This dissertation has been
microfilmed exactly as received 67-1788

PETERMAN, Lloyd Edward, 1925-

THE RELATIONSHIP OF IN-SERVICE EDUCATION TO THE INNOVATIVENESS OF THE CLASSROOM TEACHER IN SELECTED PUBLIC SECONDARY SCHOOLS IN MICHIGAN.

The University of Michigan, Ph.D., 1966
Education, administration

University Microfilms, Inc., Ann Arbor, Michigan

THE RELATIONSHIP OF IN-SERVICE EDUCATION TO THE INNOVATIVENESS OF THE CLASSROOM TEACHER IN SELECTED PUBLIC SECONDARY SCHOOLS IN MICHIGAN

by

Lloyd E. Peterman

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in the
University of Michigan
1966

Doctoral Committee:

Professor Lester W. Anderson, Chairman
Professor Russell E. Bidlack
Professor Stanley E. Dimond
Associate Professor Byron G. Massialas

Abstract

THE RELATIONSHIP OF IN-SERVICE EDUCATION TO THE INNOVATIVENESS OF THE CLASSROOM TEACHER IN SELECTED PUBLIC SECONDARY SCHOOLS IN MICHIGAN

by Lloyd E. Peterman

Purpose

The purpose is to study the relationship of the participation of teachers in in-service education to the innovativeness of the classroom teachers. It is important to determine whether the in-service education is effective in fostering innovations.

Method

The data were gathered from 16 suburban Michigan high schools with from 30 to 70 faculty members and with operating costs ranging from $350 to $450 per pupil per year.

Questionnaires were mailed to principals to determine the extent of the in-service education program in each school. Questionnaires were administered to the faculties of four schools with relatively strong in-service programs and to four with relatively weak programs.

The teacher questionnaires measured teacher participation in in-service education, teacher perceptions of the extent to which their principal promoted in-service education and change, the number of classroom innovations, and the

sources of ideas for the innovations.

Correlations of the data from both questionnaires were calculated to test the hypotheses. Chi-square tests of the differences among schools were calculated to validate the correlations.

Results

The data support the following hypotheses:

1. Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation in in-service education have greater participation by teachers than do schools in which the principal takes a less active role.

2. Teachers get more ideas for innovations from sources outside their school system than from inside sources.

The data do not support the following hypotheses:

1. Teachers who have a higher frequency of participation in in-service education have a higher number of innovations in the classroom than do teachers with a lower frequency of participation.

2. Teachers who received financial compensation or released time for participation in in-service education participate to a greater extent in in-service activities than teachers who do not.

3. Teachers who perceive of the principal as promoting change have more innovations in the classroom than teachers who perceive of the principal as not promoting change.

The data support the following:

1. Teachers who have more contacts with outside sources through in-service education have more innovations in the classroom.

2. The activities of the principal affect the participation of teachers in in-service education.

3. Classroom visits by the principal positively affect in-service participation and innovativeness of teachers.

4. Principals are not a major source of ideas for classroom innovations.

5. Teachers who receive compensation for graduate work do more graduate work than teachers who do not receive compensation.

Conclusions

The study has the following implications for school administration:

1. Principals are likely to increase participation in in-service education by classroom visitation and by providing more opportunities for in-service participation.

2. Principals are likely to foster innovations in the classroom by classroom visitation and by increasing teacher contacts with outside sources of ideas through in-service education.

3. Administrators are likely to increase graduate work by teachers by providing compensation for graduate work.

It is recommended that further study be done to determine the scope of the in-service activities, the adoption of

the innovations, and the effectiveness of the innovations reported by teachers.

ACKNOWLEDGEMENTS

I should like to express my thanks for the help, encouragement and cooperation of the many people who had a part in bringing this study to a completion.

I am especially indebted to Dr. Lester W. Anderson, chairman of my committee, for his guidance and encouragement as the work proceeded; to the other members of my committee, Dr. Russell Bidlack, Dr. Stanley Dimond, and Dr. Byron Massialas, for their helpful suggestions and to Dr. Clemens Johnson for his advice and assistance in programing the data for the computer.

Gratitude is expressed to the high school principals for their willingness to cooperate in the study by completing questionnaires and allowing me to visit their schools to administer questionnaires to the teachers, and to the teachers for their generosity in giving of their time so graciously to complete the questionnaires.

Thanks are expressed also to Mr. Robert McConeghy, Superintendent of Romulus Township Schools, and the Board of Education for allowing me to work on this study while employed as Principal of Romulus High School.

My sincere appreciation is extended to my wife Agnes for her encouragement and assistance during the entire period of the study.

Finally, I want to thank Virginia Cameron, my secretary, for her faithfulness and loyalty in assisting me with the

details of my job as principal and for typing both the working copy and the final copy of this dissertation.

L.E.P.

TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		ii
TABLE OF CONTENTS		iv
LIST OF TABLES		vi
Chapter		
I	INTRODUCTION	1
	The Need for the Study	1
	Statement of the Problem	6
	Hypotheses	7
	Definitions	8
	Design of the Study	12
	Delimitations of the Study	14
II	REVIEW OF RELATED LITERATURE	16
	In-Service Education	16
	The Process of Change	29
III	PRESENTATION AND ANALYSIS OF DATA	50
	Teacher Participation in In-service Programs	50
	In-service Education Participation by Teachers as Related to Classroom Innovations	79
	Compensation to Teachers for In-Service Participation	81
	Promotion of In-Service Education by Principals	85
	Encouragement of Change by Principals	93
	Source of Ideas for Teacher Innovations	97
IV	SUMMARY, CONCLUSIONS AND IMPLICATIONS	103
	Summary	103
	Conclusions	105
	Implications	109
BIBLIOGRAPHY		112

Page

APPENDICES..... 116

A. Correspondence with Principals of Schools Included in the Study..... 116

B. Principal Questionnaire Used in the Study.... 119

C. Teacher Questionnaire Used in the Study..... 125

D. Method Used for Obtaining the Correlations and Chi-Square Tests Used in the Study..... 137

LIST OF TABLES

Table		Page
1.	INFORMATION ON SCHOOLS USED IN THE STUDY.....	53
2.	INVOLVEMENT OF TEACHERS IN SYSTEM-WIDE COMMITTEES AS REPORTED BY PRINCIPALS.....	54
3.	INVOLVEMENT OF TEACHERS IN BUILDING COMMITTEES AS REPORTED BY PRINCIPALS.....	54
4.	NUMBER OF CURRICULUM COMMITTEES SERVED BY TEACHERS AS REPORTED BY TEACHERS.....	56
5.	NUMBER OF FACULTY MEETINGS HELD PER YEAR AS REPORTED BY PRINCIPALS.....	57
6.	NUMBER OF STAFF MEETINGS DEVOTED TO CURRICULUM IMPROVEMENT ATTENDED BY TEACHERS AS REPORTED BY TEACHERS.....	58
7.	NUMBER OF DEPARTMENTS HOLDING REGULAR MEETINGS AS REPORTED BY PRINCIPALS.....	59
8.	PROPORTION OF TEACHERS OBSERVING CLASSES OF OTHER TEACHERS IN THE SAME SCHOOL AS REPORTED BY PRINCIPALS.....	60
9.	PROPORTION OF TEACHERS OBSERVING CLASSES OF TEACHERS IN OTHER SCHOOLS AS REPORTED BY PRINCIPALS.....	60
10.	NUMBER OF TIMES TEACHERS HAVE VISITED OTHER TEACHERS' CLASSES AS REPORTED BY TEACHERS...	61
11.	NUMBER OF CONSULTANTS USED BY INDIVIDUAL TEACHERS AS REPORTED BY TEACHERS.....	63
12.	NUMBER OF CONSULTANTS USED BY GROUPS OF TEACHERS AS REPORTED BY TEACHERS.....	64
13.	NUMBER OF TIMES PRINCIPAL OR SUPERVISORS HAVE VISITED CLASSES AS REPORTED BY TEACHERS.....	66
14.	NUMBER OF TIMES TEACHERS HAVE MET WITH SALESMAN OF EDUCATIONAL MATERIALS AS REPORTED BY TEACHERS.....	67
15.	NUMBER OF EDUCATIONAL CONFERENCES ATTENDED BY TEACHERS AS REPORTED BY TEACHERS.....	68

Table Page

16. NUMBER OF SEMESTER HOURS OF GRADUATE WORK COMPLETED IN THE PAST TWELVE MONTHS AS REPORTED BY TEACHERS..... 69

17. NUMBER OF COMMITTEE MEETINGS ATTENDED OUTSIDE OF OWN SCHOOL SYSTEM AS REPORTED BY TEACHERS..... 71

18. FREQUENCY OF CONTACTS WITH OTHER TEACHERS AS REPORTED BY TEACHERS..... 72

19. ADEQUACY OF PROFESSIONAL LIBRARY WITHIN BUILDING AS REPORTED BY TEACHERS..... 74

20. FREQUENCY OF USE OF PROFESSIONAL LIBRARY WITHIN BUILDING AS REPORTED BY TEACHERS..... 75

21. NUMBER OF RESEARCH PROJECTS INVOLVED IN BY TEACHERS AS REPORTED BY TEACHERS..... 77

22. NUMBER OF PROFESSIONAL PERIODICALS OR JOURNALS READ REGULARLY BY TEACHERS AS REPORTED BY TEACHERS..... 78

23. CORRELATIONS WITH THE NUMBER OF CLASSROOM INNOVATIONS..... 80

24. PROVISION FOR COMPENSATION TO TEACHERS FOR IN-SERVICE EDUCATION..... 82

25. CORRELATIONS WITH THE COMPENSATION ALLOWABLE TO TEACHERS FOR PARTICIPATING IN IN-SERVICE EDUCATION..... 84

26. CORRELATIONS WITH THE EXTENT TO WHICH THE PRINCIPAL PROMOTED PARTICIPATION IN IN-SERVICE EDUCATION AS PERCEIVED BY THE TEACHERS..... 86

27. THE EXTENT TO WHICH THE PRINCIPAL ENCOURAGES TEACHERS TO TAKE PART IN IN-SERVICE EDUCATION ACTIVITIES AS PERCEIVED BY TEACHERS WITH 5 BEING HIGH AND 1 BEING LOW..... 88

28. CHI-SQUARE TESTS OF TEACHERS PARTICIPATION IN IN-SERVICE EDUCATION..... 91

29. CORRELATIONS WITH THE EXTENT TO WHICH THE PRINCIPALS ENCOURAGED CHANGE AS PERCEIVED BY TEACHERS..... 95

Table Page

30. THE EXTENT TO WHICH THE PRINCIPAL ENCOURAGES CHANGE AS PERCEIVED BY TEACHERS WITH 5 BEING HIGH AND 1 BEING LOW..... 96

31. CORRELATIONS WITH THE NUMBER OF CLASSROOM VISITS BY THE PRINCIPAL OR SUPERVISOR AS REPORTED BY TEACHERS..... 98

32. SOURCES OF IDEAS FOR CLASSROOM INSTRUCTION CHANGES AS REPORTED BY TEACHERS GIVEN IN NUMBERS..... 99

33. SOURCES OF IDEAS FOR CLASSROOM INSTRUCTION CHANGES AS REPORTED BY TEACHERS GIVEN IN PERCENTAGES..... 100

CHAPTER I

INTRODUCTION

We are living in a period of rapid social and technological change. One needs only to look about to see that not only are changes taking place in almost every facet of society but also that these changes are taking place at an ever increasing rate. As educators consider the task of preparing youth for a place in this changing society, they are faced with the problem of seeking to change and improve education to meet the changing needs and demands of society.

The Need for the Study

Recent Emphasis on Change

Writers in many fields are pointing out the changes that are taking place in our society. Rogers gives us an example in the field of agriculture. In 1820 the average farmer supported himself plus four others. By 1940 he supported himself plus twelve others. By 1961 it was twenty-seven.[1] Other writers point to the atomic age, automation, the space-age, computer technology, the popu-

---

[1] Everett M. Rogers, The Diffusion of Innovations (New York: The Free Press of Glencoe, 1962), p.1.

lation explosion, and many other areas to illustrate that our society is changing at a faster pace than ever before.

Implications of Change for Education

Educational leaders have become increasingly concerned about the impact of our changing society on the schools. Authors of education textbooks in school administration and curriculum are placing more emphasis on the changes taking place and the implications for schools.[2] Miles lists some of the reasons for this increased concern. He includes the concern for national survival, the periods of social change, the growing manpower demands, the growth in production of knowledge, the growth in the technological capacity to handle knowledge, government spending on research and development in both industry and education and the size and growth of the educational establishment itself.[3]

The need for schools to change to meet the new demands has long been recognized by educators. Mort and Cornell made a statement in 1938 that could very well have been made today:

> A school system should be expected to perform its functions at all times as well as known facts permit. To operate schools today in terms of the

---

[2] For an example of this see Harl R. Douglass, The High School Curriculum (New York: The Ronald Press Company, 1964), pp. 28-33.

[3] Mathew B. Miles, Innovation in Education (New York: Teachers College, Columbia University, 1964), pp. 8-9.

> understandings of a half century ago is to waste school funds and school time.... Adaptability, or the capacity to meet new needs by taking on new purposes and new practices, is indispensable to the effective functioning of any school system.[4]

The recent emphasis on change is illustrated in the following statement by Gardner as he was speaking about President Johnson's message on aid to education:

> In his message, he touched on something that you and I know very well, but sometimes choose to forget--that education needs more than dollars. It needs to be better than it is--not just better but a great deal better. We are not going to succeed in solving major problems facing us without substantial innovation. Without such innovation, the new billions that are going to be poured into the system will simply strengthen and confirm outworn practices. A system that is not innovating is a system that is dying.[5]

Rate of Change in Schools

Part of the concern for change in the schools is due to the fact that the schools have been slow to change. Miles points out that data collected by Mort and Cornell in the late 1930's showed a leisurely rate of change. They calculated that it took approximately fifteen years before a change was adopted by three per cent of the schools and fifty years for complete diffusion.[6]

Although Miles goes on to show that diffusion rates

---

[4] Paul R. Mort and Francis G. Cornell, Adaptability of Public School Systems (New York: Teachers College, Columbia University, 1938), p. x.

[5] John W. Gardner, "Innovation and Leadership in American Education," The National Association of Secondary School Principals Bulletin, IL (March, 1965), p. 36.

[6] Miles, op.cit., p. 5.

have changed,[7] there is considerable concern expressed over the time lag by schools in accepting change. Rogers, in a paper presented at a seminar on "Changes in the Public Schools", stated that, "....it appears that our schools change more slowly than our farms, our medical doctors, or our industries."[8]

In-Service Education as Related to Change

In-service education has been looked upon for a long time as one of the major ways of improving education through improvement of classroom instruction. As Schaaf points out, "the basic aim of all in-service education is the improvement of instruction in the classroom."[9]

Educators have long recognized that improvement by teachers in the classroom means change. One educator stated that the purpose of in-service education is so that, "....we can work for desirable change quite rapidly and our schools remain strong."[10]

Studies of Change

Studies of change and the process of change have been

---

[7] Ibid., p. 6.

[8] Everett M. Rogers, "What are Innovators Like," Unpublished paper presented at the Seminar on Change in Public Schools, Portland, Oregon, October 14-16, 1964, received from the author, p. 4.

[9] Pearl R. Schaaf, "Let's Review In-Service Education Programs," American School Board Journal, 138 (June, 1959) p. 17.

[10] Noel Lawrence, "In-Service Programs for High School Teachers," Educational Leadership, 17 (March, 1960), p. 344.

made in many fields. Writers in the fields of history, anthropology, rural sociology, early sociology, medical sociology, education and others have examined the factors associated with change and have developed various theories.

The researchers have taken various approaches to the study of change. Some have examined the culture and the environmental influences relating to change. Others have focused on the individual and the psychological influences relating to the innovativeness of the individual or the system. Still others have examined the role of change agents, and resistance to change.

Whatever approach to the study of change has been taken, the researchers agree that there are many factors that influence rates of change and that by giving attention to these factors, the rates of change can be altered.

Those who attempt to improve education through in-service training must consider at least two aspects of the problem. One is determining what improvements should be made, and the second is seeing that changes are made to bring about the improvements. In planning in-service education, attention should be given to the content but, beyond that, attention should be given to the factors that influence rates of change and the innovativeness of individuals. It is not enough to understand what changes should be made; it is also important to plan so that changes are made.

The Role of the Classroom Teacher

A survey of the methods and techniques of in-service education shows that the teacher plays a central role. Advocates of in-service education programs **suggest that** it is the classroom teacher who is primarily responsible for what goes on in the classroom and largely makes the basic decisions about the content and methods of instruction.

It follows that, if in-service education is to bring about improvement in instruction by promoting change, there is a need to examine in-service education programs in schools, to measure the participation of the teachers in the various activities, and to see if this participation is related to the innovativeness of the teacher in the classroom.

Statement of the Problem

School systems carry on and promote various types of in-service activities for the teachers for the improvement of the educational program. While several areas of education have received emphasis in attempts to improve education, such as the content of instruction, the facilities, the materials used to instruct and teaching methods, one focal point for improvement is classroom instruction by the teacher.

Although improvement may come about by doing better what is already being done, the emphasis in recent years has been on change or innovation as a means of improvement.

Since improvement means change in a desired direction, one measure of the effectiveness of in-service training is the extent to which it brings about change in the classroom in the content of instruction or in the methods or materials used to instruct. Since these things are largely under the control of the classroom teacher, change depends to a considerable extent on the innovativeness of the teacher.

The question is: to what extent are in-service education activities effective in bringing about change in the individual classroom? In other words, to what extent does in-service education affect the innovativeness of the teacher?

The first purpose of this study is to examine the extent of participation in in-service education by teachers in selected secondary schools.

The second purpose is to determine the relationship between participation in in-service education and the innovativeness of the teacher in the classroom.

Hypotheses

It is the purpose of this study to gather data necessary to test the following hypotheses:

1. Teachers who have a higher frequency of participation in in-service education activities have a higher number of innovations in the classroom than do teachers with a lower frequency of participation in in-service education activities.

2. Teachers who receive financial compensation or released time for participation in in-service education activities participate to a greater extent in in-service activities than teachers who do not receive such compensation or released time.

3. Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation by teachers in in-service education activities have greater participation by teachers in those activities than do schools in which the principal takes a less active role as perceived by the teachers.

4. Teachers who perceive of the principal as promoting change have more innovations in the classroom than teachers who perceive of the principal as not promoting change.

