School, program in a school system.

Need for the Study

Recognition of the importance of diffusing innovation in education is not a recent phenomenon. Until the 1950's, however, there appeared to be little public or internal pressure for educational change and, thus, nebulous need for understanding the diffusion process. As Everett Rogers indicated:

> One of the larger traditions in terms of the number of studies, education is one of the lesser traditions in terms of its contributions to understanding the diffusion of innovations or to a theory of social change.[1]

In general, changes in educational methods have been exceedingly slow. Mort reports that the relatively simple innovation that physical examinations be given to school children required more than a century for final diffusion to take place.[2] The common assumption is that educational institutions, since they are charged with imparting both new and old knowledge to the young, must themselves be highly dynamic, with frequent changes

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[1]Everett M. Rogers and F. Floyd Shoemaker, Communication of Innovations--A Cross Cultural Approach, The Free Press (New York-London: Collier-MacMillian Ltd., 1971), pp. 57-58.

[2]Paul Mort, "Studies in Education Innovation from the Institute of Administration Research: An Overview," in Innovation in Education, ed. M. B. Miles (New York: Bureau of Publications, Teachers College, Columbia University, 1964), Chapter 13, pp. 317-29.

in teaching methods and content. It's a fallacy. A chart developed by Rogers combines studies done on rate of adoption of three educational innovations: Kindergarten, Driver Training, and Modern Math. The final diffusion of these innovations took fifty years, eighteen years, and five years respectively.[3] This hardly gives credence to the assumption of overall dynamic change in educational organizations.

One important component which appears to be neglected in diffusion of innovation studies is the reality that in education, diffusion occurs within bureaucratic structures.[4] Recently consideration has been given to how the organizational structure can impede or enhance innovation. Part of a summary in a recent research project at Michigan State University suggests that:

> A study needed to gain further insight into the decision-adoption process for new teaching methods is an identification and analysis of the communication networks by which messages regarding new practices are introduced into a school system and the pathways by which those messages diffuse through

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[3]Rogers and Shoemaker, Communication of Innovations, p. 60.

[4]Richard Carlson, "School Superintendents and Adoption of Modern Math: A Social Structure Profile," in Innovation in Education, ed. Mathew B. Niles (New York: Teachers College, Columbia University, 1964).

> the system. This type of study could identify entry points and pathways which would be most likely to facilitate message flow.[5]

The importance of identifying characteristics and perceived attitudes which might be shared by those who act as bridges or liaisons in the communication network is self-evident. The compilation of this information, used by an internal or external change agent, has potential value in initiating more effective, faster, and efficient communication flow within an educational organization. Conceptually, this study should provide a unique approach to diffusion of innovation within a school system.

As a result of the relatively small amount of educational research conducted in this area, there remain many problems to be resolved and insights to be gained.

Importance to Education

Basic to this study is the belief that communication concepts and theory can be used fruitfully in education. An initial assumption is that educational leaders want to know the best way of getting research and/or

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[5]L. E. Sarbough, Project Director, A Study of the Diffusion of Ten Educational Products (East Lansing, Mich.: Michigan State University, 1973).

new educational programs and practices to the teacher. Havelock succinctly reiterates this assumption by writing:

> "Strategy" is a key aspect of this new concept of innovation because it is now becoming recognized that change will only lead to real progress if it is brought about in an orderly sequence of goal-setting, planning, and systematic execution. Clearly, therefore, there is a need for educators to spell out in detail their "innovative" plans and activities in terms of overall "strategies" and in terms of the explicit sequences of action steps ("tactics") that make up these strategies.[6]

Not all educators learn about an innovation in the same way. Some learn about it through university contact or indirectly via friends or colleagues. Others learn by reading professional journals or attending conferences or seminars. Messages travel many different pathways and involve few or many people. The more people that handle a message, the more likely that it will become distorted or that it will not be received at all.

In a paper presented to the International Communication Association the importance of this assumption is reiterated: "Perhaps the most central and crucial aspect of any communication audit is the description of who is linked into different communication nets, and how these nets meet the needs of the organization."[7]

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[6]Ronald G. Havelock, The Change Agent's Guide to Innovation in Education (Englewood Cliffs, N.J.: Educational Technology Publications, 1973), p. 153.

[7]Richard Farace and Russell Hamish, "Beyond Bureaucracy--Message Diffusion as a Communication Audit Tool" (paper presented at the International Communication Association Annual Convention, Atlanta, Georgia, April 19-22, 1972).

Therefore, the need for studies which examine the system through which innovation is diffused as well as the individual and his relationship and attitudes toward that organization is quite clear. Though much research has been undertaken concerning diffusion, only a small part of it has included concrete methodology that educational leaders might utilize to diffuse innovation.

Evans indicated that:

> Past investigation by behavioral scientists and others interested in the dynamics of change have shown that social institutions rarely include mechanisms for facilitating change. Definitions of social institutions most commonly stress their enduring and perpetuating aspects. Not surprisingly, then, the greatest resistance to change will be found in those institutions whose traditional, primary function has been the perpetuation of a society's folkways, mores, and values, such as religious and educational institutions.[8]

It is appropriate that an attempt be made to identify possible factors which may have a significant relationship to the diffusion of innovation in school organizations. Further, testing an existing change model and modifying it to include use of network analysis data in a real setting, will serve those interested in bringing change to their system, with

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[8]Richard Evans, Resistance to Innovation in Higher Education (San Francisco: Jossey-Bass Publications, Inc., 1970), p. 2.

feedback concerning problems and/or success with this new conceptual approach to bringing about change in a school system.

Theoretical Foundations of the Study

Since a major purpose of this study is to use a network analysis of a school system to find pathways and links through which a change agent might diffuse innovation, the theoretical development of the network analysis is noteworthy. The base for network analysis finds some of its early roots in the work of Kurt Lewin who stimulated much of the early small group research. Other research background stems from J. L. Moreno who began the mapping of social relations through sociometric techniques. The present network analysis is based primarily on the theoretical work of Farace and others. Richard's work in computerizing the communication flow in organizations has aided immensely in conducting network analysis studies.

To undertake a multidimensional study of the diffusion of innovation within a school system requires that several theoretical concepts be explored. First the empirical research gathered by Rogers[9] has been scrutinized for its application. The generalizations are built from studies from many academic disciplines and include

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[9]Rogers and Shoemaker, Communication of Innovations, p. 349.

many cross-cultural studies. Some of the hypotheses posed in the study of characteristics and perceptions of staff on district decision-making are replicated to see if the validity of the generalizations holds true for individuals in educational systems. Others were generated from the work of L. E. Sarbaugh.[10] Some are the result of personal curiosity and experience and may serve to add input to present empirical research in diffusion. The following hypotheses from Rogers also guided in the development of the study.[11]

There will be a positive correlation between awareness-implementation level of the innovation and:

1. Highest degree held
2. Frequency of contact with a university staff member
3. Frequency of attendance to outside conferences
4. Frequency of communication about educational programs with staff from other school districts
5. Frequency of communication about educational programs with staff from other school districts

The role of change agent will be an integral part of the total study, therefore, an examination of

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[10]L. E. Sarbaugh, Project Director, An Investigation of Communication Efforts and Their Relation to Stages of Adoption of Selected Reading Programs (East Lansing, Mich.: Michigan State University, July, 1973).

[11]Rogers and Shoemaker, Communication of Innovations, p. 349.

the role and function of the change agent has been made. Havelock,[12] Rogers,[13] and Lippitt[14] remain as major contributors to this researcher's conceptualization of the change agent as well as being instrumental in presenting change models which appeared useful to this study. Their work was especially helpful in developing strategies for working with liaisons and bridges in the school system.

Definition of Terms

For purposes of clarity and unity of thought the following terms are defined for the reader.

Network.--A term used to describe a collection of elements of objects connected or coupled together.[15]

Diffusion.--The process by which new ideas become transmitted to the members of a social system.

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[12]Havelock, Change Agent's Guide, pp. 3-140.

[13]Rogers and Shoemaker, Communication of Innovations, pp. 200-48.

[14]Ronald Lippitt, Jeanne Watson, and Bruce Westley, The Dynamics of Planned Change (New York: Harcourt, Brace and World, Inc., 1958).

[15]Lytton L. Guimares, "Network Analysis: An Approach to the Study of Communication Systems" (unpublished paper), p. 4.

Innovation.--An idea or method that is new to the system into which it is being introduced.

Change Agent.--A professional who influences innovation-decisions in a direction deemed desirable by an agency interested in producing change within a system.

Innovative Negativism.--The degree to which an innovation's failure conditions a client system to reject future innovation.[16]

Group Members.--Individuals who have more than half of their communication links with other persons in the group.[17]

Bridge.--Group members who, in addition, have one or more links to another group (or groups) in the network.[18]

Liaison.--Individuals who do not meet membership criteria for groups, yet have links in two or more groups.[19]

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[16]Rogers and Shoemaker, Communication of Innovations, p. 14.

[17]Richard V. Farace and others, "Analysis of Human Communication Networks in Large Social Systems," May, 1973, p. 16.

[18]Ibid.

[19]Ibid.

Tree Node.--Individuals which have one link with a participant but any number of links with attached isolates.[20]

Attached Isolates (IT2).--Individuals which have only one link with another network participant.[21]

True Isolates (IT1).--Individuals with no contact with anyone else in the network.[22]

Isolated Dyads.--Pairs of members with only one link, that with each other.[23]

Others.--System members who are neither group members nor group linkers.

External Group.--Members of individual schools who belong to a group composed of people from other schools within the district.

Awareness-Implementation Level.--The term used to denote the six stages leading to the adoption/non-adoption of an innovation. The levels include:

1. Awareness of the concept
2. Interested enough in the concept to want more information

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[20] Ibid.

[21] Ibid.

[22] Ibid.

[23] Ibid.

3. Sought more information about the concept
4. After seeking information, considering the use of the concept in school or classroom
5a. Participation in implementing the concept by being on a committee
5b. Participation in implementing the concept by experimenting in class

Limitations of the Study

A number of factors prevented the author from gaining access to data and therefore from drawing certain conclusions. Those factors include:

1. Lack of cooperation from a portion of the sample population;
2. Misunderstanding as to the allotment of time needed for survey completion by some administrators;
3. Innovation negativism as a result of an unpopular administrative directive and the resultant grievance procedure filed by the teacher association;
4. Difficulties with the computer program in adapting to the coding procedures used which resulted in getting the network data very late in the year.

Hypotheses

The following correlations were hypothesized as a result of the review of the literature and the desire of the author to approach the problem of diffusion within a school system in such a way as to produce a unique usable approach to dissiminating innovation within a school system.

Hypothesized Correlations of Selected Predictor Variables With Level of Adoption: Awareness-Knowledge-Acceptance

Variable		Correlation
Individual Characteristics		
I.	Grade level now teaching	+
II.	Highest degree held	+
III.	Years of teaching experience	+
External Contacts		
IV.	Courses taken beyond the last degree	+
V.	Frequency of contact with a university staff member	+
VI.	Frequency of attendance to outside conferences	+
VII.	Frequency of attendance to conferences attended within the school district	+
VIII.	Frequency of communication about educational programs with staff from other school districts	+
Perceptions of Staff on Decision-Making Policies of the District		
IX.	Perceptions of staff about how the district ranks in trying new instructional programs	+

X. Perceptions of staff about level of immediate superior encouragement to try new instructional programs +

XI. Perceptions of staff about proportion of staff who get asked about or are involved in discussing the merits of a new program +

XII. Perceptions of staff concerning the proportion of the staff given the final vote in the decision-making process +

XIII. Perceptions of staff about the proportion of staff involved in the final decision on the adoption/nonadoption of a new program +

XIV. Perceptions of staff concerning proportion of time programs recommended by a vote of the teachers are carried out by administrators +

XV. Perceptions of staff concerning the type of decision-making process (autocratic-democratic) in the school system +

Change Agent Contact

XVI. Frequency of change agent contact +

General Data

XVII. The more liaison and bridge connections in individual schools in the innovation network function the higher the expected awareness-implementation level within the schools

CHAPTER II

REVIEW OF THE LITERATURE

Considering the broad focus of this study it is necessary to review the literature concerning the two major facets involved in my conceptualization of diffusing innovation in education. The first part of the review, then, will concern itself with the literature on diffusion of innovation with emphasis on the work done in educational diffusion. The second section will deal directly with the literature on the historical development of network analysis.

Diffusion Studies

Rural sociologists, sponsored by agricultural extension services in the late 1930's and early 1940's, were the harbingers of diffusion research.

The methodology used has served as a model for researchers in other traditions. Unfortunately this trend impeded not only the potential quality of later experiments but for years "stunted the growth" of diffusion research in terms of limiting the directionality of the studies.

Miller concurred with many diffusion experts when he suggested that a polarization of approaches to the study of change has taken place.[24]

The assertion becomes apparent as one peruses the diffusion literature prior to the early 1960's. The need for other types of research efforts becomes evident as researchers take a peripheral view at the myriad efforts of scientists from the various traditions.

The task of bringing together the existing diffusion literature from all of the disciplines and making change students more aware of duplication of efforts, etc., has been accomplished by Rogers and Shoemaker.[25] A distillation of the results of more than 1,500 diffusion publications, their book is invaluable to the student interested in the diffusion process and certainly offers a beginning picture of research needs.

For those interested in educational change, Maquire presents a general overview of the topics of change and attempts to join knowledge of the change literature with knowledge of the educational setting.[26]

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[24]Richard Miller, "Kinds of Change," Educational Leadership 27 (January 1970): 331-33.

[25]Rogers and Shoemaker, Communication of Innovation.

[26]Louis Maquire, Observations and Analysis of the Literature on Change (Philadelphia: ERIC Document Preproduction Service, 1970).

In exploring the early roots of the study of diffusion, it was natural, since farmers were not a part of an organization, that individuals became the unit of response in diffusion studies, and thus the unit of analysis. One can only speculate on why that unit of analysis has lingered so long in the various research traditions. This is particularly true in the early studies pursued by educational researchers such as Paul Mort who used the survey of administrators as his major technique for gaining data.

Approximately 80 per cent of all the educational diffusion studies conducted during the late 1930's to the late 1950's were done by Paul Mort and his doctoral students at Teachers College, Columbia University. Early research centered on local control over school finances and the relationship of local control to school innovativeness. In general, the school system was the unit of response and analysis. Generally, data were from mailed questionnaires from administrative school personnel. Several findings have emerged from these studies:[27]

1. Educational cost per pupil is the best single predictor of school innovativeness.

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[27]Rogers and Shoemaker, Communication of Innovation, p. 59.

2. A considerable time lag is required for the widespread adoption of new educational practices. The average American school lags 25 years behind the best practice.

3. The pattern of adoption of an educational idea over time approaches an S-shaped curve.

A study by Carlson in 1965 illustrates the differential approaches being taken since the early sixties and contradicts some of the Mort research. In an excellent study on the communication of modern math among school administrators, Carlson explored the opinion leadership patterns in the diffusion of modern math.[28] The data demonstrated the power of social structural variables as related to the school superintendent in the explanation of rate of adoption of a specific new practice.

A further description of various educational diffusion studies in the middle sixties is found in Miles.[29]

Carlson defines the process of diffusion as: (1) acceptance; (2) over time; (3) of some specific

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[28]Richard Carlson, "School Superintendents and Adoption of Modern Math: A Social Structure Profile," in Innovation in Education, ed. Matthew Miles (New York: Teachers College, Columbia, 1964), pp. 329-42.

[29]Matthew Miles, Innovation in Education (New York: Teachers College, Columbia, 1964).

item--an idea or practice; (4) by individuals, groups or other adopting units, linked to; (5) specific channels of communication; (6) to a social structure; and (7) to a given system of values or culture.[30] He succinctly points out that no single study on the diffusion of an educational innovation takes into account all of its elements. It is, in fact, worthwhile noting that until the 1960's, little consideration was given to the fact that educational diffusion occurs in a formal organization. Little interest in diffusion research in education existed, so few critiques of the existing research were made and few new directions or dimensions were introduced.

Some attention was directed toward connecting educational diffusion research with communication theory using the two-step flow hypothesis.[31] These studies served to call attention to communication channels and to personal relations of various kinds by those who receive communication. Many prominent diffusion

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[30]Richard Carlson, "Summary and Critique of Educational Diffusion Research," paper presented at the National Conference on Diffusion of Educational Ideas, East Lansing, Michigan, March, 1968.

[31]Elihu Katz and Paul Lazarsfeld, Personal Influence: The Part Played by People in the Flow of Mass Communication (New York: The Free Press, 1955).

leaders appear to recognize the difficulty of clarifying and defending past research efforts. Schriven notes: "My view of diffusion at the moment is that it works exceedingly badly--a view over which there may be less disagreement than over anything else I say here--and where it does work it's not clear that we benefited (MACSO, New Math, etc.)."[32]

Though many change models and strategies have been developed, there appears to be little to offer anyone seeking the ultimate panacea for diffusion. Leithwood and Russell's study of forty-five schools in Ontario illustrates this point. They conclude: "Many so called diffusion strategies are in effect non-strategies for the lower innovating positions of the population, at least in regard to the complexity characterizing most educational innovations."[33]

As the concern of this study is to change existing teaching practices and curriculum, an interest in change models is evident. Many change models are found in the literature which can be useful in developing

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[32]Michael Scriven, "A Normative Model for Diffusion of New Instructional Materials and Practices," paper presented at the Social Science Consortium, Inc., Racine, Wisconsin, June 1973.

[33]R. A. Leithwood and H. H. Russell, "The Development and Evaluation of One Strategy for Implementing Change in Schools," paper presented at the American Educational Research Association, New Orleans, Louisiana, 26 February 1973.

guidelines for change as well as instrumental in aiding the change agent who desires to use existing models with minimal changes to fit the needs of the population being dealt with. Most of the educational models can be grouped together under three headings: (1) Problem-Solving; (2) Social Interaction; and (3) Research, Development, and Diffusion. Havelock highlights the features of each of these models and makes a synthesis of the qualities of each. Using the features of each model he conceptualizes a Linkage Model which he feels is more appropriate to the change task.[34]

This study has utilized Rogers' Diffusion Model which says--Innovation is communication through channels over time to members of a social system.[35] This model contains the elements of most general communication models. It is important to remember, however, that the element of time and the newness of an idea is what makes this a diffusion rather than a change model.

In a recent article on change models, Mangione emphasizes that no clear strategy or process exists which can be used successfully in all situations. He

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[34]Ronald Havelock, The Change Agent's Guide to Innovation in Education (New Jersey: Educational Technology Publications, 1973), pp. 154-69.

[35]Rogers and Shoemaker, Communication in Innovation, p. 18.

suggests that there are various models and strategies from which a change agent can extract ideas that are appropriate for his needs.[36]

Research in educational diffusion has been exceedingly eclectic and though many models for change have been offered, researchers have not been guided by any discernible framework, orientation, or change model. In recognizing the shortcomings of the science of diffusion, Carlson states:

> If one is concerned with who adopts and at what rate, it is desirable to know how communication acts and processes are related, because communication is necessary for adoption to take place. If, on the other hand, one wants to know how an innovation spreads, one is inescapably involved in the study of communication processes--until attention is given to who plays what part within a school system in the adoption decision, the neglect of the part played by communication will continue and a large gap in knowledge will continue to exist.[37]

Ronald Lippitt also recognized existing research omissions and focuses attention on the internal conditions needed if knowledge is to be utilized. He identifies some of the process elements within the

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[36]Samuel Mangione, "Bringing Perspective to the Change Literature," Educational Leadership 27 (January 1970): 359-62.

[37]Carlson, "Summary of Research."

person or adoption unit which may pose problems in the consumption and utilization of new knowledge.[38]

In the same vain Lin appealed to researchers to take a process view of the diffusion of innovation. He urges investigations to explore the various strata of decision making, the different internal stages of that process, and the effects of innovation on the total social system. He further suggests three research methods which he regards as being promising to students of change: (1) Field experiments; (2) Computer Simulation; and (3) Structural Analysis. Lin's study of three Michigan high schools demonstrate how group structural properties can be analyzed so as to be helpful in understanding the diffusion process of an educational institution.[39]

The utilization of relational analysis in diffusion investigation using: (1) Dyadic analysis; (2) Chain analysis; and (3) Clique or sub-system analysis

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[38]Ronald Lippitt and Ronald Havelock, "Needed Research on Research Utilization," paper presented at the National Conference on Diffusion of Educational Ideas, Michigan State University, March, 1968.

[39]Nan Lin, "Innovative Methods for Studying Innovation in Education," paper presented at the National Conference on Diffusion of Educationl Ideas, Michigan State University, March, 1968.

was suggested by Rogers and Jain.[40] Structural effects were viewed by both researchers as being important in explaining individual innovative behavior. Particularly pertinent to this study is the suggestion that:

> The extent of knowledge and understanding of the innovation is another useful dependent variable. Often we have looked at time of awareness, but not at the extent or degree of awareness and understanding of the innovation.[41]

Bennis uses the term "organizational development" to describe a complex educational strategy to change the belief, attitudes, values, and structure of the organization so as to better adapt to change. He emphasizes the basic value underlying organizational development theory and practice in choice. Pertinent to this study is one of the threat to bureaucracy which he describes--a psychological threat springing from a change in managerial behavior.[42] In this and in other studies,

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[40]Everett Rogers and Nemi Jain, "Needed Research on Diffusion Within Educational Organizations," paper presented at National Conference on Diffusion of Educational Ideas, Michigan State University, March 1968.

[41]Ibid.

[42]Warren Bennis, Organizational Development: Its Nature, Origins, and Prospects (Reading, Mass.: Addison-Wesley Publishing Co., 1969).

Bennis indicates that he sees a need for the inclusion of power and conflict dimensions in organization models.[43]

Many of the variables studied in this research relate to previous studies. Hilfiker found five independent variables which were significantly related to school system innovativeness:

1. Social support by the principal as perceived by staff.
2. Perceived problem-solving adequacy of staff meetings.
3. Satisfaction with amount of time devoted to problem-solving in staff meetings.
4. Perceived powerlessness in system faculty and administrative council meetings.
5. Openness and trust as interpersonal norms of the system as perceived by professional personnel.[44]

Of interest to this study was the research delineating teacher perceptions of administrative influence and their participation in decision-making which was conducted by Alutto and Belasco which showed the importance of teachers being allowed to participate in the decision-making process.[45]

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[43]Warren Bennis, "Unsolved Problems Facing Organizational Development," Business Quarterly 34 (Winter 1969): 80-84.

[44]Leo R. Hilfiker, "Factors Relating to the Innovativeness of School Systems," The Journal of Educational Research 64 (September 1970): 23-27.

[45]Joseph A. Alutto and James A. Belasco, "Decisional Participation Among Teaching Personnel and Perceptions of Administrative Influence," paper presented at the Annual Meeting of the American Educational Research Association, Minneapolis, March, 1970.

In Richard Miller's book which illustrated five case studies of elementary school innovativeness, some additional insight into the change process was given.[46] Strong administrative leadership is depicted in each case study. However, little documentation is given to the change process or the teacher's part in the decision-making process.

Miles suggests that support and conceptual help provided by consultant or other outsiders may be essential for adequate levels of awareness-interest and later adoption to take place.[47] It is hoped that this concept can be supported by this study.

Lippitt, supporting Miles' supposition that additional support and help for staff is necessary for change, says:

> Learning the new educational practice, therefore, is not a simple matter of absorbing the written transmission of information. An active learning process involving various "levels" of the person is required. To make this change effort requires more commitment, risk-taking, and help from others than is true in the other fields of practice.[48]

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[46]Richard Miller, ed., Perspectives on Educational Change (New York: Appleton-Century-Crofts, 1967).

[47]Matthew Miles, Innovation in Education (Teachers College, 1964), p. 652.

[48]Ronald Lippitt and others, "The Teacher as Innovator, Seeker, and Sharer of New Practices," in Perspectives on Educational Change, ed. Richard Miller (New York: Appleton-Century-Crofts, 1967), pp. 307-24.

There is a growing awareness that special training must be given to students of change. Training guides for this purpose have been developed by Havelock and others.[49]

Suggestions that a new role of organizational specialist be created in a school district have been given by Schmuck, Philips, and Blodino.[50] They see the role as one of improving communication patterns, group processes, and organizational procedures. Special training which emphasizes: (1) increasing understanding on the part of members of the district of how people in different parts of the total district affect one another; (2) developing clear communication networks, up, down, and laterally; (3) increasing understanding on the part of members of the district of the various educational goals in different parts of the district; and (4) involving more personnel at all levels in decision-making.

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[49]Ronald G. Havelock et al., Training for Change Agents, Center for Research on Utilization of Scientific Knowledge (Ann Arbor: University of Michigan, 1973).

[50]Richard Schmuck, Philip Runkel, and Charles Blondino, Organizational Specialists in a School District (Eugene: University of Oregon, Center for the Advanced Study of Educational Administration, October, 1970).

Network Analysis

Two different traditions permeate the study of networks. One approach involves the field research done by sociologists. The other data have been generated by social psychologists in laboratory settings.

Experimental Studies/Laboratory Settings

In 1948, Bavelas wrote an article which initiated the experimental studies of communication networks.[51] As a result of Kurt Lewin's earlier work, Bavelas conceptualized the notion of geometrical representation of psychological and communication phenomena. Using a controlled setting, group members were placed in cubicles which were interconnected by means of slots in the wall through which written messages were passed.[52] Different communication structures were imposed upon the group by closing any one of the cubicle's slots. The links in these networks were mostly symmetrical (two-way), although asymmetrical (one-way) channels were used in some experiments. A variety of three-person, four-person, and five-person networks were explored

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[51]A. Bavelas, "A Mathematical Model for Group Structures," Applied Anthropology 7 (1948): 16-30.

[52]Marvin Shaw, "Communication Networks," in Advances in Experimental Social Psychology, ed. Leonard Berkowitz (New York: Academic Press, 1964), pp. 112-47.

and the relationships among the positions analyzed (see Figure 2-1). The purpose of these tests was to determine whether different fixed communication patterns have structural properties which affect group performance.

A different version of this method was initiated by Christie who used an "action quantization" procedure that restricted each subject to single, addressed messages transmitted at specified times.[53]

Heise and Miller substituted an intercom system for the written message technique.[54]

In later studies it seemed desirable to quantify the structural properties of networks to help researchers in the analysis of structural effects on group behavior. Bavelas suggested that the following descriptors should be developed for networks: (1) those for individual positions within a network; and (2) those for the network as a whole. He termed this a "centrality index."[55]

Leavitt suggested that the indices of "relative peripherality" was related to group behavior variables

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[53]L. S. Christie, R. D. Luce, and J. Macy, "Communication and Learning in Task-Oriented Groups," Technical Report No. 231, Research Laboratory of Electronics (MIT, 1952).

[54]G. A. Heise and G. A. Miller, Journal of Abnormal and Social Psychology 46 (1951): 327-35.

[55]A. Bavelas, Journal of Accoustical Society of America (1950): 725-30.

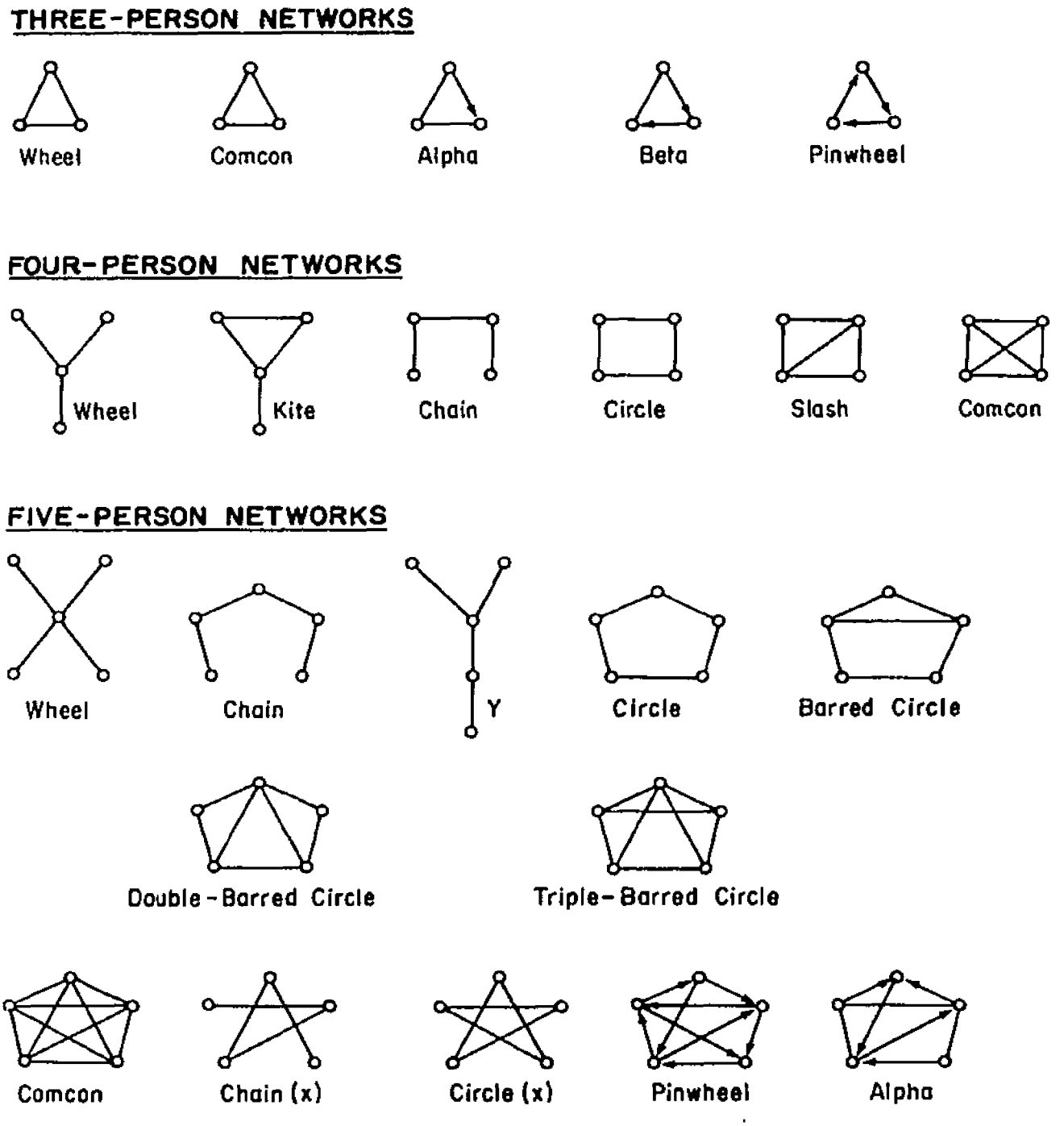

Fig. 2-1.--Communication networks used in experimental investigation. Dots represent positions, lines represent communication channels, and arrows indicate one-way channels (from Shaw, 1964, p. 113).

via differences among positions in answer-getting potential which structure group members' perceptions of their roles in the group.[56] He believed the advantages of peripherality over centrality lay in the greater comparability among positions in networks of different sizes.