5. Teachers get more ideas for innovations from sources outside their school system than from sources inside their school system.

Definitions

In-Service Education

"In-service education includes all of those activities in which a teacher might participate which would contribute to his improvement on the job. The basic aim of all in-service education is the improvement of instruction in the

classroom."[11]

"In-service education is based on the idea that teachers should grow on the job."[12]

In-service education includes, "....any in-service attempt to help teachers grow on the job."[13]

"In-service training has as its goal the professional growth of the teacher; but as a concept it includes the plan, the program, or the effort of the local school system to accomplish that end."[14]

For purposes of this study, in-service education is defined as those activities which are carried on or promoted by a school system or its administrators for the purposes of improving instruction through the professional growth of the teachers on the job.

In-service education activities which can be quantitatively measured include the following:

1. Teacher involvement in committees, workshops, and meetings dealing with classroom instruction both within and outside the school system.

2. Teacher visitation to classrooms to observe instruction by other teachers.

3. Supervision of instruction by the principal

---

[11] Schaaf, loc. cit.

[12] Harold Spears, Curriculum Planning through In-Service Programs (Englewood Cliffs, New Jersey: Prentice Hall, 1957), p. VII.

[13] Op. cit., p. VIII.

[14] Spears, Improving the Supervision of Instruction (Englewood Cliffs, New Jersey: Prentice Hall, 1953), p. 349.

including:

a. Classroom visitations to observe instruction.

b. Conferences with teachers in regard to classroom instruction.

c. Involvement with teachers in group meetings devoted to improving instruction.

d. Written communications to teachers regarding classroom instructions.

4. Use of consultants or resource people for the improvement of instruction.

5. Teacher involvement in professional activities outside the school system including graduate work, professional reading, and attendance at conferences and conventions.

6. Teacher involvement in research.

7. Teacher involvement in professional organizations.

8. Compensation given teachers for in-service education activites including:

a. Salary increases for graduate work.

b. Merit pay based in part on involvement in in-service education activities.

c. Released time for teachers for in-service activities.

d. Paid expenses of teachers for in-service activities.

Innovation

"Generally speaking it seems useful to define an innovation as a deliberate, novel, or specific change, which is thought to be more efficacious in accomplishing the goals of a system."[15]

"It seems helpful to consider innovations as being willed and planned for, rather than as occurring haphazardly."[16]

"An innovation is here defined as any thought, behavior, or thing that is new because it is qualitatively different from existing forms."[17]

"An innovation is an idea perceived of as new by the individual....whether or not an idea is 'objectively' new as measured by the amount of time elapsed since its first use or discovery."[18]

For purposes of this study, an innovation is defined as any deliberate change in content or method, either quantitative or qualitative, which is new to the teacher and which the teacher introduces in the classroom for the purpose of improving instruction. Innovativeness of the teacher is determined by the frequency of the introduction of innovations in the classroom.

---

[15] Miles, op. cit., p. 14.
[16] Ibid.
[17] H. G. Barnett, Innovation: The Basis of Cultural Change, (New York: McGraw Hill, 1953), p. 7.
[18] Rogers, Diffusion of Innovations, p. 13.

Design of the Study

From the literature it was determined that several characteristics of innovative school systems have been identified. These include size, wealth, as determined by the amount of money spent per pupil, and location in relation to metropolitan areas. The schools for the study were selected on the basis of similar characteristics in these respects.

From the literature and from the experience of the writer, in-service education activities most often mentioned and used in school systems and which can be quantitatively measured were selected for inclusion in the questionnaires to the principals and to the teachers.

Twenty public senior high schools were selected according to the following characteristics:

1. Schools had a staff of from 30 to 70 teachers.
2. Schools were accredited by the University of Michigan.
3. The schools were suburban oriented.
4. Schools were similar in the amount of money spent per pupil by the district, the amount ranging from $350 to $450 per pupil per year.

Questionnaires were sent to the principals of these schools to determine the following:

1. The involvement of the teachers in in-service education activities as perceived by the principal.

2. Compensation given to teachers financially or by released time for participation in in-service education activities.

3. The extent to which the principal promoted in-service education as perceived by the principal.

Eight schools were selected from those whose principals replied. Four of the schools were schools with a relatively high frequency of involvement by the teachers in in-service education and four with a relatively low frequency of involvement. These schools were visited and questionnaires administered to the teachers to determine the following:

1. The participation by the teachers in in-service education activities.

2. The extent to which the principal promoted in-service education as perceived by the teachers.

3. The extent to which the teachers perceived of their principal as promoting change.

4. The number of innovations introduced into the classroom teacher in the preceding twelve months.

5. The origin of the ideas for the innovativeness reported as perceived by the innovating teacher.

The data collected from the teachers questionnaires were punched into data processing cards. Computers at the University of Michigan were used for tabulating the results and for calculating Chi-square tests of the statistical significance of the results. Correlations were calculated

by computer and tables constructed, where appropriate, to establish or reject the hypotheses and furnish related information.

Delimitations of the Study

The in-service activities are measured quantitatively and not qualitatively. There is no doubt that some in-service activities have more value than others and thus may have greater effect on the classroom teacher. However, it is felt that when the total involvement is considered, these differences tend to cancel each other out and do not significantly affect the results.

The adoption of the innovation is not considered. The point at which we consider the innovation is at the point of introduction or at the trial stage. No consideration is given as to whether the innovation is adopted or whether it is discarded later by the teacher. It is assumed that teachers with a higher frequency of innovations at the trial stage will also have a higher frequency of adoption of innovations.

No attempt is made to evaluate the innovations. The evaluation of the change or innovation is extremely important to the teacher and to the school administrator to determine if the change has brought about the desired improvement in instruction. Such evaluation is outside the scope of this study. The assumption in this study is that change is necessary for improvement and therefore desirable. Any

specific change may not be a desirable one but it is assumed that the sum total of the changes will produce results in the desired direction.

The study is based on a selected and limited number of secondary schools. The schools included in the study are suburban Michigan high schools with staffs of from 30 to 70 teachers and from districts with an operating expenditure of from $350 to $450 per pupil. It is not to be inferred that the conclusions of the study would necessarily apply to all high schools.

CHAPTER II

REVIEW OF RELATED LITERATURE

In-Service Education

Early Concern

A review of the literature on in-service education reveals several consistent areas of agreement for the past sixty years. One is the recognition that teachers must continue their education after entering the profession. A second is an emphasis of the fact that education must change--that it must change in content to meet the changing needs of society, and that it must change in structure and methods as teachers learn and develop new techniques. A third area of agreement is in the types of in-service activities that are considered useful and effective.

An example of the concern for in-service education early in this century is the study by Charles Lowry in 1908. Lowry based his study on a survey conducted by mailed questionnaires to the membership of the National Society for the Study of Education. Not only is the importance of in-service education emphasized in the study, but also the necessity for change is recognized with the focus on the

classroom teacher.[1]

In-Service Activities

The in-service activities or techniques that Lowry discusses and that were recommended by the various educators of that time included:

1. The institute - regular monthly staff meetings held on Saturdays from 9:00 to 12:00 a.m.

2. Monthly consultations of the principal with individual teachers.

3. Salary increases for advanced study.

4. Promotional examinations - written examinations of teachers upon which promotions were based.

5. Regular meetings of the principal with the teachers.

6. Professional reading.

7. Supervision of instruction by the principal.[2]

Several other in-service activities have received emphasis through the years as being valuable. The use of consultants, pre-school conferences, professional organizations, inter-class visitations, workshops, action research and variations of these are frequently mentioned.[3]

---

[1] Charles D. Lowry, The Relation of Superintendents and Principals to the Training and Professional Improvement of Their Teachers (Chicago: National Society for the Study of Education, 1908), pp. 21-22.

[2] Op. cit., pp. 26-31.

[3] Schaaf, op. cit., pp. 17-19.

Recent studies on in-service education advocate activities that are very similar.[4]

Several surveys of in-service programs in the schools have been made recently. One example is that conducted by John L. Yourd. He conducted interviews in sixty public schools selected randomly with fifteen from each of four size categories and located in five midwestern states. He concluded that, "....with the exception of the pre-school conference almost all procedures listed in in-service education programs are much the same as in the literature and reported surveys over a period of 30 to 40 years."[5]

Recent Emphasis

Although educators have long been concerned with improving the curriculum of the school, little evidence of an emphasis on the direct relationship between curriculum planning and in-service education can be found in the literature prior to the last two decades. While many of the in-service activities recommended earlier involved work on the curriculum, and in a sense any improvement in instruction is a curriculum improvement, it is only in the

---

[4] For examples of this see Henry B. Nelson, In-Service Education for Teachers, Supervisors and Administrators (Chicago: University of Chicago Press, 1957), and John C. Moffitt, In-Service Education for Teachers (Washington, D.C.: Center for Applied Research in Education, 1963), pp. 21-35.

[5] John L. Yourd, "Locally Operated In-Service Education Programs of Selected High Schools in Five Midwestern States" (unpublished dissertation, State University of Iowa, 1963).

recent period mentioned that books and articles began to appear that emphasized the value of curriculum planning as in-service education for the teachers. One example of this is the book by George Sharp of Teachers College, Columbia University published in 1951. As the title, Curriculum Development as Re-education of Teachers, suggests the focus is on the improvement of the teacher. His main thesis is that, "....the curriculum develops basically as the result of the development of teachers' personalities."[6]

Another example is the book by Harold Spears, Curriculum Planning through In-Service Programs, which appeared in 1957. Spears examines the curriculum work in several large school systems in various parts of the United States and relates the curriculum work to the principles of in-service education that he sets forth. He concludes his book by defining the limits of in-service education and cautioning the reader that in-service education takes planning, time, and money.[7]

Reynard in his review of the literature on in-service education from 1958 to 1963 reports that he can detect a greater emphasis on teachers continuing their graduate training, evidence that wealth is the principal factor in the amount of in-service education provided for the teacher and greater cooperation between public schools and teacher

---

[6] George Sharp, Curriculum Development as Re-education of the Teacher (New York: Teachers College, Columbia University, 1951), p. V.

[7] Spears, op. cit., pp. 314-334.

education institutions.[8]

Implicit in the works of Sharp and Spears, cited above, is a greater emphasis on the democratic process and teacher involvement in the planning. One can also detect this in the book by Moffitt, Superintendent of Provo City School, Provo, Utah. In discussing in-service education he goes into considerable detail in the democratic process, relating it not only to in-service education of the teachers but also to the teaching of democracy in the classroom.[9]

Concern for Evaluation of In-Service Education

One further point should be made in regard to the literature on in-service education and that is the almost universal concern for evaluation of in-service programs. Perhaps a great deal more has been said about the evaluation than has been done about it.

The difficulties of accurate evaluation of in-service programs are discussed by Moffitt. One of the great difficulties is the lack of objective measures of teacher effectiveness. Education is not like an industry where production can be measured in terms of quantity and where quality can be rigidly controlled. Education is both a process and an end with both the process and the

---

[8] Harold E. Reynard, "Pre-Service and In-Service Education of Teachers", Review of Educational Research, 33 (October, 1963), pp. 364-374.

[9] John C. Moffitt, In-Service Education for Teachers (Washington, D.C.: Center for Applied Research in Education, 1963), pp. 65-80.

end continually changing.[10]

Various attempts have been made to evaluate in-service programs as the discussion of recent research, which follows, indicates. One thing that seems to be almost universally agreed upon is that no single approach to evaluation of in-service education is entirely satisfactory. Perhaps this study will add to our knowledge by examining one unexplored facet in the evaluation of in-service education.

Recent Research on In-Service Education

Recent research on in-service education can be classified in two broad categories. One is that which is based largely on surveys of existing programs to discover current in-service education practices and recommended in-service activities. The other is that which seeks to evaluate the effectiveness of in-service education. In this latter type of research two approaches are taken. One is that which focuses on the teacher to determine the effectiveness of in-service education. The other is that which focuses on the pupils and uses pupil growth as a measure of effectiveness. Some studies are combinations of these. Examples will be cited illustrating these types of research studies.

Surveys of existing programs. -- In a study of in-

---

[10] Ibid., p. 101.

service programs conducted in 1962, Wesner sent questionnaires to thirty-seven large city school superintendents to discover the most promising practices based on their experience and opinions. He classified and tabulated the responses and listed those most frequently judged as most effective. He concluded that the five most effective in-service education practices were:

1. Curriculum production committees
2. Informal special-area workshops
3. Research
4. Teacher institutes
5. Off campus college extension courses[11]

Duncan conducted a study in 1963 in which he surveyed the literature from 1930 to 1963 to discover the generally accepted principles of in-service education. Using this as a basis, he conducted interviews with eighty teachers and administrators from ten selected representative schools in Alabama to determine whether practice and opinion related closely to the literature. He tape recorded the interviews which were later tabulated and analyzed on a system by system and on a composite basis. From the study he concluded that:

1. Teachers see importance in the in-service programs recommended by the literature.

---

[11] Gordon E. Wesner, "A Study of In-Service Education Programs for Secondary Large City Public School Systems" (unpublished dissertation, University of Kansas, 1963).

2. Systems were similar in the types of programs.

3. Administrators and teachers were in agreement on factors considered as being contributory to success.

4. Each system used practices that varied according to local need.

He also listed a number of techniques that were indicated as most promising.[12] These techniques are essentially the same as those we indicated earlier as appearing in the literature of the past fifty years.

Another survey type of study was conducted by Gogan. He developed a questionnaire which was submitted to twenty-six supervisors and 407 secondary teachers in selected schools from six mid-western states for the purpose of determining existing practices in supervisory services and drawing some conclusions as to the effectiveness. The data were tabulated, analyzed, and summarized. He concluded that the majority of the teachers obtained their ideas from professional reading and other teachers and that teachers ranked department meetings, staff meetings, and individual teacher conferences relatively high and classroom visits, consultant services, and inter-school visits relatively low as useful in-service activities.[13]

---

[12] Billy M. Duncan, "A Study of Factors Associated with the Successful Operation of In-Service Programs of Education in Selected Alabama Schools" (unpublished dissertation, University of Alabama, 1964).

[13] William L. Gogan, "A Study of Supervisory Services and Activities of Selected Secondary Schools for the Improvement of Instruction" (unpublished dissertation, The University of Nebraska Teachers College, 1963).

Several other survey type of studies have been conducted in recent years.[14] These as well as those cited here have limited value in evaluating in-service programs in that they are based largely on opinion. There is little or no attempt in most of them to evaluate in-service programs in terms of their effect on teacher practices in the classroom or on pupil achievement.

Evaluations of in-service programs based on pupil achievement. -- Mork sought to evaluate an in-service training program by using achievement tests in science with fifth and sixth grade pupils in Duluth, Minnesota, in a two year experiment. An experimental group of teachers participated in an in-service program while a control group did not. The pupils were tested with five science tests prepared by the investigator and with the Kuhlmann-Anderson Intelligence Test. They were tested again at the end of the experiment. Mork used the data to test the null hypothesis that there is no difference in science achievement between pupils whose teachers participated in an in-service program and those whose teachers did not. He concluded that the null hypothesis was rejected.[15]

---

[14] Two similar survey studies are those by Robert J. Schild, "A Survey of Certain Practices and Some Proposed Directions for In-Service Education" (unpublished dissertation, Teachers College, Columbia University, 1964), and Charles R. Lewin, "In-Service Education in Relation to Curriculum Development" (unpublished dissertation, the University of Southern California, 1963).

[15] Gordon A. Mork, "Effects of an In-Service Teacher Training Project on Pupil Outcomes in 5th and 6th Grade Science" (unpublished dissertation, the University of Minnesota, 1953).

Although significant, the value of this study is limited by the fact that it measured only a small facet of the possible value of in-service education.

Another study relating pupil achievement to in-service education is that of Jirik. In this study 2121 sixth grade pupils in thirteen school systems were tested with the California Achievement Test and the California Short Form Test of Mental Maturity. Socio-economic factors were studied and a multiple regression formula was used based on the mental maturity scores and the socio-economic ratings. The teacher participation in in-service education was determined by a teacher survey questionnaire. Coefficients of correlation were calculated between the pupil achievement and the in-service characteristics studied and tested at the .01 level. He concluded that there was a positive significant relationship between the level of achievement and the number of times instruction was observed in other schools by the teachers. There was also a positive significant relationship between level of achievement and the number of curriculum meetings attended. Other in-service activities studied did not show a significant relationship.[16] The value of this study in evaluating in-service education is limited by the fact that it considers only pupil achievement on two tests as a measure

---

[16] Frank E. Jirik, "A Statistical Analysis of Level of Achievement as Related to Certain Supervisory Services and In-Service Participation" (unpublished dissertation, Ohio University, 1964).

of the success of the teacher.

Evaluation of in-service programs based on teacher characteristics. -- In a study carried out by Milstein on the effectiveness of teacher participation in developing curriculum guides, twenty-five teachers who worked on curriculum guides were compared with twenty-five who did not. Antecedent variables were used in equating the groups. Teacher observations, using a check list, were used to determine teaching characteristics including variety of instructional material used, range in difficulty and level of maturity in the materials used, selection of materials, purposes served in the use of materials, variety of activities, and the differentiated use of activities. The data were used to calculate the relationship between curriculum guide development participation and the frequency of observed practices. He concluded that significant findings at or below the .05 level of confidence were rare. In only three dimensions were significant differences noted. These related to certain materials used in arithmetic and language arts. A small difference was noted in seventeen areas of measurement and no difference in sixty-seven.[17] The small returns do not warrant confidence in curriculum guide projects of the type described as a means of improving teacher effectiveness. It should be noted

---

[17] Abe Milstein, "The Effect of Teacher Participation in Curriculum Guide Development upon Selected Classroom Practices" (unpublished dissertation, Stanford University, 1960).

that in this study teacher effectiveness is measured in terms of certain practices that are somewhat arbitrarily selected. It could well be that teacher effectiveness measured with other criteria would tell a different story.

In a study by Finch the relationship of in-service education to the competence of teachers was calculated by using in-service credits of the teachers on the one hand and a competence rating of the teachers by their principals on a forty item forced choice evaluation instrument on the other. A total of 270 pairs of teachers were used selected from the city of Los Angeles School District. Finch concluded that there were statistically significant differences in teacher effectiveness between teachers having more in-service education credits and those having fewer in-service education credits.[18] This study is limited by the fact that teacher effectiveness is determined by the principals' opinions of teachers in specified areas. There may be ommissions of significant criteria of effectiveness and the opinions and information that the principals have may be subject to distortion and error.