Because Shaw felt that some important characteristics of networks and positions were not reflected by either of these measures, he developed an "independence index."[57]

Though all of the structural indices mentioned have some explanatory value in regard to differences among positions in networks, none adequately explain differences among different networks.

Additional studies have employed many independent variables. Peter Monge put these into three categories:[58]

1. Network Related Variables: group size, changes in network, opportunity to organize;

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[56]H. J. Leavitt, Journal of Abnormal Social Psychology (1951): 38-50.

[57]Shaw, "Communication," pp. 115-17.

[58]Peter Monge, "The Evolution of Communication Structure" (Ph.D. dissertation, Michigan State University, 1971).

2. Information Input Variables: noise, information distribution, reinforcement; and

3. Group Composition Variables: ascendance, authoritarianism, leadership style, and popularity.

It appears to be generally conceded that the major findings which are constant throughout the experimental studies over the past twenty years are: (1) Centralized networks (e.g. wheel, Y) are generally more efficient when the task is simple; (2) Decentralized networks (e.g. circle, comcon) are more efficient when the task is complex; and (3) Decentralized networks are more satisfying to group members regardless of the kind of task.

Field Studies

The sociological literature is extensive, but only a small portion of the studies deal with communication flow or networks. It is generally recognized that the lines on an organizational chart do not reflect adequately the lines of communication flow. Efforts have been made to study the communication flow that occurs in addition to the formal organizational lines.

The most widely recognized technique for studying networks in education is the sociogram developed by Marino in 1934. Although somewhat simplistic in

nature, it is "amendable to rigorous mathematical treatment."[59] The distinctive feature of the sociogram is its ability to provide a visual representation of the obtained structure.

The work of Mareno has been invaluable, historically and conceptually, to the study of networks. The belief that ideas were transmitted through networks and could possibly be controlled was crystalized during a study in which he devised psychogeographic maps which followed the lines of communication contact between individuals in neighborhoods, districts, and buroughs.[60] Essentially the sociogram is the "root" of present network analysis procedures. Although many researchers continue to use the sociogram, either in the graph or the visual sociogram form, its limitations, i.e., the lack of clearly specified rules and its inability to handle groups of more than fifty people have drawn researchers to other avenues of exploration.

Reduction of communication relations data by matrix methods has been more fruitful. The two means by which this has been accomplished are by matrix

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[59] Ibid.

[60] J. L. Moreno, ed., The Sociometry Reader (Glencoe: Free Press, 1960), pp. 71-78.

multiplication and by matrix manipulation.[61] These methods were utilized by Festinger, Schachter, and Bock in one of the more important studies on small group functioning and structure.[62]

Earlier uses of this technique of analyzing matrices by manual manipulation are described by Forsyth and Katz.[63]

The major difficulty in using matrix multiplication is that it requires a great deal of hand labor and time. As system size increases so does the time required to tabulate.

The need for a more viable technique which permits an analysis of large social systems is evident. The building of a set of analysis procedures which could deal effectively with past problems is described by Farace.[64] In a two-phase effort, the advantages of a

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[61]Richard Farace, William Richards, Peter Monge, and Eugene Jacobson, "Analysis of Human Communication Networks in Large Social Systems," Michigan State University, May, 1973.

[62]Leon Festinger, Stanley Schachter, and Kurt Bock, Social Pressures in Informal Groups (California: Stanford University Press, 1950), pp. 132-50.

[63]Elaine Forsyth and Leo Katz, "A Matrix Approach to the Analysis of Sociometric Data," Preliminary report, Sociometry 9 (November 1946): 340-47.

[64]Farace, Richards, Monge, and Jacobson, "Analysis of Networks."

program devised by Richards[65] is described. "The technique has the following advantages: (1) Up to 5,000 system members can be handled with no restrictions on the number of links they can cite; (2) the links can be operationalized at any measurement level, may be reciprocated or not, and can be internally weighted and reconstructed; (3) Re-ordering a matrix of size 1,000 requires 5-7 minutes of time, and, hence, is reasonably economical."[66]

During the second phase, criteria for specific communication roles was programmed. The theory for the method was based on the definitions of groups, liaison agents, bridge agents, isolates, and memberships. The computer routine identifies network participants and network isolates, as well as identifying groups within the sub-system and their linkages to the total system. This system was used to analyze the communication structure of the Office of Civil Defense.[67] The

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[65]William Richards, "An Improved Conceptually Based Method for the Analysis of Communication Networks in Large Complex Organizations," paper presented at the International Communication Association Meeting, Phoenix, Arizona, April 1971.

[66]Farace, Richards, Monge, and Jacobson, "Analysis of Networks."

[67]David Berlo et al., An Analysis of the Communication Structure of the Office of Civil Defense, Michigan State University, February 1972.

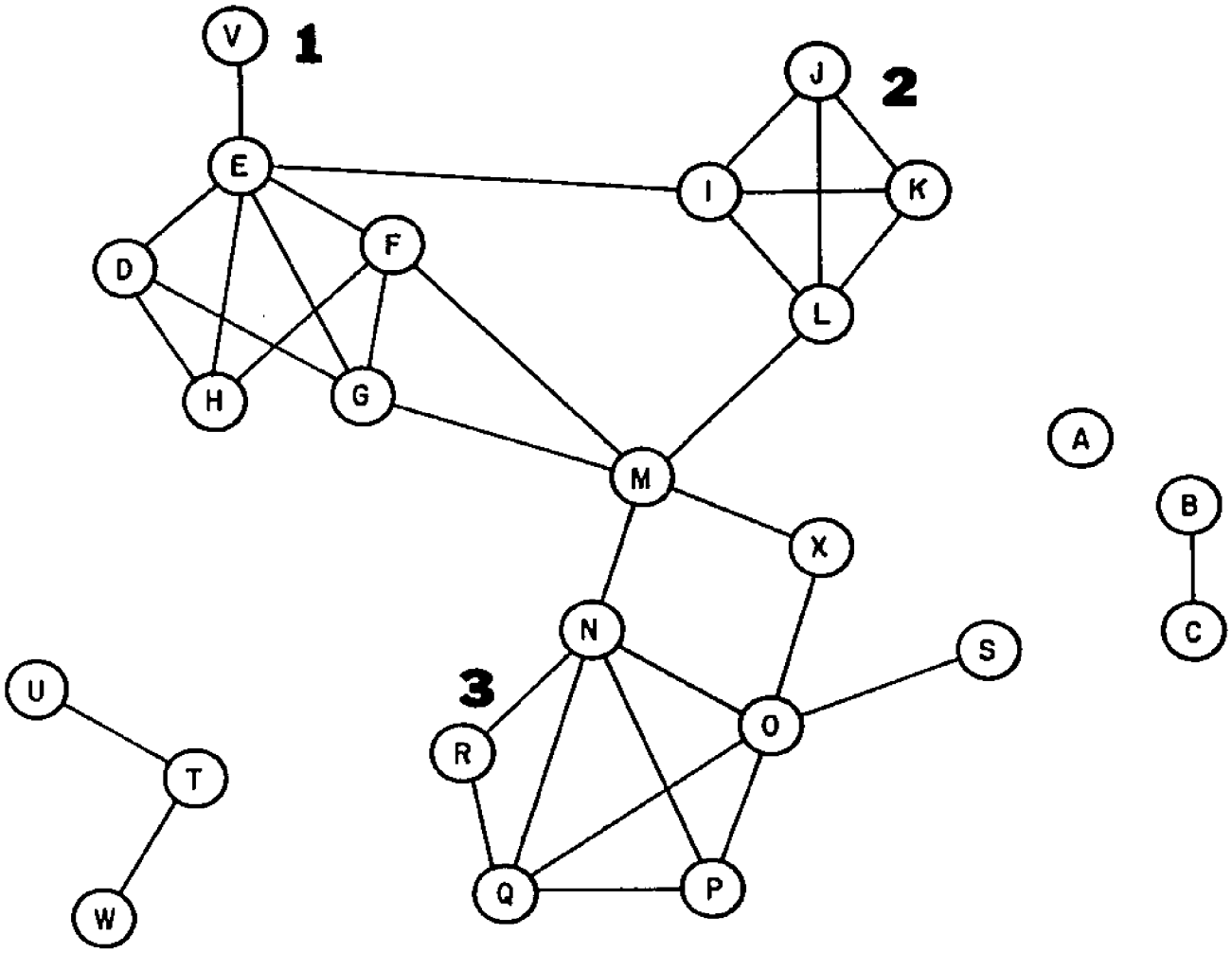
network analysis done as a part of this study is patterned after that research effort.

Figure 2-2 illustrates some of the components found in the network of an organization.

The availability of this new computer program enables a research approach which appears to have merit in terms of the hypotheses generated on network analysis and communication flow posed in Chapter I. This technique has been utilized successfully in large corporations. Since schools are in fact large organizations the applicability of the technique to a school system should prove fruitful in providing information useful to educators. Existing theory indicates that network analysis has been used successfully to identify communication groups, bridges, and liaisons in the various functions of the organization through which communication flow is processed. For school districts many unanswered questions about the diffusion of innovation may be solved.

As the complexities which permeate the study of diffusion become clearer with more sophisticated research techniques and new directional emphases, the role of the change agent assumes greater clarity and importance.

The need to close the gap between knowledge and known educational need increases each year. Man's capacity to create and store knowledge expands at a



GROUP MEMBERS:

Group #1--D, E, F, G, H
Group #2--I, J, K, L
Group #3--N, O, P, Q, R

BRIDGES--E, I,
LIAISONS--M
TREE NODES--T
ATTACHED ISOLATES--S, W, U, V
TRUE ISOLATES--A
ISOLATED DYAD--B, C
OTHERS--H

Fig. 2-2.--Illustration of communication network roles. (From: Farace and others, "Analysis of Human Communication Networks in Large Social Systems," Michigan State University, 1973, p. 141.)

phenomenal rate. Using the knowledge acquired through this research to diffuse an innovation in a school district is one of the stated purposes of this study. It is hoped that the knowledge acquired in this process will contribute to narrow the chasm between what research has proven valid and what is currently being done in schools today.

CHAPTER III

DESIGN OF THE STUDY

In order to determine how an innovation could be diffused in a school system more effectively, it was decided to use a unique approach to diffusion. The methodology utilized encompasses a combination of tactics, some of which are exploratory in nature and others which are experimental. The plan used involved the following steps:

1. Select a sample school system willing to participate in the study.
2. Submit a written proposal on SWS to the Superintendent.
3. Design and test a diffusion model.
4. Survey the school district for the following data:
   - A. Awareness-implementation level of the innovation
   - B. Characteristics of the population
   - C. External contacts of the population
   - D. Perceptions of the population

5. Do a network analysis of the population considering three organizational functions and the awareness-implementation level of the innovation. Examine the total data considering the functions of maintenance, production, and innovation.

6. Tabulate and analyze the data.

7. Using the data gained from the survey, assume the role of change agent to diffuse information on SWS.

8. Establish a pilot SWS program in one of the elementary schools by September, 1974.

It will be the intent of this chapter to delineate each step in the above plan.

It is recognized that limitations are imposed by studying and making generalizations about one single school system. It is desirable that further research in a variety of school systems be accomplished.

Selection of the Sample District

The selection of this sample school district was predicated on two factors: (1) The necessity of locating a district willing to participate in a research project of this nature; and (2) The fact that the researcher had an intimate knowledge of the district during a ten-year association, first as a teacher and later as an outside

university consultant, which would present an interesting facet to the change agent aspect of the study.

A letter was submitted to the Superintendent delineating the nature, scope, and amount of staff time required for the survey. Permission was granted to pursue the research in the district with the stipulation that a copy of the completed research be donated to the school district.

Characteristics of the District

The school district selected for study is a growing suburb adjacent to a large metropolitan area in Michigan. It encompasses sixteen square miles and its boundaries take in, partially or wholly, four separate municipalities. The district comprises a cross section of socio-economic levels. The population growth in the past five years, however, has consisted of persons with higher income levels who have constructed homes in the $50,000 to $80,000 range.

The district employed 297 teachers at the time of this study. The 5,766 students of the district are housed in 5 elementary schools, 2 middle schools, and 1 high school.

Table 3-1 indicates the respondent result of the survey administered to the professional staff in January, 1974.

TABLE 3-1.--Percentage of professional staff participating in the survey

	Total Population	Survey Participants	Percentage of Response
School 1	20	18	90%
School 2	28	26	93%
School 3	24	24	100%
School 4	20	18	90%
School 5	23	16	70%
School 6	26	22	85%
School 7	40	9	23%
School 8	91	57	63%
Admin/ Spec. Ser.	25	19	76%
District Total	297	210	71%

It should be evident that the low responses from Schools 5, 7, and 8 will impose some limits on the generalizations made in the study.

Submission of a Written Proposal on SWS to the Superintendent

In early August, 1973, a proposal was submitted to the Assistant Superintendent of Curriculum which involved the SWS innovation (see Appendix A). The proposal was thoroughly discussed and approved by the Assistant Superintendent. The following week a meeting was held with principals who might be interested in implementing the plan. The general reaction of the principals to the innovation was favorable.

Designing a Diffusion Model

The decision to utilize Rogers' Model of Diffusion was based on two factors: (1) The model, though loosely designed, appears eminently logical as well as amicable to the additions which appeared desirable to make; and (2) Most of the literature appeared to concede that all models or strategies for change must be amendable to the needs of the particular innovation and population it will involve. Miller reiterates the point: "Models can and should be consulted, but each major attempt at implementation may need to consider anew the strategy to be used."[68]

Rogers' Diffusion Model states: "Innovation is communication through channels over time to members of a social system."[69] The basic elements are: (1) innovation; (2) communication through channels; (3) time; and (4) members of a social system. His elaborations of each element are perspicacious, easily condensed, and amendable to input. Figure 3-1 is devised to illustrate Rogers' Model in a more concrete fashion. The asterisks indicate added input as deemed desirable for this study. Perusal of this model will make more

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[68]Miller, Perspectives, p. 367.

[69]Rogers and Shoemaker, Communication of Innovation, p. 18.

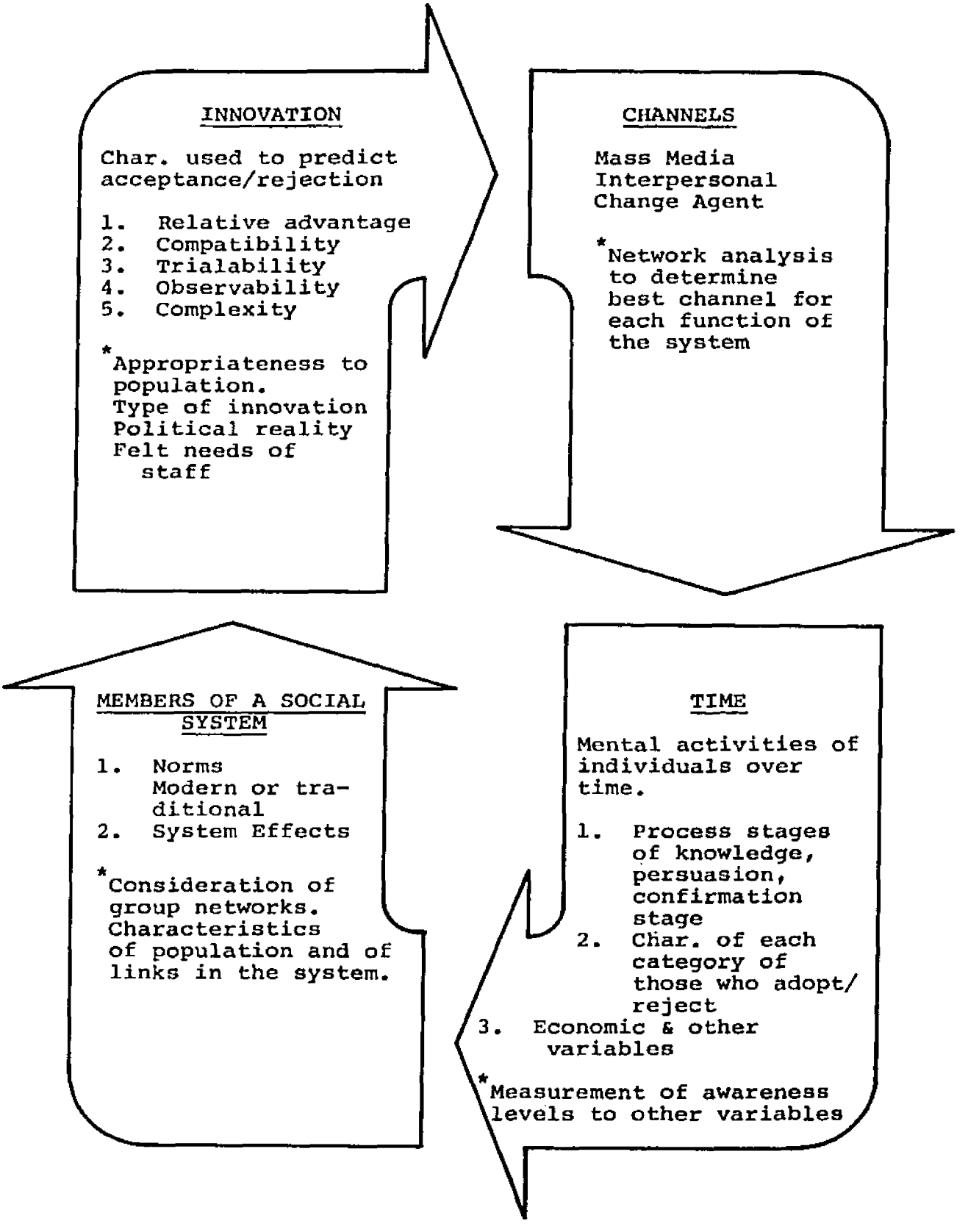

Fig. 3-1.--Modified diffusion model

comprehendable the diffusion strategy devised to facilitate the implementation of the proposed SWS pilot program.

Table 3-2 elucidates the proposed diffusion strategy planned early last summer for execution during the 1973-1974 school year.

Survey Instruments

In declaring the purposes of this study, it appeared important to determine what instruments would generate data to answer the following questions:

1. What are the characteristics of the population being studied that may have a correlation to and possible influence on their awareness-implementation level of the innovation and their position in the network?
2. After a four-month diffusion effort what would be the awareness-implementation level of the population as a total group and as separate school groups?
3. What are the perceptions of the staff concerning their participation in the decision-making process of the system and does this have a correlation to the awareness-implementation level of the innovation?

TABLE 3-2.--Proposed diffusion strategy for SWS innovation with timetable

AUGUST

1. Presentation of plan to Central Administration
2. Presentation to principals

SEPTEMBER

1. Introduction of proposal to Curriculum Council
2. Inclusion of proceedings into Curriculum Council Newspaper
3. Arrange through council members to speak to individual schools about proposal

OCTOBER

1. Individual school meetings
2. Contact Association president to discuss plan
3. Discuss informally plan with interested teachers

NOVEMBER

1. Discuss informally with teachers at each school
2. Meet with Curriculum Council for feedback
3. Submit article about concept to local newspaper

DECEMBER

1. Individual interaction with interested teachers and principals

JANUARY

1. Submit survey to Superintendent for approval
2. Submit survey to Association Board of Directors for approval
3. Administer survey concerning individual characteristics, external contacts, perceptions of staff on decision-making and a network analysis to all professional staff
4. Tally and analyze data
5. Use data to diffuse through bridges and liaisons

FEBRUARY

1. Locate teachers interested in participating in pilot program through survey
2. Meet with interested group and plan strategy for beginning a SWS program

MARCH

1. Continue to diffuse concept through bridges and liaisons
2. Meet with Curriculum Council for feedback

APRIL

1. Meetings with interested teachers
2. Meetings with principals interested in concept

MAY

1. Letter home to parents to locate those who might be interested in placing their child in the SWS environment
2. Meeting of interested parents and teachers
3. Newspaper article on SWS to local newspaper

JUNE

1. Summer workshop for teachers, parents, and principals interested in SWS concept

4. What are the perceptions of the staff concerning the tendency of the district to try new innovations, and encourage staff to innovate? Do these factors have a relationship to awareness-implementation level of the innovation or position in the network?

5. Is it possible to identify persons in the network who would be able to disseminate information more efficiently than the use of the regular organizational network?

With these questions in mind the survey was developed as described in the following section.

Index Development

No single instrument has been devised which could account for all of the variables related to the awareness-implementation level of the innovation or membership role in the network. The items finally selected for use were patterned heavily on the study by Sarbaugh and Hawkins.[70] The inclusion of the network analysis survey in this study allows an important dimension and is a prototype of a survey used by Farace

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[70]Sarbaugh and Hawkins, Investigation.

and others in a study of the communication structure of the Office of Civil Defense.[71] (See Appendices B-D.)

The survey instrument is intended to obtain data on the following: (1) Awareness-implementation level of the innovation; (2) Characteristics of the population; (3) Participation in the decision-making process; (4) External contacts of the respondents; and (5) A network analysis of the school system. (See Appendix B.)

Testing Procedure

The survey form was administered by this researcher to each school during a thirty-minute block of time allotted to the study by the Assistant Superintendent and principals (see limitations of the study) over a ten-day period in January, 1974.

Survey Form 1

To measure the awareness-implementation level of the innovation, an instrument specifically designed for this purpose was developed with Dr. Larry Sarbaugh of the Communications Department of Michigan State University. A scale was developed which would yield the number of stages a system member had moved through by the time the survey was given. The values assigned to each level increase with the number of stages through

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[71]Berlo, Analysis of Structure.

which the respondent has gone through. The highest value is given to the member or group who has moved from no awareness of the innovation to experimentation of the innovation in the classroom or school. The lowest value is given to respondents who were not aware of the innovation in any way. The scale considers an aspect not normally used in the diffusion research in that it accounts for the distance moved in the adoption process and identifies the number of respondents ready to implement the innovation.

Stages 1, 4, and 5a (see Appendix B) are considered as necessary sequences to meet one of the particular goals of this study, which is to begin a pilot SWS program. Stages 2 and 3 are not particularly necessary to the sequence.

The basic steps in building the scale are:

1. Awareness of the concept;
2. Interested enough in the concept to want more information;
3. Sought more information about the concept;
4. After seeking information, considering the use of the concept in school or classroom;
5a. Participation in implementing the concept by being on a committee;

5b. Participation in implementing the concept by experimenting in class.

The composite scale is as follows:

Value Assigned	Awareness Stages Included
0	No action
1	Awareness Stage 1
2	" Stages 1,2
3	" " 1,2,3 or 1,3
4	" " 1,2,3,4 or 1,4
5	" " 1,2,3,4,5a or 1,4,5a or 1,5a
6	1,2,3,4,5a,5b,or 1,4,5b or 1,5b or 1,4,5a,5b

Survey Form 2

Measures included in this form include: (1) Characteristics of the population; (2) External contacts and; (3) Perception of staff concerning particular processes within the district.

The intent is to: (1) Use these as variables to measure their correlation to the awareness-implementation level of the innovation and (2) To use the accumulated data to perform the change agent function more effectively.

Characteristics of the Population

The characteristics selected for measurement were:

1. Grade level now teaching;
2. Highest degree held;
3. Years of teaching experience.

The ACT (Analysis of Contingency Tables), a subsystem of the Computer Institute of Social Sciences Research, is used to find frequencies, percentages, means, standard deviations, and to determine if a significant correlation exists between these characteristics and the awareness-implementation level of the innovation. These descriptive data give a picture of the number of persons and groups at the various stages of adoption and allow comparison of the characteristics of the persons and groups in the sample.

External Contacts

The independent variables used to measure external contacts are:

1. Courses taken beyond last degree received;
2. Frequency of contact with a university staff member;
3. Number of professional meetings attended outside of the school district;
4. Number of professional meetings attended within the school district;
5. Frequency of contact with staff from other school systems.

Multivariate tests (Finn Program) will be used to determine the means for each individual school on these variables. Correlations between each of the external variables will also be examined.

Perception of Staff

In measuring the perceptions of staff, two types of measures were used. In one type (Question 12, 13, 18) the respondent is required to place a mark on a scale indicating where they feel the district falls in several key areas. These scales are given the highest value for the first step. Each succeeding step decreases in value. The lowest step has a value of one.

Question 16 requires the respondent to write in who they perceive as making the final decision on the adoption/nonadoption of a new program. The information then will be programmed using the ACT.

The second type of measure involves a set of questions which ask for specific behaviors which have face validity as indicators of the level of participation in the decision-making process. Four of these types are found in questions 14, 15, and 17. The points covered in relation to participation areas are:

14. Who gets asked or is involved in discussing the merits of a new program?

    a. None of the staff
    b. Some group within the staff (Curriculum Council)
    c. Some group within the affected staff
    d. Entire staff
    e. Other

In order to explore this perceived decision-making process further, an additional question is asked (Question 15).

15. Who on the teaching staff is given a final vote in the decision-making process?

    a. None of the staff
    b. Some group within the staff (Curriculum Council)
    c. Some group from the affected staff
    d. All affected teachers
    e. Entire staff

Question 17 measures the extent to which teachers perceive the administration carrying out new programs voted on by teachers.

17. How often does the administration carry out the action recommended by a vote of the teachers?

    a. Nearly always
    b. 3/4 of the time
    c. 1/2 of the time
    d. 1/4 of the time
    e. Hardly ever
    f. Never

In the final data analysis, these items were scaled by being given a value of 5 or 6 for Item a, 4 or 5 for Item b, etc. to give a greater range of level of participation and then checked for their relationship

to the adoption-implementation level of the Innovation. Again the ACT Program was selected to process this information.

Survey Form 3

This survey form examines three communication functions of the school system: Maintenance, Production, and Innovation. The frequency of the contact in each function is also measured. Respondents were asked to use page five (see Appendix B) to write in the names of those persons in their school with whom they communicated with in each function and the frequency of each contact. On page six respondents were asked to name individuals in other schools in the district with whom they communicate.

The value assigned to each frequency is as follows:

4-More than once a day
3-Once a day
2-Once or twice a week
1-Once or twice a month

In order to meet the goal of this study the following feedback from the network program will be examined:

1. Total group membership status for the functions of maintenance, production, and innovation;

2. The external communication network of the system;
3. The external and internal liaison and bridge links that exist within the network;
4. The internal and external liaisons and bridges within each school;
5. The total liaison and bridge connections within the whole system.

The method used for analysis of the data is a relatively new computer program designed by Richards for use in large complex systems.[72]

Assuming the Role of Change Agent

This portion of the study is exploratory in nature. Using the knowledge acquired from the change agent literature, previous experience with the professional staff of the school system, and the survey results, an effort will be made to assume the role of change agent. The goal will be the establishment of one pilot SWS program in one elementary school. The strategy designed in Table 3-2 will be followed.

It is hoped that the combination of the data received from the survey and the knowledge acquired by assuming the change agent role will present a

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[72]Richards, "Conceptually Based Method."

diorama of the diffusion process within a school system not previously contemplated, but potentially useful to understanding the problem of change.

CHAPTER IV

ANALYSIS OF THE DATA

The analysis included three types of data: (1) The awareness-implementation level of the innovation of the individual schools after a four-month diffusion effort; (2) The procreation of fifteen hypotheses concerning the characteristics, external contacts, and perceptions of staff on decision-making within the school system; and (3) Two general hypotheses dealing with change agent contact and communication flow.

These components will be summarized and then analyzed individually in this chapter.

Awareness-Implementation Level of the Innovation in the Individual Schools

Though not hypothesized it is important to note that there is a significant difference in the awareness-implementation level of the innovation among the individual schools. The ACT analysis produced a Chi Square equal to 131.9 and a degree of freedom to 56; therefore, the contingency coefficient equals .622 and is statistically significant from zero.

Table 4-1 illustrates that there were 209 respondents who chose to participate in filling out this section of the survey. The total mean level of awareness-implementation of the innovation for all of the schools was 1.69. This would place the mean population at the awareness-implementation level where they are seeking more information about the innovation.

Figure 4-1 gives a graphic picture of each school and administrative/special services personnel (School Nine). The total mean for each school indicates the departure of each school from the total mean. Schools One and Four are where change agent contact has been the greatest. School Seven participated in one formal change agent contact to discuss the innovation but did not cooperate in completing the survey instrument. The lowest mean of .56 occurs at School Five. Schools Two, Three, Five, and Eight all fall below the district mean.

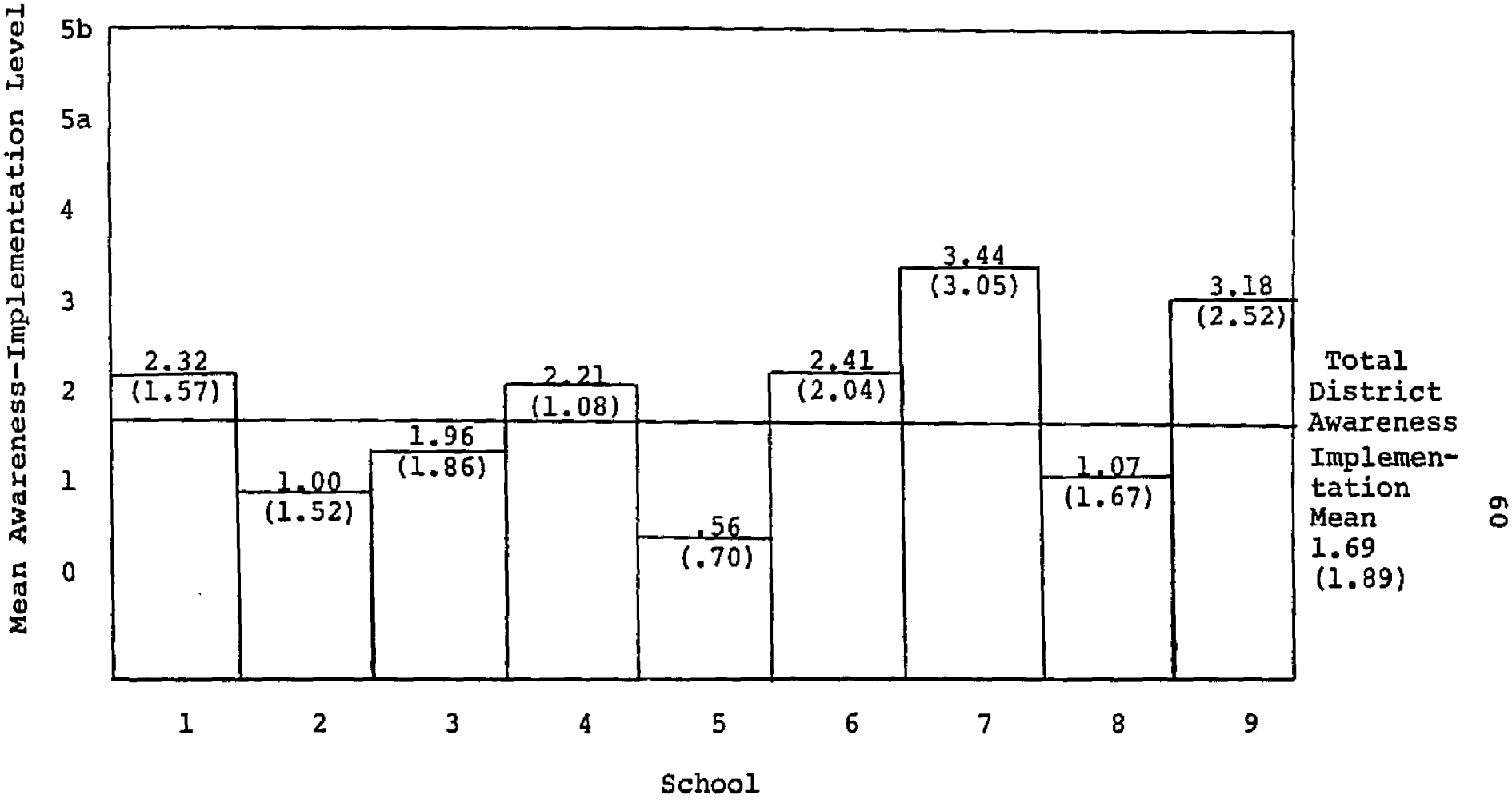
Summary of the Findings for the Hypotheses on Characteristics, External Contacts, and Staff Perceptions on Decision-Making

Table 4-2 summarizes the data on Hypotheses I to XV. A detailed analysis of each hypothesis follows the summary.

TABLE 4-1.--Awareness-implementation level of the innovation in individual schools after a four-month diffusion effort

School	Stage	Not Aware	1	2	3	4	5a	5b	Other	Mean	Standard Deviation	Total Respondents
(1)	Freq.	3	3	5	2	5	1	0	0	2.32	1.57	19
	Pct.	15.7	15.7	26.3	10.5	26.3	5.2	0	0			
(2)	Freq.	16	3	3	4	0	0	1	0	1.00	1.52	27
	Pct.	59.2	11.1	11.1	14.8	0	0	3.7	0			
(3)	Freq.	8	3	5	4	3	0	2	0	1.96	1.86	25
	Pct.	32.0	1.20	20.0	16.0	12.0	0	8.0	0			
(4)	Freq.	2	2	6	8	1	0	0	0	2.21	1.08	19
	Pct.	10.5	10.5	31.5	42.1	5.2	0	0	0			
(5)	Freq.	10	6	2	0	0	0	0	0	.56	.70	18
	Pct.	55.5	33.3	11.1	0	0	0	0	0			
(6)	Freq.	3	8	2	1	5	1	1	1	2.41	2.04	22
	Pct.	13.6	36.3	9.0	4.5	22.7	4.5	4.5	4.5			
(7)	Freq.	2	2	0	1	0	0	2	2	3.44	3.05	9
	Pct.	22.2	22.2	0	11.0	0	0	22.2	22.2			
(8)	Freq.	30	17	4	2	2	1	2	1	1.07	1.67	59
	Pct.	50.8	28.8	6.7	3.3	3.3	1.6	3.3	1.6			
(9)	Freq.	3	0	1	1	4	0	0	2	3.18	2.52	11
	Pct.	27.2	0	9.0	9.0	36.3	0	0	18.1			
Total		77	44	28	23	20	3	8	6	7.69	1.89	209
		36.8	21.0	13.4	11.0	9.5	1.4	3.8	2.8			100

Legend: 0 = Not aware; 1 = Aware; 2 = Interested enough to want more information; 3 = Have sought more information; 4 = After seeking information considered using in your school; 5a = Are participating in implementing plans for this concept working on a committee; 5b = Are participating in implementing plans for this concept by experimenting in class.



Note: Scale values for awareness-implementation range from 0-6. Standard Deviation is shown in parentheses; #1-8 = Schools; #9 = Administration/ Special Services

Fig. 4-1.--Analysis of levels of awareness-implementation for individual schools and administrative/special services personnel after a four-month diffusion effort

TABLE 4-2.--Summary of the findings on the hypothesized correlations of selected predictor variables with level of adoption: Awareness-knowledge-acceptance

	Variable	Contingency Coefficient (Direction)	Statistically Significant
	Individual Characteristics		
I.	Grade level now teaching	+	Sig.
II.	Highest degree held	+	Sig.
III.	Years of teaching experience	+	Sig.
	External Contacts		
IV.	Courses taken beyond the last degree	-	N.S.
V.	Frequency of contact with a university staff member	-	N.S.
VI.	Frequency of attendance to outside conferences	+	Sig.
VII.	Frequency of attendance to conferences attended within the school district	+	Sig.
VIII.	Frequency of communication about educational programs with staff from other school districts	-	N.S.
	Perceptions of Staff on Decision-Making Policies of the District		
IX.	Perceptions of staff about how the district ranks in trying new instructional programs	-	N.S.
X.	Perceptions of staff about levels of immediate superior encouragement to try new instructional programs	-	N.S.
XI.	Perceptions of staff about proportion of staff who gets asked about or are involved in discussing the merits of a new program	-	N.S.
XII.	Perceptions of staff about no. of staff given the final vote in the decision-making process	-	N.S.
XIII.	Perceptions of staff about the proportion of staff involved in the final decision on the adoption/nonadoption of a new program	Testing not done	
XIV.	Perceptions of staff concerning proportion of time new programs recommended by a vote of the teachers are carried out by administrators	+	Sig.
XV.	Perceptions of staff concerning the type of decision-making process (autocratic-democratic) in the school system	-	N.S.

Sig. - Statistically Significant
N.S. - Not statistically significant

Analysis of the Characteristics of the Population

Hypothesis I:

There will be a positive correlation between grade level now teaching and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square equal to 91.5 and a degree of freedom equal to 35; therefore, the Chi Square is significant. The contingency coefficient equals .551 and is significant according to the significance of the Chi Square. The null hypothesis is rejected; there is a positive correlation between grade level now teaching and the awareness level of the innovation.

Table 4-3 indicates the frequency, percentage, mean, and standard deviation at each teaching level. The total mean for the school system places awareness-implementation level correlated with teaching level at 1.78 which would indicate that the mean population for this data set is near Stage Two and is seeking more information about the innovation. Seventy-seven respondents indicated they were not aware of the innovation. Of this total approximately 3 per cent were administrators, 49 per cent were elementary faculty, 6 per cent were middle school faculty, and 38 per cent were high school faculty. This would indicate that the largest segment of respondents had the greatest number

TABLE 4-3.--Analysis of levels of awareness-implementation by teaching levels

Awareness Level	High School	Middle School	Elem. School	Admin.	Spec. Services	Coun.	Total	Mean	St. Dev.
Not Aware									
Freq.	30	5	38	2	2	0	77	1.92	1.11
Pct.	38.9	6.4	49.3	2.6	2.6	0	100		
Stage 1									
Freq.	16	10	18	0	0	0	44	1.95	.89
Pct.	36.3	22.7	40.9	0	0	0	100		
Stage 2									
Freq.	4	2	20	1	1	0	28	1.46	1.04
Pct.	14.2	7.1	71.4	3.5	3.5	0	100		
Stage 3									
Freq.	2	2	17	1	1	0	23	1.39	1.03
Pct.	8.7	8.7	73.9	4.3	4.3	0	100		
Stage 4									
Freq.	2	4	8	3	2	1	20	1.80	1.51
Pct.	10.0	20.0	40.0	15.0	10.0	5.0	100		
Stage 5a									
Freq.	1	1	1	0	0	0	3	2.0	1.0
Pct.	33.3	33.3	33.3	0	0	0	100		
Stage 5b									
Freq.	2	3	2	1	0	0	8	1.75	1.04
Pct.	25.0	37.5	25.0	12.5	0	0	100		
Other									
Freq.	1	1	0	3	0	0	6	1.50	1.76
Pct.	16.6	16.6	0	50.0	0	0	100		
Total Freq.	58	28	104	11	6	2	209	1.78	1.11
Pct. Across	27.7	13.4	49.7	5.2	2.8	.96	100		

of those unaware of the innovation, after a four-month diffusion effort. The smallest segment of the population (administrators and special services) had the least amount of respondents unaware of the innovation (3%). Of those replying, middle school faculty had the lower percentage not aware than either high school or elementary.

Hypothesis II:

There will be a positive correlation between highest degree held and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square equal to 73.0 and a degree of freedom equal to 28; therefore, the Chi Square is significant. The contingency coefficient equals .508 and is significant according to the Chi Square. Therefore, the null hypothesis is rejected and there is a correlation between highest degree held and the awareness-implementation level of the innovation.

Table 4-4 illustrates the mean awareness-implementation level of the innovation at each degree level. The mean for Ph.D. and Ed.S. degree holders was above 4.0, the highest of any of the degree holders. The lowest level (B.S. degree) has a mean awareness-implementation level of 1.56. As degree status improves the mean level of awareness-implementation increases.

TABLE 4-4.--Analysis of levels of awareness-implementation by highest degree held

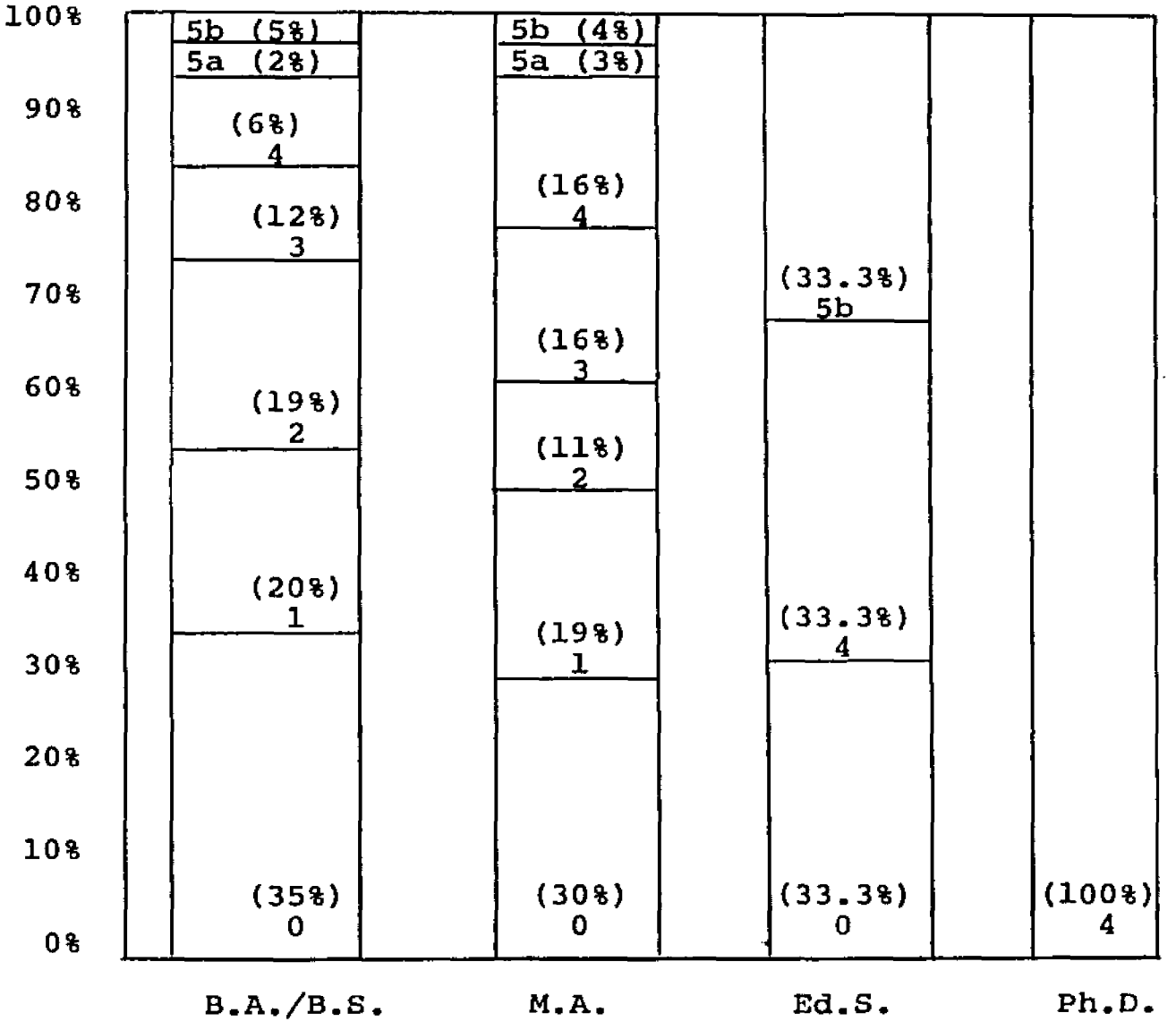
Highest Degree	Number of Respondents	Mean of Awareness Level
No answer	31	.38
B.S.	110	1.56
M.A.	62	1.69
Ed.S.	2	4.25
Ph.D.	4	4.00
Total	209	2.37

Figure 4-2 gives a graphic illustration of degree status and awareness-implementation level, showing the differences between the four degree holders. The significance is particularly apparent at the Ed.S. and Ph.D. category with approximately 66 per cent of Ed.S. degree holders at awareness Stage Four and Fiveb. One hundred per cent of the Ph.D. degree holders were at Stage Four level of awareness.

Hypothesis III:

There will be a positive correlation between years of teaching experience and the awareness-implementation level of an innovation.

The ACT analysis produced a Chi Square equal to 73.9 and a degree of freedom of 49; therefore, the Chi Square is significant. The contingency coefficient equals .511 and is significant according to the



Note: Number on the bars indicates the stage.
0-5b = Stages of Awareness-implementation

Fig. 4-2.--Analysis of levels of awareness-implementation by highest degree held using percentage graph

significance of the Chi Square. The null hypothesis is rejected and there is a correlation between years of teaching experience and the awareness-implementation level of the innovation.

In analyzing the results of the contingency table (Table 4-5), it appears that a total mean for the population in relationship to teaching experience is 1.64. The lowest mean level of awareness-implementation occurs at the twenty-one to twenty-five years of teaching experience level (1.33). The next lowest mean (1.50) occurs at the none level which would include beginning teachers who have not completed their first year of teaching experience. Interestingly enough the awareness-implementation level increases from the three- to five-year category for the next three levels or until the last category when it drops substantially. Teachers in the sixteen- to twenty-year category showed the greatest level of awareness (2.40).

In summary, all three hypotheses concerning characteristics of the population are significant and their positive correlation to awareness-implementation level of the innovation has been shown.

External Contacts

The Finn Program of Multivariance was used to test the following hypotheses.

TABLE 4-5.--Analysis of level of awareness-implementation by total years of teaching experience

Years of Experience	Number of Respondents	Mean of Awareness Level
No answer	21	.38
None	4	1.50
1-2 years	29	1.82
3-5 years	106	1.79
6-10 years	26	1.84
11-15 years	9	2.11
16-20 years	10	2.40
21-25 years	4	1.33
Total	209	1.64

Hypothesis IV:

There will be a positive correlation between courses taken beyond the last degree and the awareness-implementation level of the innovation.

Hypothesis V:

There will be a positive correlation between frequency of contact with a university staff member and the awareness-implementation level of the innovation.

Hypothesis VI:

There will be a positive correlation between frequency of attendance to outside conferences and the awareness-implementation level of the innovation.

Hypothesis VII:

There will be a positive correlation between frequency of conferences attended within the district and the awareness-implementation of the innovation.

Hypothesis VIII:

There will be a correlation between frequency of communication about educational programs with staff from other school districts and the awareness-implementation level of the innovation.

Analysis of the Data for External Contacts

Two of the external contact measures were significantly related. These were the hypotheses dealing with frequency of attendance to inside and outside conferences.

Table 4-6 illustrates the following data. The value given Hypothesis IV by the program is .075 which is not significant at the .05 level.[73] This hypothesis is rejected. No correlation could be found between courses taken beyond the last degree and the awareness-implementation level of the innovation.

A value of .122 is obtained for Hypothesis V which is not significant at the .05 level. This hypothesis is rejected. No correlation could be found between frequency of contact with a university staff member and the awareness-implementation level of the innovation.

The value obtained for Hypothesis VI is .178 which is significant at the .05 level. This hypothesis is accepted. A correlation between frequency of

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[73]The critical value of the correlation is .138 with a 200 degree of freedom for Hypotheses IV - VIII.

TABLE 4-6.--Correlation table for Hypothesis IV - VIII

	Awareness-Implementation Level of the Innovation (SWS)
Hypothesis IV (Courses taken beyond last degree)	.075
Hypothesis V (Contact with university staff member)	.122
Hypothesis VI (Attendance to outside conferences)	.178*
Hypothesis VII (Attendance to inside conferences)	.175*
Hypothesis VIII (Communication with staff from other districts)	.002

*Significant

Note: Critical value of the correlation is .138 with a 200 degree of freedom.

attendance to outside conferences and the awareness-implementation level of the innovation has been established.

The value obtained for Hypothesis VII is .175 which is significant at the .05 level. This hypothesis is accepted. A correlation between frequency of conferences attended within the district and the awareness-implementation level of the innovation has been established.

The value obtained for Hypothesis VIII is .002 and is not significant at the .05 level. This hypothesis is rejected. No correlation between frequency of communication about educational programs with staff from other school districts and awareness-implementation level of the innovation was found which was significant.

Two external contacts, Hypotheses VI and VII, have been found to be positively correlated with awareness-implementation level of the innovation. All other hypotheses (IV, V, VIII) have been rejected.

Analysis of the Perceptions of Staff Within the District

Hypothesis IX:

There will be a positive correlation between perceptions of staff about how the district ranks in trying new instructional programs and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square equal to 32.8 and a degree of freedom equal to 35; therefore, the Chi Square is not significant. The contingency coefficient equals .368 and is not significant. Thus the null hypothesis is accepted and there is no correlation between perceptions of staff about the rank of the district in trying new instructional programs and the awareness-implementation level of the innovation.

Table 4-7 shows the total awareness-implementation mean in relationship to perceptions of staff to be 2.03. The highest level of awareness-implementation of 2.66 appears at the first (five) level which indicates that portion of the respondents who perceive the district as having a tendency to try new programs first show the greatest awareness-implementation level. Those at the lowest mean (1.52) are located at Stage Three. However, the level of the intermediate categories did maintain a consistent trend.

Figure 4-3 shows each school's attitudes concerning the district rank in trying new programs and graphically illustrates the tendency of most schools to fall within the mean with little discrepancy. For change agent purposes it would appear useful to note that School One and Two had mean scores of 3.79 and 3.63 respectively. The scores would indicate that those schools may perceive that their school tends to be more likely to try new programs.

TABLE 4-7.--Analysis of the level of awareness-implementation and perceptions of staff concerning the district's tendency to try new instructional programs

Perceptions of Staff	Number of Respondents	Mean of Awareness-Implementation Level
No answer	4	0
Last (1)	15	1.73
(2)	17	2.58
(3)	119	1.52
(4)	42	1.69
First(5)	12	2.66
Total	209	2.03

Hypothesis X:

There will be a positive correlation between perceptions of staff about level of immediate superior encouragement to try new instructional programs and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square of 44.9 and a degree of freedom equal to 49. Thus the Chi Square is not significant; nor is the contingency coefficient of .420 significant. Thus the null hypothesis is accepted. There is no correlation between perceived attitudes about immediate superior encouragement and the awareness-implementation level of the innovation.

The total awareness-implementation mean for the population as shown on Table 4-8 is 1.55. The highest mean is 2.48 at point seven (always encourages) on the

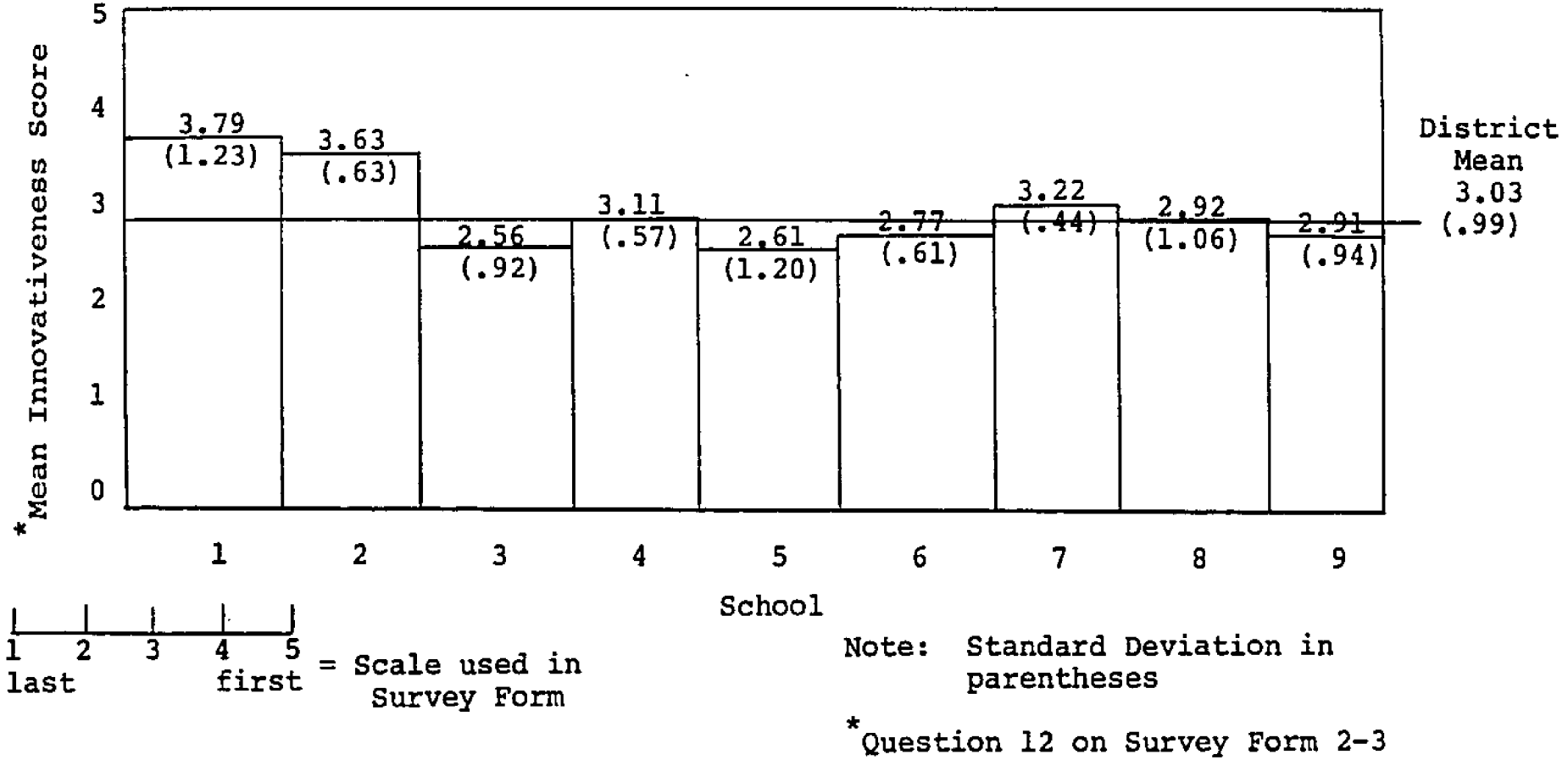


Fig. 4-3.--Individual school analysis of perceptions of staff concerning the district trying new instructional programs

scale, indicating a somewhat higher awareness-implementation level mean occurs at point four on the scale with limited variation among the other means.

TABLE 4-8.--Analysis of levels of awareness-implementation and perceptions of the staff concerning encouragement from immediate superior to try new instructional programs

Perceptions of Staff	Number of Respondents	Mean of Awareness-Implementation Level
No answer	6	1.00
(1) Never encourages	6	1.66
(2)	3	1.33
(3)	16	1.50
(4)	27	1.22
(5)	50	1.42
(6)	70	1.84
(7) Always encourages	31	2.48
Total	209	1.55

Figure 4-4 graphs the differences in encouragement that occur between schools. The highest means of 6.16 and 5.95 occur at Schools One and Six. The lowest mean occurs at School Three. These factors may have potential value to the change agent. These two schools (One and Six) were among the highest on the awareness-implementation measures. School Seven had a higher awareness-implementation level score but had only nine respondents. School Four also had high encouragement and high aware implementation scores. School Two,

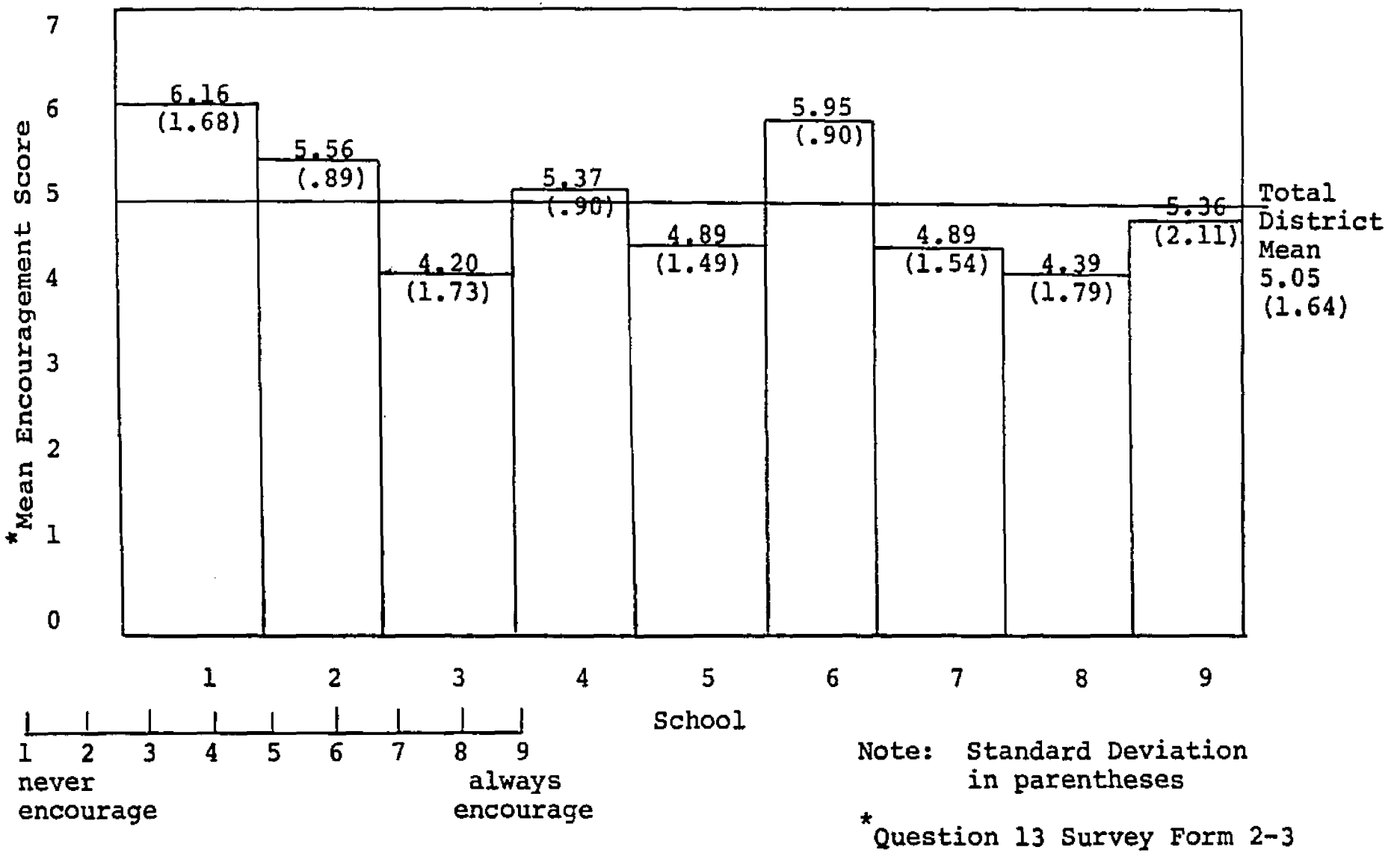


Fig. 4-4.--Individual school analysis of perceptions of the staff concerning encouragement from immediate superior to try new instructional programs

which also had a high perceived encouragement from superiors, did not report high awareness-implementation.