One of the more ambitious attempts to evaluate the effectiveness of in-service education was the project conducted jointly by the University of Michigan and the University of Minnesota with Ned A. Flanders of Michigan

---

[18] Arnold E. Finch, "The Relationship of In-Service Education to Competence of Selected Teachers of the City of Los Angeles City School Districts" (unpublished dissertation, the University of California, 1964).

serving as project director. Experimental and control groups of teachers were set up in suburban Minneapolis. The emphasis of the in-service training workshops, conducted with the experimental group, was on interaction analysis as a means of changing teacher behavior. The data collected included testing and retesting of the ~~teachers~~ in both the experimental and control groups with the Minnesota Teacher Attitude Inventory and the students of both groups with the Minnesota Student Attitude Inventory. In addition classroom observations were made of both groups with trained observers. Using Chi-square tests for significance, it was concluded, among other things, that interaction analysis could be used as an in-service education method and that teachers involved in in-service education using this method became more indirect and flexible in their teaching as opposed to direct and rigid.[19] This project has value in that it shows that specific types of teacher behavior can be changed through in-service education. Further research should be done to determine if other areas of teacher behavior can be similarly changed.

---

[19] Ned A. Flanders, Helping Teachers Change Their Behavior (Ann Arbor: the University of Michigan School of Education, 1963).

The Process of Change

Theories of Change

Writers in several fields have explored the problems of change to show its relationship to culture and progress. One example is the study by Margaret Hodgen of the dated distributions of technological innovations in England. She shows the importance of studying change for the fields of anthropology, archeology, history, sociology, and economics.

While the main emphasis of the study is on history and tracing the diffusion of change, it has value for this study in that the author takes a look at the innovator and draws some conclusions that are relevant. While admitting the difficulty of learning much about the personal life of early innovators, she makes the point that innovators exist in all strata of society.[20] Among other conclusions she states that diffusion of ideas cannot be explained in terms of migrations alone and that changes generally took place "on prepared soil."[21] This is significant in that it relates culture and environment to the process of change.

A writer in the field of anthropology who examines the question of innovations and relates it to cultural change is Barnett. In his book, Innovation, The Basis of Cultural Change, he develops the interaction or linkage

---

[20] Margaret T. Hodgen, Change and History (New York: Wenner-Gren Foundation for Anthropological Research, 1952), p. 74.

[21] Ibid., p. 197.

theory to explain the spread of innovations. He looks at innovation as a mental phenomenon which is primarily the result of interacting psychological forces:

> It seems that any innovation, when it is understood as a mental phenomenon, conforms to one of a limited number of reaction patterns irrespective of the contents of the ideas that are embodied in the mental reactions; it is the result of a particular conjunction of psychological processes, none of which, when taken alone, is peculiar to the pattern of thought that is essential to the conception of a novelty. There is, in other words, no innovative "faculty," nor is there any specifically creative instrument that is possessed by some men and not by others.
>
> Certain conditions are obviously more propitious than others for the occurrence of new ideas. Favorable and unfavorable conditions have, moreover, social as well as personal determinants.[22]

Barnett takes a look at what he calls the "acceptors" of change and develops three hypotheses concerning them:

> 1. An individual will not accept a novelty unless in his opinion it satisfies a want better than some existing means at his disposal.
>
> 2. There are biographical determinants for the lack of satisfaction that is characteristic of individuals who are predisposed to accept a substitute for some accustomed idea, and these determinants result from the interplay and adjustment of an individual's conception of himself and the events of his life history.
>
> 3. Dissatisfaction or unsatisfaction may be a pervasive attitude in some individuals.[23]

Barnett's theory, while taking a different approach than Hodgen by examining the psychological forces influencing innovation, [24] is related to the "prepared soil"

---

[22] H. G. Barnett, Innovation, The Basis of Cultural Change (New York: McGraw Hill, 1953), p. 1.

[23] Ibid., pp. 378-379.

[24] For a study of the theory of "need satisfaction" as related to change see Kenneth D. Benne and Bozidar Muntigan, Human Relations in Curriculum Change (New York: The Dryden Press, 1951).

theory. Both agree that environmental conditions affect innovativeness.

Griffiths takes another approach to the study of change. He develops a "system theory" which is designed to be all inclusive.[25] He uses the system theory as a model to investigate the problem of change in organizations. He lists a number of propositions concerning conditions aiding or inhibiting change:

> -The major impetus for change in organizations is from the outside.
> -The degree and duration of change is directly proportional to the intensity of the stimulus from the suprasystem.
> -Change in an organization is more probable if the successor to the chief administrator is from outside the organization than if he is from inside the organization.
> -When change in an organization does occur, it will tend to occur from the top down, not from the bottom up.
> -Living systems respond to continuously increasing stress first by a lag in response, then by an over-compensatory response, and finally by catastrophic collapse of the system.
> -The number of innovations expected is inversely proportional to the tenure of the chief administrator.
> -The more hierarchal the structure of an organization, the less the possibility of change,
> -The more functional the dynamic interplay of subsystems, the less the change in an organization.[26]

Jenkins analyzes the problem of change in terms of

---

[25] Daniel E. Griffiths, "The Nature and Meaning of Theory," Behavioral Science and Educational Administration, Sixty-Third Yearbook of the National Society for the Study of Education, Part II (Chicago: the University of Chicago Press, 1964), p. 116.

[26] Ibid., pp. 117-118.

social engineering.[27] He develops a plan for change that takes into account driving forces or restraining forces that affect the individual. Speaking of the forces acting on an individual he states:

> When we have determined the nature of the forces which are affecting the present state of affairs we can think more clearly in selecting the forces or factors which should be modified if the conditions are to change in the direction we desire. Changes will occur only as the forces are modified so that the level where the forces are equal is changed.[28]

Rogers studies the problem of change in terms of the diffusion of innovations. He reviews the fields of anthropology, early sociology, rural sociology, education and medical sociology to develop a framework for analyzing changes and studying the factors involved in their spread. Focusing on the individual, Rogers states that:

> The adoption process is conceptualized in five stages or steps: awareness, interest, evaluation, trial, and adoption. At the awareness stage the individual is exposed to the innovation but lacks complete information about it. He then becomes interested in the innovation and seeks information about it at the interest stage. At the evaluation stage the individual mentally applies the innovation to his present and anticipated future situation, and then decides whether or not to try it. The individual uses the innovation on a small scale in order to determine its utility in his own situation at the trial stage. At the adoption stage the individual decides to continue the full use of the innovation.[29]

---

[27] David H. Jenkins, "Social Engineering in Educational Change: An Outline of Method" in C. Gratton Kemp, Perspectives on the Group Process (Boston: Houghton Mifflin Company, 1964), pp. 114-120.

[28] Ibid., p. 117.

[29] Everett Rogers, Diffusion of Innovations (New York: Free Press of Glencoe), p. 119.

Rogers also examines the relationship of culture to change and discusses cultural norms. "A norm is defined as the most frequently occurring pattern of overt behavior for the members of a particular social system. Norms influence the diffusion or new ideas. A system's norms can be a barrier to change.[30]

He goes on to describe two ideal types of social system norms which he calls "traditional" and "modern" and shows that these system norms affect the innovativeness of the individuals in the system.[31]

A significant diffusion study that influenced much of the research that followed, according to Rogers and reported by him, was the hybrid seed corn study by Ryan and Gross in Iowa in 1941.[32] A total of 345 farmers were interviewed to study the diffusion of the use of hybrid seed corn and to determine some of the characteristics of the innovators.

Ryan and Gross concluded, among other things, that the average farmer first heard about hybrid corn from a salesman but that neighbors were more influential in leading to its adoption. Salesmen were more important as information sources for early adopters and neighbors were more important as information for late adopters.[33]

---

[30] Ibid., p. 57.
[31] Ibid., pp. 57-75.
[32] Ibid., pp. 33-36.
[33] Bruce Ryan and Neal C. Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology, 8, (1943), pp. 15-24.

Carter and Williams made a study of fifty English industrial firms in an attempt to determine "technical progressiveness" or innovativeness. The researchers used a ten-point scale to determine the characteristics of the most innovative and least innovative firms. Factors that were found to be related to innovativeness include:

> 1. Cosmopoliteness as indicated by the world-wide travel of executives, and lack of secretiveness with plant visitors.
> 2. Adequate information sources as measured by subscriptions to scientific journals and degree of contact with universities.
> 3. Lack of "shop floor resistance to innovation" as evidenced by the conservatism of foremen and union resistance.[34]

We have examined briefly several approaches to the study of change and the theories relating to these approaches. Hodgen studies changes through a historical approach, Barnett examines change in terms of cultural influences, Griffiths uses the system theory while Rogers develops his theory in terms of the diffusion of innovations. Others such as Ryan and Gross and Carter and Williams have also examined the factors that influence the acceptance of change.

While there have been many approaches to the study of change there are several factors in the various theories that are related. One is that the culture and environment of a system influence the innovativeness of the individuals

---

[34] C. F. Carter and B. R. Williams, "The Characteristics of Technically Progressive Firms," Journal of Industrial Economics, 7, pp. 87-104, reported by Rogers, Diffusion of Innovations, pp. 44-45.

in that system. A second is that communication within the system is related to change. A third is that influences from outside the system are significant and hence the contacts of individuals in the system with sources outside the system is important.

Implied in all the theories is the fact that changes occur as a result of many influences and that by giving attention to these influences the rates of change can be altered. One factor that already has been mentioned but which we shall examine in greater detail is the role of change agents in the process of change.

The Role of Change Agents

Rogers discusses the role of the change agent whom he defines as a "professional person who attempts to influence adoption decisions in a direction that he feels is desirable."[35] He goes on to say:

> In most cases, a change agent seeks to secure the adoption of new ideas, but he may also attempt to slow the diffusion and prevent the adoption of certain innovations. A new idea may compete with or supersede an old idea sponsored by the change agent. A change agent may seek to prevent the adoption of a nonrecommended innovation.... Almost every area of public concern has at least one type of change agent. Examples of various types of change agents are: technical assistance workers in less developed countries; county extension agents; salesmen and dealers of new products; public health officials, nurses, and medical doctors; and school administrators and teachers.[36]

---

[35] Rogers, Diffusion of Innovations, p. 254.
[36] Ibid., pp. 254-256.

In considering the role of the change agent, Rogers develops a strategy for change:

> 1. A program of change should be tailored to fit cultural values and past experiences...
> 2. A change agent's clients must perceive a need for an innovation before it can be successfully introduced...
> 3. Change agents should be more concerned with improving their clients' competence in evaluating new ideas and less with simply promoting innovations per se...
> 4. Change agents should concentrate their efforts upon opinion leaders in the early stages of the diffusion of an innovation...
> 5. The social consequences of innovations should be anticipated and prevented if undesirable.[37]

The role of participants in change was studied in a project carried out under Gordon Mackenzie at Columbia University over a two year period. Over thirty case examples of curricular changes in elementary and secondary schools were prepared based on observation of the changes or on interviews of those who had participated in them.[38]

Mackenzie analyzes curricular change and discusses change agents in terms of "internal participants". He lists ten major groups of internal participants: students, teachers, principals, supervisors, superintendents, boards of education, citizens in local communities, state legislatures, state boards of departments of education, and state and federal courts. Concerning the role of the principal in change he states:

---

[37] Ibid., pp. 254-255.

[38] Gordon N. Mackenzie, "Curricular Change: Participants, Powers and Processes," in Miles, Innovations in Education, p. 409.

> ...Principals were found to be very influential participants in changing the determiners. For example, some principals had the authority to control the assignment of teachers to grade for ability groupings. Also, some principals controlled, within broad limits, decisions on student composition of class groups, the human and non-human resources to be introduced into classrooms, and the time allotments to be followed. They also had much to do with the extent to which parental pressures were brought to bear directly on teachers, and with the provision of in-service educational opportunities for teachers.[39]

While the term change agent has been used in various ways to apply to individuals or groups who promote change, the point to note is that any study of the process of change must take into account the influence of these agents of change.

We have examined several theories of change and the role of change agents in promoting change. Another approach to the study of change is to analyze the resistance to change and seek to discover why certain people reject change.

Resistance to Change

Coch and French studied resistance to change in a pajama factory to determine why people resist change so strongly and to develop a theory of what can be done to overcome the resistance.[40] The plant used for the study employed approximately 500 women and 100 men recruited

---

[39] Ibid., pp. 410-411.

[40] Lester Coch and John R. P. French Jr., "Overcoming Resistance to Change," in Cartwright and Zander, Group Dynamics (Evanston, Illinois: Row Peterson and Company, 1960), pp. 319-341.

from rural areas and with an average age of 23 and an average educational level of eight years of grammar school.

The researchers developed a preliminary theory of resistance to change based on a series of observations. On the basis of this theory an experiment was devised and conducted within the factory to test the propositions. Analyzing resistance to change chiefly in terms of frustrations, they concluded that:

> It is possible for management to modify greatly or to remove completely group resistance to changes in methods of work... This change can be accomplished by the use of group meetings in which management effectively communicates the need for change and stimulates group participation in planning the changes.
>
> A majority of all grievances stemmed from a change situation. By preventing or greatly modifying group resistance to change, this concomitant to change may well be greatly reduced.[41]

Lortie analyzes resistance to change in terms of latent functions:

> We see that established ways of doing things (and, indeed, material objects as well) come to have a variety of meanings to people. This process is close to the heart, in fact, of the nature of human society, for established ways come, through time, to be interconnected in a complex web of relationships. Some of these relationships are open and clearly announced. But there are important inter-connections which are not so readily visible, and it is these which we identify as latent functions and which must be ferreted out.[42]

Lortie goes on to suggest three "habits of mind" that

---

[41] Ibid., p. 341.

[42] Dan C. Lortie, "Change and Exchange: Reducing Resistance to Innovation," Administrator's Notebook, 12 (1964), pp. 1-4.

can help the administrator overcome resistance:

> First he must "stand back" from the activity he wishes to understand--he must develop the kind of objectivity which permits him to group the reactions of persons with interests and outlooks different from his own.
>
> Secondly, the would-be innovator must stand ready for serious inquiry. Since latent functions are latent, he will have to dig to find them, and this means that he must get reliable information even when that is difficult.
>
> Third, the innovator who would anticipate resistance must be able to see how proposed changes are likely to disturb latent functions.[43]

In an effort to understand the process whereby people reject change, Eichholz developed a theory of rejection that closely paralleled existing theories of acceptance and adoption. He stated that rejection may be caused by ignorance or lack of dissemination of information by the fact that the data are not logically or materially compelling, that the data are not psychologically compelling or because of present or past trials.[44] Eichholz then goes on to suggest that once a principal can identify the specific form of rejection he can take steps to overcome it.[45]

Rhodes also examined the problem of resistance to innovations in schools. He points out that many innovations are not accepted because of the problem of time. Secondary teachers have less time than elementary teachers because they need to cover more subject matter. Many innovations fail because they are used in a "time adding" way. He suggests

---

[43] Ibid., p. 4.-

[44] Gerhard Eichholz, "Why Do Teachers Reject Change," Theory into Practice, 2, (December, 1963), pp. 264-468.

[45] Ibid., pp. 267-268.

that innovations should be used in a complementary way and not in a supplementary way to be effective.[46]

Although, the previous discussion was concerned with education and educators to some extent in studying the theories of change, it was general in nature and not specific to change in education. It is necessary in this review to look at the problem of changes in education more specifically.

Change in Education

Many articles have appeared in the educational journals in recent years that emphasize the need for change in schools and examine various facets of the problem. Some examples from just a few will illustrate this fact.

The thesis that Bushnell advanced as she examined the diffusion rates of schools is that there is cause for optimism in the concern over the lag in public schools to adapt to new ideas. She cited a number of examples to illustrate that improvements have been made in the number of years it takes for an idea to be diffused. However, she insists that there is still a long way to go and that the schools are still twenty years behind the times.[47]

Gardner, in an address to secondary school principals, expressed a sense of urgency for innovation and emphasized the responsibility of the school administrator:

> What is the appropriate role of the members of

---

[47] Margaret Bushnell, "Now We are Lagging only Twenty Years," School Executive, 77 (October, 1957), pp. 61-63.

> this association in the process of innovation? You do not have to be experts on all the varieties of innovation that are occurring. But you do--and I say this with all the emphasis I can summon--you do have to create in your schools an atmosphere friendly to innovation.[48]

An educator who has perhaps done more research and writing in the area of change and adaptability of schools than any other person is the late Paul Mort of Columbia University.[49] In one of his earlier books, Adaptability of Public School Systems, he examined the diffusion of innovations which he called "adaptability". He analyzed the factors influencing the adaptability of school systems, both those that are subject to administrative control and those which are not.[50] Among the things that were recognized as affecting the adaptability, or innovativeness, of a school system were the level of expenditure by the school[51] and the local leadership.[52]

In another study Mort and Furmo examine the causes for change in school districts by proposing a sequential simplex model to account for the various influences on schools. The sequential simplex, which Mort developed, was a way of seeking to define causitive factors by measuring financial power at three different points in a

---

[48] John W. Gardner, op. cit., p. 40.
[49] Rogers, Diffusion of Innovations, p. 39.
[50] Paul R. Mort and Francis G. Cornell, Adaptability of Public School Systems (New York: Teachers College, Columbia University, 1938), pp. 41-48.
[51] Ibid., p. 52.
[52] Ibid., p. 53.

continuum: wealth, actual expenditures, and professional salaries. Data were used from several previous studies of school systems in Pennsylvania and New York. Measures of excellence were set up and correlated to show that adaptability is related to financial power.[53]

Mort summarized the research on educational innovation. He stated that 200 studies have been carried on in the Institute of Administrative research dealing with the adaptability of public school systems and the adaptation process. Of the fifty studies completed prior to Mort's report, he indicated that they deal almost exclusively with the influences on the adaptability of school systems.[54]

Mort drew certain conclusions from the research that should be noted here:

> 1. Change in the American school system comes about through a surprisingly slow process.
> 2. There is a relationship of surprising magnitude between the community and the adaptability of the school system.
> 3. The tempo of diffusion can be speeded up.[55]

Another study that adds light to the problems of change is that of Cocking. Cocking examined the rate and patterns of educational change and the aids and hindrances to the diffusion process. Although he did not include in

---

[53] Paul R. Mort and Orlando F. Furmo, Theory and Synthesis of a Sequential Simplex (New York: Teachers College, Columbia University, 1960).