Hypothesis XI:

There will be a positive correlation between perceptions of staff about proportion of staff who get asked about or are involved in discussing the merits of a new program and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square of 41.7 with 35 degrees of freedom. Therefore, the Chi Square is not significant. The contingency coefficient equals .408 and is not significant. The null hypothesis is accepted. There is no statistically significant correlation between perceived attitudes about who gets asked about or is involved in discussing the merits of a new program and the awareness-implementation level of the innovation.

Table 4-9 shows the awareness-implementation mean to be lowest (1.18) at category two (none of the staff). The highest mean (2.22) occurs at category four (some affected staff), which indicates that in that category the respondents to the item were at the Stage Two awareness-implementation level. There are no significant differences between categories three and five.

Figure 4-5 illustrates each school's mean level of perceptions of staff about number of staff asked about the merits of a new program. The lowest mean is found

at School Three and the highest at Nine which is the administrative/special services section. School Two with a mean of 3.00 is the next highest mean. Schools One, Four, and Six were at or above the mean on this measure and were also high on the awareness-implementation level of the innovation. School Two was high on this measure but low on the awareness-implementation of the innovation.

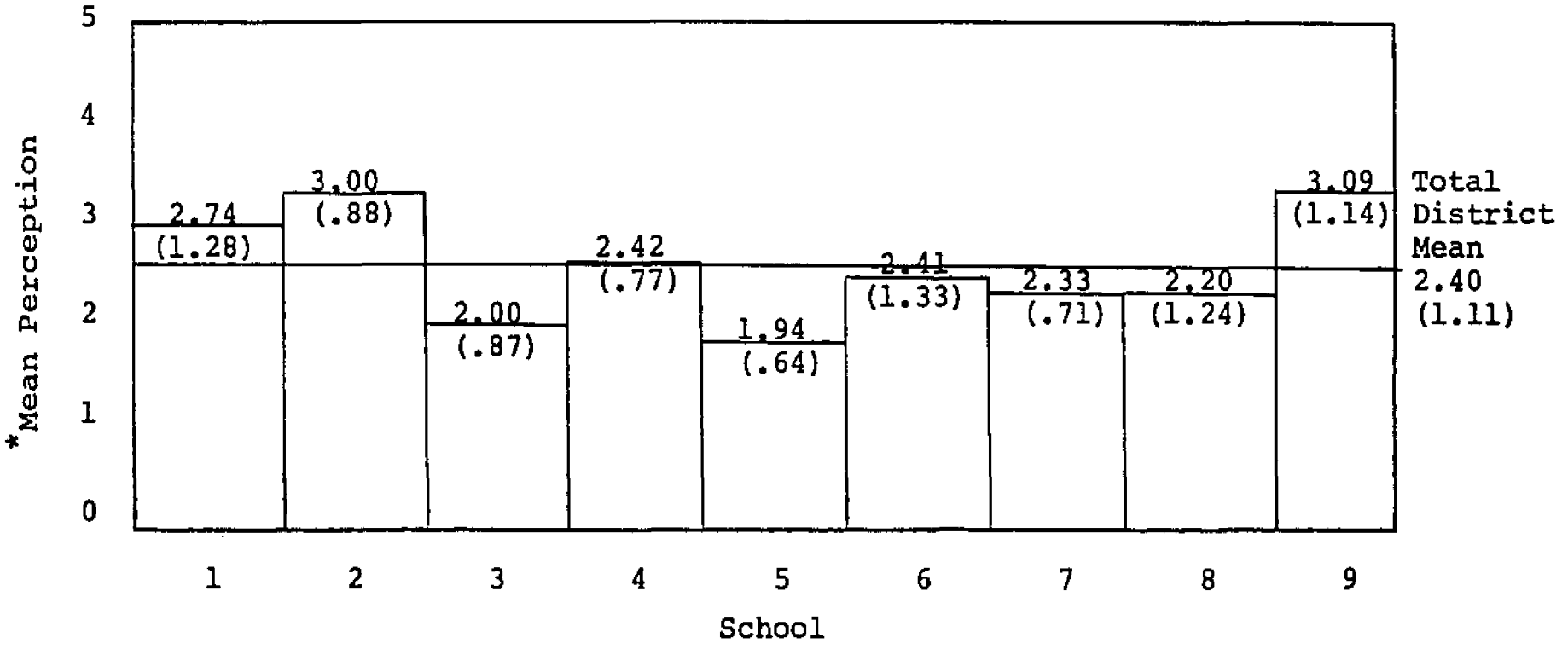
TABLE 4-9.--Analysis of the level of awareness-implementation and perceptions of staff attitudes concerning who gets asked about the merits of a new program

Perceptions of Staff	Number of Respondents	Mean of Awareness-Implementation Level
1. No answer	6	0.50
2. None of the staff	28	1.18
3. Some (curr. council)	99	1.75
4. Some affected staff	37	2.22
5. Entire staff	30	1.70
Other	9	1.33
Total	209	1.64

Hypothesis XII:

There will be a positive correlation between perceptions of staff about the number of the teaching staff given the final vote in the decision-making process and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square of 52.6 with 49 degrees of freedom. Therefore, the Chi Square is not significant. The contingency coefficient equals



Scale: 0 = none of staff consulted; 1 = some group within staff consulted (curriculum council); 2 = some group within affected faculty is consulted; 3 = entire teaching staff is consulted; 4 = Other

Note: Standard Deviation in parentheses

*Question 14 Survey Form 2-3

Fig. 4-5.--Individual school analysis of the perception of staff concerning who gets asked about the merits of a new program

.448 and is not significant. The null hypothesis is accepted. There is no correlation between perceptions of staff about the number on the teaching staff is given the final vote in the decision-making process and the awareness-implementation level of the innovation.

Table 4-10 shows a total district mean awareness-implementation level of 1.98 in relationship to this staff perception. The lowest awareness-implementation level mean occurs at 0-none of the staff. The highest awareness-implementation level of 3.25 appears at the five-other category. The "other" category is vague in terms of level of participation; among all the other categories the entire staff participation produced the highest mean awareness-implementation level. The awareness-implementation level mean increases, though not significantly, at each succeeding level from one through five. The raw data locate the highest percentage frequencies at point one (22%) and point two (36%).

Figure 4-6 indicates that School Two with a mean of 3.63 has the highest mean and School Five with a mean of 1.89 has the lowest mean. Schools Three, Five, and Eight fall below the mean. The differences in these means should have value for the change agent.

School Five also has the lowest mean awareness score. School Two again presents a puzzling picture when analyzing this variable with awareness-implementation.

Again Schools One, Four, Six, and Seven are above the mean score on this variable and rank high on awareness-implementation.

TABLE 4-10.--Analysis of the level of awareness-implementation and the perceptions of staff attitudes concerning the number of staff getting a final vote in the decision-making process

Perception of Staff	Number of Respondents	Mean Awareness-Implementation Level
No answer	5	.200
0. None of staff	45	1.38
1. Some group (Curr. council)	76	1.62
2. Group of affected staff	19	1.63
3. All of affected staff	35	1.74
4. Entire staff	16	2.25
5. Other	12	3.25
Total	209	1.98

Hypothesis XIII:

There will be a positive correlation between perceptions of staff about the proportion of staff involved in the final decision on the adoption/nonadoption of a new program and the awareness-implementation level of the innovation.

Because of the problems of assigning values of the various categories of decision-makers the hypotheses testing was not done with this variable. The following descriptive data may be of value to the reader.

Table 4-11 illustrates the total mean awareness-implementation level in relationship to staff perceptions to be 2.02. The lowest awareness-implementation mean is

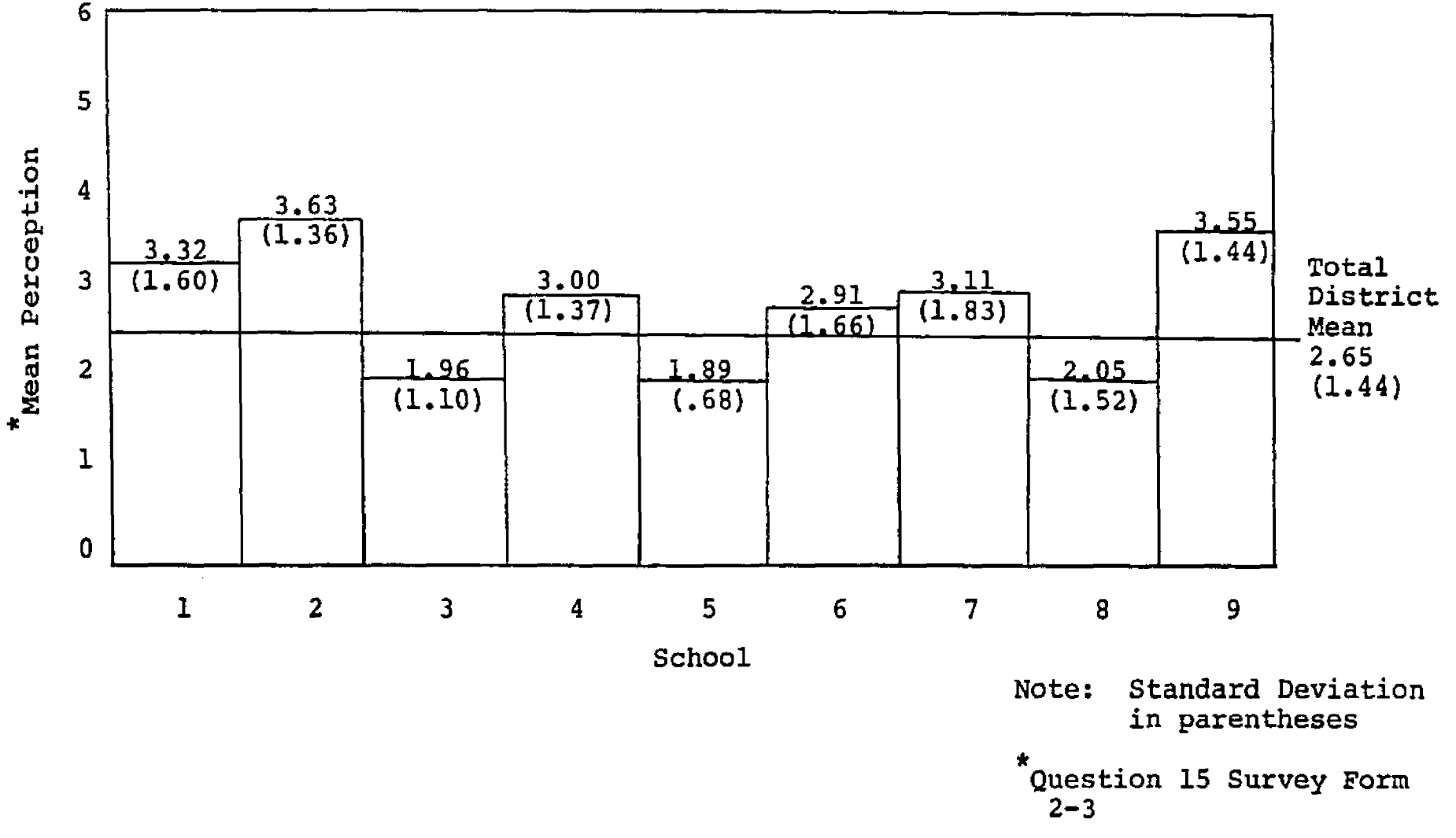


Fig. 4-6.--Individual school analysis of perceptions of staff concerning who gets a final vote in the decision-making process (mean scores derived from scale of 0 for no one votes to 6 for everyone votes)

1.15 at the don't know stage. The highest awareness-implementation mean (3.75) is for the teachers category, but only for respondents in that category. Those who believe the Assistant Superintendent makes the final decision have the next highest awareness-implementation mean (3.50). Category two, four, six, and seven all fall above the total awareness-implementation level mean. Among the next highest mean awareness-implementation were the combination of administrators and teachers; and Board of Education. Those respondents who chose category one, three, and five fall below the total awareness-implementation level mean.

Table 4-12 shows the frequency and percentage data for each type of decision-making. Item five (combination of administrators) was selected by 46 per cent of the population. Item three (principal) was selected by 13 per cent of the population. Twelve per cent of the population chose the didn't know item and 10 per cent chose item one (superintendent). Other information of pertinent interest is the low percentage frequency (.96) given on item two (assistant superintendent) and eight (curriculum council).

Figure 4-7 shows the highest percentage item selected for the individual schools. Item five (combination of administrators) was selected by all but Schools Two and Four, with percentages ranging from

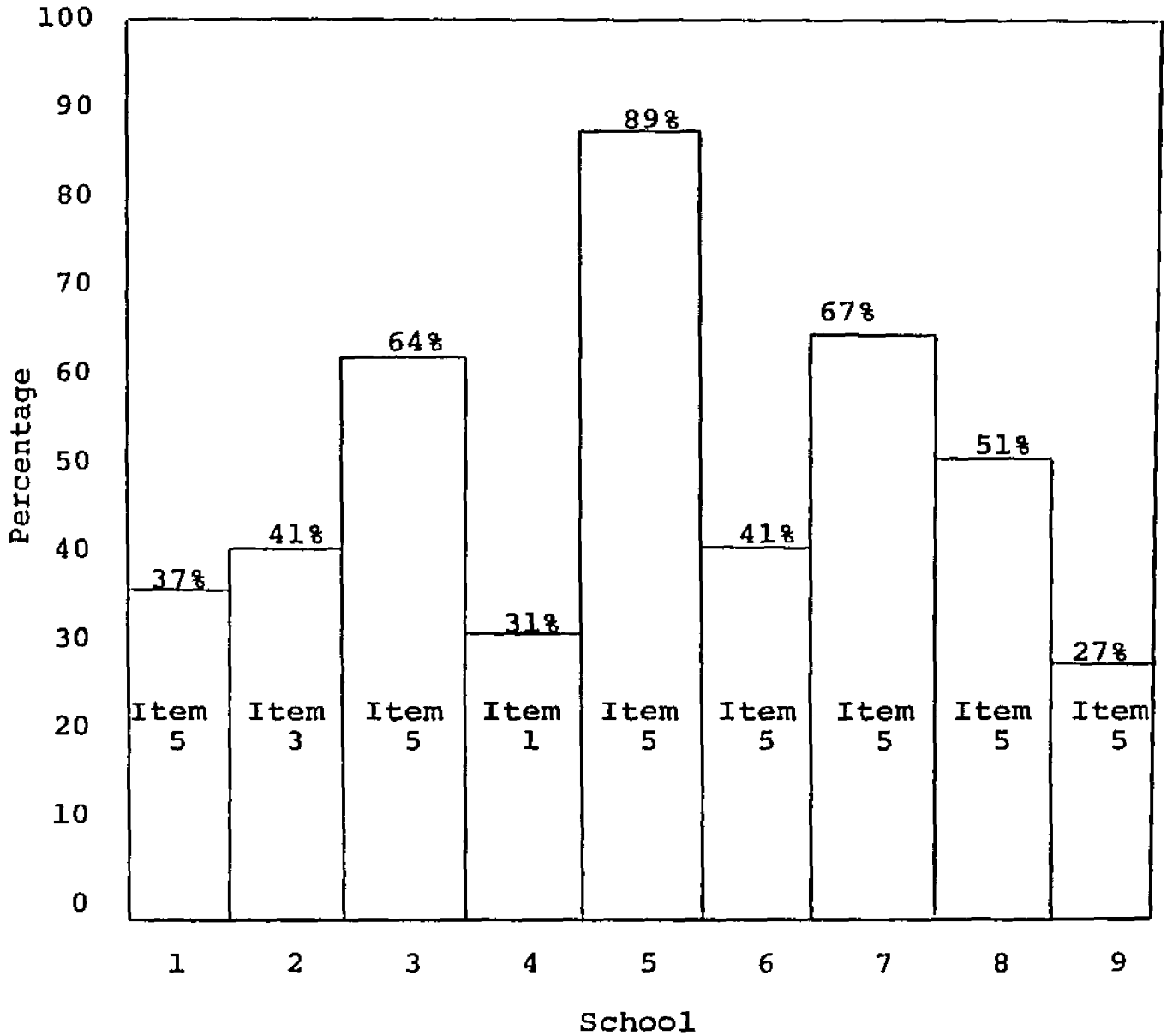
TABLE 4-11.--Analysis of level of awareness-implementation and perceptions of staff concerning who makes the final decision on the adoption or nonadoption of a new program

Perceptions of Staff	Number of Respondents	Mean Awareness-Implementation Level
0. Don't know	26	1.15
1. Superintendent	22	1.45
2. Ass't Superintendent	2	3.50
3. Principal	28	1.36
4. Teacher	4	3.75
5. Combination of Administrators	97	1.63
6. Combination of Administrators and teachers	15	2.47
7. Board of Education	13	2.85
8. Curriculum Council	2	0.00
Total	209	2.02

TABLE 4-12.--Analysis of the total frequency and percentage of those items selected by respondents concerning perceptions of staff about who makes the final adoption/nonadoption decision concerning a new program

	0	1	2	3	4	5	6	7	8
Total Frequency	26	22	2	28	4	97	15	13	2
Pct. Across	12%	11%	.96	13%	2%	46%	7%	6%	.96

0 = Don't know; 1 = Superintendent; 2 = Assistant Superintendent; 3 = Principal; 4 = Teacher; 5 = Combination of Administrators; 6 = Combination of Administrators and Teachers; 7 = Board of Education; 8 = Curriculum Council



Scale:
Item 0 = don't know; Item 1 = superintendent; Item 2 = assistant superintendent; Item 3 = principal; Item 4 = teachers; Item 5 = combination of administrators; Item 6 = combination of administrators and teachers; Item 7 = board of education; Item 8 = curriculum council

Fig. 4-7.--Highest percentage item selected by individual schools on perceptions of staff about who makes the final adoption/nonadoption decision

27 per cent to 89 per cent. School Two chose item three (principal) with 41 per cent frequency. School Four chose item one (superintendent) with a 31 per cent frequency. Only in School Five do you get what approaches consensus on who is making the final adoption/nonadoption decision.

Hypothesis XIV:

There will be a positive correlation between perceptions of staff concerning proportion of time programs recommended by a vote of the teachers are carried out by administrators and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square of 69.9 with 49 degrees of freedom; therefore, the Chi Square is significant. The contingency coefficient equals .500 and is significant according to the significance of the Chi Square. The null hypothesis is rejected and there is a correlation between perceptions of staff concerning proportion of new programs recommended by a vote of the teachers which are carried out by the administrator and the awareness-implementation level of the innovation.

Table 4-13 graphically illustrates the significant correlation of level of awareness-implementation and staff perceptions of administrative acceptance of the staff input. Category five and six with awareness-implementation level means of 2.43 and 2.96 are the highest on the table. The lowest awareness-implementation

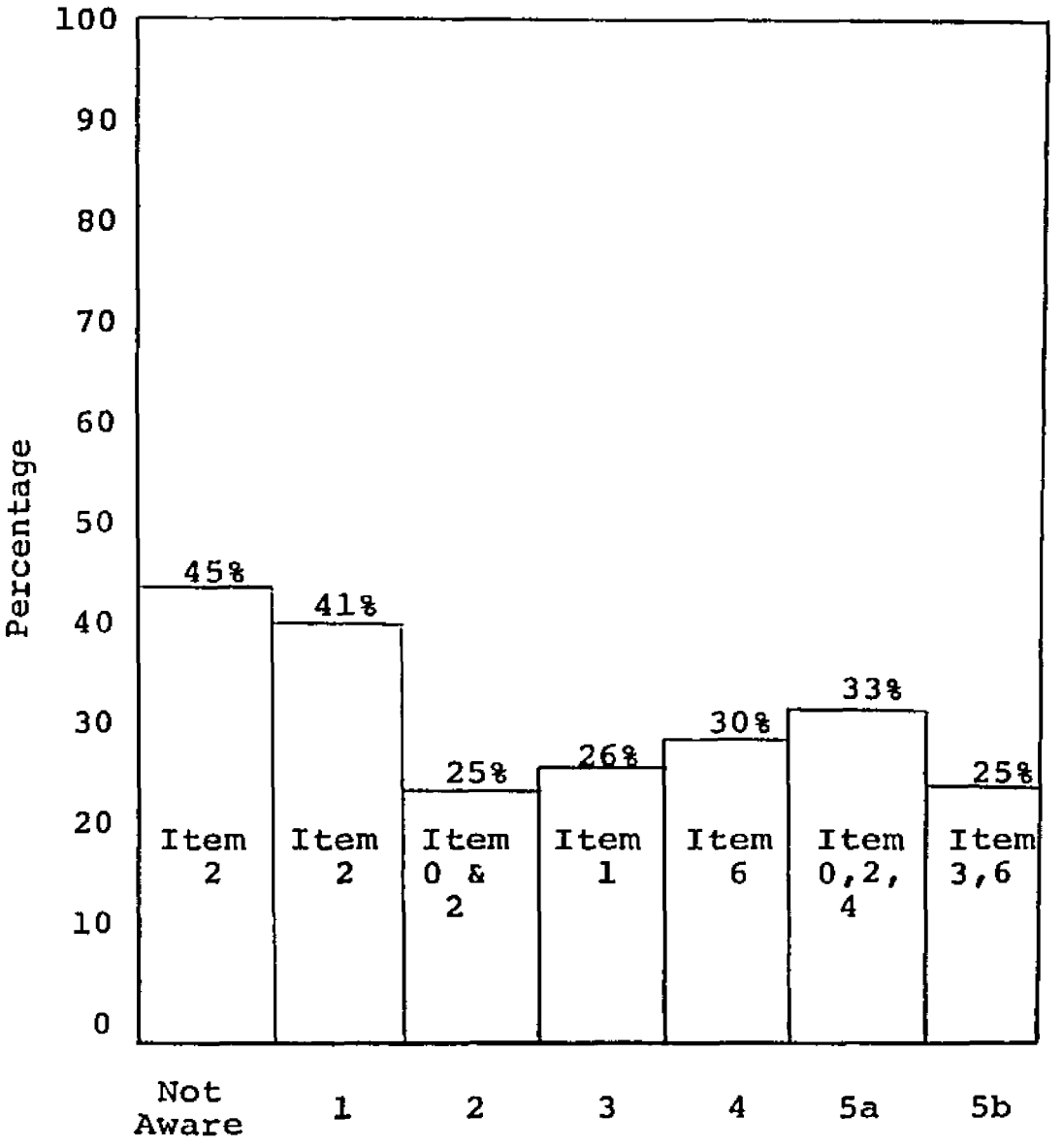
mean (.73) occurs at category two with the next lowest awareness-implementation mean of 2.04 at category one.

TABLE 4-13.--Analysis of level of awareness-implementation of staff perceptions concerning how often administrators carry out new programs recommended by a vote of the teachers

Perceptions of Staff	Number of Respondents	Mean Awareness-Implementation Level
0. No answer	24	1.21
1. Never	24	2.04
2. Hardly ever	67	.73
3. 1/4 of the time	32	2.09
4. 1/2 of the time	23	2.04
5. 3/4 of the time	14	2.43
6. Nearly always	24	2.96
Total	209	1.93

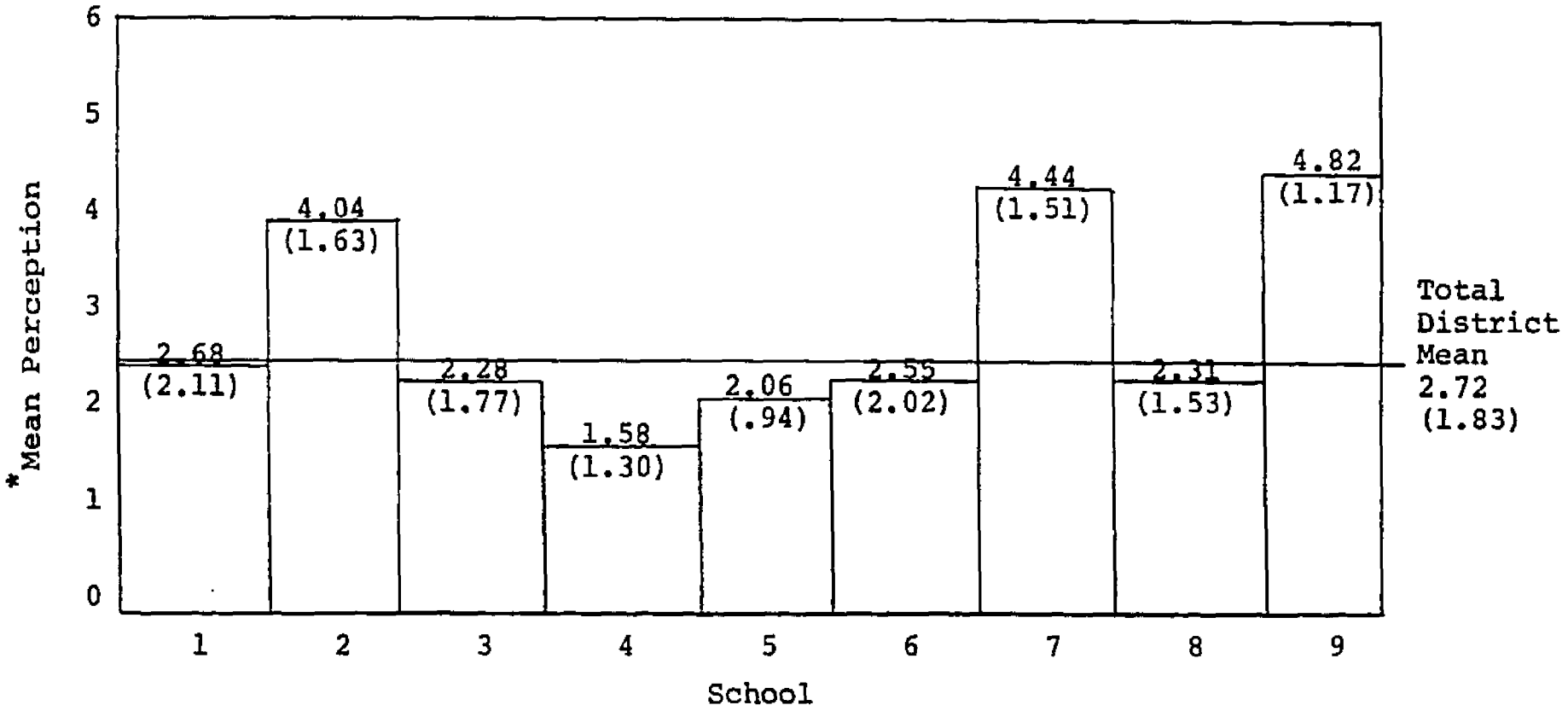
The items selected most frequently by respondents are illustrated with percentages on Figure 4-8. Item two (hardly ever) shows the highest percentage frequency (45%) at the not aware stage and at the next highest percentage (41%). Stage Five A indicates that the respondents selected item zero (no answer), two (hardly ever), and four (1/2 of the time) equally at 33 per cent respectively.

Figure 4-9 analyzes the individual schools. School Nine (administrators and special services) receives the highest mean of 4.82 which indicates their belief that administrators carry out the vote of teachers about



Scale:
Item O = no answer; Item 1 = never; Item 2 = hardly ever; Item 3 = 1/4 of the time; Item 4 = 1/2 of the time; Item 5 = 3/4 of the time; Item 6 = nearly always

Fig. 4-8.--Item selected most frequently at each awareness-implementation level to the question of how often administrators carry out the vote of teachers



Mean: 0 = never; 1 = hardly ever; 2 = about 1/4 of the time; 3 = about 1/2 of the time; 4 = about 3/4 of the time; 5 = nearly always

Note: Standard Deviations in parentheses

*Question 15 Survey Form 2-3

Fig. 4-9.--Individual school analysis of staff perceptions of how often administrators carry out new programs voted on by teachers

three-fourths of the time. The lowest mean is found in School Four (1.58). Schools Two, Seven, and Nine are the only schools above the total mean.

Hypothesis XV:

There will be a positive correlation between perception of teachers concerning the type of decision-making process (Democratic and Autocratic) in the school system and the awareness-implementation level of the innovation.

The ACT analysis produced a Chi Square of 62.0 with 63 degrees of freedom. Therefore, the Chi Square is not significant. The contingency coefficient of 0.47 is not significant. The null hypothesis is accepted. There is no correlation between perceptions of teachers concerning how democratic the decision-making process is within the school system and the awareness-implementation level of the innovation.

Table 4-14 shows the highest mean of 3.75 is located at point seven, which indicates those four respondents felt the district more democratic. Five categories (of decision style) (one, four, six, eight, and nine) fell below the total district mean.

In exploring the contingency table several factors become interesting for change agent purposes. On a nine-point scale beginning with very autocratic (point one) and ending with democratic (point nine) 22 per cent of the total population chose category five

or above. Seventy-six per cent of the population chose scale points one through four. Of the 76 per cent, 32 per cent chose point one (very autocratic). Two per cent had no answer to the question. This data indicate that the population, in general, perceives the district to be quite autocratic.