[54] Mathew B. Miles, Innovation in Education (New York: Teachers College, Columbia University, 1964), pp. 319-327.

[55] Ibid., pp. 318-319.

his study many of the studies examined by Rogers,[56] some of the conclusions he reached coincide with those of Rogers. Of particular importance to this study are the conclusions he reached in regards to geographic location:

> The location of a school system in a particular geographical area is effective in aiding or hindering the early introduction of educational practices in the degree that this location (1) affords intercommunication among and within suburban communities which either in themselves make up a wide range of population types or constitute a part of a larger community with such characteristics, and (2) provides exchange among isolated communities having a cross section of social and economic circumstances which are related to the alertness of school systems in recognizing the needs of children and inventing ways of meeting them.[57]

Miles analyzed change in education and relates it to what he calls temporary systems.[58] He shows that these temporary systems, which in education might be committees, workshops, conferences, and the like, are productive of change in themselves and might be used to great advantage by those who are planning for change.

A work that examines the question of change in relation to the curriculum is that of McNally and Passow. The authors point out that some of the agents of change in the curriculum include textbook writers, administrative decisions, teachers institutes, national committees, lab-

---

[56] Rogers, Diffusion of Innovations.

[57] Walter Cocking, The Regional Introduction of Educational Practices (New York: Teachers College, Columbia University, 1951), p. 71.

[58] Miles, op. cit., pp. 437-490.

oratory schools and others.[59]

McNally and Passow also point out that there have been changes in emphasis in recent years that affect curriculum planning, (1) a more comprehensive approach to curriculum planning, (2) extensive classroom participation, (3) wide and varied use of committee and group work, (4) more diversified instruction materials, (5) leadership and responsibility are more specifically assigned, and (6) curriculum change uses the broken front approach.[60] These observations are important considerations for those who would foster change in schools.

An example of the convergence of two research fields to focus on the diffusions of innovations is the study by Eichholz and Rogers in the fields of education and rural sociology respectively. In this study the resistance to the adoption of audio-visual aids by elementary teachers is compared and contrasted to agricultural innovation.

The procedure in the education study was to develop a theory of rejection-adoption. This theory was then tested by interviewing forty-five teachers in a metropolitan school system in 1960. They were selected on the basis of three criteria: Grade taught, teaching experience, and known rejector. Although the researchers were able to classify most of the responses in the rejector categories

---

[59] Harold J. McNally and Harry A. Passow, Improving the Quality of Public School Programs (New York: Teachers College, Columbia University, 1960), pp. 30-32

[60] Ibid., pp. 34-36.

they had postulated, they felt the results were not completely conclusive. No teacher was a rejector of all newer media. The reasons given for rejection were not always the real reason.[61]

In comparing the results of this study and others in education to agricultural studies, the authors make the observation that in rural sociology the unit of analysis has been the individual system while in the 150 education studies reviewed the unit of analysis has been the school system. They also make these generalizations in regard to the slow adoption rate in schools:

1. There is an absence of scientific sources of information in education.

2. There is a lack of change agents to promote new educational ideas.

3. There is a lack of economic incentive to adopt.[62]

A project carried out by Fox and Lippitt at the University of Michigan to study teacher innovations involved thirty teachers and their classrooms over a period of three years. It was hypothesized that teachers might be encouraged to make changes in two ways: by collaborating with a research team and by examining innovative efforts of other teachers. Teachers were involved in action research efforts

---

[61] Gerhard Eichholz and Everett M. Rogers, "Resistance to the Adoption of Audio-Visual Aids by Elementary School Teachers: Contrasts and Similarities to Agricultural Innovation," in Miles, op. cit., p. 309.

[62] Ibid., p. 315.

with special attention given to communication linkage with teachers involved in change efforts.

Various instruments were developed and used to study various aspects of the classroom and characteristics of the teachers. The instruments included written questionnaires as well as interviews. The final phase of the project focused on examining the factors involved in the spread of innovations.[63]

Follow-up research to this project is being done at the Institute for Social Research at the University of Michigan. Although final results of these studies are not available at this writing, several tentative conclusions have been advanced:

1. Teachers participating in the intensive summer workshops attempted a greater number of ideas in the classroom.

2. Summer workshops plus consultation produced a higher rate of innovation.

3. Innovative efforts can be useful to colleagues. However, communication channels are poorly developed.

4. Collaborative efforts of school administrators, teachers, and outside resource people provide a more vigorous and productive leadership.[64]

---

[63] Robert S. Fox and Ronald Lippitt, "The Innovation of Classroom Mental Health Practices," in Miles, op. cit., pp. 271-297.

[64] Ibid., pp. 296-297.

A study by Bergsma on the characteristics of school districts adopting educational television tended to confirm the earlier findings of the diffusion studies. Bergsma sent questionnaires to 176 school administrators in high school districts within range of a broadcast television station. To verify earlier research, eight administrative characteristics of school districts were selected for analysis, (1) quality, (2) location, (3) size, (4) level of personal income, (5) ratio of pupils per teacher, (6) median school years completed by people living in the district, (7) tax effort, and (8) wealth. Chi-square measures of statistical independence were used to determine if relationships existed.

Among the conclusions reached, it was determined that school districts using television tended to be accredited to a greater extent, located in urban areas and to support the schools with a higher tax millage.[65]

This study was limited to one innovation. The adoption process or the part that the individual teacher may have played in its adoption is not considered. However, its importance to this study lies in the fact that it tends to confirm earlier findings that innovativeness is related to location, size, and wealth.

---

[65] Kenneth S. Bergsma, "The Relationship of Selective School District Characteristics to the Use of Educational Television in Michigan High School Districts," (unpublished dissertation, Michigan State University, 1963).

Conclusion

In concluding this survey of the literature, several things can be summarized in regard to in-service education, the process of change, and change as related to education.

Several areas of agreement have been noted in regard to in-service education. One is that it is necessary for teachers to continue their education after entering the teaching profession. A second is that one of the chief purposes of in-service education is the improvement of education. There has been almost universal concern for evaluation. Evaluations in the past have been based mostly on surveys of existing practice and opinions. Finally it has been shown that most of the activities recommended for in-service education have been emphasized for the past sixty years.

The studies and research on the process of change have shown that changes come about as a result of many factors and influences. It has also been shown that certain conditions foster change and that interaction and communication are significant. It is generally agreed by the researchers that rates of change can be altered, that the existence of change agents and the extent of their efforts influence these rates of change, and that resistance to change can be reduced if this resistance is analyzed.

There is greatly increased emphasis on change in education as a means of improving schools. Reasons for schools being slow to change include lack of change agents,

lack of financial incentive to change, and the absence of scientific sources for evaluating change.

Most studies of change in education have been based on the system as a unit of analysis rather than on the individual teacher. It has been shown that location, size, and wealth are positively related to innovativeness and that the efforts of the principal in regard to change are important. Other factors influencing change rates include information sources, communication, and the use of temporary systems.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

The purpose of this chapter is to present an analysis of the extent of participation in in-service education by teachers in the schools included in the study and to analyze the data with reference to the hypotheses of the study.

The chapter is divided into six sections. The first section examines the extent of participation by teachers in in-service programs. The second section examines the frequency of participation and its relationship to the number of innovations in the classroom. The third section examines the financial compensation or released time given to teachers for participation in in-service education. The fourth section examines the role of the principals in promoting in-service education. The fifth section examines the teacher's perception of the extent to which the principal promotes change. The sixth section examines the sources of ideas for innovations of the teachers in the classroom.

Teacher Participation in In-Service Programs

The data on in-service education provided in the tables were taken from two sources: (1) questionnaires completed by principals in sixteen high schools, and (2) questionnaires

completed by 213 teachers from eight of the sixteen schools. The questionnaires to principals were mailed following a telephone contact with each principal requesting his cooperation and participation. The questionnaires to teachers were administered in person by the writer at staff meetings in each of the eight schools.

The eight schools at which teacher questionnaires were administered were selected from the sixteen on the basis of the scores obtained from the principal questionnaires. Four schools were those that scored relatively high and four were schools that scored relatively low on frequency of selected in-service education activities as indicated in the principal questionnaires.

Schools Included in the Study

The schools in the study were selected on the basis of location, accreditation, size, and wealth in order to equate several factors which might influence in-service education programs of the schools or the innovativeness of the teachers.[1]

The schools were located in three suburban metropolitan areas of Michigan including Detroit, Flint, and Grand Rapids. The participants were assured that schools, principals, and teachers would not be identified in the study. This was done in order to obtain objective answers to questionnaires. For this reason the schools are not identified by name.

---

[1] See page no. 47.

The size of the schools was determined by the number of teachers on the staff. Table 1 shows that schools had from 29 to 69 teachers. There were 423 teachers listed for the previous year in the eight schools where the questionnaires were administered to teachers. There were 213 questionnaires completed. It should be noted that beginning teachers, librarians, and counselors who were not teaching in the classroom were not included in the study.

All schools were accredited by the North Central Association of Colleges and Secondary Schools and by the University of Michigan. The estimated per pupil expenditures for operating costs for the districts in which the schools were located were for the 1963-64 school year, the latest available at the time the schools were selected. The expenditures ranged from $362 per child per year to $442.

Participation of Teachers in In-Service Education

The questions dealing with participation in committees were limited to those committees dealing with content, methods, or materials of instruction. Questions about system-wide committees were asked of both principals and teachers.

A comparison of the data in Table 2 and Table 3 shows that building committees were more widely used than system-wide committees. Twelve principals reported that their schools had more than one-third of the teachers involved in committees, with five reporting all the teachers involved. Four schools had less than one-third but no principal

TABLE 1

INFORMATION ON SCHOOLS USED IN THE STUDY

School number	Number of teachers[1]	Type of organization[1]	Accredition date[1]	Est. per pupil expenditure[2]
1	51	3	1929	$442
2	46	4	1935	418
3	47	3	1964	433
4*	59	3	1920	433
5*	55	3	1962	384
6*	31	4	1957	379
7*	45	4	1938	375
8*	69	3	1931	404
9*	43	3	1960	417
10	50	5	1930	382
11	39	3	1945	411
12	52	4	1937	362
13	29	3	1964	373
14	68	3	1927	384
15*	52	3	1950	401
16*	69	6	1963	373

* Schools where the faculties completed the teacher questionnaire.

[1] Michigan Accredited Schools 1965-66, The University of Michigan Official Publication, Vol. 67, No. 47, 1965.

[2] Stanley E. Hecker and Thomas Northey, Teacher Salary Schedule Study (East Lansing, Michigan: The Michigan Education Association, 1964).

TABLE 2

INVOLVEMENT OF TEACHERS IN SYSTEM-WIDE COMMITTEES AS REPORTED BY PRINCIPALS

	Number of schools
All teachers	2
At least two-thirds but not all	2
From one-third to two-thirds	2
Less than one-third	8
None at all	2
Total	16

TABLE 3

INVOLVEMENT OF TEACHERS IN BUILDING COMMITTEES AS REPORTED BY PRINCIPALS

	Number of schools
All teachers	5
At least two-thirds but not all	2
From one-third to two-thirds	5
Less than one-third	4
None at all	0
Total	16

reported that none of the staff were involved. In regard to system-wide committees, two principals reported no teachers involved and two reported all teachers involved. Half of the principals reported that less than one-third of the teachers were involved.

Table 4 shows that from 31.2% to 60.0% or an average of 46.0% of the teachers in all the schools served on no system-wide committee whereas an average of 2.8% served on four or more. Thirty-three per cent of all teachers reported serving on one system-wide committee.

In regard to building committees, from 11.4% to 54.6%, or an average of 24.5%, reported serving on no building committee and an average of 4.7% reported serving on four or more. The greatest number, 39.2%, reported serving on one building committee.

Table 5 indicates that the greatest number of schools held from three to nine faculty meetings per year but that one held none and one held more than twenty.

TABLE 4

NUMBER OF CURRICULUM COMMITTEES SERVED BY TEACHERS
AS REPORTED BY TEACHERS

	Number of teachers															
School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
System-wide committees:																		
Four or more--	0	.0	1	2.8	0	13.3	0	.0	1	2.9	1	2.9	0	2.9	0	.0	6	2.9
Three---------	1	2.9	4	11.1	0	.0	2	9.1	1	2.9	1	6.3	0	.0	1	4.8	10	4.7
Two----------	6	17.7	6	16.7	1	6.7	2	9.1	4	11.8	0	.0	5	14.3	4	19.0	28	13.2
One----------	15	44.1	12	33.3	4	26.7	6	27.3	15	44.1	5	31.2	8	22.8	6	28.6	71	33.3
None----------	12	35.3	13	36.1	8	53.3	12	54.5	13	38.3	9	31.2	21	60.0	10	47.6	98	46.0
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	21	100	213	100
Building committees:																		
Four or more--	1	2.9	4	11.1	1	6.7	0	.0	0	.0	2	12.5	2	5.7	0	.0	10	4.7
Three---------	2	5.9	6	16.7	1	6.7	0	.0	3	8.8	1	6.3	1	2.9	1	5.0	15	7.1
Two----------	16	47.1	3	8.3	0	.0	3	13.6	5	14.7	6	37.5	13	37.1	6	30.0	52	24.5
One----------	9	26.5	16	44.4	5	33.3	7	31.8	18	52.9	5	31.2	15	47.9	8	40.0	83	39.2
None----------	6	17.6	7	19.5	8	53.3	12	54.6	8	23.6	2	12.5	4	11.4	5	25.0	46	24.5
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100

TABLE 5

NUMBER OF FACULTY MEETINGS HELD PER YEAR AS REPORTED BY PRINCIPALS

	Number of schools
More than twenty	1
Ten to twenty	2
Three to nine	7
One or two	5
None at all	1
Total	16

Table 6 indicates the involvement of teachers. According to the teachers, from 6.3% to 52.4%, or an average of 22.3%, attended no staff meetings devoted to curriculum improvement while 1.4% reported attending more than twenty. The greatest number, 34.6%, reported attending three to nine.

Principals reported that regular department meetings were held by at least a few departments in all the schools and by all the departments in six of the schools as the data in Table 7 show. The teachers' attendance at department meetings devoted to curriculum improvement, as indicated by the data in Table 6, closely parallels attendance at total staff meetings, with the greatest number, 41.7%, attending from three to nine meetings. On the other hand, 14.7% reported attending none and 1.9% reported attending more

TABLE 6

NUMBER OF STAFF MEETINGS DEVOTED TO CURRICULUM IMPROVEMENT ATTENDED BY TEACHERS AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total staff:																		
More than twenty-------	0	.0	0	.0	0	.0	0	.0	1	2.9	0	.0	2	5.9	0	.0	3	1.4
Ten to twenty-------	3	9.1	0	.0	1	6.7	1	4.6	9	26.5	3	18.8	5	14.7	0	.0	22	10.4
Three to nine--	9	27.3	15	41.7	5	33.3	14	63.6	10	29.4	6	37.5	10	29.4	4	19.1	73	34.6
One or two-----	12	36.4	13	36.1	6	40.0	5	22.7	8	23.5	6	37.5	10	29.4	6	28.6	66	31.3
None----------	9	27.3	8	22.2	3	20.0	2	9.1	6	17.7	1	6.3	7	20.6	11	52.4	47	22.3
Total---	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100
Department staff:																		
More than twenty-------	0	.0	2	5.6	0	.0	0	.0	0	.0	1	6.3	1	2.9	0	.0	4	1.9
Ten to twenty-------	4	12.1	2	5.6	2	13.3	1	4.6	3	8.8	2	12.5	2	5.9	3	14.3	19	9.0
Three to nine--	14	42.4	10	27.8	7	46.7	7	31.8	18	52.9	6	37.5	19	55.9	7	33.3	88	41.7
One or two-----	11	33.3	16	44.4	4	26.7	4	18.2	9	26.5	6	37.5	9	26.5	10	47.6	69	32.7
None----------	4	12.1	6	16.7	2	13.3	10	45.5	4	11.8	1	6.3	3	8.8	1	4.8	31	14.7
Total---	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

TABLE 7

NUMBER OF DEPARTMENTS HOLDING REGULAR MEETINGS AS REPORTED BY PRINCIPALS

	Number of schools
All departments	6
Most of the departments	4
About half of the departments	3
A few of the departments	3
None of the departments	0
Total	16

than twenty.

An in-service education activity that is not extensively used in the schools is that of teachers visiting other teachers' classes for observing instruction. By comparing Tables 8 and 9 with Table 10, it is noted that some of the principals were not aware that a number of teachers were involved in class visitations. Three principals reported no class visitation within their schools and four reported no visitation to other schools, yet class visitation both within the school and to other schools was reported by at least some of the teachers in all of the schools. As shown in Table 10, the greatest percentage of teachers involved in class visitation within the building in any one school was 63.2% while the smallest percentage was 31.2%. An average of 59.7% did not visit any classes within the building.

TABLE 8

PROPORTION OF TEACHERS OBSERVING CLASSES OF OTHER TEACHERS IN THE SAME SCHOOL AS REPORTED BY PRINCIPALS

	Number of schools
All teachers	0
At least two-thirds but not all	0
From one-third to two-thirds	1
Less than one-third	12
None at all	3
Total	16

TABLE 9

PROPORTION OF TEACHERS OBSERVING CLASSES OF TEACHERS IN OTHER SCHOOLS AS REPORTED BY PRINCIPALS

	Number of schools
All teachers	0
At least two-thirds but not all	2
From one-third to two-thirds	6
Less than one-third	4
None at all	4
Total	16

TABLE 10

NUMBER OF TIMES TEACHERS HAVE VISITED OTHER TEACHERS' CLASSES AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
In same school:																		
Four or more--	3	8.8	3	8.3	0	.0	1	4.6	5	14.7	3	18.8	4	11.4	4	21.1	23	10.9
Three---------	3	8.8	5	13.9	2	13.3	2	9.1	1	2.9	1	6.3	3	8.6	2	10.5	19	9.0
Two----------	2	5.9	2	5.6	3	20.0	3	13.6	10	29.4	0	.0	2	5.7	2	10.5	24	11.4
One----------	5	14.7	2	5.6	1	6.7	1	4.6	3	8.8	1	6.3	2	5.7	4	21.1	19	9.0
None----------	21	61.8	24	66.7	9	60.0	15	68.2	15	44.1	11	68.8	24	68.6	7	36.8	126	59.7
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	19	100	211	100
In another school:																		
Four or more--	2	5.9	2	5.6	2	13.3	0	.0	2	5.9	1	6.3	6	17.1	3	15.0	18	8.5
Three---------	0	.0	1	2.8	0	.0	1	4.6	2	5.9	1	6.3	0	.0	2	10.0	7	3.3
Two----------	1	2.9	2	5.6	1	6.7	2	9.1	5	14.7	2	12.5	4	11.4	1	5.0	18	8.5
One----------	4	11.8	4	11.1	3	20.0	2	9.1	2	5.9	2	12.5	5	14.3	1	5.0	23	10.9
None----------	27	79.4	27	75.0	9	60.0	17	77.3	23	67.7	10	62.5	20	57.1	13	65.0	146	68.9
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100

The percentage of teachers who visited classes in other schools ranged from 20.6% to 42.9%. An average of 68.9% did not make any visits. It is interesting to note that an average of 8.5% reported visiting four or more classes in other schools.