TABLE 4-14.--Analysis of the level of awareness-implementation and the perceptions of staff concerning the type of decision-making process in the school system

Perceptions of Staff	Number of Respondents	Mean Awareness-Implementation Level
No answer	4	0.00
1. Very autocratic	66	1.47
2.	40	1.83
3.	32	2.34
4.	20	1.45
5.	28	1.75
6.	11	1.36
7.	4	3.75
8.	2	.50
9. Democratic	2	.50
Total	209	1.66

More information for use by the change agent is found on Figure 4-10 which analyzes individual school response to the question of the type of decision-making for autocratic to democratic. School Two has the highest mean (5.07). With a mean of 1.28 School Five has the lowest mean. Schools One, Three, Four, Five, and Eight all fall below the total district mean. Schools Two,

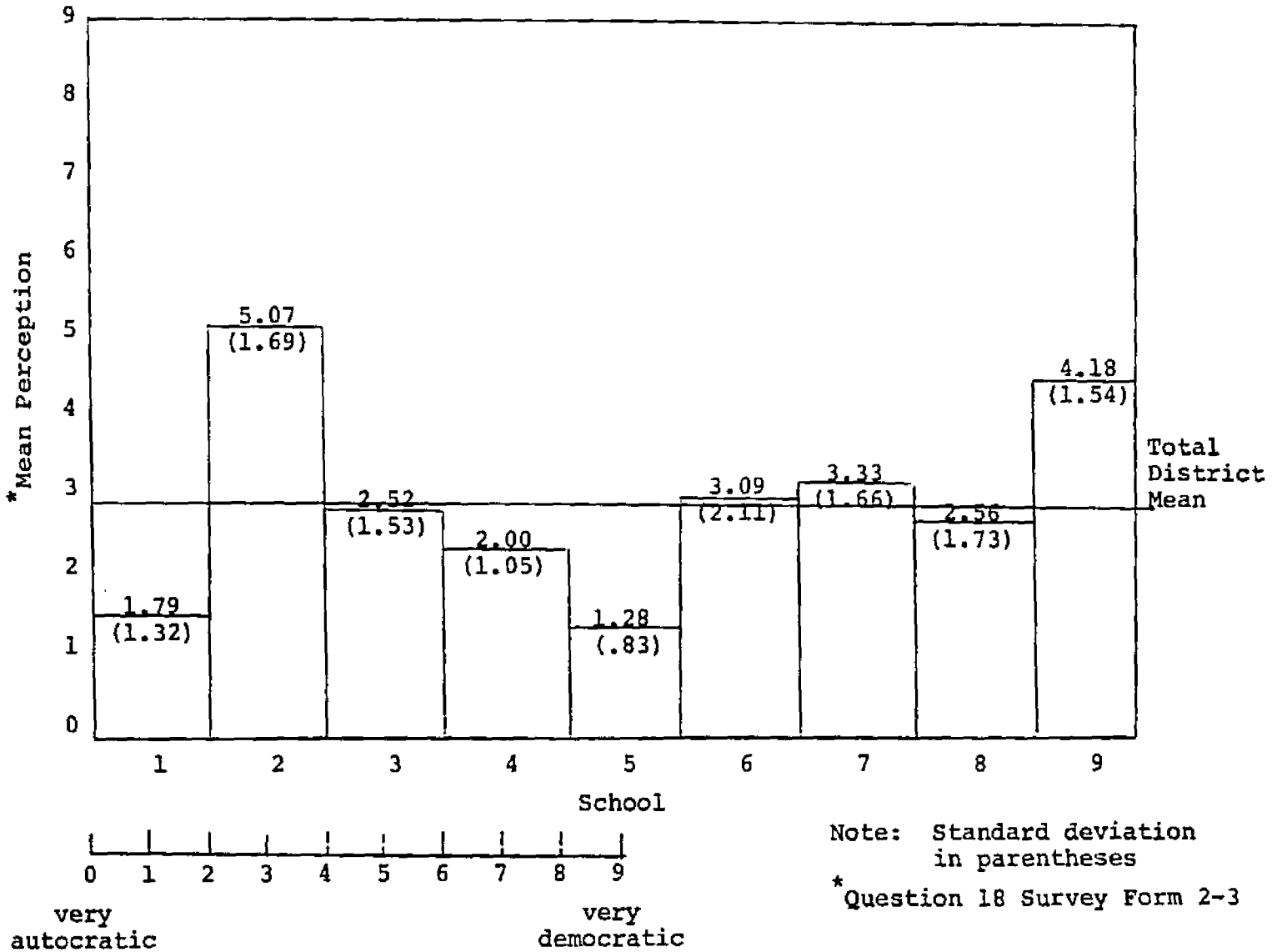


Fig. 4-10.--Individual school analysis on perceptions of staff concerning the type of decision-making process (autocratic-democratic) in the school system

Six, Seven, and Nine are above the mean, i.e. more democratic in decision-making.

Analysis of the Network Data

The analysis and treatment of the data generated from Richards' computerized network system has been organized with regard to the usefulness to the change agent. Only a small portion of the total data was utilized for this study. It is important to understand that more information could have been fruitfully explored and would have added much to the available information on communication flow within a school district. The limitations on the usage of the network data are the author's. These data are primarily a description of the communication flow within the district, indicating key points of communication contact both within and between schools for each of the three key communication functions within organizations. Further discussion of this point will be made in Chapter V.

The data used will be presented in the following manner:

1. Analysis of Hypotheses XVI and XVII;
2. The data dealing with the total system in the maintenance, production, and innovation function will be explored and charted for visual clarity;

3. The external communication network will be analyzed for the functions of maintenance, production, and innovation;

4. External and internal liaison connections in the individual schools will be examined;

5. External and internal bridge connections in the individual schools will be elucidated;

6. The liaison and bridge connections will be tabulated and examined for the total school district.

Analysis of the Hypotheses XVI and XVII

Hypothesis XVI:

There will be a positive correlation between frequency of change agent contact and the awareness-implementation level of the innovation.

Change agent contact was greatest at Schools One, Four, Six, Seven, and Nine in the diffusion process. It should be noted, however, that although School Seven had the highest mean awareness-implementation level (3.44, see Table 4-1 and Figure 4-1) cooperation in taking the survey was limited and therefore generalizations are not made in regard to this population.

School Nine includes special service personnel such as speech teachers, etc. who did not receive as much change agent contact as did the central

administration staff. Substantial contact was made on an interpersonal level at Schools One, Four, and Six. Minimum to no contact was made with staff from Schools Two, Three, Five, and Eight; all of which fall below the total district awareness-implementation level of 1.69.

School Nine had 22 per cent of its population at the Stage One level (not aware), 22 per cent were at the Stage Two level (interested enough to want more information), and 22 per cent who were experimenting with the concept in the classroom (Stage 5b).

School Nine had 27 per cent of its total population at the not aware stage. It should be noted again that these respondents were not subject to direct change agent contact. Approximately 56 per cent of the population were at Stages Two to Four. Of this 56 per cent, 36 per cent represented the Stage Four level (considering using in your school).

School Six had the second lowest number of respondents (13.6%) not aware of the innovation. Thirty-six per cent indicated they were at Stage One (aware of the innovation). Thirteen per cent were at Stage Two and Three and 22.7 per cent were at the Stage Four level (considering using in your school). Two respondents were at the Stage 5a (on a committee) and Stage 5b (experimenting in class).

School One respondents indicated that three persons (15.7%) were not aware of the innovation. Stage One had 15.7 per cent who indicated awareness of the innovation. Sixty-three per cent of the respondents were at the Stage Two to Stage Four level. One respondent indicated a Stage 5a (on a committee) level.

School Four had the lowest number of respondents (10.5%) who indicated they were not aware of the innovation. There were two respondents (10.5%) at the Stage One level. Approximately 79 per cent of the population of School Four were at Stages Two to Four.

The conclusion reached from the analysis is that there is a positive correlation between frequency of change agent contact with a school and the awareness-implementation level of the innovation in that school.

Hypothesis XVII:

The more liaison and bridge connections in individual schools in the innovation network function, the higher the expected awareness-implementation level within the individual schools.

In looking at Table 4-1 and Table 4-15, the following patterns emerge. School One has one liaison, seven bridge connections, and a high awareness-implementation level. School Two has no liaison, no bridge, and an awareness-implementation level below the district mean. School Three has one liaison, four bridges, and an awareness-implementation level below

the mean. School Four has two liaisons, four bridges, and a high awareness-implementation level. In addition School Four has the greatest number of total bridge and liaison connections. School Five has no liaison but has eight bridge connections which suggest tight cliques. This is consistent with the Richard Allen findings that tight cliques and groups within the school have limited external contacts and lower awareness-implementation levels.[74] School Six has a similar pattern to School Five having no liaison and ten bridge connections. However, the awareness-implementation level is above the mean. This may be due, however, to change agent contact and the past innovativeness of this school. School Seven has one liaison and no bridges, but incomplete data prohibits making conclusions. School Eight has nine liaisons and twenty-three bridges; however, many of the connections are within school contacts. Of a total 138 contacts, only thirty-two are with other schools within the district. There are no data helpful in identifying the awareness-implementation level of the two groups within this school. However, the total School Eight awareness-implementation level is below the total district mean.

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[74]Richard Allen, "A Comparison of Communication Behaviors and Non'Innovative Secondary Schools" (Ph.D. dissertation, Michigan State University, 1970).

It would appear that in the elementary schools (One-Five) the hypothesis shows a positive correlation between number of liaison and bridge connections in individual schools for the innovation function and high awareness-implementation level of the innovation.

The data are not complete enough at the middle and high school to support the hypotheses for these school levels.

Analysis of the Network Data

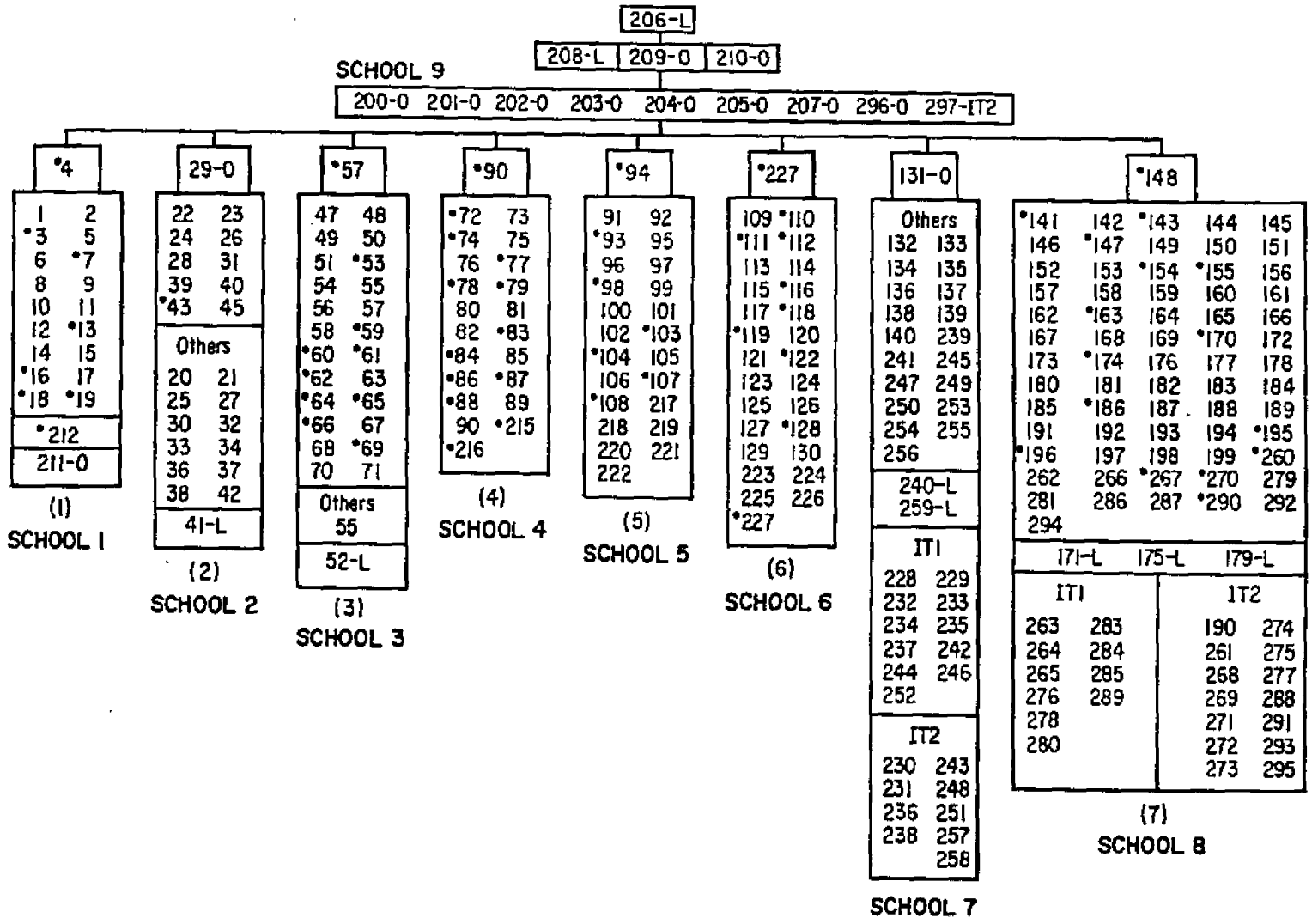
The data generated from the network analysis will be presented in the following manner:

1. The data dealing with the total system in the maintenance, production, and innovation function will be explored and charted for visual clarity.
2. The external communication network will be analyzed for the functions of maintenance, production, and innovation.
3. External and internal liaison connections in the individual schools will be examined.
4. External and internal bridge connections in the individual schools will be elucidated.
5. The liaison and bridge connections will be tabulated and examined for the total school district.

Maintenance--Total District

The data for the total maintenance function are illustrated on Table 4-11. Seven communication groups are formed for this function. Nine liaisons are found in the network, but are unevenly spread throughout the district. Most liaisons are found at the middle and high school level for this function (55%). Twenty-two per cent of the total liaison group are found at the elementary level, and 22 per cent are located at the administrative level.

There are sixty-seven bridges for the total maintenance function of the district. Sixty per cent of the bridge connections are at the elementary level. The middle school has 15 per cent of the bridge connections. The high school has 24 per cent of the bridge connections. This represents sixteen connections and is the greatest number of connections in any of the schools. However, this represents only 16 per cent of the high school's total population. School Four with 19 per cent or thirteen bridge connections has the second largest number of bridges and significantly represents a large portion of its school population (60%). Except for School Two all of the elementary schools have from seven to thirteen connections which appears to indicate that there are many more bridge connections on a per population basis in the elementary schools than in the high school.



Code: Red = Group 1; Blue = Group 2; Green = Group 3; Brown = Group 4; Yellow = Group 5; Orange = Group 6; Purple = Group 7

Other Data: O = Other; L = Liaisons; • = Bridges

Fig. 4-11.--Total system--Maintenance function--Internal and external contacts

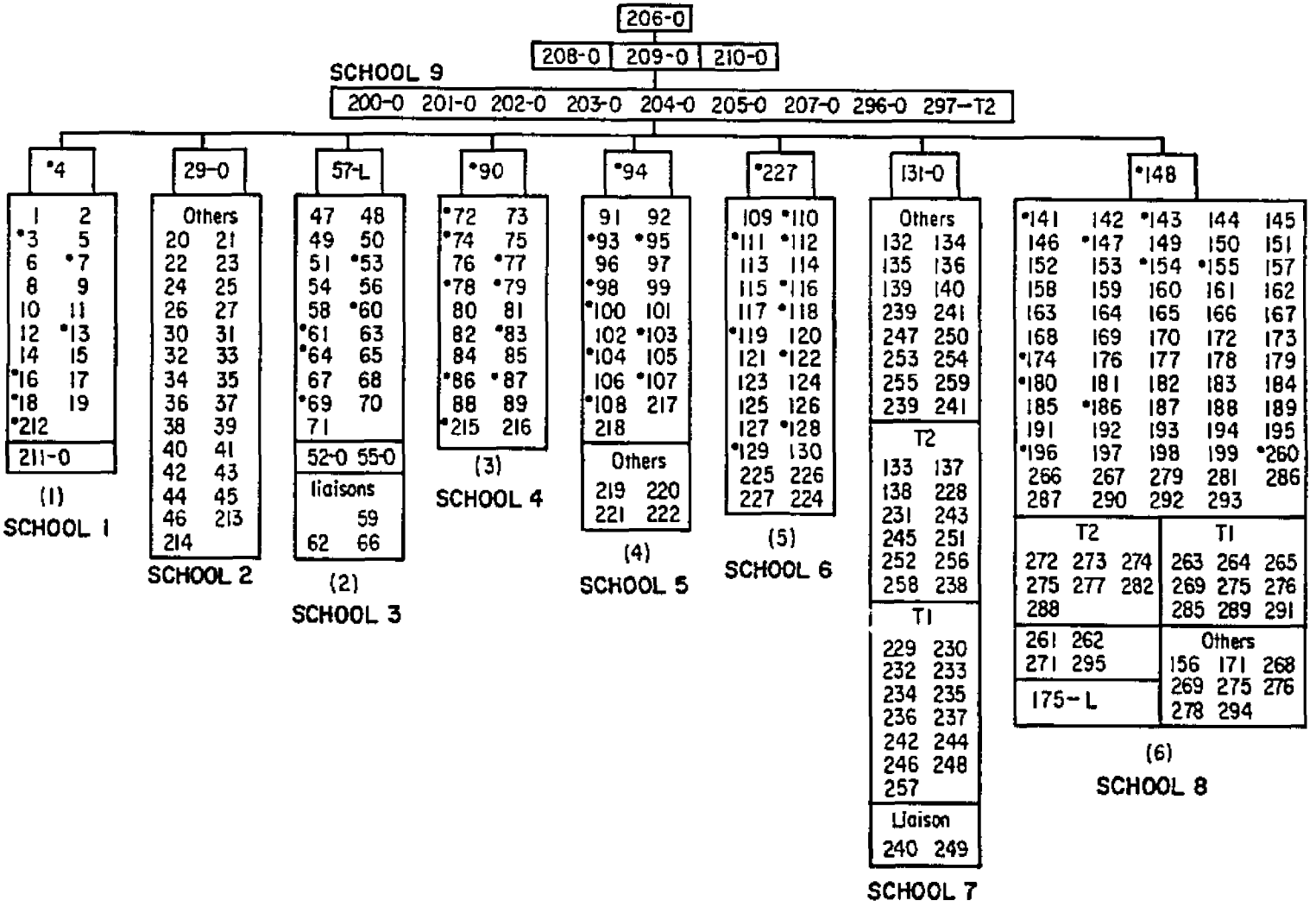
School Six, a middle school, has ten bridges or 15 per cent of the total population. Schools Seven and Nine show no bridge connections for this function.

Production Network--Total District

Figure 4-12 illustrates graphically the production communication network of the total district. There are six groups formed within the system. Seven liaisons are found in the network and are unevenly distributed among the schools. School Three has four liaisons or 62.5 per cent of the total seven. School Seven has two liaisons or 25 per cent of the total liaisons. School Eight has one liaison or 12.5 per cent of the total liaison contacts.

The bridge links are more evenly distributed in the network. Of a total of fifty-two bridges, 14 per cent are in School One, 10 per cent in School Three, 19 per cent are in School Four, 17 per cent are in School Five, 19 per cent are in School Six, and 21 per cent are in School Seven. For change agent purposes, however, it might be well to analyze the data in terms of the percentage frequency in each school and its total membership.

Thirty-three per cent of the total School One population of twenty-one staff members are bridges. Schools Two, Seven, and Nine have no bridge connections.



Code: Red = Group 1; Blue = Group 2; Green = Group 3; Brown = Group 4; Yellow = Group 5; Orange = Group 6; Purple = Group 7

Other Data: O = Other; L = Liaisons; • = Bridges

Fig. 4-12.--Total system--Production function--Internal and external contacts

School Three has 40 per cent. School Five has 45 per cent. School Six has 37 per cent. School Eight has 7 per cent. Schools Four, Five, and Six appear to be schools which have the greatest amount of internal and external production communication connections. School Three should be noted, for change agent purposes, as having a large percentage of liaison members.

Another potentially useful analysis technique is to examine the liaison and bridge connections in terms of teaching levels. Sixty per cent of the bridges are in the elementary schools (One to Five), thus the change agent could utilize the information factor in devising diffusion strategy. Based on this strategy the agent would have key entry points into the network system. Further exploration will need to be done to determine the influence role of liaison and bridges. Nineteen per cent of the bridges are found in the middle schools. Twenty-one per cent of the bridge connections are at the high school level. None of the members of School Nine were designated as bridge connections.

Sixty per cent of the liaisons are found at the elementary level, 25 per cent at the middle school, and 12 per cent at the high school level. The data would suggest that the elementary school level has more communication network contacts in the production function

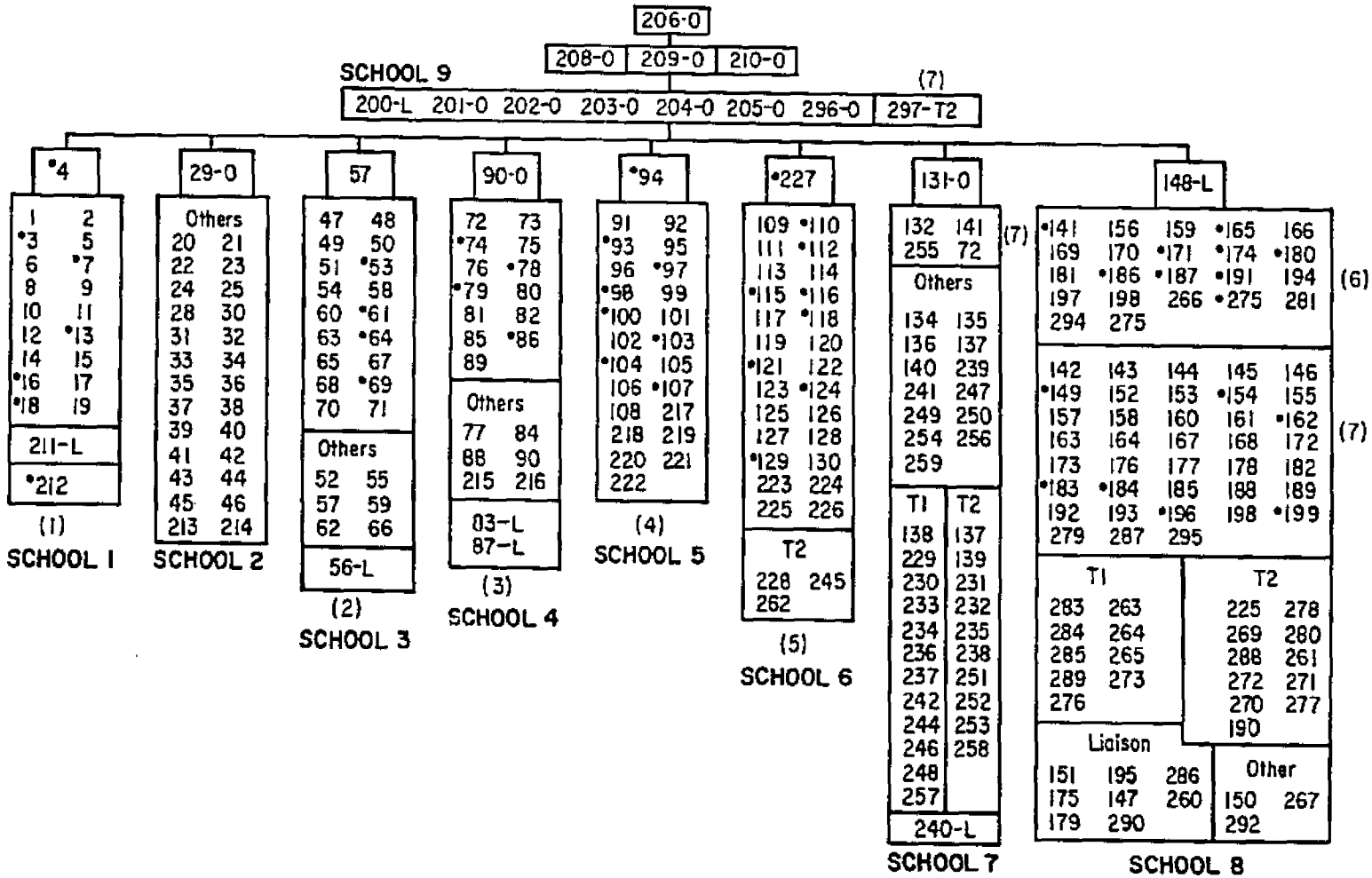
than the other teaching levels. Again this information can be utilized by the change agent in planning diffusion strategy.

Innovation Network--Total District

Figure 4-13 illustrates the innovation network for the total district and includes internal and external communication contacts. Seven groups were identified. Two of the groups are found in School Eight (the high school).

There are twelve liaisons and forty-six bridge connections in this function. Fifty-eight per cent of the liaisons and 35 per cent of the bridge connections are located in School Eight. It is important to remember that these connections are frequently found to exist within the two groups located in School Eight. School One has one liaison or 2 per cent, and 5 or 11 per cent of the bridge connections. School Three has one liaison (2%) and four bridges (8%). School Four has two (16%) and four bridges (8%) of all bridges. School Five has no liaisons and eight bridges (17%). School Six has 0 liaisons and nine bridges (20%). School Nine has one liaison (2%) and no bridge connections.

Forty-five per cent of the bridge connections and 33 per cent of the liaisons are located in the elementary schools. Zero per cent of the liaisons and 20 per cent



Code: Red = Group 1; Blue = Group 2; Green = Group 3; Brown = Group 4; Yellow = Group 5; Orange = Group 6; Purple = Group 7

Other Data: O = Other; L = Liaison; • = Bridge Links

Fig. 4-13.--Total system--Innovation function--Internal and external contacts

of the bridges are found at the middle school level. Fifty-eight per cent of the liaisons and 35 per cent of the bridges are found at the high school level, but many contacts occur within the two groups found at that level. Change agent strategy based on this information could be of great value in diffusing innovation.

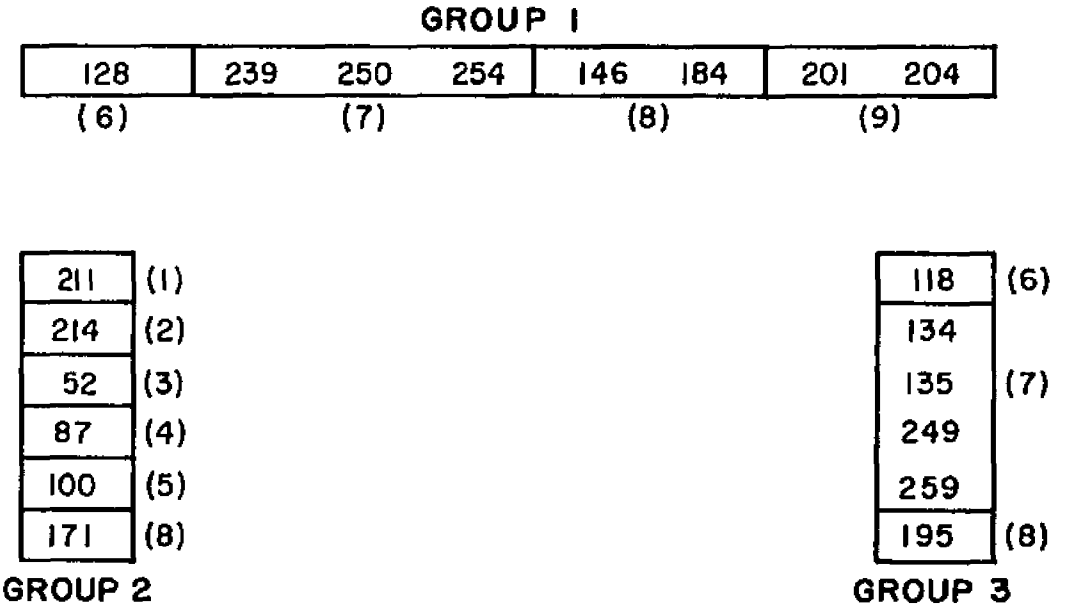
External Communication Contacts

The following data are generated from the response on Survey Form 3-6 (see Appendix B) and delineates the respondents' external communication contacts to other schools within the district for the separate functions of maintenance, production, and innovation. It does not not include schools external to the district.

Maintenance

As Figure 4-14 illustrates, three small groups are formed within the school district for the maintenance function. Each group is composed of a variety of individuals from individual schools.

In analyzing the figure it appears that each group is composed of teachers with a particular teaching function. Group one consists of members of the district counseling staff. Group two is composed of members in the system who teach music. Group three members are teachers who participate in or are part of the physical education department in the district.



Code: Red = School 1; Blue = School 2; Green = School 3; Brown = School 4; Orange = School 5; Yellow = School 6; Gray = School 7; Purple = School 8; White = School 9

Other Data: 152 Isolate T1; 54 Isolate T2; 2 Dyad Members; 13 Tree Nodes; 56 Others; 0 Liaisons

Fig. 4-14.--Analysis of groups formed for the maintenance function--External connection only

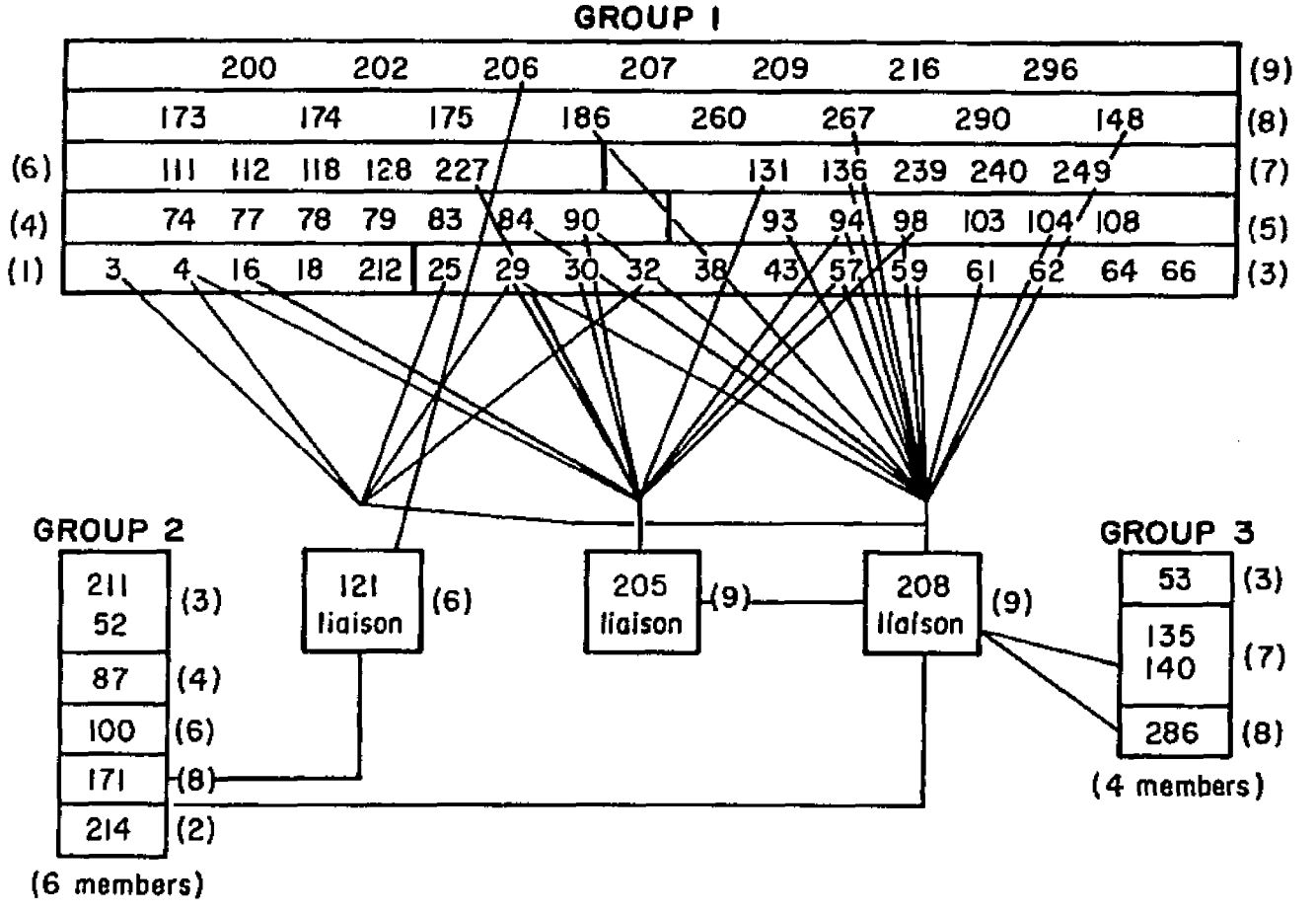
There are no liaisons located for this function nor are all of the special teacher categories included.

Production

Figure 4-15 portrays the three external groups formed within the district for the production function. All schools are represented in group one. Groups two and three, as in the maintenance function, are composed of special teachers from different schools. Three liaisons connect the groups, with group two and three having the least amount of liaison contact. In exploring liaison contact in group one all schools are shown to have at least one of the thirty liaison connections. Schools Six and Seven each have two liaison contacts and the other schools have either four or five liaison connections. Liaison 208 has a total of twenty-one connections within the three groups with contacts in each school except School Six. Liaison 205 has a total of twelve connections with contacts in every school except School Seven. Liaison 121 has a total of two connections. This connection is only with Schools One and Nine. The groups represent approximately 21 per cent of the total population.

Innovation

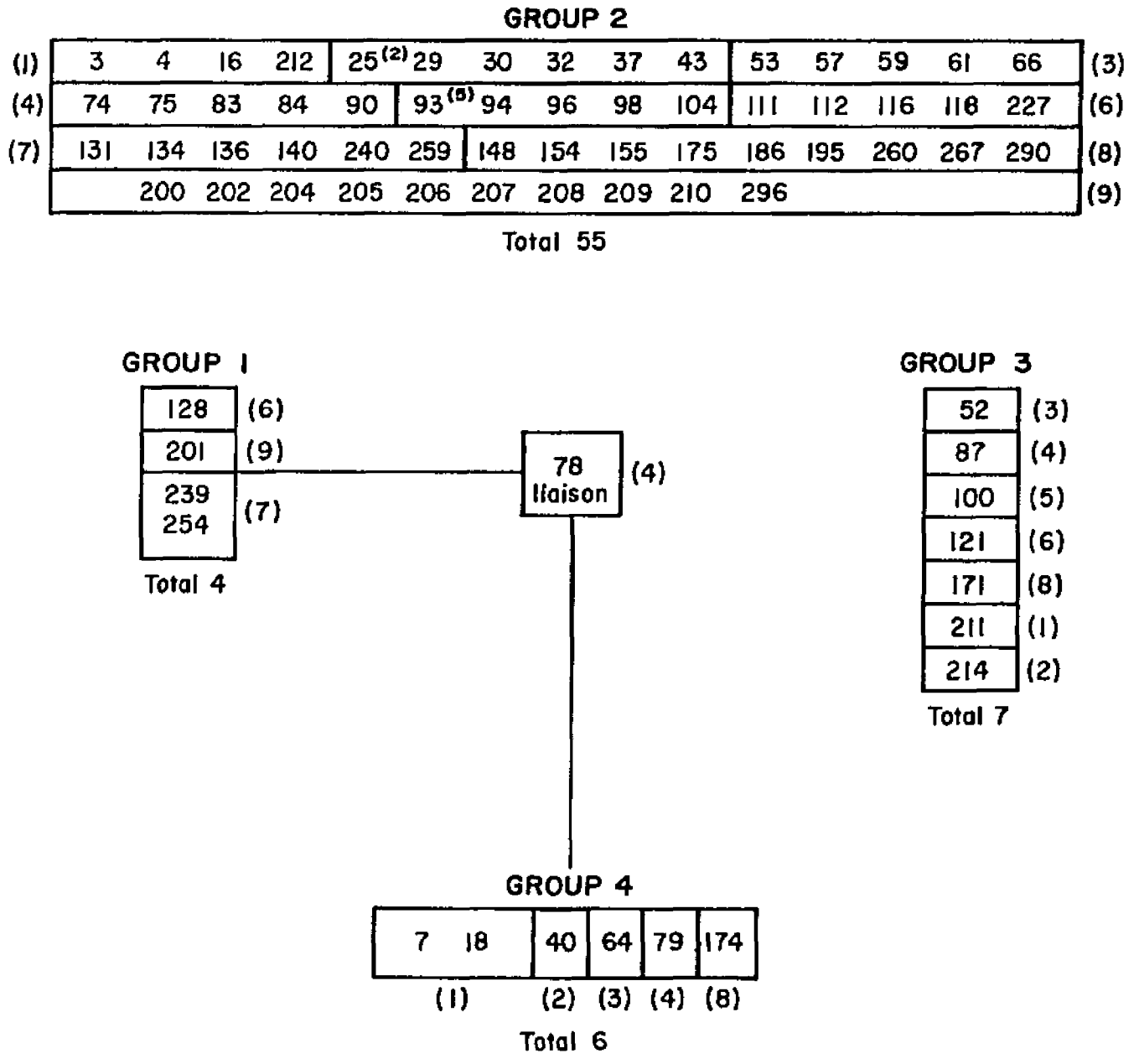
The communication groups formed for the innovation function are illustrated on Figure 4-16. The small



Code: Red = School 1; Blue = School 2; Green = School 3; Brown = School 4; Orange = School 5; Yellow = School 6; Gray = School 7; Purple = School 8; White = School 9

Other Data: 151 Isolates T1; 50 Isolates T2; 4 Dyad Members; 17 Tree Nodes; 7 Other; 3 Liaisons

Fig. 4-15.--Analysis of groups formed for the production function--External connections only



Code: Red = School 1; Blue = School 2; Green = School 3; Brown = School 4; Orange = School 5; Yellow = School 6; Gray = School 7; Purple = School 8; White = School 9

Other Data: 143 Isolate T1; 57 Isolate T2; 4 Dyad Members; 15 Tree Node; 5 Other

Fig. 4-16.--Analysis of groups formed for innovation function--External connection only

groups one and three are, as in the maintenance and production function, formed by special teachers. Group four represents a political segment of the district. Group two is composed of a variety of the population from each school.

One liaison (seventy-eight) connects group one and four. There are no other liaison connections in this function.

The groups formed represent approximately 22 per cent of the total population.

Analysis of the Liaison Connections in the Individual Schools for the Innovation Function-- External and Internal

Elementary Schools

Figure 4-17 specifies the liaisons in each elementary school and their particular school and individual connection. Schools Two and Five at the elementary level have no liaison member. School One has one liaison member with connections to one member in Schools One, Five, and Eight. School Three has one liaison member with connection to Schools Three and Six. Most liaison contact is within the liaison's own school. The contact with School Six is with one member. School Four appears to have substantial liaison connections. Two of its members are liaisons. Liaison Eighty-three has a connection with every school within the district and frequently with many members within that school. Liaison

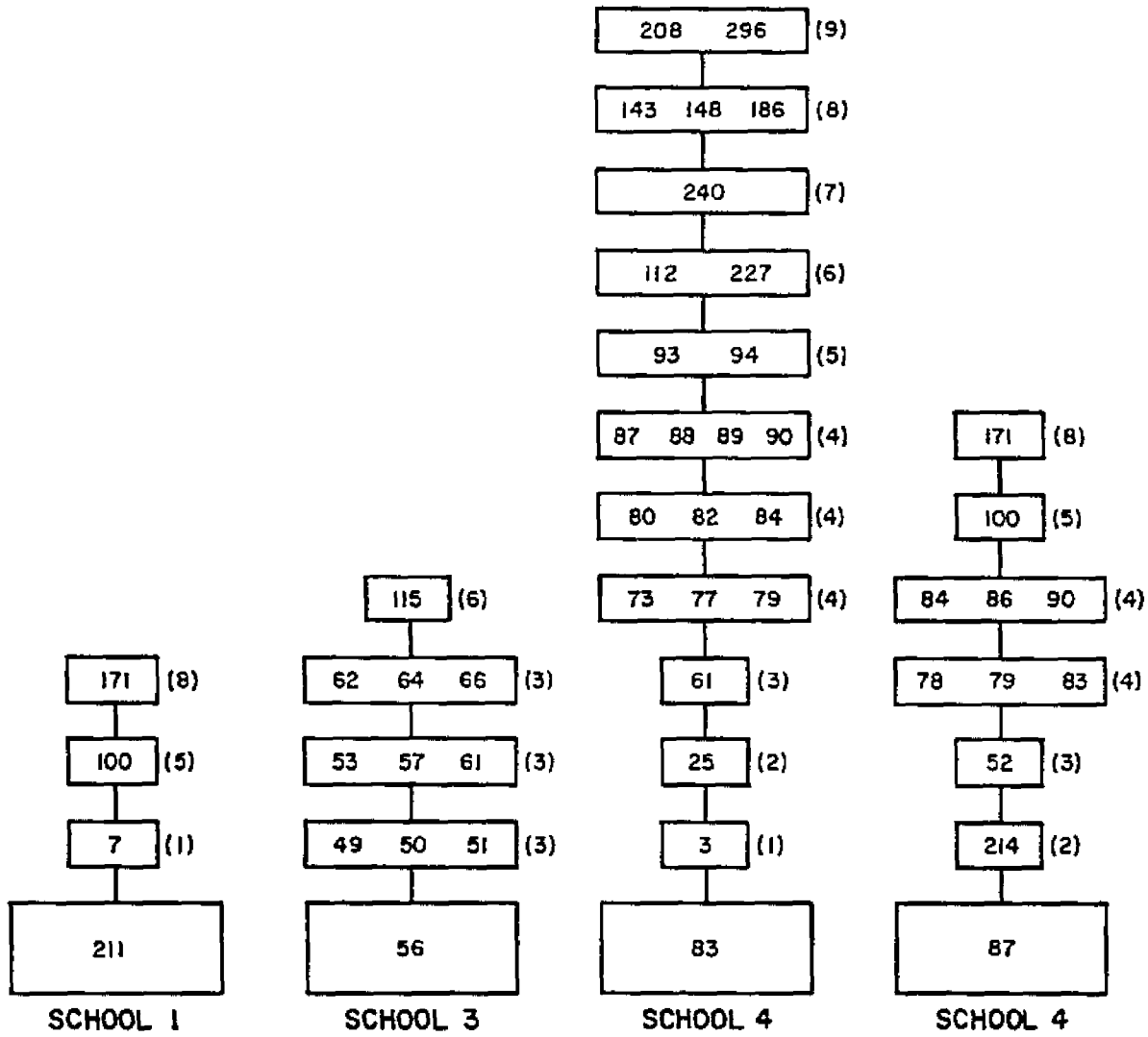


Fig. 4-17.--Liaison connections within the innovation network--Elementary school liaisons; ( ) indicates school

member Eighty-seven has connection to each school except Schools One, Six, and Nine.

There are minimal contacts between Schools Six, Seven, and Nine and the total elementary liaisons.

Middle Schools--School Nine

Figure 4-18 illustrates the liaison connections in the middle schools and School Nine (Administrative/ Special Services). School Six had no liaison member. School Seven has one liaison member with one contact in each school except Schools Eight and Nine. School Nine has one liaison member with contacts in Schools Three, Four, Five, Six, and Nine. The connections are generally with more than one member in each school.

High School

Figure 4-19A and B examine the liaison members at the high school level. It is important to remember that the high school is composed of two groups for the innovation function, so many of the liaison contacts will be within School Eight liaison contacts.

Liaison 148 has substantial liaison contacts in School Eight and contact with one or two members in Schools Two, Three, Four, Five, Six, and Nine. Liaison 147 has one connection to Schools Four and Six and sixteen connections with School Eight. Liaison 151 has liaison contacts in School Eight with both Groups Six

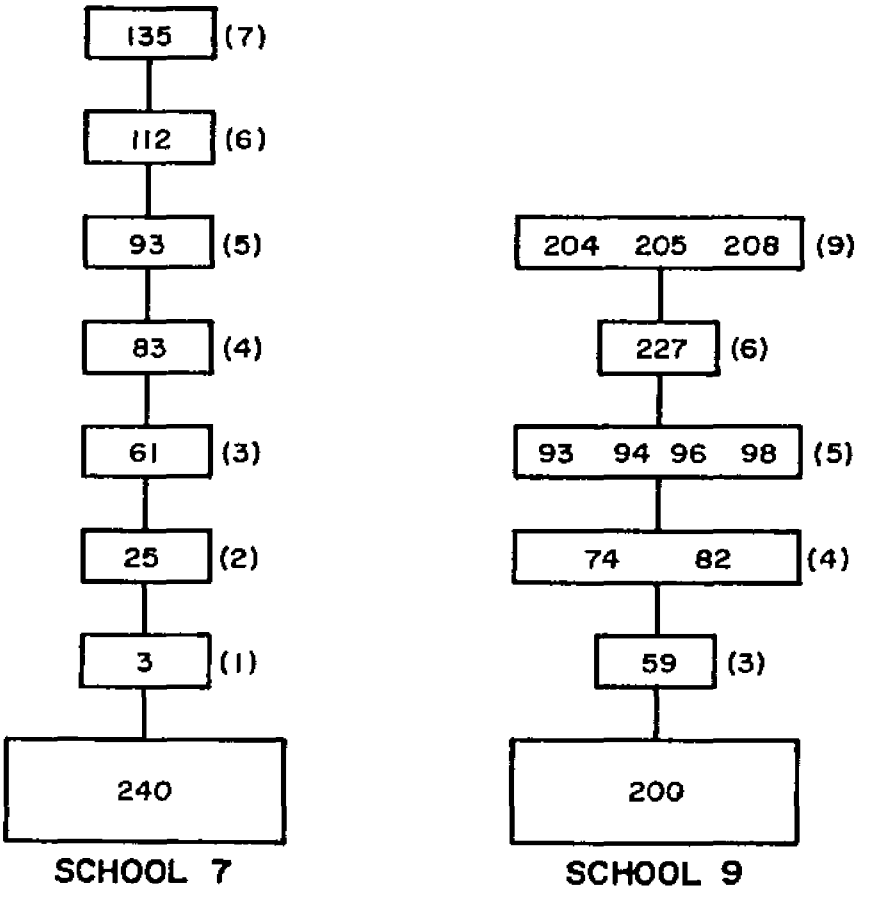


Fig. 4-18.--Liaison connections within the innovation network--Middle school liaison and administrative/special services (School 9); ( ) indicates school

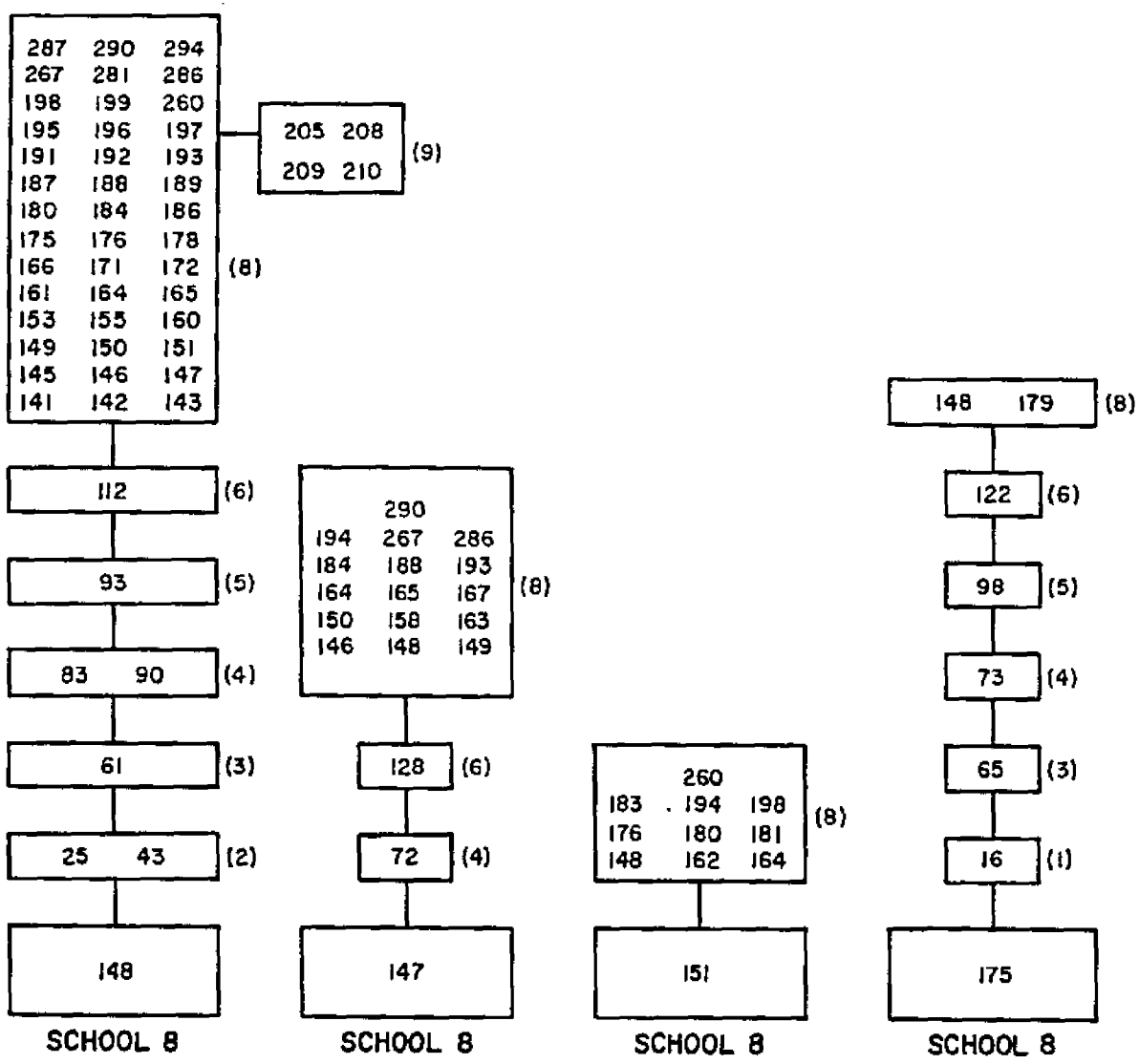


Fig. 4-19A.--Liaison connections within the innovation network--High school liaisons

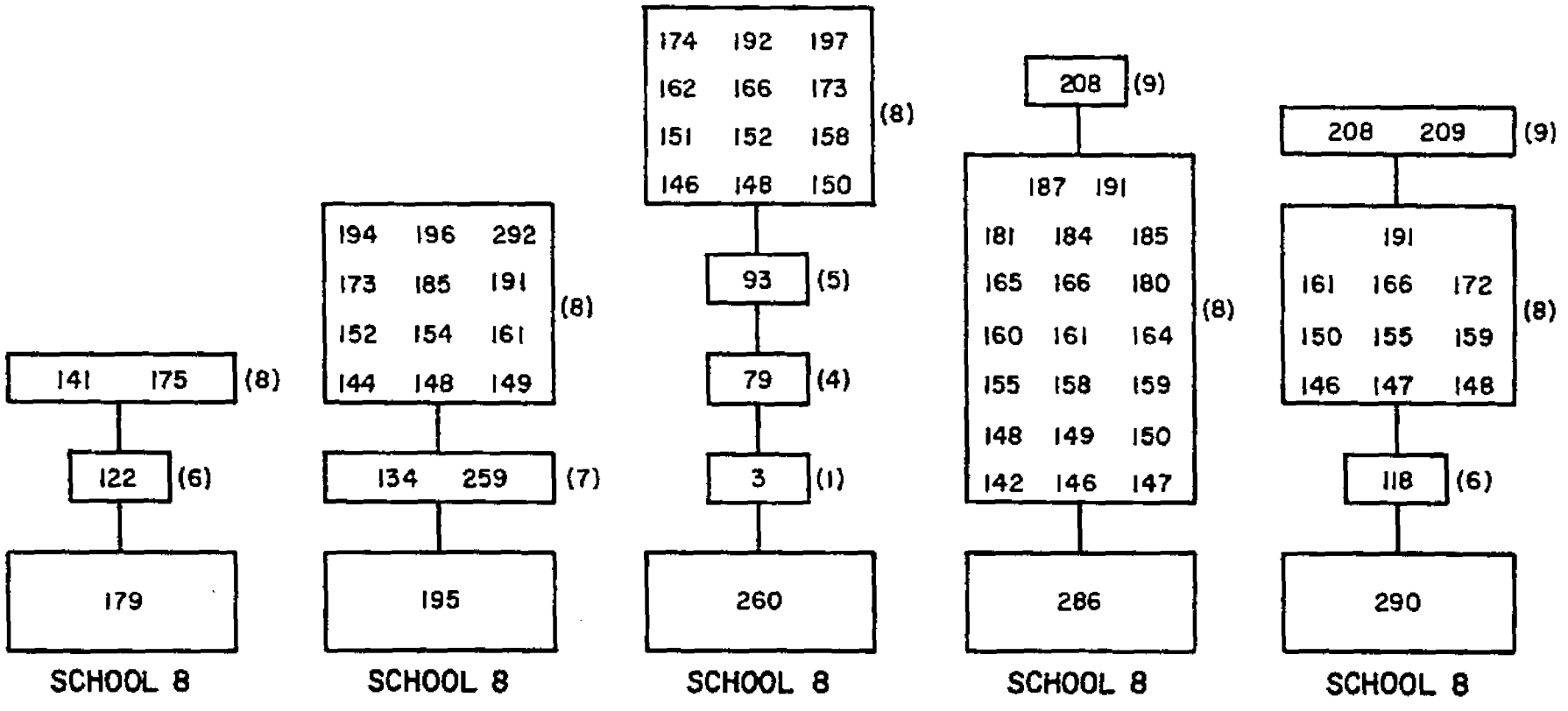


Fig. 4-19B.--Liaison connections within the innovation network--High school liaisons

and Seven. Liaison 175 has one liaison connection to Schools One, Three, Four, Five, and Six and with two members of School Eight. Liaison 179 has two connections at School Six and Eight. Liaison 195 has two connections to School Seven and twelve contacts with School Eight. Liaison 260 has liaison connections with Schools One, Four, Five, and Eight. Liaison 286 has a large liaison contact with School Eight and one contact with School Nine. Liaison 290 has one contact in School Six, ten contacts in School Eight, and two contacts in School Nine.

In examining the prescribed roles within the high school only two liaisons are regular teaching staff members. The other liaisons have special functions in the district which would likely place them in contact with other schools.

In reviewing the raw data with the prescribed roles of the liaison, there appears to be little high school-elementary school connection for the function of innovation.

Analysis of the Bridge Connections in the Individual Schools for the Innovation Function--External and Internal

School One

Figure 4-20 shows the bridge link connections of School One. There are seven bridge members. Bridge Three has the greatest number of contacts (five), as

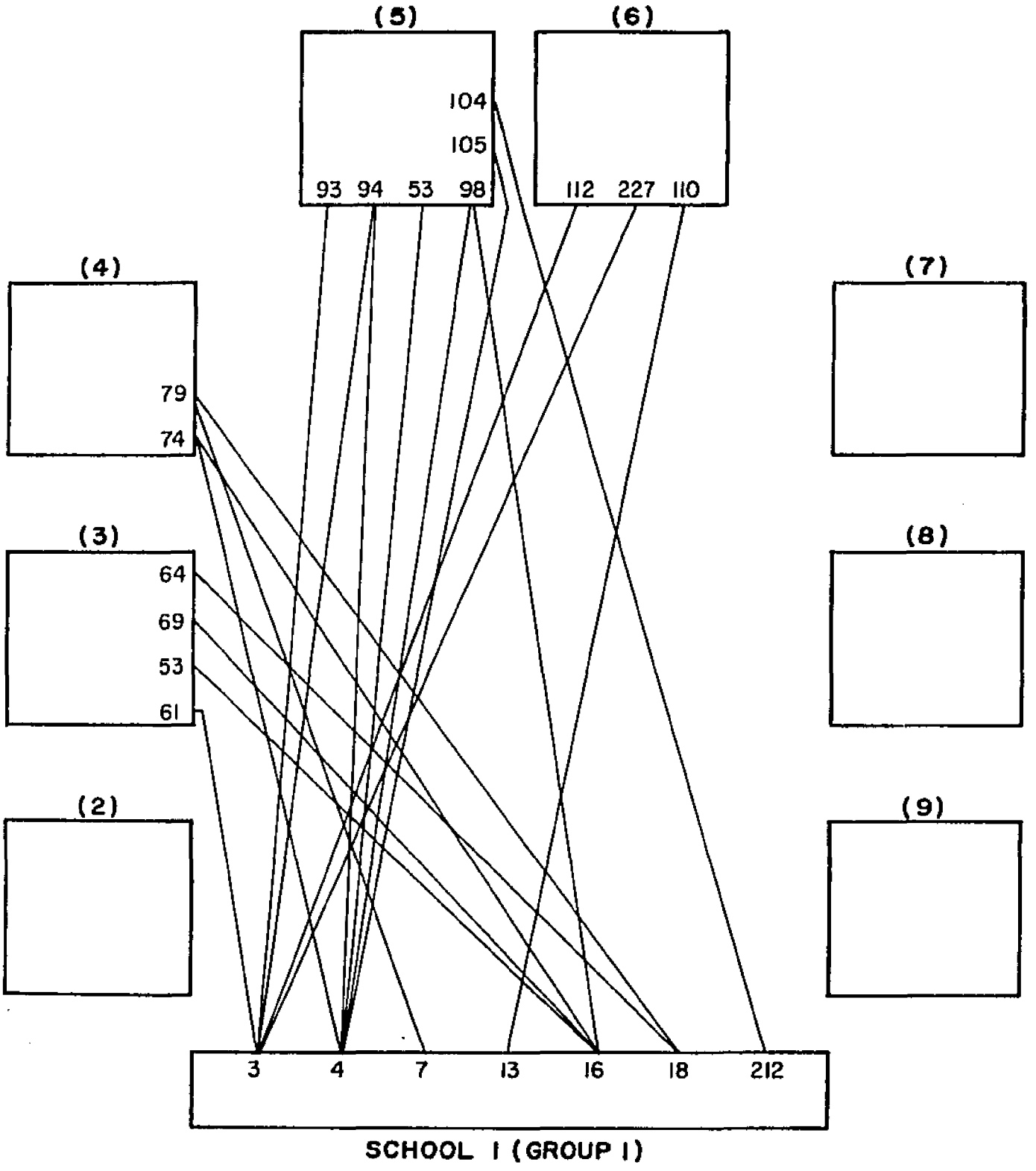


Fig. 4-20.--Individual school analysis of bridge links in the total innovation network; School 1 (Group 1)

well as having contacts with more schools (three). Bridges four and sixteen have four bridge links each. Bridges seven, thirteen, and 212 have one link each. Bridge eighteen has two links. There are no bridge links to Schools Two, Seven, Eight, or Nine. Thirty-three per cent of the total staff are bridge links.

School Two

The data do not reveal any bridge links in School Two or to School Two.

School Three

Figure 4-21 reveals that School Three has four bridge links (fifty-three, sixty-one, sixty-four, sixty-nine) with connections to Schools One, Four, Five, Six, and Eight. Bridge sixty-one has five links to three schools (One, Five, Six). Bridge fifty-three has three links to Schools One, Four, and Five. Bridge sixty-four has two links to Schools Four and Eight. Bridge sixty-nine has one link to School One. There are no bridge links to Schools Two, Seven, or Nine. Fifteen per cent of the staff are bridge links.