A comparison of the data in Tables 11 and 12 shows that consultants were used more by teachers in groups than by individual teachers and that in both cases more consultants were provided from within the system than from the outside. There is a wider range of differences among schools in the use of consultants from within the system. In regard to consultants used by individual teachers, from 30.6% to 47.0%, or an average of 39.4%, of the teachers indicated they had used no consultants from within the system. From 20.0% to 68.7%, or an average of 51.9% indicated they had used no consultants from outside the system. On the other hand, 21.1%, reported using four or more consultants from within the system and 14.2% reported using that many from the outside.

In the use of consultants by teachers in groups, from 25.7% to 45.4%, or an average of 34.1%, reported using no consultants from inside the system and from 13.3% to 50.0%, or an average of 37.4%, reported using none from the outside. Similarly, 20.9% indicated using four or more from inside the system and 14.2% reported using that many from the outside. These data are presented in Table 12.

The in-service activity that showed the greatest variation among schools was that of classroom visitation by the

TABLE 11

NUMBER OF CONSULTANTS USED BY INDIVIDUAL TEACHERS
AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
From within system:																		
Four or more--	7	20.6	10	27.8	5	33.3	7	31.8	4	11.8	5	31.3	5	14.3	2	9.5	45	21.1
Three---------	4	11.8	4	11.1	0	.0	0	.0	4	11.8	0	.0	2	5.7	3	14.3	17	8.0
Two----------	2	5.9	7	19.4	2	13.3	3	13.6	7	20.6	2	12.5	8	22.9	3	14.3	34	16.0
One----------	5	14.7	4	11.1	2	13.3	3	13.6	7	20.6	3	18.8	5	24.3	4	19.1	33	15.5
None----------	16	47.0	11	30.6	6	40.0	9	40.9	12	35.3	6	37.5	15	42.8	9	42.9	84	39.4
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	21	100	213	100
From outside:																		
Four or more--	3	8.8	5	13.9	4	26.7	7	31.8	3	8.8	3	18.8	3	8.6	2	10.0	30	14.2
Three---------	5	14.7	4	11.1	1	6.7	0	.0	1	2.9	0	.0	3	8.6	3	15.0	17	8.0
Two----------	2	5.9	5	13.9	5	33.3	0	.0	3	8.8	6	37.5	3	8.6	2	10.0	26	12.3
One----------	5	14.7	5	13.9	2	13.3	2	9.1	7	20.6	2	12.5	2	5.7	4	20.0	29	13.7
None----------	19	55.9	17	47.2	3	20.0	13	59.1	20	58.8	5	31.2	24	68.7	9	45.0	110	51.9
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100

TABLE 12

NUMBER OF CONSULTANTS USED BY GROUPS OF TEACHERS
AS REPORTED BY TEACHERS

	Number of teachers																	
School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
From within system:																		
Four or more--	7	21.2	10	28.6	3	20.0	3	13.6	6	17.7	3	18.8	7	20.0	5	23.8	44	20.9
Three---------	3	9.1	3	8.6	2	13.3	1	4.6	4	11.8	2	12.5	3	8.6	4	19.1	22	10.4
Two----------	5	15.2	7	20.0	3	20.0	4	18.2	5	14.7	2	12.5	6	17.1	3	14.3	35	16.6
One----------	6	18.2	6	17.2	3	20.0	4	18.2	6	17.7	2	12.5	8	22.9	3	14.3	38	18.0
None----------12		36.4	9	25.7	4	26.7	10	45.4	13	38.2	7	43.8	11	31.4	6	28.6	72	34.1
Total----33		100	35	100	15	100	22	100	34	100	16	100	35	100	21	100	211	100
From outside:																		
Four or more--	3	8.8	6	17.1	2	13.3	8	36.4	3	8.8	3	18.8	2	5.7	4	20.0	31	14.7
Three---------	2	5.9	1	2.9	3	20.0	1	4.6	2	5.9	1	6.3	0	.0	1	5.0	11	5.2
Two----------	9	26.5	7	20.0	4	26.7	2	9.1	6	17.7	6	37.5	10	28.6	3	15.0	47	22.3
One----------11		32.4	6	17.1	4	26.7	4	18.2	6	17.7	3	18.8	7	20.0	2	10.0	43	20.4
None----------	9	26.5	15	42.9	2	13.3	7	31.8	17	50.0	3	18.8	16	47.7	10	50.0	79	37.4
Total----34		100	35	100	15	100	22	100	34	100	16	100	35	100	20	100	211	100

principal or supervisor. As Table 13 shows, school number five had 66.7% of the teachers reporting no visits, only 5.6% reporting three and none reporting four or more. In contrast to this, school number six had all teachers reporting some class visits with 33.3% reporting four or more. It is possible that the size of the faculty, 36 reporting teachers in school five versus 15 reporting teachers in school six, had something to do with the number of visits. However, school nine, with 16 reporting teachers, had 50% reporting no visits. The totals show 32.6% of the teachers reporting no visits and 11.8% reporting four or more.

Table 14 shows that teachers have a considerable number of contacts with salesmen of educational materials. A total of 34.0% of the teachers reported having four or more contacts in the twelve month period. Only 14.6% reported having none. There is a wide variation among the schools, with all the teachers of one school reporting having some contact with salesmen, and 33.3% of another school reporting having none.

There was not a wide variation among schools in the number of educational conferences attended by teachers as indicated by the data in Table 15. From 6.7% to 19.4%, or an average of 13.7% reported attending no conferences while from 22.2% to 33.3%, or an average of 25.6%, reported attending four or more.

As shown in Table 16, the number of teachers completing graduate work in the past twelve months seems rather low

TABLE 13

NUMBER OF TIMES PRINCIPAL OR SUPERVISORS HAVE VISITED CLASSES AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Four or more---	1	2.9	0	.0	5	33.3	2	9.1	11	32.4	1	6.3	3	8.6	2	10.0	25	11.8
Three----------	1	2.9	2	5.6	2	13.3	3	13.6	6	17.7	0	.0	2	5.7	1	5.0	17	8.0
Two----------	4	11.8	4	11.1	3	20.0	8	36.4	8	23.5	4	25.0	6	17.1	6	30.0	43	20.3
One-----------	13	38.2	6	16.7	5	33.3	5	22.7	7	20.6	3	18.8	13	37.1	6	30.0	58	27.4
None----------	15	44.1	24	66.7	0	.0	4	18.2	2	5.9	8	50.0	11	31.4	5	25.0	69	32.6
Total-----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100

TABLE 14

NUMBER OF TIMES TEACHERS HAVE MET WITH SALESMEN OF EDUCATIONAL MATERIALS AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Four or more--	7	20.6	15	41.7	4	26.7	10	45.5	10	29.4	8	50.0	12	34.3	6	30.0	72	34.0
Three---------	0	.0	5	13.9	4	26.7	1	4.6	11	32.4	3	18.8	3	8.6	5	25.0	32	15.1
Two----------	8	25.5	7	19.4	0	.0	5	22.7	5	14.7	3	18.8	5	14.3	4	20.0	37	17.5
One----------	9	26.5	6	16.7	2	13.3	2	9.1	6	17.7	2	12.5	10	28.6	3	15.0	40	18.9
None----------	10	29.4	3	8.3	5	33.3	4	18.2	2	5.9	0	.0	5	14.3	2	10.0	31	14.6
Total----	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100

TABLE 15

NUMBER OF EDUCATION CONFERENCES ATTENDED BY TEACHERS AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Four or more---	8	23.5	8	22.2	5	33.3	6	27.3	8	24.2	4	25.0	9	25.7	6	30.0	54	25.6
Three----------	5	14.7	8	22.2	3	20.0	3	13.6	5	15.2	2	12.5	3	8.6	2	10.0	31	14.7
Two------------	9	26.5	7	19.4	5	33.3	8	36.3	8	24.2	7	43.8	7	20.0	4	20.0	55	20.1
One------------	7	20.6	6	16.7	1	6.7	4	18.2	6	18.2	1	6.3	12	34.3	5	25.0	42	19.9
None-----------	5	14.7	7	19.4	1	6.7	1	4.6	6	18.2	2	12.5	4	11.4	3	15.0	29	13.7
Total-----34	100		36	100	15	100	22	100	33	100	16	100	35	100	20	100	211	100

TABLE 16

NUMBER OF SEMESTER HOURS OF GRADUATE WORK COMPLETED IN THE PAST TWELVE MONTHS AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Eight or more--	3	9.1	1	2.8	0	.0	0	.0	10	29.4	2	12.5	7	20.6	8	38.1	31	14.7
Five to seven--	2	6.1	5	13.9	1	6.7	4	18.2	6	17.7	3	18.8	4	11.8	0	.0	25	11.9
Three or four--	2	6.1	7	19.4	3	20.0	5	22.7	4	11.8	1	6.3	5	14.7	5	24.8	32	15.2
One or two-----	2	6.1	3	8.3	5	33.3	1	4.6	3	8.8	2	12.5	1	2.9	1	4.8	18	8.5
None----------	24	72.7	20	55.5	6	40.0	12	54.6	11	32.4	8	50.0	17	50.0	7	33.3	105	49.8
Total----	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

considering that all the schools are suburban oriented with easy access to graduate centers. Almost 50% of the teachers reported no graduate work while one school had as many as 72.7% reporting no graduate work. The school with the greatest number completing graduate work showed 67.6% of the teachers having some graduate work and 29.4% completing eight or more hours.

As one might expect, the number of committee meetings attended outside of the school system by teachers is rather low as is shown in Table 17. The school with the greatest number of teachers attending such meetings had 53.1% of the teachers involved, while the school with the least number involved had 19.0%. An average of 68.3% of all teachers were not involved at all and 2.3% were involved in ten or more.

An aspect of in-service education that affects the communication of ideas is the contact teachers have with other teachers. Table 18 shows the response to two questions on the teacher questionnaire concerning contacts with teachers within the building and with teachers from other schools. Surprisingly, two teachers reported having hardly any at all within the building and three reported having only a few contacts a year. On the other hand, 25.0% reported having a few contacts a week with teachers within the building and 70.3% reported having a few contacts a day. In the school having the most frequent contacts reported, 93.8% of the teachers reported having a few contacts a day.

TABLE 17

NUMBER OF COMMITTEE MEETINGS ATTENDED OUTSIDE OF OWN SCHOOL SYSTEM AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Ten or more---	1	3.0	1	2.8	0	.0	1	4.6	1	2.9	0	.0	1	2.9	0	.0	5	2.3
Five to nine--	2	6.1	1	2.8	1	6.7	1	4.6	0	.0	0	.0	0	.0	1	4.8	6	2.8
Three or four-	2	6.1	4	11.1	0	.0	3	13.6	6	17.7	0	.0	0	.0	1	4.8	16	7.6
One or two----	3	9.1	8	22.2	4	26.7	3	13.6	9	26.5	6	37.5	5	14.7	2	9.5	40	19.1
None----------	25	75.8	22	61.1	10	66.7	14	63.6	18	52.9	10	62.5	28	82.4	17	81.0	144	68.3
Total	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

TABLE 18

FREQUENCY OF CONTACTS WITH OTHER TEACHERS
AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
In building:																		
A few times a day-------	22	64.7	29	80.6	9	60.0	12	54.6	23	67.7	15	93.8	26	74.3	13	65.0	149	70.3
A few times a week------	10	29.4	7	19.4	5	33.3	8	36.4	8	23.5	1	6.2	7	20.0	7	35.0	53	25.0
A few times a month-----	0	.0	0	.0	1	6.7	2	9.1	2	5.9	0	.0	0	.0	0	.0	5	2.4
A few times a year------	1	2.9	0	.0	0	.0	0	.0	1	2.9	0	.0	1	2.9	0	.0	3	1.4
Hardly at all-	1	2.9	0	.0	0	.0	0	.0	0	.0	0	.0	1	2.9	0	.0	2	.9
Total	34	100	36	100	15	100	22	100	34	100	16	100	35	100	20	100	212	100
In other schools:																		
A few times a day-------	1	3.0	2	5.6	0	.0	2	9.1	1	2.9	0	.0	1	2.9	2	9.5	9	4.3
A few times a week------	6	18.2	10	27.8	3	20.0	6	27.3	7	20.6	3	18.8	5	14.7	7	33.3	47	22.3
A few times a month-----	9	27.3	16	44.4	5	33.3	10	45.5	19	55.9	8	50.0	16	47.1	5	23.8	88	41.7
A few times a year------	11	33.3	8	22.2	5	33.3	2	9.1	2	5.9	5	31.3	7	20.6	7	33.3	47	22.3
Hardly at all-	6	18.2	0	.0	2	13.3	2	9.1	5	14.7	0	.0	5	14.7	0	.0	20	9.5
Total---	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

In regard to contacts with teachers from other schools, the greatest number, 41.7%, reported having a few contacts a month, 4.3% reported having a few contacts a day, and 9.5% reported having hardly any contact at all.

The question on the adequacy of the professional library available within the building is an opinion question. As Table 19 shows, there is considerable difference of opinion within each school. Some of the teachers in all the schools, and as many as 31.8% in one school, reported that the professional library was none existent. The rest of the teachers all reported there was a professional library but judged its adequacy in varying degrees. It is interesting to note that in the school where seven teachers reported that the library was **non-existent**, two reported that it was completely adequate. The school that would appear to have the most adequate professional library shows 50.0% of the teachers indicating it is adequate in most respects and 5.9% indicating it is completely adequate. Even in this school, one teacher thought it was **non-existent.** From this it would seem that one thing principals might well consider is informing their staffs about the professional library.

A comparison of the data in Tables 19 and 20 **show that** the frequency of use of the professional library parallels teachers' perceptions of its adequacy. However, the percentage of teachers who did not use it at all is higher than the percentage of those who reported it none existent. An average of 20.9% reported not using it at all and 2.4% re-

TABLE 19

ADEQUACY OF PROFESSIONAL LIBRARY WITHIN BUILDING
AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Completely adequate-----	0	.0	2	5.6	0	.0	2	9.1	2	5.9	0	.0	0	.0	0	.0	6	2.8
Adequate in most respects-	10	30.3	11	30.6	5	33.3	2	9.1	17	50.0	1	6.2	5	14.7	1	4.8	52	24.6
Adequate in some respects-	7	21.2	10	27.8	2	13.3	4	18.2	9	26.5	6	37.5	8	23.5	4	19.1	50	23.7
Limited in most respects-	14	42.4	10	27.8	6	40.0	7	30.8	5	14.7	8	50.0	15	44.1	11	52.4	76	36.0
None existent--	2	6.1	3	8.3	2	13.3	7	31.8	1	2.9	1	6.3	6	17.7	5	23.8	27	12.8
Total----	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

TABLE 20

FREQUENCY OF USE OF PROFESSIONAL LIBRARY WITHIN BUILDING AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Daily---------	1	3.0	1	2.8	1	6.7	0	.0	1	2.9	1	6.3	0	.0	0	.0	5	2.4
A few times a week-------	2	6.1	4	11.1	0	.0	2	9.1	4	11.8	0	.0	3	8.8	0	.0	15	7.1
A few times a month------	5	15.2	4	11.1	8	53.3	3	13.6	15	44.1	5	31.3	6	17.7	6	28.6	52	24.6
A few times a year-------	18	54.6	21	53.3	4	26.7	9	40.9	13	38.2	7	43.8	14	41.2	9	42.9	95	45.0
Not at all----	7	21.2	6	16.7	2	13.3	8	36.4	1	2.9	3	18.8	11	32.4	6	28.6	44	20.9
Total---	33	100	36	100	15	100	22	100	34	100	16	100	34	100	21	100	211	100

ported using it daily.

Table 21 indicates the teachers' responses to the question, "How many research projects have you worked on either by yourself or with others?" The questionnaire indicates that responses are to cover the past twelve months. Since what is considered "research" is not spelled out, the responses would include anything that in the teachers' judgment could be called a research project. There is a wide range of responses with as few as 20.0% from one school and as many as 72.7% from another reporting working on one. As many as 20.0% from one school but only an average of 4.7% of all teachers reported working on four or more. An average of 46.5% reported working on four or more. An average of 46.5% reported working on none while the rest indicated they had worked on one or more.

As Table 22 shows, there is considerable variation among schools in the number of professional periodicals read regularly by the teachers. In school six, no teachers reported reading none while 40.0% reported reading four or more. On the other hand, school 16 had 14.3% of the teachers reporting that they read none and the same percentage reporting that they read four or more. The greatest number of all teachers reporting 32.2%, indicated they read two, 4.7% indicated they read none, and 17.5% indicated they read four or more.