School Four

Figure 4-22 portrays the bridge connections in School Four. Bridge eighty-six has three contacts with Schools Five and Six. Bridge seventy-nine has two contacts with Schools One and Eight. Bridges seventy-four

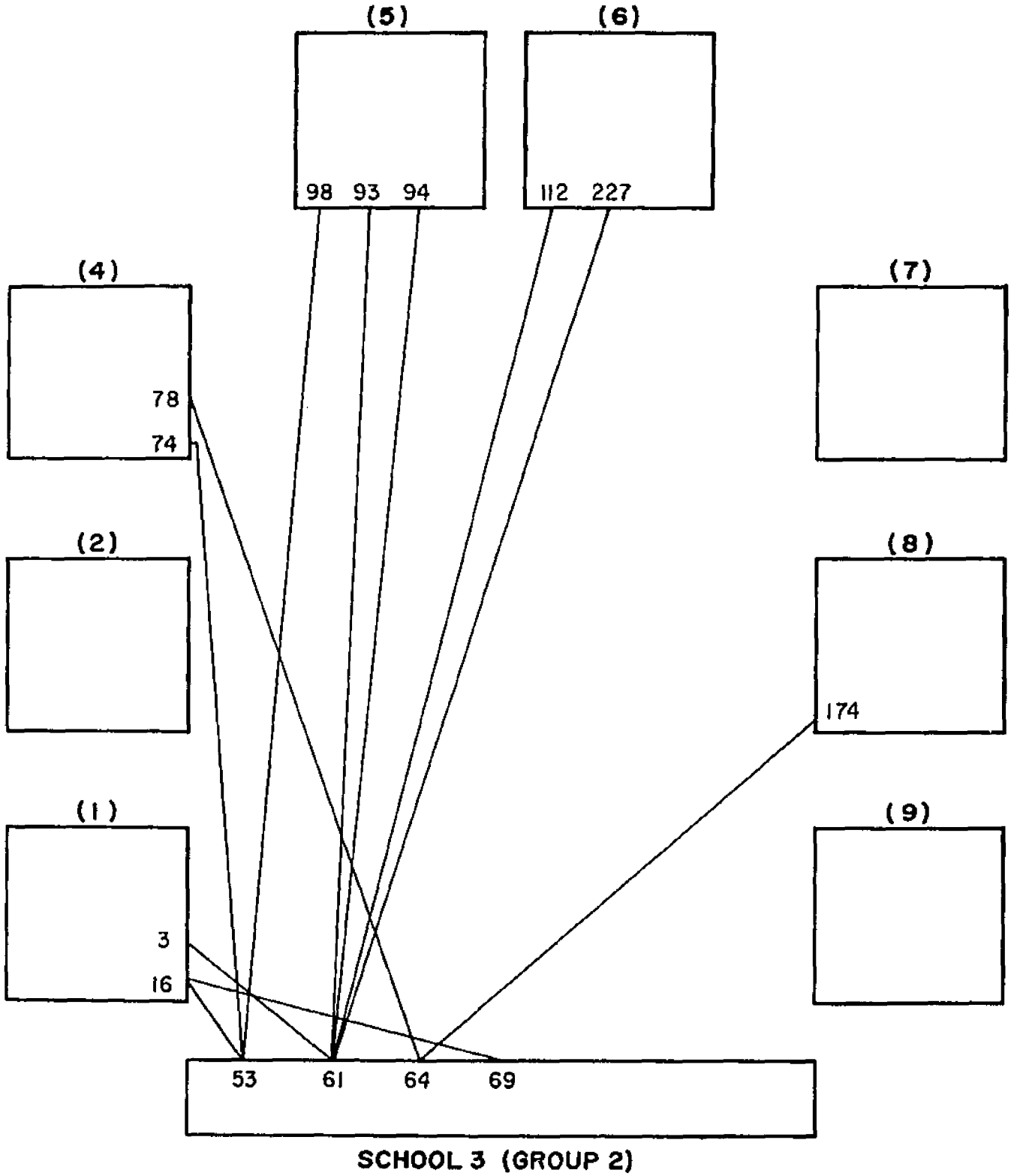


Fig. 4-21.--Individual school analysis of bridge links in the total innovation network; School 3 (Group 2)

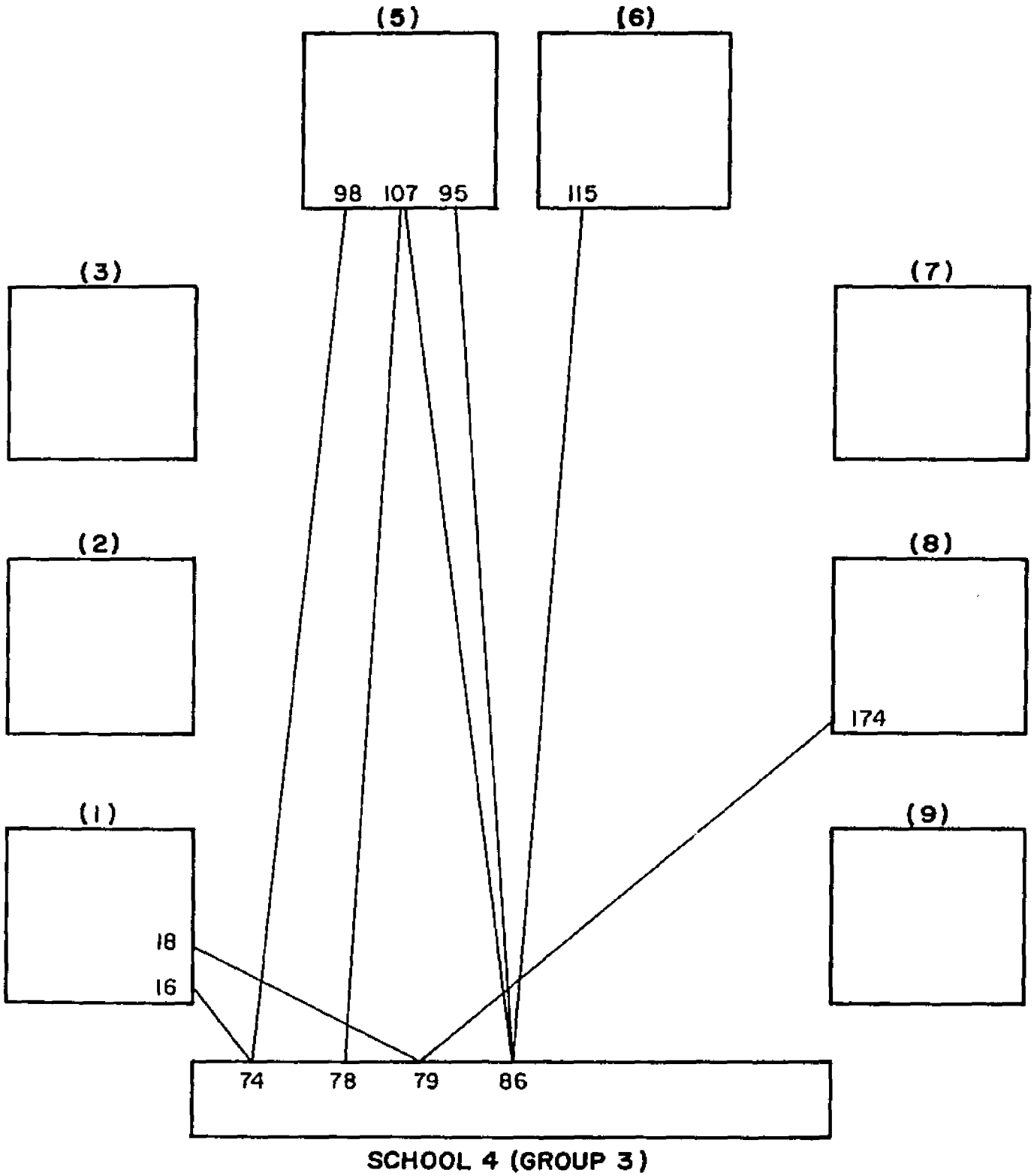


Fig. 4-22.--Individual school analysis of bridge links in the total innovation network; School 4 (Group 3)

has two contacts with School One and Five. Bridge seventy-eight has one contact with School Five. School Four has no bridge connections to School Two, Three, Seven, Eight, or Nine. The bridge links represent 19 per cent of the staff.

School Five

Figure 4-23 shows the bridge connections found in School Five. There are a total of eight bridges in this school. Bridge ninety-three and ninety-four each have three bridge connections with three different schools. Bridge ninety-eight has two connections with two schools. Bridge 100, 103, 104, and 107 have one bridge connection. There are no links to Schools Two, Seven, or Nine. Bridge links represent 38 per cent of this school's membership.

School Six

Figure 4-24 illustrates the bridge links in School Six. There are ten bridges in the school which means that 37 per cent of the staff are bridge links. Bridge 112 has four links to three schools. Bridge 227 has two links to two schools. Bridge 110 and 118 have three links to one school. Bridges 115, 116, 121, 124, 199, and 223 have one link to one school. The majority of bridges are linked to School Eight. No bridge links connect to Schools Two, Seven, or Nine.

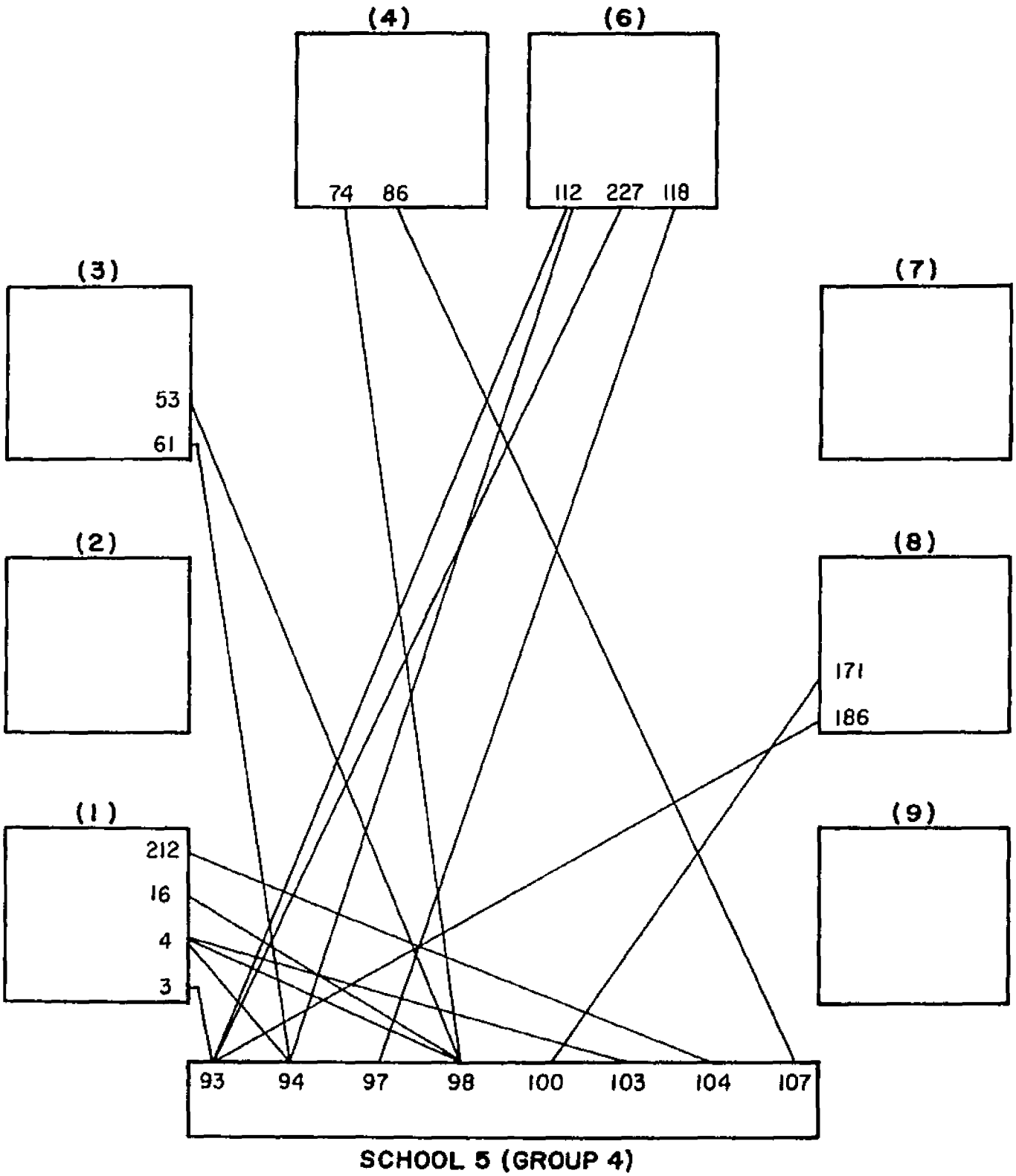


Fig. 4-23.--Individual school analysis of bridge links in the total innovation network; School 5 (Group 4)

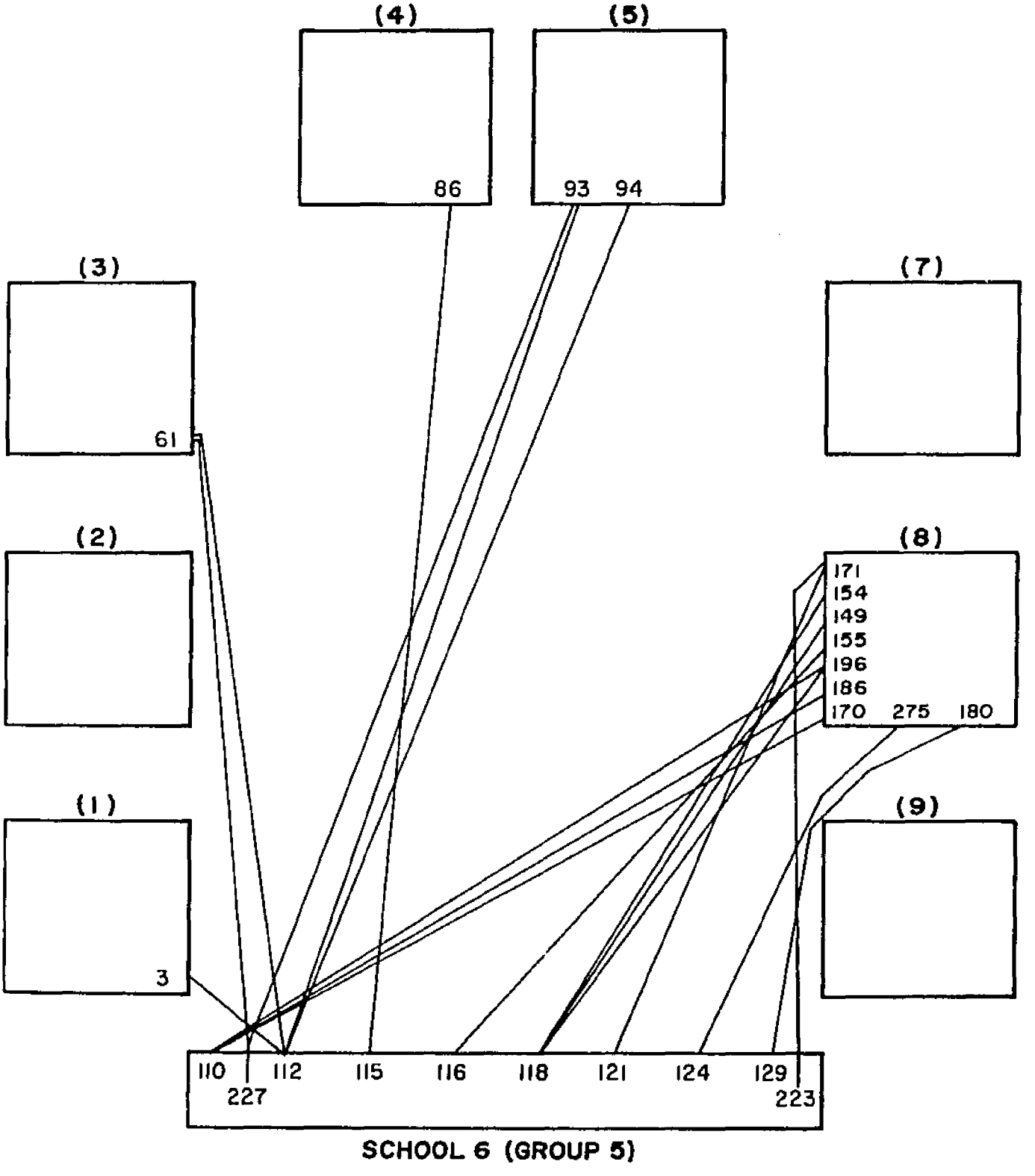


Fig. 4-24.--Individual school analysis of bridge links in the total innovation network; School 6 (Group 5)

School Seven

The data do not reveal any bridge links in School Seven.

School Eight (Group Six and Seven)

There are twenty-seven links in School Eight which indicates that 28 per cent of the staff are bridges (see Figures 4-25 and 4-26). There are no bridge links to Schools One, Two, Seven, or Nine. The majority of the bridges connect to the two groups within School Eight. A total of six bridges or 6 per cent of the total School Eight population has bridge connections to other schools. Only five bridge links are to elementary schools.

School Nine

The data do not reveal any bridge links in School Nine or to School Nine.

Analysis of the Total Liaison and Bridge Connections in the Innovation Function

Table 4-15 analyzes the bridge and liaison communication network for the innovation function of each school and for the total district. The fifteen liaisons identified in the network have a communication link with 180 members of the system. The forty-nine bridges have a communication link to eighty-two members of the system. Without considering the duplication of some of these

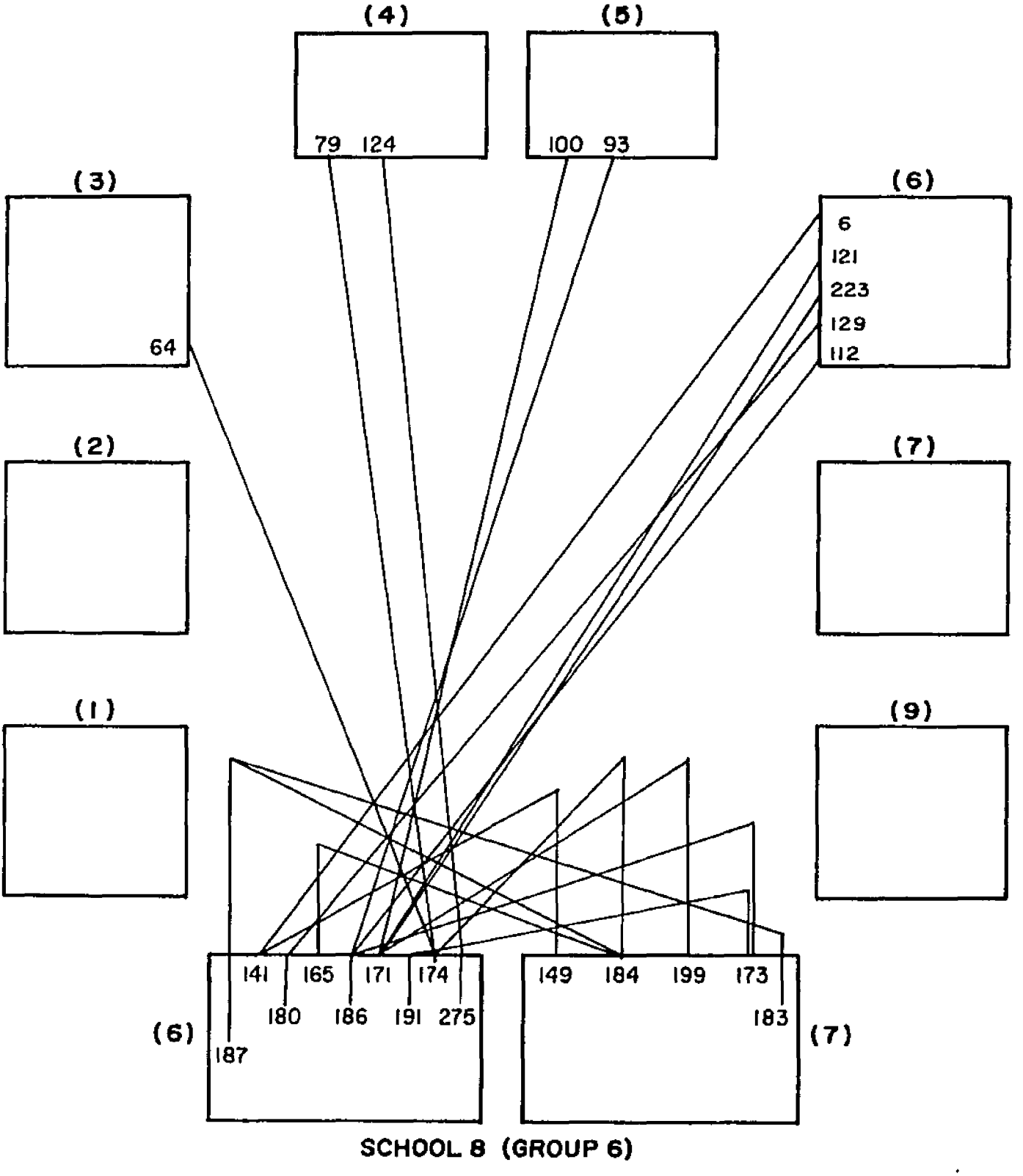


Fig. 4-25.--Individual school analysis of bridge links in the total innovation network; School 8 (Group 6)

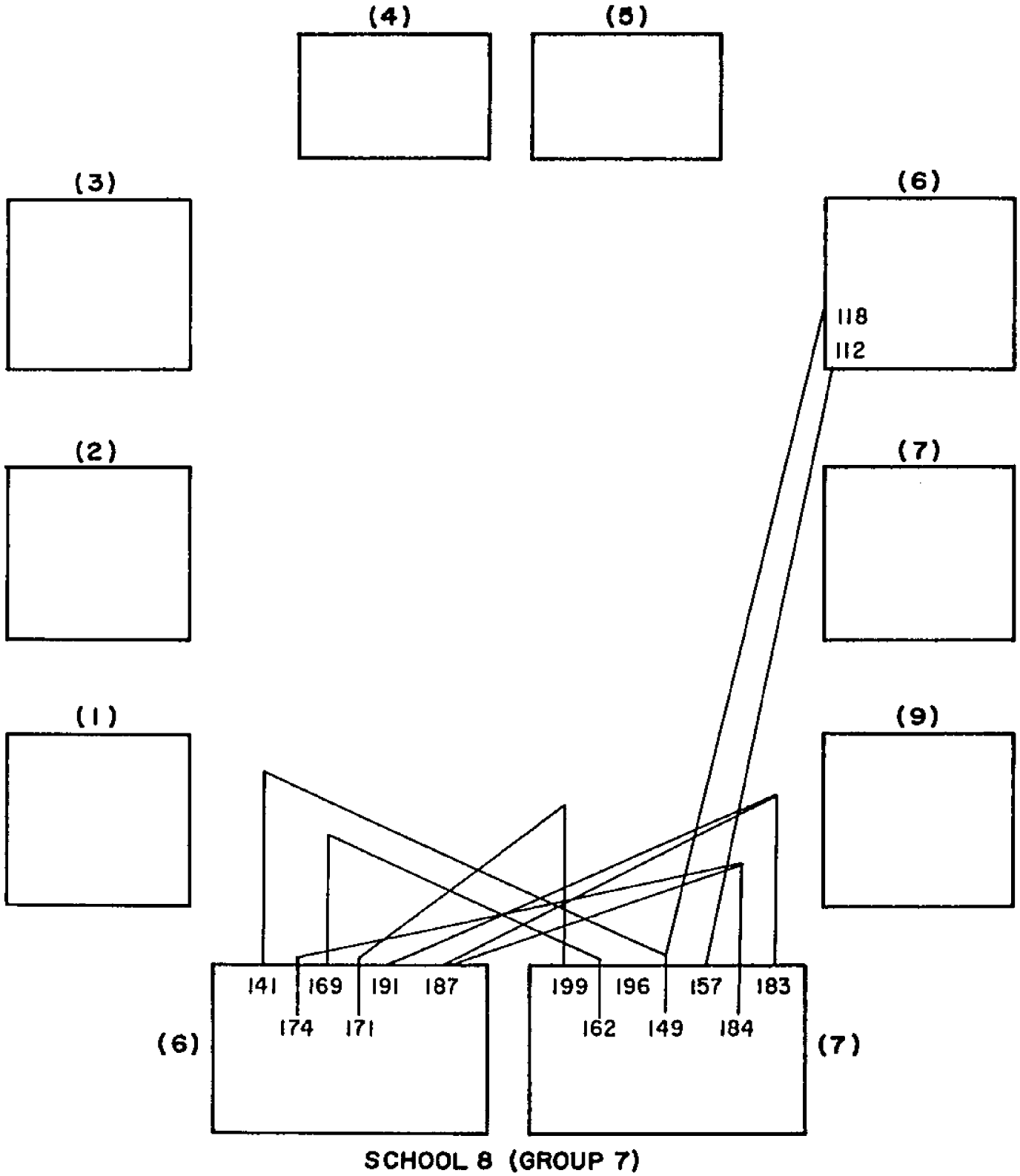


Fig. 4-26.--Individual school analysis of bridge links in the total innovation network; school 8 (Group 7)

TABLE 4-15.--Analysis of districts' bridge and liaison communication connections for the innovation function

Liaisons					Bridges				
School	Number of Liaisons	Total Number of Liaison Contacts	Percentage of Individual School Population	Percentage of Total Number of Liaisons	Number of Bridges	Number of Bridge Contacts	Percentage of Individual School Population	Percentage of Total Number of Bridges	Total Bridge and Liaison Contacts
1	1	3	5%	7%	7	15	33%	14%	18
2	0	0	0	0	0	0	0%	0%	0
3	1	10	4%	7%	4	10	15%	9%	20
4	2	34	9%	13%	4	7	16%	9%	41
5	0	0	0	0	8	13	38%	16%	13
6	0	0	0	0	10	14	37%	20%	16
7	1	7	2%	7	0	0	0%	0%	7
8	9	115	9%	60%	9 (Group 6)	15	9%	18%	138 (36 outside connections 132 with school connection)
					7 (Group 7)	8	8%	14%	
9	1	11	8%	7%	0	0	0%	0%	11
	15	180			49	82			262

linkages there are a total of 262 communication links that exist for the function of innovation within the system.

School Eight has the greatest percentage of liaisons at 60 per cent and the most liaison connections (nine). It is important to recall that many of these are within School Eight connections. The liaisons are composed of 9 per cent of the School Eight population.

There are a total of sixteen bridge links in School Eight with twenty-three connections. The bridges represent 32 per cent of the total district bridges and 17 per cent of the School Eight population. Many of the bridge connections represent connections within School Eight. School Eight has a total of 138 bridge and liaison connections.

School Four has the second greatest number of communication connections with a total of forty-one. Most of these occur at the liaison level. School Four has 13 per cent of the total number of liaisons in the district. There are four bridges with seven connections in School Four. They compose 9 per cent of the total number of bridges in the system.

School Three has one liaison with ten connections. They have four bridges with ten connections, for a total of twenty communication contacts. School One has one liaison with three connections and seven bridges with

fifteen linkages for a total of eighteen communication contacts. Thirty-three per cent of the total School One population are bridges. School Six has no liaison connections but has ten bridge links with fourteen connections. Thirty-seven per cent of their population are bridges. They represent 20 per cent of the total bridge members. School Five has no liaison, but has eight bridges with thirteen connections. Thirty-eight per cent of School Five members are bridges and compose 16 per cent of the total bridge population. School Nine has one liaison with eleven contacts. Eight per cent of School Nine are liaisons. There are no bridge links in this school. School Seven has one liaison with seven connections and represents 2 per cent of the School Seven population. There are no bridge connections located within this school. The data did not locate either liaisons or bridges for School Two.

The network study gives massive data for analysis but does offer suggestions for persons who need to communicate and disseminate innovation into their school system. Though the data are not as definitive as one would like, they do suggest that there is a connection between presence of liaisons and bridges and awareness-implementation level of the innovation, at least at the elementary school level.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND DISCUSSION

Chapter V will be devoted to a summary of the study, followed by a discussion of the conclusions generated from the analysis of the data, recommendations for the district, and a general discussion of the study.

Summary

1. The basic purpose of this study was to analyze the diffusion of innovation within a school system, by introducing an innovation (School Within a School) into a district.
2. Closely allied to this purpose was the desire to ascertain if the use of a unique approach to diffusion would: (1) ensure the establishment of one pilot SWS classroom in the system, and (2) get the innovation information to staff members in the most efficient manner so that adoption/nonadoption decisions could be made.

3. The study additionally sought to determine if the characteristics, perceptions of the staff, and external contacts of the staff affect the awareness-implementation level of the innovation.

4. To explore the school system as a bureaucratic structure, its communication flow in three organizational functions, and its individuals in relationship to the total system was a further purpose of this study and the major reason for doing a network analysis of the district.

5. Another purpose of the study was to find the liaisons and bridges in the system through the network analysis study and to have this information for a change agent to diffuse innovation.

In order to accomplish these purposes hypotheses were developed, the communication network of the total district was described, and change agent contact was maintained for the 1973-1974 school year. These elements will be discussed later in this chapter under conclusions.

Review of the Literature

A review of the literature for the study consisted of an analysis of the historical development of network analysis in both the field and laboratory settings. The diffusion literature was examined for its relationship to education and to this particular study.

Findings of previous studies in both of these areas which were of significance to the diffusion problem or to the study were as follows:

1. The belief that ideas are transmitted through networks.
2. The development of a network analysis program technique permits an analysis of a large social system and assigns roles to each person in the network.
3. Centralized networks (e.g. wheel, Y) are generally more efficient when the task is simple.
4. Decentralized networks (e.g. circle, comcon) are more efficient when the task is complex.
5. Decentralized networks are more satisfying to group members regardless of the kind of task.
6. A considerable time lag is required for the widespread adoption of new educational practice. The average school lags twenty-five years behind the best practice.
7. The pattern of adoption of an educational idea over time approaches an S-shaped curve.
8. Educational systems are bureaucratic. Schools desire to innovate, therefore change in a bureaucracy is group, not individual, change.

9. Support and help for staff are necessary for change to take place.

10. Each change model must be modified to meet the particular needs of its participants.

Design of the Study

In order to meet the purposes of this study several steps were taken. First, a proposal was submitted and accepted by the Superintendent of the sample district (see Appendix A). Second, a diffusion model was modified for use with this school system and plans made for diffusion of the proposed innovation based on this model were designed and utilized. Third, a three-part survey form (see Appendix B) was designed to measure the following elements:

1. Awareness-implementation level of the innovation after a four-month diffusion effort.

2. Awareness-implementation level of the innovation in relation to: (a) Characteristics of the population; (b) External contacts of the population; and (c) Perceptions of the population.

3. Individual school characteristics and perceptions of staff in School One compared to School Two, etc.

4. The internal and external communication network of the population for the functions of maintenance, production, and innovation.

Fourth, using the data from the survey, assume the role of change agent to diffuse information on the innovation. Fifth, establish a pilot SWS program in one of the elementary schools by September, 1974.

Conclusions

It is important to reiterate that the conclusions drawn from this case study of this population can be generalizable to other school systems only to the extent to which the systems are similar. Further study must be undertaken in many kinds of districts which may or may not add credence to the conceptualization of change explored for this study.

For added reflection the author also wishes to remind the reader that there are many different kinds of innovation introduced into school systems. The diffusion of a new reading program requires different change models and strategies than an innovation which requires philosophical change. It is the author's contention, however, that the same communication flow network utilized for this study can be fruitfully applied to diffuse many types of innovation.

This has not been a typical diffusion effort. No attempt was made by the change agent to force the innovation on the staff. It is the belief of the author that there is a very real moral-philosophical issue involved in the utilization of the network analysis. Trust, openness, and honesty must be maintained with staff members. The results of the analysis must be shared with staff in an open atmosphere for the maximum mutual benefit of the total system.

The statistical analysis of the data led to the following conclusions based on the results of the study:

1. There is a positive correlation between the awareness-implementation level of the innovation and teaching level of the respondents.

2. There is a strong positive relationship between highest degree held and the awareness-implementation level of the innovation. As degree status increases so does the awareness-implementation level of the innovation.

3. There is a positive relationship between years of teaching experience and the awareness-implementation level of the innovation. Those with less than one year of teaching experience and with more than twenty-one years of experience are less aware of the innovation than the remaining

population. Staff members with sixteen to twenty years of experience are more aware of the innovation than other respondents.

4. There is no significant relationship between number of courses taken beyond the last degree and the awareness-implementation level of the innovation.

5. There is no significant relationship between frequency of contact with a university staff member and the awareness-implementation level of the innovation.

6. There is a positive correlation between frequency of attendance to inside conferences and awareness-implementation level of the innovation.

7. There is a positive correlation between frequency of attendance to outside conferences and the awareness-implementation level of the innovation.

8. There is no correlation between frequency of communication about educational programs with staff from other school districts and the awareness-implementation level of the innovation.

9. There is no relationship between perceptions of staff about how the district ranks in trying new instructional programs and the awareness-implementation level of the innovation. Those

respondents who perceive the district as having a high tendency to try new programs show the greatest mean awareness-implementation level.

10. There is no statistically significant relationship between perceptions of staff about level of immediate superior encouragement to try new instructional programs and the awareness-implementation level of the innovation. However, those respondents in individual schools who perceive their immediate superior as always encouraging them to try new instructional programs show the highest awareness-implementation level of the innovation. This suggests that very positive attitudes from superiors tend to have some impact on those respondents.

11. There is no statistically significant relationship between perceptions of staff about the proportion of staff who get asked about or are involved in discussing the merits of a new program and the awareness-implementation level of the innovation.

12. There is no statistically significant relationship between perceptions of staff concerning the proportion of the teaching staff given the final vote in the decision-making process and the awareness-implementation level of the innovation.

13. Because of the problem of assigning values of the various category of decision-makers the hypothesis listing was not done with this variable.

14. There is a positive correlation between perceptions of staff concerning proportions of time programs recommended by a vote of the teachers are carried out by administrators and the awareness-implementation level of the innovation. Respondents who perceive that administrators more often carry out new programs recommended by a vote of the teachers have higher levels of awareness-implementation of the innovation.

15. There is no correlation between perceptions of staff concerning the type of decision-making process (autocratic-democratic) in the school system and the awareness-implementation level of the innovation.

16. There is a positive correlation between frequency of change agent contact and the awareness-implementation level of the innovation.

17. Positive correlation between more liaison and bridge connections in elementary schools and higher awareness-implementation level of the

innovation has been established. The data are not available for conclusions concerning the middle schools or the high school.

In analyzing the total network of internal and external connections in the maintenance, production, and innovation function the following conclusions were made:

1. Each function generally has a different set of liaison connections. Members are seldom liaisons in more than one function.
2. Bridge links are likely to maintain their status in all three of the organizational functions surveyed.
3. The composition of the groups does not change significantly for the total external and internal connections for the three functions studied, except for School Eight in the innovation function and School Two in the maintenance function.

In observing the external connections for the maintenance, production, and innovation of the school system the following conclusions were reached:

1. There are no linkages and minimal group formation outside of each individual school for the maintenance function.

2. Members who form the small external contact groups for the maintenance function are special staff such as music teachers, etc.

3. There are few external linkages for the innovation function of the district.

4. There are more external linkages in the production function than in the maintenance or innovation function of the system.

5. Only a small percentage of the members of the total system have group membership, liaison, or bridge roles in the external groups formed for the three functions studied. The majority of the school system members are isolated and have no contact with other staff members outside of their own school.

In examining the data on liaison connections for the innovation function the following conclusions were reached regarding the liaison.

1. Liaisons differ markedly in the number and scope of their contacts in the innovation function. Some connect to only one other school within the system. Others have connections to two or more schools within the system. The number of contacts each liaison has in each school varies from one to many.

2. Liaisons are most frequently members of the organization with special functions that bring them into contact with different schools and groups within the system for the innovation function.

An exploration of the data on bridge connections in the innovation function resulted in the following conclusions:

1. Bridges differ markedly in the number and scope of their contacts in the innovation function. Some have contacts in only one other school; others have contacts to many other schools within the district. Some bridges have contact with only one member in another school; others have more than one contact in another school.

2. More bridges than liaisons are found within an organization for the innovation function. There were forty-nine bridges and fifteen liaisons in the district for the innovation function.

3. The number of external contacts per liaison member is generally greater than the number of external contacts per bridge member in the innovation function.

4. Three schools (Two, Seven, and Nine) have no bridge connections to or from other schools for the innovation function.

Perusal of the total data has led to the following conclusions:

5. In Schools One and Four where there has been strong change agent contact it should be noted that these schools fall consistently above the total mean in awareness-implementation level of the innovation and in the hypothesized connection with selected characteristics and perceptions of staff. One of the schools (School One) also has the greatest total number of bridge and liaison connections in the district for the innovation function and it is high on the awareness-implementation scale.

6. When schools fall below the mean awareness-implementation level there is a tendency for them to fall below the mean individual school level in characteristics and perceptions of staff (Schools Five and Eight).

Implications

The implications which can be drawn for this study are significant to all educators interested in the diffusion of innovation. If the attainment of bringing the

best instructional practices into the schools in a reasonably short time is the goal of school districts, then it is essential that a close examination of the total staff and the communication network of the system be open for analysis.

This study has demonstrated that school systems are composed of relatively isolated groups for the function of maintenance, production, and innovation. Only a small percentage of staff have communication connections to other schools. Many staff members of the larger schools are composed of isolates or isolates with only one contact. It is, indeed, not surprising that innovation does not flourish in the schools, but exists only in certain schools with particular kinds of leadership and staff.

Innately, perhaps, teachers recognize the value of communication with others. An interesting facet of this study was that many of the items felt by the researcher to be of importance to the awareness-implementation level of the innovation were not significant. Instead, teachers selected as very significant two items--frequency of attendance to outside and within district conferences--as being related to awareness-implementation level of the innovation. Teachers appear to recognize the value of interaction with peers.

This study leads to another interesting observation. Administrators/special services and middle school personnel have the highest awareness-implementation level of the innovation. They represent the smallest portion of the population. Although they may be aware of the innovation, particularly the administrators/special services group, no channel to communicate that awareness was apparent. The ramifications and value of this study then are to show that some channels do exist for the diffusion of innovation, but are not currently being utilized.

Years of teaching experience also are correlated with awareness-implementation level of the innovation. Those most aware of the innovation are staff members with sixteen to twenty years of teaching experience. This could dispel the notion of many that innovation is brought into the system by fresh young graduates. It reiterates instead that it well might be the experienced teacher that is aware of new ideas. The adoption of these ideas into actual practice is not covered by the study. The teachers most interested in trying a pilot program, however, were those with a number of years of experience.

The fact that there is a significant relationship between perceptions of staff concerning the proportion of staff involved in making the final decision on a new program or adopting a program voted on by the teachers

and the awareness-implementation level of the innovation is illuminating. The implication here is that when staff members feel they are respected enough to make a final decision they explore and consider possibilities for change. Perhaps there have been too many drawers filled with too many wasted plans and time-consuming ideas for teachers to accept freely changes suggested by others.

This study has attempted to investigate the diffusion of innovation within a school district utilizing a unique technique. It describes the communication system that exists within this educational institution, and it is hoped that the recommendations that follow will serve to facilitate communication in the future.

Recommendations for the District

1. With the permission of all of those participating in the study, the results of the study should be communicated to staff for discussion and questions.

2. A research and development team should be selected in each school to meet one-half day a month in their school and one day a month as a total team to exchange ideas and new concepts. This committee should be responsible for one teacher's meeting per month for the purpose of

disseminating and obtaining new ideas for development and consideration.

3. Ideas deemed worthy of support and consideration for use in the schools should be presented to the Curriculum Council for final adoption.

4. The Curriculum Council should be composed of the following:

   (a) One teacher representative from each school (consideration should be given to including those teachers who the data suggest serve liaison or bridge roles)
   (b) One teacher association executive board member
   (c) One principal
   (d) One central administrator
   (e) One board of education member
   (f) One parent from each school level
   (g) One student from each school level

   This body should be given final adoption/non-adoption power of proposals presented to them on curriculum issues.

5. A total of one-half day per month should be devoted to conferences within the school system. The option of attending these conferences should

be the choice of the teacher. Other choices, such as visiting other districts, etc., could be initiated by the teacher. Each school should be responsible for setting up one conference and if feasible it should be held in that school.

6. Teachers should be allowed one conference day per year to attend outside conferences. Participation in state and national conferences should be encouraged on a rotating basis.

7. Joint staff meetings of elementary, middle, and high school staff should be instigated when the issues are appropriate. The data indicate that there has been limited contact between high school and elementary staff.

8. The teachers' association should take a leadership role in initiating workshops, promoting professional growth opportunities, and opening communication channels between staff members.

9. An inter-school bulletin should be formed for the purpose of exchanging ideas and promoting awareness of what is occurring in the district educationally.

10. Unique classrooms, ideas, or practices should be reported to local newspapers.

11. Editors from the local newspapers should be encouraged to set up a column called the Teacher's Forum, which could act as a repository of new concepts, ideas, or practices.

12. Building administrators should be encouraged to observe and analyze the communication patterns within her/his school for the purpose of improving the linkages among all staff members. A reassessment of classroom assignments should be considered if appropriate.

13. Ten minutes of each staff meeting should be designated to acknowledging or introducing an idea or concept being considered or used by a staff member.

14. Building administrators should invite staff members from other buildings to visit their school to share ideas and exchange dialogue with other staff members.

15. Building autonomy, though having some advantages, tends to hamper communication flow and exchange; therefore, planned efforts toward creating communication channels among buildings should be made.

Recommendations for Further Research

1. Communication network studies done in other school systems, both similar and dissimilar to the system explored for this study, should be undertaken.

2. The network analysis should be done in the first month of the school year so that change agent contact can be made with the designated liaisons and bridges throughout the school year.

3. After introduction of the innovation has been accomplished it would be profitable to survey the district for awareness-implementation level at the end of the study as well as at the four-month stage.

4. A complete network analysis, excluding the other elements used in this study, would be of great value. All of the network functions should be thoroughly examined, with a view to identifying the nature of the communication networks which will satisfy each of the organizational functions--production, maintenance, innovation--most efficiently. Closer attention should also be given to group connectedness and dominance.

5. Studies should be undertaken in other districts to see if the external linkage system found in

this district will be similar. The factor of whether a system which is not similar and perhaps more or less innovative could have interesting implications for those interested in the change process.

Discussion

The reader has by now undoubtedly missed in the analysis and summary much mention of the role played by the author as a change agent or the final implementation of a SWS pilot program. Upon reflection of these missing components, it is tempting to title this last portion of the study--REALITIES.

Briefly in reflecting upon the change agent role, a very real attempt to follow the planned strategy was attempted; however, a parallel circumstance constantly hampered progress. This district became engaged in a bitter teacher association-administration grievance dispute. The planned strategy for diffusion became entangled in the struggle. During some periods of the study it was deliberately planned to use only personal change agent contact where teachers requested it. Innovative negativism reigned in many schools. Very possibly the study could not have been accomplished had the author not had long personal contact with many staff members.

There will be no SWS pilot program in this district for the 1974-1975 school year. Though a small

number of teachers indicated an interest and desire to proceed with the program and spent time during Easter vacation working with the change agent, reality once again prevailed. Ultimately there was no administrator willing to implement the program, with the ramifications it imposed.

APPENDICES

APPENDIX A

A PROPOSAL TO INTRODUCE THE "SCHOOL WITHIN A SCHOOL" CONCEPT TO THE SCHOOL DISTRICT

APPENDIX A

A PROPOSAL TO INTRODUCE THE "SCHOOL WITHIN A SCHOOL" CONCEPT TO THE SCHOOL DISTRICT

WHY?

Rationale

This proposal is an attempt to find a creative solution for meeting the educational and psychological needs of a diversified student population in the _____ District.

We respectfully recognize the efforts of the staff in making our present educational system flexible, academically rewarding, and emotionally satisfying for many of our students. It is appropriate that we finally resolve the problems of students who are not challenged and are unable to reach their potential in the existing classroom structures, and provide for them an alternative learning environment. Further, it is evident that some parents desire and should be able to select, from a variety of alternatives, the type of learning situation they deem most favorable to their child's development.

It is imperative that we become cognizant of and activate what empirical research has substantiated about how humans acquire and use knowledge.

If schools are to become relevant institutions where students can learn to meet the demands of an increasingly pluralistic society, as well as a place where students can explore their potential as a vital interacting member of society, then we must provide the educational design which gives this opportunity. It is imperative that we become accountable for and be able to describe each classroom environment existing in our district. Further, the intellectual and theoretical base upon which each teacher creates her/his total classroom atmosphere should be subject to close examination for its validity to how children learn.

The intent of this proposal is to provide on a pilot basis, in one elementary school, an educational setting called "School within a school" or SWS.

Theoretically the environment we propose is based on sound empirical research and encompasses the work of Piaget, Kolberg, and Smith.

The goals, environmental description sheet, educational design, staffing patterns, characteristics, and implementation plan constitute the remainder of this proposal.

WHAT?

Selected Goals

1. To encourage each child to identify and understand his/her aptitudes, abilities, interests, aspirations, and needs.

2. To help each individual realize the uniqueness of his/her intellectual, physical, and social capacities.

3. To relate learning to life roles and assist all individuals in developing values and skills which will improve their potential for more effective living as children, youth and adults in their family and citizen roles.

4. To help each student recognize what educational opportunities exist within the school system for his personal and social growth and development.

5. To develop alternatives for student self-direction in our age of increasing individuality with emphasis on decision making and choosing among options.

6. To provide experiences that will encourage the individual to relate in a positive way to a variety of environments.

7. To create an environment that is responsive to the needs of children who are or will be enrolled in the school, and to initiate means by which changing needs can be met.

8. To provide maximum opportunity for continued development in academic areas (math, reading, science, arts, etc.) with emphasis on student center learning.

9. To encourage the use of community resources as a part of alternative school experiences.

10. To continuously evaluate the degree to which the above goals are being met.

WHAT?

Environmental Description Sheet
School Within a School (SWS)

Philosophy

The learner is viewed as having his own control system which generates goals, and strategies to reach those goals, by means of sensory feedback information that functions to correct or redirect action. Behavioral responses are structured according to spacial patterns of stimulation. The amount of information the learner processes from his environment is less important than how he learns to combine and organize those stimuli. The teacher acts as a facilitator in a cybernetic environment.

Learning Theory

Cybernetic--Smith
Cognative--Piaget

Transmission of Knowledge

Knowledge-Stimuli-Feedback-Learner-Facilitator

Description of Environment

The learner determines by conscious choice to accept or reject knowledge perceived on the basis of his own experience, therefore autonomy of learning pursuits is maintained. The student makes most of the decisions concerning the why, what, how, and when of learning.
Self-established goals
Most controls are internal
Self-control perceived as more important than external control
Emphasis on knowledge of self and understanding of self in relationship to others.
Education is a process
Student evaluation is carried on by the students and shared with parents and friends.

WHAT?

Educational Design

Setting: This team will be composed of approximately 90 multi-age students (5-11 years old) and 8-12 staff. They will be considered a family unit. A large enclosed area will provide four major learning centers in Communication, Math-Science, Social Science, and the Arts as well as an Instructional Materials Center.

Outer constraints for students:

1. Two hours per day must be scheduled in a basic skill area unless the student has demonstrated mastery in all of the basic skill areas.

Staffing considerations:

1. Each team member is selected on the basis of their competency in one of the cognative areas--their demonstrated ability to work in an open environment--their ability to relate well to others--and their willingness to work as a member of a family unit--and their desire to work in this kind of environment.

2. Each learning center will have a team member competent in each skill area.

3. Community resources will be surveyed for possible school connection. People will be surveyed for possible competencies that children would be interested in learning such as movie-making, mechanics, etc.

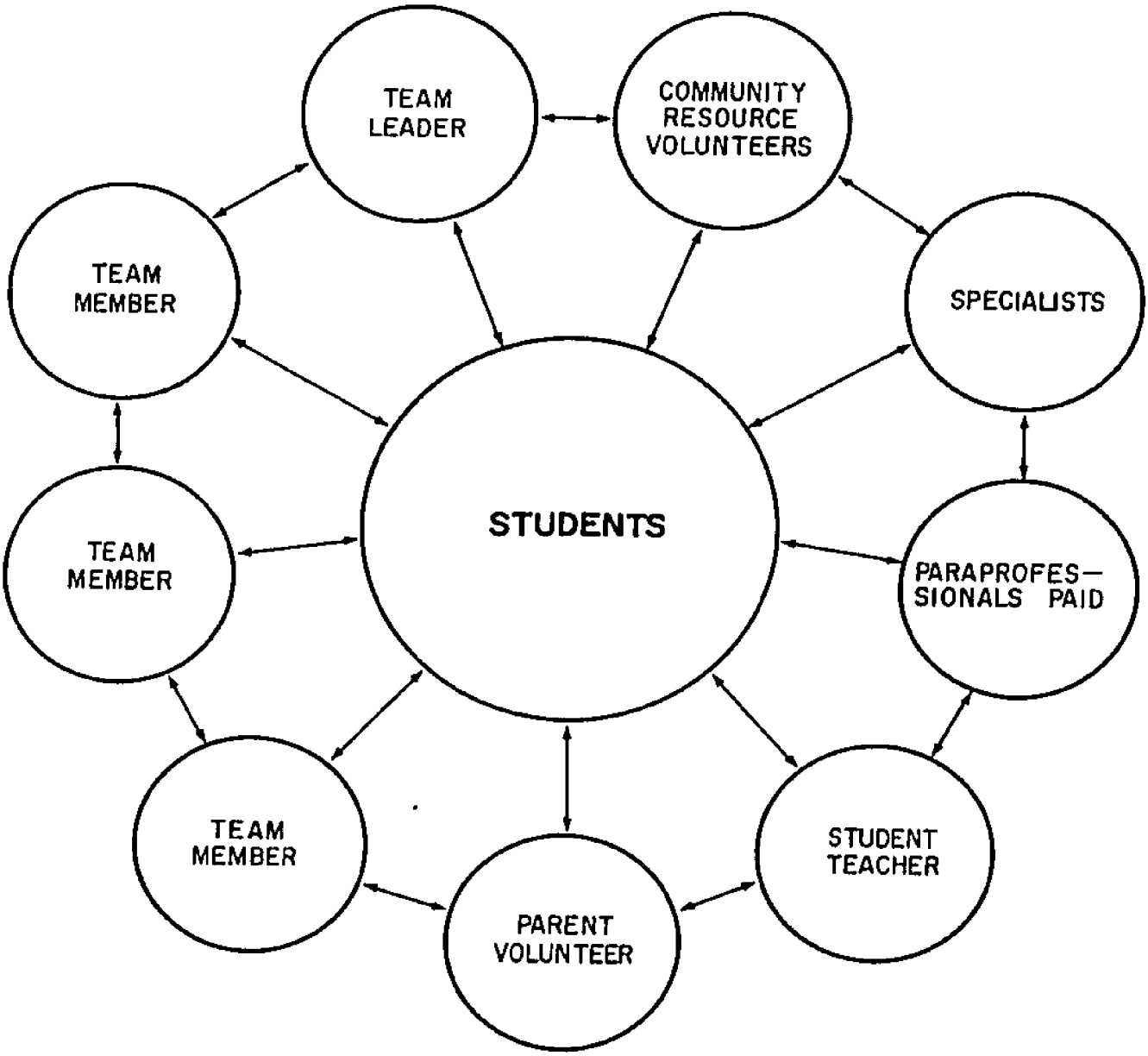
Learning Centers

Each Learning Center will contain a variety of individualized basic skill programs and enrichment materials. Community resource personnel will serve as resource to the appropriate Learning Center.

WHAT?

Model One

Classroom SWS--Staffing Arrangement



90 STUDENTS
15 STUDENTS FROM EACH AGE LEVEL: 5-11 YEARS OLD

WHAT?

Characteristics of SWS

1. A rich assortment of materials, providing abundant opportunities for children to learn from experiences.

2. Children have freedom to move about the room, and to some extent outside the school, in pursuit of learning activities.

3. Children are able to explore deeply an interest in an environment where there often is a variety of activities going on simultaneously.

4. Children have the freedom and time to talk with one another--to share experiences openly; where they know that talking and interaction are acceptable behaviors.

5. The teacher shows respect for the children's ideas, feelings, and action and rarely finds the need to commend or reprimand.

6. There are a minimum number of restrictions determined by the clock, providing a flexible schedule that permits more natural engagement and disengagement inactivities.

7. Conflict in the team is recognized and resolved by students and the teacher, and is not handled by the teacher alone, solely through punishment, reward, or exclusion.

8. The teacher feels secure in working without a predetermined, set curriculum or fixed time period.

9. Children's learning is frequently a cooperative enterprise, with children helping each other and sharing with others their joint efforts.

10. The teacher tends to give children small, concentrated amounts of her time rather than giving general attention to the children as a group all day.

11. The teacher actively seeks further information about the community, and physical, cultural, and human resources and makes ample use of them in the team.

12. Students' academic activities are centered on the development of skills and concepts as the children perceive them to be needed. There are few obvious barriers between subject matter areas, and much of the children's activity is interdisciplinary in nature.

13. The teacher sees herself as simply one of many sources of knowledge and attention in the team, and may guide the children to a variety of sources both within the team and out of it.

HOW?

Implementation of SWS

1. Ideas presented to Curriculum Council for discussion by superintendent and researcher

2. Survey school district for teachers interested in open classroom environment and for teachers who have existing open classrooms.

3. Provide paid summer workshop with possibility of college credit for interested staff.
   A. Use summer enrichment program for children as demonstration and training center for Classroom Z concept teachers.
   B. University personnel hired as consultants and trainers. Together teachers and university staff develop an environmental description and communication techniques in interpersonal and group relations. This will occur as an ongoing process throughout workshop as they observe and participate with trained personnel in Classroom Z concept.
      1. Demonstration and development of individualized materials-teacher made and published--opportunities for direct experience in using.
      2. Observation and participation in interpersonal and group networks relating to both children and as a total group.

4. Among workshop participants select a team for a pilot program at one elementary school.

5. Continuous evaluation and testing throughout the year with university personnel support brought in as needed.

6. Monthly reports of projects progress given at curriculum council, in teacher newspaper, and bi-yearly letter to parents.
   A. Special attention given to inviting news media in during the year.
   B. Parent volunteers used to speak to interested groups about Classroom Z.
   C. Special invitations sent to teachers and parents several times during the year to visit.

7. Year-end evaluation report prepared by team and presented to Board of Education and Curriculum Council.

8. Diffusion to other schools

APPENDIX B

SURVEY FORM

CODE NUMBER _____

SURVEY FORM I

School Within A School		
YES	NO	UNCERTAIN

1. Are you aware of the following concept?
2. Have you been interested enough in this concept to want more information?
3. Have you sought more information about this concept?
4. After seeking more information about this concept, have you considered using it in your school?
5. Are you participating in implementing plans for this concept in your school in any of the following ways:
   a. On a committee
   b. Experimenting in class
   c. Other

SURVEY FORM 2

CODE NUMBER_____
GRADE LEVEL NOW TEACHING_____
SUBJECTS YOU TEACH_____
HIGHEST DEGREE YOU HOLD_____

1. How many years have you been connected with this school system?
   (1)__1-2 years (4)__11-15 years (7)__26 or more
   (2)__3-4 years (5)__16-20 years
   (3)__6-10 years (6)__21-25 years

2. How many years have you taught school?
   (1)__none (4)__6-10 years (7)__21-25 years
   (2)__1-2 years (5)__11-15 years (8)__26 or more
   (3)__3-5 years (6)__16-20 years

3. How many years have you served as a school administrator?
   (1)__none (4)__6-10 years (7)__21-25 years
   (2)__1-2 years (5)__11-15 years (8)__26 or more
   (3)__3-5 years (6)__16-20 years

4. During the past three years, how many courses have you taken beyond the last degree you received?

   _____

5. How frequently do you have contact with a university staff member? (Use most convenient line)
   _____ times a week
   _____ times a month
   _____ times a year

6. How many different conferences and/or professional meetings outside of your school district during the past 12 months?

   _____

7. How many conferences, seminars, or workshops have you attended within your school district during the past 12 months?

   _____

8. What would you estimate is your frequency of communication about educational programs with staff in other school systems? (Use most convenient line)
   _____ times a week
   _____ times a month
   _____ times a year

9. What professional organizations do you belong to? (Please list)

_____

_____

10. What community organizations do you belong to? (Please list)

_____

_____

11. What publications do you read concerning teaching?
1. __none
2. __Bulletins, pamphlets
3. __Popular magazines
4. __Professional journals (Please name)_____

_____

_____

5. __Other_____

12. When it comes to trying new instructional programs my school district tends to be: (Put mark on line where you think this district falls)

_____

first average last

13. When it comes to trying new instructional programs my immediate superior:

_____

always encourages me	occasionally encourages me	seldom encourages me	never encourages me

14. When your school system is considering new programs, who gets asked about or is involved in discussing the merits of the new program?
a. ___none of the teaching staff is consulted
b. ___some group within the teaching staff is consulted (i.e. Curriculum Committee)
c. ___some group from within the affected faculty is consulted
d. ___entire teaching staff is consulted
e. ___other (Please explain)_____

_____

15. After the various forms of consultation and discussion, a final decision among the teaching staff may be made. Please indicate who on the teaching staff is given the final vote in the decision-making process
a.___none of the teaching staff is given a vote
b.___some group within the teaching staff is given a vote (i.e. Curriculum Committee)
c.___some group from the affected teachers is given a vote
d.___all affected teachers are given a vote
e.___entire teaching staff is given a vote
f.___Other (Please explain)_____

_____

16. Who makes the final decision on the adoption or nonadoption of a new program?

_____

17. How often does the administration of your school system carry out the action concerning new programs recommended by a vote of the teachers?
a.___nearly always
b.___about 3/4 of the time
c.___about 1/2 of the time
d.___about 1/4 of the time
e.___hardly ever
f.___never

18. Considering the decision-making process in your school system, would you say the process is:

_____

very autocratic — very democratic

SURVEY FORM 3

CODE NUMBER_____

INSTRUCTIONS

1. On the attached checklist are spaces for certain information about your communication with other members of your school district. You will be asked: the names of people you contact, how frequently you communicate with them, and the general function that each contact serves.

2. While names are needed to reconstruct the communication networks, I assure you that no one but me will see any of the names you list, and that they will be coded by number in the research study.

3. On the first page you are asked to list the names of any staff member in your school that you communicate with. On the second page you are asked to list the names of any staff member you contact in other schools in the district. I have attached a list of all of the professional staff members of the district as well as central administrators for your convenience.

4. "Communication" includes: face-to-face conversation, formal or informal meetings, memos, letters, intercom, telephone conversations, etc.

5. People in organizations usually talk with one another to accomplish three goals: (1) getting the work done, which is called PRODUCTION; (2) finding new ways of doing things, which is called INNOVATION; and (3) dealing with people's problems, which is called MAINTENANCE. In the pages that follow, you will find these three goals listed along with a short description of each. You are asked to list the names of all the people with whom you communicate at least once a month about these goals. Indicate by checking the right box how often you communicate with each person about these goals. Your communication with a person may include all three goals, any two, or only one.

EXAMPLE:

BETA SCHOOL	MAINTENANCE: Interpersonal relations; setting rules; monitoring peoples' behavior; settling arguments; helping others; counseling people				PRODUCTION: Telling; Asking how to do things; decreasing errors; meeting deadlines; "Getting the work out:				INNOVATION: New ways to do things; New things to do; New sources of information; New channels for communicating			
	HOW OFTEN?				HOW OFTEN?				HOW OFTEN?			
	1	2	3	4	1	2	3	4	1	2	3	4
	More than once a day	Once a day	Once or twice a week	Once or twice a month	More than once a day	Once a day	Once or twice a week	Once or twice a month	More than once a day	Once a day	Once or twice a week	Once or twice a month
Able, Mary			X			X						
Brown, John										X		

CODE NUMBER_____

YOUR SCHOOL

_____

LIST NAMES BELOW	MAINTENANCE: Interpersonal relations; Setting rules; Monitoring people's behavior; settling arguments; Counseling people — HOW OFTEN?				PRODUCTION: Telling or asking how-to-do things; Decreasing errors; Meeting deadlines; "Getting the work out" — HOW OFTEN?				INNOVATION: New ways to do things; New things to do; New sources of information; New channels for communicating about something. — HOW OFTEN?			
	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month

CODE NUMBER_____

PEOPLE YOU COMMUNICATE WITH FROM OTHER SCHOOLS

LIST NAMES BELOW

	MAINTENANCE: Interpersonal relations; Setting rules; Monitoring people's behavior; Settling arguments; helping others; Counseling people. HOW OFTEN?				PRODUCTION: Telling or asking how-to-do things; Decreasing errors; Meeting deadlines; "Getting the work out" HOW OFTEN?				INNOVATION: New ways to do things; New things to do; New sources of information; New channels for communicating about something. HOW OFTEN?			
	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month	1 More than once a day	2 Once a day	3 Once or twice a week	4 Once or twice a month

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