TABLE 21

NUMBER OF RESEARCH PROJECTS INVOLVED IN BY TEACHERS
AS REPORTED BY TEACHERS

Number of teachers

School number:	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Four or more--	2	5.9	2	5.6	3	20.0	0	.0	2	6.1	1	6.7	0	.0	0	.0	10	4.7
Three---------	3	8.8	0	.0	1	6.7	0	.0	2	6.1	0	.0	0	.0	2	9.5	8	3.8
Two----------	3	8.8	6	11.7	4	26.7	2	9.1	5	15.2	4	26.7	9	25.7	1	4.8	34	16.1
One----------	8	23.5	13	36.1	4	26.7	4	18.2	12	36.4	2	13.3	11	31.4	7	33.3	61	28.9
None----------	18	54.9	15	41.7	3	20.0	16	72.7	12	36.4	8	53.3	15	42.9	11	52.4	98	46.5
Total---	34	100	36	100	15	100	22	100	33	100	15	100	35	100	21	100	211	100

TABLE 22

NUMBER OF PROFESSIONAL PERIODICALS OR JOURNALS READ REGULARLY BY TEACHERS AS REPORTED BY TEACHERS

Number of teachers

School number	4		5		6		7		8		9		15		16		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Four or more--	4	11.8	7	19.4	6	40.0	4	18.2	6	18.2	2	13.3	5	14.3	3	14.3	37	17.5
Three---------	5	14.7	8	22.2	3	20.0	8	36.4	7	21.2	4	26.7	8	22.9	8	38.1	51	24.2
Two----------	13	38.2	13	36.1	4	26.6	8	36.4	9	27.3	3	20.0	12	34.3	6	28.6	68	32.2
One----------	10	29.4	7	19.4	2	13.3	2	9.1	9	27.3	6	40.0	5	14.3	4	19.1	45	21.3
None----------	2	5.9	1	2.8	0	.0	0	.0	2	6.1	0	.0	5	14.3	0	.0	10	4.7
Total---	34	100	36	100	15	100	22	100	33	100	15	100	35	100	21	100	211	100

In-Service Education Participation by Teachers as Related to Classroom Innovations

The purpose of this section is to examine the data that are related to the first hypothesis of the study which is: "Teachers who have a higher frequency of participation in in-service education activities have a higher number of innovations in the classroom than do teachers with a lower frequency of participation in in-service education activities."

The statistical data used are correlations of the total number of innovations by individual teachers, as determined by responses to questions 32 through 43 on the teacher questionnaire, with the frequency of participation of individual teachers in in-service education activities as determined by responses to questions 2 through 24. As the data in Table 23 show, there is a correlation of -.01 between the number of innovations in the classroom and the total participation of teachers in in-service education. This correlation is not satistically significant; therefore, the data do not support the first hypothesis of the study.

Although there is no significant correlation between the number of innovations and the total number of in-service activities in which teachers participated, there are significant correlations between the number of innovations and participation in several individual activities of in-service education. Those activities that are related with a significance at better than the 1% level include the number of professional

TABLE 23

CORRELATIONS WITH THE NUMBER OF CLASSROOM INNOVATIONS

Participation of teachers in in-service education as reported by teachers	-.01
The number of committees teachers served on outside the school system	.17
The frequency with which teachers used professional libraries as reported by teachers	.17
The number of research projects in which teachers were involved	.18
The number of professional journals read by teachers	.19
The number of resource persons from outside the system used by teachers	.19
The number of classroom visits made by teachers to other teachers within the building	.15
The number of education conferences teachers attended away from school	.19

Correlation necessary to be significant at the 5% level of confidence: .138, at the 1% level: .181.

journals read by teachers (.19), the number of resource people from outside the system used by teachers (.19), and the number of education conferences the teachers attended away from school (.19).

Those activities that were related to innovativeness with a significance at the 5% level or better include the number of committees teachers served on outside the school system (.17), the frequency of use of professional libraries (.17), the number of research projects in which teachers were

involved and the number of classroom visits made by teachers to other teachers within the building (.18). It is noted that of those activities that are significantly related to innovativeness, four have to do with contacts of the teachers with outside sources and only two can be called sources from within the system.

Compensation to Teachers for In-Service Participation

The purpose of this section is to examine the data that are related to the second hypothesis of the study which is: "Teachers who receive financial compensation or released time for participation in in-service education activities participate to a greater extent in in-service activities than teachers who do not receive such compensation or released time."

The data were taken from two sources, first, the provision for compensation to teachers for participation in in-service activities as determined by the principal questionnaires, and second, the participation of the teachers in in-service education as determined by the teacher questionnaires.

The data in Table 24 are based on the responses to questions 13 through 18 on the principal questionnaire. The questions were designed to determine compensation by released time or paid expenses for attending conferences, paid tuition for graduate work, and the number of semester hours of graduate work for which salary increases were granted.

According to the principals' replies, all schools

TABLE 24

PROVISION FOR COMPENSATION TO TEACHERS
FOR IN-SERVICE EDUCATION

	Number of schools
Released time for conferences:	
All teachers	7
Selected teachers only	8
Department chairmen only	1
Total	16
Amount of expenses paid:	
Pay all expenses	14
Pay travel, lodging and registration only	2
Total	16
Graduate work:	
Pay for all tuition	2
Pay for part of tuition	3
Occasionally pay for part of tuition	1
Pay none of tuition	10
Total	16
Salary increases for graduate work by semester hour:	
For each one or two hours	2
For each ten hours	3
For each fifteen hours	5
For degree or thirty hours	4
Not based on credit	2
Total	16

provided released time for conferences but one provided it to department chairmen only and eight to selected teachers only. Seven reported allowing release time to all teachers. All principals reported that expenses were paid, but two indicated that travel, lodging and registration only were paid, which excludes meals.

In regard to graduate work, ten principals reported that none of the tuition was paid for the teachers, four indicated that part of the tuition was paid and two indicated all tuition was paid.

In regard to salary increases for graduate work completed, the replies showed little consistency of practice among the schools. Two indicated salary increases were not given for graduate credit, four indicated it was given for an advance degree or thirty hours only, four for fifteen hours, three for ten hours and two for each one or two hours.

Table 25 lists the correlations of the compensation allowable to teachers for participation in in-service education, as determined by questions 13 to 17 on the principal questionnaire, with four factors, including total participation in in-service activities, number of conferences attended, number of semester hours of graduate work completed in the past twelve months, and the number of committees served on away from the local school. There is a correlation of -.02 between overall participation of teachers in in-service education and the compensation allowable; this correlation is not significant. Hence, the data do not

TABLE 25

CORRELATIONS WITH THE COMPENSATION ALLOWABLE TO TEACHERS FOR PARTICIPATING IN IN-SERVICE EDUCATION

The participation of teachers in in-service education as reported by teachers	-.02
The number of conferences teachers attended	.04
The number of semester hours of graduate work teachers completed in the past twelve months	.24
The number of committees away from school served by teachers	.03

Correlation necessary to be significant at the 5% level of confidence: .138, at the 1% level: .181.

support the hypothesis that, "Teachers who receive financial compensation or released time for participation in in-service education activities participate to a greater extent in in-service activities than teachers who do not receive such compensation or released time."

It is important to note that there is a correlation significant at better than the 1% level in the compensation allowable teachers and the number of semester hours of graduate work completed in the past twelve months; this correlation is .24. This indicates that the schools in the study that allowed compensation for graduate work had a significantly greater number of teachers involved in graduate work. As can be noted in the principal questionnaire and in Table 24, the compensation was determined by the salary increases for graduate work completed and by the extent to which the

school system paid the tuition for graduate work.

The data in Table 25 show there is no significant correlation of the compensation with the number of conferences teachers attended away from school or with committees served away from school. This may be due to the fact that there were little differences among schools in the compensation allowable as indicated by the data in Table 24.

Promotion of In-Service Education by Principals

The purpose of this section is to examine the data that are related to the third hypothesis of the study which is: "Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation by teachers in in-service education activities have greater participation by teachers in those activities than do schools in which the principal takes a less active role as perceived by teachers."

Two methods of statistical analysis are used. First, correlations are examined of the extent to which principals encourage teachers to participate in in-service education as perceived by teachers with the participation of teachers in in-service education, the number of classroom visits by the principal, and the extent to which the principal encouraged participation in in-service education as reported by principals. Second, chi-square tests of the differences among schools in the participation of teachers are analyzed.

As the data in Table 26 indicate, there is a corre-

TABLE 26

CORRELATIONS WITH THE EXTENT TO WHICH THE PRINCIPAL PROMOTED PARTICIPATION IN IN-SERVICE EDUCATION AS PERCEIVED BY THE TEACHERS

The participation of teachers in in-service education as reported by teachers	.14
The number of classroom visits by the principal or supervisor	.30
The extent to which the principal promoted participation in in-service education as reported by the principal	.33

Correlation necessary to be significant at the 5% level of confidence: .138, at the 1% level: .181.

lation of .14 with the participation of the teachers in in-service education. This correlation, which is significant at better than the 5% level, supports hypothesis three of the study.

The data in Table 26 also indicate that there is a correlation of .30, which is significant at better than the 1% level, between the number of classroom visits by the principal or supervisor and the extent to which the principal encouraged participation of teachers in in-service education as perceived by the teachers. It is evident that teachers who had a greater number of classroom visits felt that there was more encouragement by the principal to participate in in-service education than those who had fewer visits. This becomes even more important when it is noted that there is a correlation of .14, which is significant at

better than the 5% level, between the encouragement of the principal, as perceived by the teachers, and the over-all participation in in-service education by the teachers as noted above. These data suggest that while principal classroom visits are a means of in-service education themselves, they also foster greater over-all participation.

It is also noted that there is a correlation of .33, which is significant at better than the 1% level, between the perception of the teachers and that of the principals in the extent to which the principal encouraged teacher participation in in-service education. On the teacher questionnaire, the teachers were asked to judge the extent to which they felt the principal promoted in-service education, while on the principal questionnaire, principals were asked to indicate quantitatively the means by which they promoted the various in-service activities. This high correlation is an indication of the effectiveness of encouragement of teachers by the principal to participate in in-service education activities.

Table 27 lists a summary of the responses to questions 25 through 31 on the teacher questionnaire which asked the teachers to indicate the extent to which they felt the principal encouraged participation in the various activities indicated.

There is little difference among the schools in the ranking of the activities according to the extent to which the principal encouraged teachers to participate in them.

TABLE 27

THE EXTENT TO WHICH THE PRINCIPAL ENCOURAGES TEACHERS TO TAKE PART IN IN-SERVICE EDUCATION ACTIVITIES AS PERCEIVED BY TEACHERS WITH 5 BEING HIGH AND 1 BEING LOW

	Sum of score by school								
School number:	4	5	6	7	8	9	15	16	Total
Attend education conferences---	86	104	41	65	108	43	78	52	577
Serve on committees-------	75	115	35	55	115	43	87	49	574
Continue graduate training-	71	92	36	50	106	42	65	45	507
Do professional reading-------	71	67	34	49	108	33	55	40	457
Use consultants---------	61	84	41	39	89	30	56	32	432
Do research----	54	64	30	44	101	35	52	31	411
Visit other teachers' classes-------	52	61	30	37	80	23	48	31	362
Total-----	470	587	247	339	707	249	441	280	3320
Average score per teacher--------	13.8	16.3	16.5	15.4	21.4	16.6	12.6	13.3	15.7
Average score per teacher per activity-	1.96	2.33	2.36	2.20	3.06	2.37	1.80	1.90	2.24

The two activities that ranked one or two in all the schools, with one exception, are "attend educational conferences," and "serve on educational committees." The activity that ranked on the bottom over all, and either six or seven out of seven in all schools, is "visit other teachers classes." The activity, "use consultants," ranked five over all but ranked number one in school six along with "attend education conferences." It is evident that, as perceived by the teachers, principals encouraged teachers to attend conferences and serve on committees considerably more than they visit other teachers' classes or to do research.

As is shown in Table 27, none of the principals was rated very highly in his encouragement of in-service participation. Three principals were given an average rating of just below two, which is "rarely," and only one was given an average rating of over three, which was "occasionally." In general, most teachers felt that the principals gave little encouragement to participate in any of the activities.

The chi-square tests were used to determine whether there are significant differences among the schools in the participation of the teachers in in-service activities. This statistic is useful to substantiate the validity of the correlations of principal encouragement of in-service participation and teacher participation. If the encouragement of the principal affects the participation of teachers, then we should expect significant differences among schools in the participation of teachers.

It can be seen by examining the chi-squares listed in Table 28 that there are differences significant at the 1% level, among schools in six of the 23 items included in the questionnaire, differences significant at the 5% level, in three of the items, and no significant differences in 14 of the items. An examination of the individual items gives some understanding of the meaning of the significant differences.

A comparison of items 2 and 3 in the table with items 4 and 5 suggests that there are no significant differences among schools in teacher participation in system-wide committees but that there are differences significant at better than the 1% level, in the participation in building committees. This may be accounted for by the fact that building committees are more likely to be under the control of the building principal than system-wide committees and hence more accurately reflects the leadership of the principal in the in-service program. The in-service programs tend to have greater differences among schools in those aspects under the control of the principal than in aspects beyond his control.

A similar deduction can be made with respect to a comparison of items 6 and 7 with 8, 9, and 10. There are no significant differences among schools in the use of consultants from within the system, but there are differences, significant at better than the 5% level, in the use of consultants and salesmen from outside the system. Here we can

TABLE 28

CHI-SQUARE TESTS OF TEACHER PARTICIPATION IN IN-SERVICE EDUCATION

Question Number	Activity	Chi-Square	Significance None	5%	1%
2	No. of system-wide committees served	29.020	X		
3	No. of meetings with above committees	25.947	X		
4	No. of building committees served	57.774			X
5	No. of meetings with above committees	50.254			X
6	No. of meetings as an individual with consultants from within system	21.863	X		
7	No. of meetings in groups with consultants from within system	8.250	X		
8	No. of meetings as an individual with outside consultants	45.075		X	
9	No. of meetings in groups with outside consultants	45.362		X	
10	No. of meetings with salesmen	44.490		X	
11	No. of class visits within school	35.548	X		
12	No. of class visits in other schools	22.495	X		
13	No. of class visits by principal or supervisor	74.816			X
14	No. of educational conferences away from school	19.043	X		
15	No. of informal contacts with teachers in building	26.289	X		
16	No. of informal contacts with teachers from other schools	38.339	X		
17	No. of faculty meetings attended	48.900			X
18	No. of department staff meetings attended	37.405	X		
19	No. of committee meetings attended outside of system	30.482	X		
20	Adequacy of professional library	57.470			X
21	Frequency of use of professional library	44.338		X	
22	No. of semester hours of graduate work completed in past 12 months	62.406			X
23	No. of research projects involved in	38.043	X		
24	No. of professional periodicals read regularly	29.588	X		

Chi-square necessary to be significant at the 5% level of confidence: 41.337, at the 1% level: 48.278.

see that a staff is limited by the number of consultants available from within the system to a much greater extent than by the number of consultants or salesmen available from outside the system.

It was noted previously in Table 10 that class visitation by teachers to other teachers' classes was not practiced widely. The chi-square test shows no significance in the differences among schools. Thus it can be said that class visitation by teachers did not play an important role in the in-service education programs of the schools in the study.

It is important to note that there are differences among schools, significant at better than the 1% level, in the number of class visits by the principal or supervisor and in the number of faculty meetings. Here again are in-service activities that are under the direct control of the building principal.

There are no significant differences among schools in the number of education conferences teachers attended away from school, the number of contacts teachers had with other teachers, the number of department meetings attended, the number of committee meetings teachers were involved in away from school, the number of research projects involved in by teachers, or the number of periodicals teachers read regularly. These aspects of in-service education are not under the control of the principal to the extent that the aspects showing significant differences are.

There is a difference among schools, significant at better than the 1% level, in the adequacy of the professional library as judged by the teachers, and a difference, significant at better than the 5% level, in the frequency of use of the library. Here again we have an in-service education activity that is more subject to the control of the principal than the in-service education activities previously noted as not being significantly different among the schools in the study.

In summarizing the results of the chi-square tests, it is noted that the activities that were shown to have significant differences among the schools in the study were those activities that were under the control of the principal to a greater extent than those activities which were shown not to have significant differences among the schools.

Consequently, the chi-square tests as well as the correlations support the hypothesis that, "Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation by teachers in in-service education activities have a greater participation by teachers in those activities than do schools in which the principal takes a less active role as perceived by teachers."

Encouragement of Change by Principals

The purpose of this section is to examine the data that are related to the fourth hypothesis of the study which is: "Teachers who perceive of the principal as promoting change

have more innovations in the classroom than teachers who perceive of the principal as not promoting change."

Table 29 lists the correlations of the extent to which principals encouraged classroom changes as perceived by the teachers with the number of classroom innovations by teachers, the number of classroom visits by the principal, and the extent to which principals promoted in-service education as perceived by teachers. The data show a correlation of .03 between innovativeness and the extent to which teachers felt that principals encouraged change. This correlation is not significant. Consequently, the data fail to support hypothesis four of the study.

The data also indicate that there is a correlation of .20, which is significant at better than the 1% level, between the number of classroom visits by the principal or supervisor and the extent to which teachers perceived of the principal as encouraging change. This correlation shows that those teachers who reported more visits felt that the principals encouraged changes to a greater extent than those who reported fewer visits.

The third correlation indicates that teachers who felt that principals promoted in-service education tended to feel that they also encouraged change.

TABLE 29

CORRELATIONS WITH THE EXTENT TO WHICH THE PRINCIPALS ENCOURAGED CHANGE AS PERCEIVED BY TEACHERS

The number of classroom innovations by teachers	.03
The number of classroom visits by principal or supervisor	.20
The extent to which the principal promoted in-service education as perceived by the principals	.18

Correlation necessary to be significant at the 5% level of confidence: .138, at the 1% level: .181.

Table 30 lists a tabulation by school of the responses to question 45 on the teacher questionnaire, which asked teachers to indicate the extent to which they felt their principal encouraged changing things or trying new ideas.

It is noted that there are considerable differences among schools in the way the teachers rated their principals. In school number 8, where the principal received the highest rating, 13 teachers out of 35 rated him as "continuously promotes and encourages change." However, two teachers in the same school rated him as "nearly always opposes change." On the other hand, the school where the principal received the lowest rating, number 15, only one teacher out of 35 rated the principal at the top, while eleven rated him as "nearly always opposes change."

It is noted also that 40 teachers out of 212 felt that their principals were usually or always opposed to change.

TABLE 30

THE EXTENT TO WHICH THE PRINCIPAL ENCOURAGES CHANGE
AS PERCEIVED BY TEACHERS WITH 5 BEING HIGH AND 1 BEING LOW

Number of teachers and score

School number:	4		5		6		7		8		9		15		16		Total	
	No.	Score	No.	Score	No.	Score	No.	Score	No.	Score	No.	Score	No.	Score	No.	Score	No.	Score
Continuously promotes and encourages----	5	25	7	35	0	0	0	0	13	65	1	5	1	5	0	0	27	135
Ocassionally promotes and encourages----	9	36	13	52	4	16	11	44	12	48	6	24	5	20	4	16	64	256
Favors change but seldom promotes------	14	42	11	33	10	30	10	30	7	21	9	27	10	30	10	30	81	243
Sometimes promotes but usually opposes------	6	12	4	8	1	2	1	2	0	0	0	0	8	16	5	10	25	50
Nearly always opposes change-------	0	0	1	1	0	0	0	0	2	2	0	0	11	11	1	1	15	15
Total---	34	115	36	129	15	48	22	76	34	136	16	56	35	82	20	67	212	699
Average score per teacher--	3.38		3.75		3.20		3.45		4.00		3.50		2.34		2.85		3.30	

On the other hand, 172 teachers out of the 212 felt that their principals favored change and 91 felt that they either occasionally or continuously promoted and encouraged change. The failure of the data to support the hypothesis may be due to the fact that principals were generally rated low by teachers in respect to encouraging change.

The correlation of classroom visits by the principal or supervisor as reported by teachers with the participation of the teachers in in-service education, as indicated in Table 31, is significant at better than the 1% level. The correlation of classroom visitation by the principal with the number of classroom innovations by teachers is also significant at better than the 1% level. This indicates that classroom visitations by the principal or supervisor are significantly related to both in-service participation by teachers and innovativeness of the teachers in the classroom.

With respect to hypothesis four, it has been shown that while teachers' perceptions of the extent to which the principal encourages change are not significantly related to the number of innovations in the classroom, the frequency of classroom visitation by the principal is significantly related to the number of innovations in the classroom.

Sources of Ideas for Teacher Innovations

The purpose of this section is to examine the data that are related to the fifth hypothesis of the study which

TABLE 31

CORRELATIONS WITH THE NUMBER OF CLASSROOM VISITS BY THE PRINCIPAL OR SUPERVISOR AS REPORTED BY TEACHERS

The participation of the teachers in in-service education as reported by teachers	.26
The number of classroom innovations as reported by teachers	.19

Correlation necessary to be significant at the 5% level of confidence: .138, at the 1% level: .181.

states: "Teachers get more ideas for innovations from sources outside their school system than from sources inside their school system."

The data in Tables 32 and 33 present a summary of the responses of teachers to the second part of question 32 through 43, which asked them to list the sources of the ideas for the innovations they indicated they had made. There were only 4.4% of the replies checked in "don't know or other," indicating that teachers generally had opinions about where their ideas came from. However, a comparison of the total number of sources (4243), indicated in Table 32, with the total number of innovations (5228), indicated in Table 33, suggests that teachers did not list as many sources as they did innovations.

The ranking of the sources gives an indication of the relative influence of the various idea sources in in-service education. Research ranks number one and is given credit

TABLE 32

SOURCES OF IDEAS FOR CLASSROOM INSTRUCTION CHANGES AS REPORTED BY TEACHERS GIVEN IN NUMBERS

School Number:	4	5	6	7	8	9	15	16	Total	Inside source	Outside source
Research	176	222	96	130	177	100	195	104	1200		
Fellow teacher	74	69	19	49	103	73	93	73	553	553	
Professional reading	76	109	59	45	84	57	104	61	595		595
Graduate work	50	69	37	52	91	42	56	58	455		455
Students	50	76	21	26	41	63	79	42	398	398	
Teacher from other school	59	34	18	24	52	43	40	56	326		326
Conference away	29	53	25	26	31	28	28	10	230		230
Department chairman	12	2	13	11	12	11	2	21	84	84	
Salesman	7	6	13	14	6	16	10	4	76		76
Consultant	4	22	7	7	5	14	12	1	72	72	
Principal	4	5	5	5	11	12	3	3	48	48	
Don't know or other	41	21	11	15	22	18	62	16	206		
Total	582	688	324	404	635	477	684	449	4243	1155	1682
Percentage										40.7	59.3

TABLE 33

SOURCES OF IDEAS FOR CLASSROOM INSTRUCTION CHANGES AS REPORTED BY TEACHERS GIVEN IN PERCENTAGES

School number	4	5	6	7	8	9	15	16	Average
Research	30.2	32.2	29.6	32.2	27.9	21.0	28.5	23.2	28.1
Fellow teacher	12.7	10.0	5.9	12.1	16.2	15.3	13.6	16.3	12.8
Professional reading	13.4	15.8	18.2	11.1	11.7	11.9	15.2	13.5	13.9
Graduate work	8.6	10.0	11.4	12.8	14.3	8.8	8.2	12.9	10.9
Students	8.6	11.0	6.5	6.4	6.5	13.2	11.5	9.4	9.1
Teacher from other school	10.1	4.9	5.6	5.9	8.2	9.0	5.8	12.5	7.8
Conference away	4.6	7.8	7.7	6.4	4.9	5.9	4.1	2.2	5.5
Department chairman	2.1	2.3	4.0	2.7	1.9	2.3	.3	4.7	2.5
Salesman	1.2	.9	4.0	3.5	.9	3.4	1.5	.9	2.0
Consultant	.7	3.2	2.2	1.7	.8	2.9	1.8	.2	1.7
Principal	.7	5.7	1.5	1.2	1.7	2.5	.4	.7	1.2
Don't know or other	7.1	3.1	3.4	3.7	3.5	3.8	9.1	3.6	4.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

for 28.1% of all ideas for innovations, which is more than twice as much as the second highest, fellow teachers, with 13.9%. This high ranking for research is supported by the data in Table 21 which showed 46.5% of all teachers as having worked on one or more research projects. Again, one should keep in mind that what is "research" is not spelled out and therefore includes anything that in the teachers' judgment could be called research.

The fact that consultants ranked the lowest, on the average, may be because consultants are not widely used, as was previously noted by the data in Tables 11 and 12. Principals are not a major source of ideas for innovations as can be seen by the fact that they ranked second from the bottom and were given credit for only 1.8% of the ideas.

Considering that only about half the teachers indicated having taken graduate work during the twelve month period covered by the questionnaire, as was shown in the data in Table 16, it is surprising that graduate work was given credit for 10.9% of the ideas for all innovations.

The last two columns in Table 32 give the total number of times a source was indicated according to whether the source was from within the system or from outside the system. Since research is not spelled out and cannot be labeled as either an inside or an outside source (it may be either,) it is disregarded in the tabulation. As the totals show, 1682 sources, or 59.3%, are from outside the system, while 1155, or 40.7%, are from within the system. The test for

the stability of a percentage[1] indicates that the 1% level of confidence for the sample percentage is 59.3% plus or minus 2.0%, or from 57.3% to 61.3%. Hence, the data support the fifth hypothesis of the study that, "Teachers get more ideas for innovations from sources outside their school system than from sources inside their school system."

---

[1] Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Co., 1958) p. 197.

CHAPTER IV

SUMMARY, CONCLUSIONS AND IMPLICATIONS

The purpose of this chapter is to present a summary of the study, the conclusions determined from the data, and the implications of these conclusions for school administration and for further study.

Summary

The first major purpose of this study was to examine the extent of participation in in-service education by teachers in selected secondary schools. The second major purpose was to determine the relationship between participation in in-service education and the innovativeness of the teacher in the classroom.

The hypotheses of the study were:

1. Teachers who have a higher frequency of participation in in-service education activities have a higher number of innovations in the classroom than do teachers with a lower frequency of participation in in-service education activities.

2. Teachers who receive financial compensation or released time for participation in in-service education activities participate to a greater extent in in-service

activities than teachers who do not receive such compensation or released time.

3. Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation by teachers in in-service education activities have greater participation by teachers in those activities than do schools in which the principal takes a less active role as perceived by the teachers.

4. Teachers who perceive of the principal as promoting change have more innovations in the classroom than teachers who perceive of the principal as not promoting change.

5. Teachers get more ideas for innovations from sources outside their school system than from sources inside their school system.

The data for the study were gathered by means of two questionnaires. The first questionnaire was mailed to principals of 19 secondary schools that were selected on the basis of similarity of size, location and wealth. The purpose of the questionnaire was to determine the strength of the in-service education programs in the schools. The second questionnaire was administered in person by the writer to the faculties of 8 of the 16 schools whose principals replied to the first questionnaire. Four of the schools selected were those with relatively strong in-service programs and four were schools with relatively weak in-service programs as determined by the principal questionnaires. The purpose

of the second questionnaire was to determine the participation of teachers in in-service education, the teachers' perceptions of the principals of the schools in regard to promoting in-service education and encouraging change, the number of innovations teachers made in the classroom, and the sources of the ideas for the innovations.

Three methods of statistical analysis were used in the study. Correlations were determined between the data in various sections of the two questionnaires. Chi-square tests were calculated of the differences among the schools of the participation of the teachers in in-service education as determined by the teacher questionnaires. Finally, the stability of a percentage was calculated to determine the reliability of the percentage which applied to the number of ideas for innovations that teachers reported as having come from outside the system.

Conclusions

The conclusions of the study include those conclusions with respect to the hypotheses of the study and those other conclusions that are related to the major purposes of the study.

Conclusions with Respect to Hypotheses

The first hypothesis was: "Teachers who have a higher frequency of participation in in-service education activities have a higher number of innovations in the classroom than do

teachers with a lower frequency of participation in in-service education activities."

There were significant correlations between participation by teachers in certain in-service education activities and the number of innovations, but the correlation between the frequency of the total participation of teachers in in-service education and the number of innovations by teachers in the classrooms was -.01. This correlation is not significant. Consequently, the data do not support the first hypothesis.

The second hypothesis was: "Teachers who receive financial compensation or released time for participation in in-service education activities participate to a greater extent in in-service activities than teachers who do not receive such compensation or released time."

The correlation between the score for financial compensation and released time as determined by the principal questionnaires and the frequency of participation of the teachers as determined by the teacher questionnaires was -.02. This correlation is not significant. Therefore the data do not support the second hypothesis.

The third hypothesis of the study was: "Schools in which the principal takes a more active role, as perceived by the teachers, in promoting participation by teachers in in-service education activites have a greater participation by teachers in those activities than do schools in which the principal takes a less active role as perceived by the

teachers."

The correlation between the score for the extent to which the principal promoted change as perceived by the teachers and the frequency of participation by the teachers was .14. This correlation is significant at the 5% level. Hence, the data support the third hypothesis.

The fourth hypothesis of the study was: "Teachers who perceive of the principal as promoting change have more innovations in the classroom than teachers who perceive of the principal as not promoting change."

The correlation between the score for the extent to which teachers perceive of the principal as promoting change and the number of innovations teachers introduced in their classrooms was .03. This correlation is not significant. Therefore, the data do not support the fourth hypothesis.

The fifth hypothesis of the study was: "Teachers get more ideas for innovations from sources outside their school system than from sources inside their school system."

The percentage of ideas for classroom changes that teachers indicated came from the **outside** was 59.3% of those ideas that could be classified as coming from either within the system or from outsdie the system. The test for the stability of the percentage showed the 1% level of confidence for the percentage to be plus or minus 2.0% or from 57.3% to 61.3%. Consequently, the data support the fifth hypothesis.

Other Conclusions

The following statements were supported by the data in the study:

1. Teachers who have more contacts with outside sources of ideas through in-service education, including serving on committees outside the system, using professional libraries, reading professional journals, using outside resource people, and attending educational conferences away from school, make more innovations in the classroom than teachers who have fewer contacts with outside sources of ideas through in-service education.

2. There are greater differences among schools in the participation of teachers in those in-service education activities which are under the direct control of the principal than in those in-service activities not under the direct control of the principal.

3. Those teachers who have a greater number of classroom visits by the principal for the purpose of observing instruction perceive the principal as encouraging in-service education participation to a greater extent than those teachers who have fewer visits by the principal.

4. Those teachers who have a greater number of classroom visits by the principal for the purpose of observing instruction perceive the principal as promoting change to a greater extent than those teachers who have fewer visits by the principal.

5. Those teachers who have more classroom visits by the principal for the purpose of observing instruction have more innovations than those teachers who have fewer classroom visits by the principal.

6. More teachers feel that principals "rarely" or "almost never" encourage participation in in-service education than who feel that the principal "occasionally," "frequently" or "continuously" encourages participation.

7. There is a wide range of difference among schools in the number of visits principals make to classrooms for the purpose of observing instruction.

8. More teachers feel that principals seldom promote and encourage change or are opposed to change than who feel that principals occasionally or continuously promote and encourage change.

9. Principals are not a major source of ideas for teacher innovations in the classroom.

10. Teachers who receive compensation for graduate work by paid tuition or salary increases participate in graduate work to a greater extent than teachers who do not receive such compensation.

Implications

The implications of the study are those that relate to school administration and those that relate to further study.

Implications for School Administration

The conclusions of the study have the following implications for school administration:

1. Principals are likely to increase participation of teachers in in-service education activities by encouraging participation of teachers in in-service education activities and by providing more opportunities for such participation.

2. Principals are likely to effectively promote in-service education participation by teachers and encourage innovations in the classroom by teachers through classroom visitation for the purpose of observing instruction.

3. Administrators are likely to increase the number of innovations by teachers in the classroom by increasing participation of teachers in those in-service education activities that are related to sources outside the school system including using professional libraries, reading professional journals, using outside resource people and attending educational conferences away from school.

4. Administrators are likely to increase the number of teachers involved in graduate work by having the school pay for all or part of the tuition for graduate work.

Implications for Further Study

The conclusions of the study imply that further study should be made in the following:

1. Further study should be made of the scope, extent of the involvement of teachers, and the duration of the in-service education activities in which the teachers indicated they had participated.

2. Further study should be made of the adoption of the innovations teachers indicated they had made in their classrooms.

3. Further study should be made of the innovations teachers reported they had made in the classrooms with regard to their effectiveness in bringing about desired results.

BIBLIOGRAPHY

Books

Barnett, H. G. Innovation: The Basis of Cultural Change. New York: McGraw Hill, 1953.

Benne, Kenneth D. and Muntyan, Bozidar. Human Relations in Curriculum Change. New York: The Dryden Press, 1951.

Cartwright, Dorwin and Zander, Alvin. Group Dynamics. Evanston, Illinois: Row Peterson and Company, 1960.

Cocking, Walter. The Regional Introduction of Educational Practices in Urban School Systems in the United States. New York: Columbia University Institute of Administrative Research, 1951.

Douglass, Harl R. The High School Curriculum. New York: The Ronald Press Company, 1964.

Flanders, Ned A. Helping Teachers Change Their Behavior. Ann Arbor, Michigan: The University of Michigan School of Education, 1963.

Griffiths, Daniel E. Behavioral Science and Educational Administration, Sixty-Third Yearbook of the National Society for the Study of Education, Part II, edited by Daniel E. Griffiths. Chicago: The University of Chicago Press, 1964.

Henry, Nelson B. In-Service Education for Teachers, Supervisors and Administrators. National Society for the Study of Education, Chicago: The University of Chicago Press, 1957.

Hodgen, Margaret T. Change and History. New York: Wenner-Gren Foundation for Anthropological Research, 1952.

Jenkins, David H. "Social Engineering in Educational Change," in C. Gratton Kemp, Perspectives on the Group Process. Boston: Houghton Mifflin Company, 1964, pp. 114-120.

Lowry, Charles Doak. The Relation of Superintendents and Principals to the Training and Professional Improvement of Their Teachers. Chicago: The National Society for the Study of Education, 1908.

McNally, Harold J. and Passow, Harry A. Improving the Quality of Public School Programs. New York: Columbia University Press, 1960.

Miles, Mathew B. (ed.) Innovation in Education. New York: Columbia University Press, 1964.

Moffitt, John Clifton. In-Service Education for Teachers. Washington D.C.: Center for Applied Research in Education, 1963.

Mort, Paul R. and Cornell, Francis G. Adaptability of Public School Systems. New York: Columbia University Press, 1938.

Mort, Paul R. and Furmo, Orlando F. Theory and Synthesis of a Sequential Simplex. New York: Columbia University Press, 1960.

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

Sharp, George. Curriculum Development as Re-education of Teachers. New York, Teachers College, Columbia University Press, 1951.

Spears, Harold. Curriculum Planning Through In-Service Programs. Englewood Cliffs, New Jersey: Prentice Hall, 1957.

_____. Improving the Supervision of Instruction. Englewood Cliffs, New Jersey: Prentice Hall, 1953.

Articles and Periodicals

Bushnell, Margaret. "Now We Are Lagging Only Twenty Years," School Executive, 77 (October, 1957) pp. 61-63.

Eichholz, Gerhard C. "Why Do Teachers Reject Change?" Theory Into Practice, 2 (December, 1963) pp. 264-268.

Gardner, John W. "Innovation and Leadership in American Education," National Association of Secondary School Principals Bulletin, 49, No. 299 (March, 1964) pp. 36-42.

Lawrence, Noel. "In-Service Programs for High School Teachers," Education Leadership, 17 (March, 1960) pp. 344-346.

Lortie, Dan C. "Change and Exchange: Reducing Resistance to Innovation," Administrator's Notebook, 12 (February, 1964) pp. 1-4.

Reynard, Harold E. "Pre-Service and In-Service Education of Teachers," Review of Educational Research, 33 (October, 1963) pp. 369-374.

Rhodes, Lewis A. "Can There Be Effective Innovation in the Secondary School?" Michigan Journal of Secondary Education, 6, No. 3 (Spring, 1965) pp. 44-49.

Ryan, Bruce and Gross, Neal. "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology, 8, (1943) pp. 15-24.

Schaaf, Pearl. R. "Let's Review In-Service Education Programs," American School Board Journal, 138 (June, 1959) pp. 17-20.

Unpublished Materials

Bergsma, Stuart Kenneth. "The Relationships of Selected School District Characteristics to the Use of Educational Television in Michigan High School Districts." Unpublished dissertation, Michigan State University, 1963.

Duncan, Billy M. "A Study of Factors Associated With the Successful Operation of In-Service Programs of Education in Selected Alabama Schools." Unpublished dissertation, The University of Alabama, 1964.

Finch, Arnold E. "The Relationship of In-Service Education to Competence of Selected Teachers of the Los Angeles City School District." Unpublished dissertation, The University of California, Los Angeles, 1964.

Gogan, William L. "A Study of Supervisory Services and Activities of Selected Secondary Schools for the Improvement of Instruction." Unpublished dissertation, The University of Nebraska Teachers College, 1964.

Jirik, Frank E. "A Statistical Analysis of 'Level of Achievement' as Related to Certain Supervisory Services and In-Service Participation." Unpublished dissertation, Ohio University, 1964.

Lewin, Charles R. "In-Service Education in Relation to Curriculum Development--Trends and Recommended Programs in Secondary Schools." Unpublished dissertation, The University of Southern California, 1963.

Milstein, Abe. "The Effect of Teacher Participation in Curriculum Guide Development upon Selected Classroom Practices." Unpublished dissertation, Stanford University, 1960.

Mork, Gordon A. "Effects of an In-Service Teacher Training Project on Pupil Outcomes in 5th and 6th Grade Science," Unpublished dissertation, The University of Minnesota, 1953.

Rogers, Everett M. "What are Innovators Like?" Unpublished paper presented at the Seminar on Change in Public Schools, Portland, Oregon, October 14-16, 1964.

Schild, Robert J. "A Survey of Certain Practices and Some Proposed Directions for In-Service Education Programs in Selected Schools of the A.P.S.S." Unpublished dissertation, Columbia University, 1964.

Wesner, Gordon E. "A Study of In-Service Education Programs for Secondary School Teachers in Selected Large City Public School Systems," Unpublished dissertation, The University of Kansas, 1963.

Yourd, John L. "Locally Operated In-Service Education Programs of Selected High Schools in Five Midwestern States," Unpublished dissertation, State University of Iowa, 1963.

APPENDIX A

CORRESPONDENCE WITH PRINCIPALS OF SCHOOLS INCLUDED IN THE STUDY

Dear

I know you are busy so I tried to anticipate your questions and be brief.

NOT ANOTHER QUESTIONNAIRE?
Yes, but I tried to make it easy to answer.

DON'T YOU KNOW I HAVE TOO MANY THINGS TO DO ALREADY?
Yes, but this is also brief. It will take only a few minutes of your itme.

WHAT IS IT ALL ABOUT?
It is part of a study in in-service education.

WHO IS BEHIND IT?
It is part of my doctoral program at the University of Michigan. Dr. Lester Anderson is chairman of my committee.

WHY SHOULD I FILL IT OUT?
As a responsibility to the profession: you will be adding to the research data. As a favor to me: you will be helping me with my doctoral program.

BUT I DON'T WANT MY NAME OR SCHOOL MENTIONED!
Neither your name nor your school will be identified with the data in the study.

IS THIS ALL?
A few schools will be selected for follow-up studies. Yours may be one of them.

WHAT WILL I GET OUT OF IT?
Some stimulated thinking and my everlasting gratitude. Thanks in advance.

Sincerely,

Lloyd E. Peterman

Dear

Thank you for answering and returning the research questionnaire on in-service education.

Your school has been selected as one of several for a follow-up study with the staff.

May I have your permission to come to your school to administer a questionnaire to your teachers at a staff meeting? It should take no more than 20 or 30 minutes.

The questionnaire is about their participation in in-service education activities and the introduction of changes in the classroom.

Having your staff fill out the questionnaires should have value to you and to your staff in that it will stimulate the thinking of the teachers in regard to in-service education and cause them to reflect on their own involvement.

Please remember that neither you nor your school nor individual teachers will be identified with the data in the study.

I'll be calling you in a few days to make an appointment.

Thanks a million for your help!

Sincerely,

Lloyd E. Peterman

APPENDIX B

PRINCIPAL QUESTIONNAIRE USED IN THE STUDY

RESEARCH QUESTIONNAIRE ON IN-SERVICE EDUCATION

Instructions

A. Check the answer that, in your opinion, best applies.

B. Check only one answer to each question.

C. If question cannot be answered, please comment.

1. How adequate is the professional library available to teachers within your school, consisting of professional books, journals, research studies and the like?
   a. Adequate in all respects.
   b. Adequate in most respects.
   c. Adequate in some respects.
   d. Limited in most respects.
   e. None at all.

2. During the past twelve months how many consultants or resource people were in your building to work with teachers to improve instruction in the classroom?
   a. Ten or more.
   b. Six to nine.
   c. Three to five.
   d. One or two.
   e. None at all.

3. During the past twelve months how many teachers in your school have served on system-wide curriculum committees?
   a. All teachers.
   b. At least two thirds but not all of the teachers.
   c. From one to two-thirds.
   d. Less than one-third of the teachers.
   e. None at all.

4. During the past twelve months how many teachers in your school have served on committees within the school devoted to improvement of content, method, or materials of instruction in the classroom?
   a. All teachers.
   b. At least two-thirds but not all of the teachers.
   c. From one to two-thirds.
   d. Less than one-third of the teachers.
   e. None at all.

5. During the past twelve months, how many total staff meetings have been held in which a major topic taking fifteen minutes time or more was devoted to the improvement of content, methods, or
   a. More than twenty
   b. Ten to twenty.
   c. Three to nine.
   d. One or two.
   e. None at all

materials of instruction in the classroom?

6. How many departments have regular department meetings at which content, methods, or materials of instruction are discussed?
   a. All departments.
   b. Most of the departments.
   c. About half of the departments.
   d. A few of the departments.
   e. None at all.

7. How often are department meetings, as described above, held?
   a. Weekly.
   b. Every other week.
   c. Monthly.
   d. Less than once a month.
   e. Not at all

8. During the past twelve months how many of the teachers in your school have been in meetings in the school where outside companies have demonstrated or discussed equipment, supplies, or facilities for use in the classroom?
   a. All teachers.
   b. At least two-thirds but not all of the teachers.
   c. From one to two-thirds.
   d. Less than one-third of the teachers.
   e. None at all.

9. How many teachers at your school do you estimate have visited another classroom within the school to observe instruction for their own improvement?
   a. All teachers.
   b. At least two-thirds but not all of the teachers.
   c. From one to two-thirds.
   d. Less than one-third of the teachers.
   e. None at all.

10. How many teachers at your school do you estimate have visited another school to observe instruction or to see materials or equipment?
    a. All teachers.
    b. At least two-thirds but not all of the teachers.
    c. From one to two-thirds.
    d. Less than one-third of the teachers.
    e. None at all.

11. On the average how often during the school year can a beginning teacher expect a classroom visit by a supervisor for the purpose of observing the instruction and providing assistance to the teacher?
    a. More than five times.
    b. Four or five times.
    c. Two or three times.
    d. Once.
    e. Not at all

12. On the average how often during the school year can a tenure teacher expect a classroom visit by a supervisor for the purpose of observing the instruction and providing assistance to the teacher?
    a. More than five times.
    b. Four or five times.
    c. Two or three times.
    d. Once.
    e. Not at all.

13. Does your school give released time to staff members for attendance at conferences away from school at least once a year other than institutes or conferences when school is closed?
    a. All teachers.
    b. Selected or recommended teachers only.
    c. Department or committee.
    d. Administrators only.
    e. None at all.

14. To what extent does your school pay the expenses of teachers attending conferences away from school?
    a. All expenses.
    b. Travel, lodging, and registration.
    c. Travel and registration.
    d. Registration only.
    e. None of the expenses.

15. To what extent does your school pay the tuition for graduate work of staff members?
    a. Routinely pays all tuition.
    b. Routinely pays part of tuition.
    c. Occasionally pays all of the tuition.
    d. Occasionally pays part of the tuition.
    e. Pays none of the tuition.

16. At what level are salary increases granted for graduate work in your school?
    a. For each additional one or two hours of graduate credit.
    b. For each additional ten hours.
    c. For each additional fifteen hours.
    d. For advanced degrees or thirty hours only.
    e. Salary increases not based on hours of credit.

17. To what extent does your school have a merit pay system which recognizes participation of staff members in activities other than graduate work such as research work,
    a. Salary increases always given for such involvement.
    b. Salary increases frequently given for such involvement.
    c. Salary increases occasionally given for such involvement.

publications, involvement in regional state, or national associations and the like?

d. Salary increases seldom given for such involvement.
e. Salary increases never given for such involvement.

18. To what extent do you encourage teachers to attend conferences or workshops away from school?

a. By all of the following:
   1. Speaking to individuals.
   2. By sending information to individuals.
   3. By posting information on bulletin boards.
   4. By giving information to those who ask for it.
b. By three of the above ways.
c. By two of the above ways.
d. By one of the above ways.
e. Not at all.

19. To what extent do you encourage teachers to use professional libraries?

a. By all of the following:
   1. Speaking to individuals.
   2. By sending information to individuals.
   3. By posting information on bulletin boards.
   4. By giving information to those who ask for it.
b. By three of the above ways.
c. By two of the above ways.
d. By one of the above ways.
e. Not at all.

20. To what extent do you encourage teachers to continue their graduate training through regular course work at the Universities?

a. By all of the following:
   1. Speaking to individuals.
   2. By sending information to individuals.
   3. By posting information on bulletin boards.
   4. By giving information to those who ask for it.
b. By three of the above ways.
c. By two of the above ways.
d. By one of the above ways.
e. Not at all.

21. To what extent do you encourage teachers to apply for summer fellowships and institutes?

a. By all of the following:
   1. Speaking to individuals.
   2. By sending information to individuals.
   3. By posting information.
   4. By giving information to those who ask for it.
b. By three of the above ways.
c. By two of the above ways.
d. By one of the above ways.

e. Not at all.

22. To what extent do you encourage teachers to do research on content or methods of instruction?
    a. By all of the following:
       1. Speaking to individuals.
       2. By sending information to individuals.
       3. By posting information.
       4. By giving information to those who ask for it.
    b. By three of the above ways.
    c. By two of the above ways.
    d. By one of the above ways.
    e. Not at all.

23. To what extent do you encourage new ideas in the classroom?
    a. By continuous encouragement in my contacts with teachers.
    b. By frequent encouragement in my contacts with teachers.
    c. By occasional encouragement in my contacts with teachers.
    d. By providing information and advice when asked.
    e. Do not encourage.

24. To what extent do you provide printed information to teachers concerning new teaching practices or methods?
    a. Mainly by sending memos and/or materials to individual teachers.
    b. Mainly by sending memos and/or materials to department chairmen.
    c. Mainly by keeping materials on file for those who ask for it.
    d. Mainly by advising teachers who ask where to get information.
    e. Providing no information.

25. Are you doing anything new or unusual in the way of in-service training at your school that is not covered by this questionnaire?

Comment_____

_____

_____

Please answer the following:

1. How long have you been a principal? _____
2. How long have you been principal of your school?____

APPENDIX C

TEACHER QUESTIONNAIRE USED IN THE STUDY

TEACHER QUESTIONNAIRE

I. In questions 2 to 26 you are asked to indicate your involvement in certain aspects of in-service education. Please consider the past twelve months in determining your answer. Consider only the subject in which you do most of your teaching.

1. Please indicate the approximate enrollment of your school.

100-500 500-1000 1000-1500 1500-2000 over 2000

2. How many system-wide committees have you served on outside your building which were concerned with the improvement of content, methods, or materials of instruction?

4 or more 3 2 1 none

3. How many times have you met with each committee on which you served as indicated in #2 above? (Give more than one answer if necessary.)

4 or more 3 2 1 none

4. How many committees have you served on within your building which were concerned with the improvement of content, methods, or materials of instruction?

4 or more 3 2 1 none

5. How many times have you met with each committee on which you served as indicated in #4 above? (Give more than one answer if necessary.)

4 or more 3 2 1 none

6. How many times have you met as an individual with consultants or resource people from your school system concerning improvement of instruction?

4 or more 3 2 1 none

7. How many times have you met in group meetings with consultants or resource people from your school system concerning improvement of instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

8. How many times have you met as an individual with consultants or resource people from outside your school system concerning the improvement of instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

9. How many times have you met in group meetings with consultants or resource people from outside your school system concerning the improvement of instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

10. How many times have you met as an individual or in group meetings with a salesman or representative of a company selling equipment or materials for instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

11. How many times have you visited a class in your school to observe instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

12. How many times have you visited a class outside of your own school to observe instruction?

4 or more ____ 3 ____ 2 ____ 1 ____ none

13. How many times have your classes been visited by your principal or other supervisor for the sake of observing instruction and providing help?

4 or more ____ 3 ____ 2 ____ 1 ____ none

14. How many educational conferences outside your own school system have you attended?

4 or more	3	2	1	none

15. How frequently do you talk with teachers in your building, in informal contacts such as lunch hour, conference hour, during social activities and the like?

a few times a day	a few times a week	a few times a month	a few times a year	hardly at all

16. How frequently do you talk informally with teachers from other schools?

a few times a day	a few times a week	a few times a month	a few times a year	hardly at all

17. How many total staff meetings have you attended at which a major topic taking fifteen minutes or more was devoted to the content, methods, or materials of instruction?

more than 20	10 to 20	3 to 9	1 or 2	none

18. How many department staff meetings have you attended at which a major topic taking fifteen minutes or more was devoted to content, methods, or materials of instruction?

more than 20	10 to 20	3 to 9	1 or 2	none

19. How many committee meetings have you attended while serving on a committee with teachers or educators outside of your own school system?

10 or more	5 to 9	3 or 4	1 or 2	none

20. How adequate is the professional library available to you within your school consisting of professional books, journals, research studies and the like?

completely adequate	adequate in most respects	adequate in some respects	limited in most respects	none existent

21. How often do you make use of the professional library available to you as mentioned above?

daily	a few times a week	a few times a month	a few times a year	not at all

22. How many semester hours of graduate work have you completed in the past twelve months?

8 or more	5 to 7	3 or 4	1 or 2	none

23. How many research projects have you worked on either by yourself or with others?

4 or more	3	2	1	none

24. How many professional periodicals or journals do you read regularly?

4 or more	3	2	1	none

II. In questions 25 to 31 please indicate to what extent you feel your principal encourages you to take part in the activity mentioned.

25. Serve on educational committees:

continuously	frequently	occasionally	rarely	almost never

26. Attend educational conferences?

continuously	frequently	occasionally	rarely	almost never

27. Use consultants to improve your teaching?

continuously frequently occasionally rarely almost never

28. Continue your graduate training?

continuously frequently occasionally rarely almost never

29. Visit other teachers' classes to get ideas?

continuously frequently occasionally rarely almost never

30. Do professional reading?

continuously frequently occasionally rarely almost never

31. Do research?

continuously frequently occasionally rarely almost never

III. In questions 32 to 44 please indicate in part "A" the number of times you have tried something for the first time in your classroom. In part "B" please indicate where you got your idea for this change. Give more than one answer in part "B" if necessary.

32. Reorganized the content of units of the course, not counting changes made because of textbook change.

A. 4 or more | 3 | 2 | 1 | none

B. (Check more than one if necessary.)

Principal | Dept. Chairman | Consultant | fellow teacher | teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

33. Replaced some content with other content.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

34. Added new content to the course.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

35. Added new resource materials, other than textbooks, that you requested or supplied yourself.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B.

Principal	Dept. Chairman	Consultant	fellow teacher	teacher from other school
salesman	graduate work	professional reading	conference	my own research
my students	don't know or other			

36. Used a type of audio-visual equipment for the first time.

A.

4 or more	3	2	1	none

B.

Principal	Dept. Chairman	Consultant	fellow teacher	teacher from other school
salesman	graduate work	professional reading	conference	my own research
my students	don't know or other			

37. Used new or different type of equipment, other than audio-visual, for demonstration or class use.

A.

4 or more	3	2	1	none

B.

Principal	Dept. Chairman	Consultant	fellow teacher	teacher from other school
salesman	graduate work	professional reading	conference	my own research
my students	don't know or other			

38. Used a resource person for your class for the first time.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

39. Tried a new method of presentation.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

40. Gave different type of assignment.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

41. Used a different type of test.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

42. Changed the method of grading.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

43. Changed the physical arrangements of the room.

A. _____ 4 or more _____ 3 _____ 2 _____ 1 _____ none

B. _____ Principal _____ Dept. Chairman _____ Consultant _____ fellow teacher _____ teacher from other school

_____ salesman _____ graduate work _____ professional reading _____ conference _____ my own research

_____ my students _____ don't know or other

44. Tried something new that isn't listed.

Indicate _____

_____

IV. Please check the answer you feel best applies.

45. In general what action does the principal take in regard to changing things or trying new ideas?

_____ continuously promotes and encourages change

_____ occasionally promotes and encourages change

_____ favors change but seldom promotes

_____ sometimes promotes but usually opposes

_____ nearly always opposes change

V. Please check those statements that apply to you.

46. What sex are you?

_____ male _____ female

47. What is your age?

_____ 20-24 _____ 25-29 _____ 30-34 _____ 35-39 _____ 40-44

_____ 45-49 _____ 50-54 _____ 55-59 _____ 60-65 _____ over 65

48. In what subject areas do you do most of your teaching?

_____ art _____ bus. ed. _____ English _____ foreign language _____ homemaking

math	ind. arts	social studies	science	music
phys. ed.	other			

49. How many years have you taught in this school? (count this year as one)

one	2-4	5-9	10-14	15-19
20 or more				

50. What is the total number of years you have taught?

one	2-9	10-19	20-29	30-39
40 or more				

51. What is your present level of academic preparation?

less than B.A.	B.A. or B.S.	B.A. or B.S. plus hours	M.A. or M.S.
M.A. or M.S. plus hours	Ed. Sp.	Doctorate	

APPENDIX D

METHOD USED FOR OBTAINING THE CORRELATIONS AND CHI-SQUARE TESTS USED IN THE STUDY

METHOD USED FOR OBTAINING THE CORRELATIONS AND CHI-SQUARE TESTS USED IN THE STUDY

The purpose of this appendix is to present the method used for obtaining the correlations and the Chi-square tests presented in the study. The data were taken from the teacher questionnaires and from the principal questionnaires.

The correlations were obtained by making two runs with the computer. For the first run the answers to the questions on the principal questionnaires were hand tabulated to rank the schools according to the over-all strength of the in-service education program, the compensation allowable for in-service education, the extent to which principals reported they encouraged in-service education, and the opportunities provided by the school for in-service participation. This information was coded and punched into a computer card for each teacher questionnaire along with the coded answers to all the questions on each teacher questionnaire, with the exception of the "B" answers to questions 32 through 43, which were hand tabulated. The first run was made for tabulation of the data.

Following the first run, certain parts of the teacher questionnaires were summarized and punched into a second card for each teacher questionnaire. The scores of questions 2 through 24 for each teacher questionnaire were totaled to give a total score for participation in in-service education. The scores of questions 25 through 31 were totaled to give a total score for principal encouragement as

perceived by the teachers. Finally, the scores of questions 32 through 43 were totaled to give a score for teacher innovativeness. The second run of the computer furnished correlations of all the items listed on computer cards one and two for each teacher.

The correlations listed in this study are those which had significance and were relevant to the study.

The chi-square tests were calculated by computer in a third run. Chi-square scores and the significance of the scores were calculated for the participation of teachers in each of 23 in-service activities, as determined by teacher response to questions 2-24 on the teacher questionnaires, in each of the schools when the schools were ranked according to the strength of the in-service programs as determined by the total score in the principal questionnaires.